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Building learner autonomy into work-integrated learning: Challenges for the 21st Century

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ABSTRACT

Empowering learners to develop autonomy through critical self-reflection is pivotal to the transition from teaching to learning, and employability. Professionals desire graduate autonomy, employers require it and so Work-Integrated Learning (WIL) must embrace, conceptualise and operationalise it. Knowledge and application of work skills alone do not guarantee employability. However, if knowledge and application are accompanied by student critical self-reflection on appropriate levels of autonomy, then this process heightens students' sense of accountability in the workplace and enhances employability. This study supports the empowerment of WIL students with Learner Autonomy to promote sustained competence in the workplace. The purpose of this study is to illustrate neither higher nor lower levels of autonomy are valued per se, but rather student awareness of appropriate levels of autonomy needed and correctly aspired to in the workplace, together with the mentor ability to scaffold safe and competent increases in student autonomy. The research objectives are firstly, to develop and administer a model to shape reflective learners, and secondly determine constructs of Learner Autonomy. A sample of forty-four cross disciplinary WIL students from an Australian university were selected to determine the perceived levels of pre and post autonomy in work skills. One hundred and thirty two student essay and journal transcripts and forty four semi structured interviews were used in a qualitative analysis to address the objectives. The study concludes variations in levels of autonomy in work skills are primarily a result of - Motivation, Adaptability, Communication, and Supervision. The implications of this study therefore focuses beyond the passive acquisition of skills and knowledge to actively empower students with an understanding of why learner autonomy is relevant to 21st century employability.

Keywords: Work-Integrated Learning, Learner Autonomy, Self-reflection, Work skills

BACKGROUND

Autonomy is related to metacognitive strategies which involve thinking about the learning process, preparation for learning, monitoring the learning task, and self-evaluating (Little, 1991). In the Work-Integrated Learning (WIL) context, it refers to how students reflect, monitor and take responsibility for their learning. Autonomy is based on the philosophy that if students are responsible for their own decision making processes then they are likely to be more enthusiastic about learning (Littlejohn, 1985) and learning becomes more focussed and purposeful (Dam, 1995; Chan 2001, 2003; Smith 2008).

Australian universities often list 'autonomy' as a university graduate attribute either directly as, '*personal and intellectual autonomy'* (University of Sydney, 2014) or indirectly as, '*independence, creativity and learning*' (James Cook University, 2014) in their attempt to demonstrate employability of graduates (Barrie, 2006, 2012). The definition however, is often inconsistent (Broad, 2006) and unclear (Clanchy & Ballard, 1995) about what is achieved educationally (Green, Hammer, & Star, 2009), and empirical studies that explore the concept rare (Willison, Sabir & Thomas, 2017).

Holec (1985) first defined the term 'Learner Autonomy' as '*the ability to take charge of one's learning*'. Subsequently it was re-defined as '*taking control over one's learning'* (James & Garrett, 1991, 198), and '*taking complete responsibility for learning'* (Dickinson (1987, 11) while setting suitable goals. Taking on responsibility in learning entails critical self-reflection which in turn leads to individual accountability for autonomy in the workplace. Nevertheless, learners

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aspiring to be more autonomous frequently require support and guided direction from educators and mentors. Such support motivates and fosters the learners' critical reflection on work skills in a way that is more likely to instil the need to develop autonomy (Winch, 2009).

The purpose of this study is to create learning environments in WIL that foster autonomy, and optimise outcomes by encouraging students to think about their learning goals and articulate self-instructional strategies. It is not about achieving higher or lower levels of autonomy per se, but rather student awareness of appropriate levels of autonomy needed, and correctly aspired to in the workplace.

Equally important is the need for academics' and WIL supervisors' abilities to scaffold safe and competent increases in student autonomy, as well as the management of expectations when students need to work at lower levels of autonomy. The research objectives are firstly, to develop and administer a model to shape 'autonomous learners' in WIL, and secondly to determine constructs of Learner Autonomy.

MODEL OF LEARNER AUTONOMY [MLA]

The term 'model' used in this study and defined by the Cambridge Dictionary, refers to a representation of something in words [or numbers] that can be used to tell what is likely to happen if particular facts are considered as true (http://dictionary.cambridge.org/us/dictionary/english/model).

The Model of Learner Autonomy is based on the Work Skills Development (WSD) framework (Bandaranaike & Willison, 2009/2016), a two dimensional conceptual framework, used in WIL assessment (Bandaranaike & Willison, 2015). The WSD's six comprehensive work skills facets of employability, succinctly defined as – Initiative, Technology, Lifelong Learning, Self-Management, Problem Solving, and Communication - are combined together with a continuum of five levels of autonomy/direction – Prescribed, Bounded, Scaffolded, Self-initiated, and Open - to compose the MLA (Fig.1).

The Model of Learner Autonomy is grounded on the concept of 'engaged learning' where the learners are behaviourally, cognitively, and emotionally involved in their learning. When students take responsibility for critical reflection (Mezirow, 1998; Fook, White & Gardner, 2006; Hickson, 2011)) within the context of autonomy they become more focused to actively engage in self-improvement and progress over time (Bandaranaike & Willison, 2010). The process enables the autonomous learner to establish a personal agenda for learning by setting up directions in the planning, pacing, monitoring and evaluating the learning process (Little, 1994; Chan, 2003).

METHODOLOGY

In the teaching and learning of WIL it was deemed necessary to devise a methodology that went beyond the mere transfer of cognitive knowledge and skills. Students needed to be cognizant of what they are doing and why (reflective practice). Learner Autonomy is a behavioural outcome of critical reflection and to measure it, personal characteristics are assessed using constructs (Cronbach & Meehi, 1955; Messick, 1995). However, these constructs cannot be measured directly, but assessed through a number of variables, indicators and attributes.

The MLA was based on a sample of forty four multi-disciplinary WIL students at an Australian university. The variables, indicators and attributes used in this study, were collected from thirty eight pre-set reflective questions (f2f /on line), including seven questions on the background of the student and nature of the WIL placement, together with critical reflections on each of the six work skills (total 30 questions), followed by a final question on their overall hierarchical reflection (work skills) on their Learner Autonomy in the particular placement. These responses were further supported by individual written reflections from a total of 88 reflective journals and essays. The variables were coded in an Excel spreadsheet and analysed using both descriptive statistics (quantitative) and reflective statements (qualitative).

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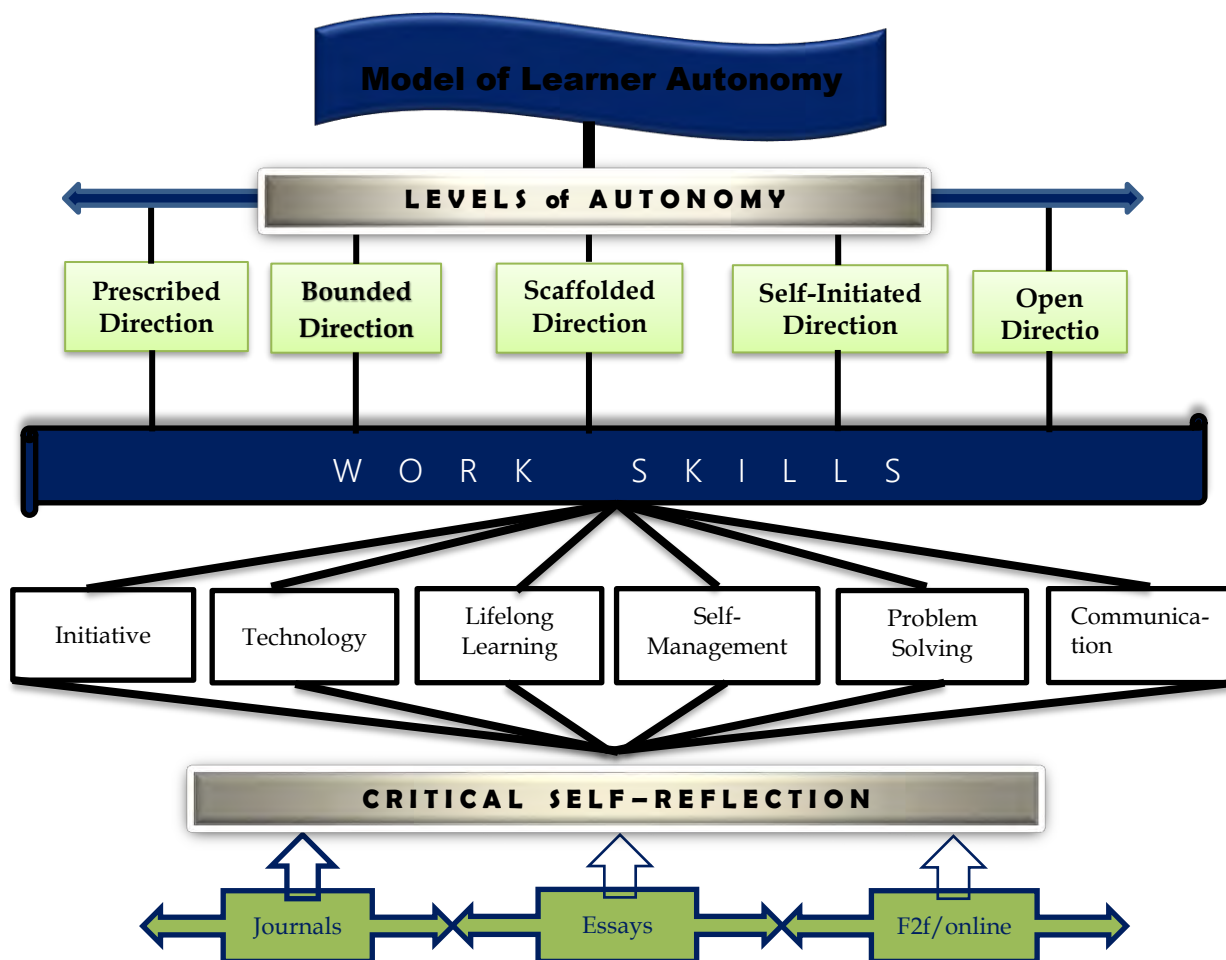
FIGURE 1: Building Learner Autonomy

Levels of Learner Autonomy

Levels of Autonomy on a scale of 1-5 were categorised as illustrated in Table 1, column 1. These generic levels of autonomy were further extended (not shown here) across the six work skills - *Initiative, Technology, Lifelong Learning, Self-Management, Problem Solving, and Communication* - and used in measuring change (d) between *pre* and *post* levels of autonomy for each of the work skills. The overall mean level of autonomy for each work skill, both *pre* and *post* level, were used in calculating the mean difference (d) in the Level of Autonomy to projected change in level of autonomy. With individual autonomy being recorded on a level of 1-5 (Table 1), the maximum change possible in levels of autonomy was 4 (level 1 to Level 5) and rare. Initially, WIL students lack confidence and struggle with identity and role adjustment and require prescribed direction, but as this study indicates the change in pre and post autonomy is consistent with a minimum of a 2 point increase on a scale of 5 (e.g. level 1 to 3 or 3 to 5). For 18% of the students (N=44) the level of autonomy doubled (d ≥ 2.5) between *pre* and *post* placement. In contrast 27% indicated they had very little improvement (d ≤ 1.5) in their *pre* and *post* levels of autonomy.

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TABLE 1: Levels of learning autonomy. Column 2, gives the generic description for each Level of Autonomy, and column 3 illustrates its application through the work skill facet, *Problem Solving*.

Levels of Autonomy 1-5	Description	Assessment (as applied to 'Problem Solving')
Prescribed Direction	Student learning relies on highly structured directions and guidance from educator	Applies a simple structure to understand problems & contribute towards solutions
Bounded Direction	Learning is defined via structured direction and set boundaries by the educator	Applies a structured format to interpret, evaluate, analyse & synthesise existing information to create solutions
Scaffolded Direction	Independent learning prompting discovery commences within provided guidelines	Interprets information independently to analyse and synthesises knowledge to initiate innovative solutions
Self-Initiated Direction	Embarks on self-initiated direction to develop innovative learning outcomes	Applies critical thinking and works collaboratively to produce innovative and creative solutions
Open Direction	Works within self-determined guidelines to advance learning within given context	Applies sophisticated critical thinking & analysis to initiate change and extrapolate outcomes

While the extent of Autonomy in the first two levels (*Prescribed and Bounded direction*) are "Educator Initiated" receiving substantial educator/mentor support, the last two levels (*Self-Initiated and Open Direction*) are "Student Initiated" receiving less mentor support and, function at a higher autonomy level. The third level, *Scaffolded direction*, is a transitory level between Educator and Student Initiated direction where the student demonstrates greater independence (after Willison, Sabir & Thomas, 2017).

Table 2 gives a generic description for each work skill facet and expected outcomes in MLA. The MLA is a flexible model in that, while the generic framework incorporates definitions of autonomy adaptable to cross- disciplinary studies, the sector descriptors can be modified to reflect autonomy in work skills within individual disciplines, if required.

TABLE 2: Expected Outcomes of Learner Autonomy by work skill facets

Initiative	Technology	Lifelong Learning	Self-Management	Problem Solving	Communication
Shows a clear knowledge of what the placement would entail and the employer expectations through personal communication, research & networking	Shows evidence of having utilised available resources to demonstrate a desire to engage in the broader discipline within placement.	Has a clear vision for at least the next few years after completing the placement. Has a high degree of personal & interpersonal sensitivity	Shows maturity in dealing with stressful situations. Organises information to articulates visions, goals, and innovative strategies and effectively manages teams	Ability to identify challenges in the workplace. Applies sophisticated critical thinking & analysis to initiate change and extrapolate outcomes.	Ability to communicate and work with others with a solid understanding of the social, emotional and cultural context of the other

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Levels of student Autonomy were also assessed in p*re* and *post* WIL assessment in the face to face and online assessment, and changes (d) noted in composing the MLA constructs. Students identified their Levels of Autonomy from a given set of reflective statements and asked to justify their choices. These responses were further validated using Evidence Probes methodology (Liamputtong & Ezzy, 2005, 65) to identify how sure a person is of their interpretation to prevent misinterpretation and errors in the response.

Constructs of Learner Autonomy

Analysis of data across 132 essay, journal and interview transcripts (as discussed above) were used to isolate variables to identify the main constructs of Learner Autonomy as:

- **Motivation** (to engage in role, work unsupervised),
- **Adaptability** (coping with challenges, stressful situations),
- **Communication** (articulation, purposeful negotiations)
- **Supervision** (educator/mentor support)

Interestingly, the first three are affective constructs (as opposed to cognitive) in which emotional, social and cultural adaptations in the workplace become essential in reaching higher order levels of autonomy. The fourth construct, Supervision, is more reliant on cognitive knowledge and skill for improved Learner Autonomy.

RESULTS AND DISCUSSION

Motivation builds engaged learner autonomy. Students with an increased motivation to learn and engage in a work environment have a greater learning effectiveness (Dickinson 1995) and higher learner autonomy. Variables used in measuring this construct related to the extent an individual was goal directed and motivated to embark clarify the given role. Motivation was assessed through the following reflective questions:

1. What motivated you to take on this particular placement?

2. When you first took on the Placement how did you feel and what steps did you take to fully understand your New Role?

3. Was there any time during your placement you felt less motivated than usual? If YES, Describe briefly the situation/moment.

4. After completing your placement were you motivated to work within the same area / same place or work elsewhere? Give reasons.

Adaptability was assessed in the context of gaining confidence and becoming more independent in the workplace. This construct was determined via critical reflections on how successfully an individual managed challenges and difficult situations and the ability to organise and manage oneself. It was also extended to how well the individual critically analysed and synthesised a challenging situation. For example reflecting on:

Think of a time when you were faced with a stressful situation, how did you deal with it at the time and if it happened again would you deal with it differently and for what reasons?

Communication is the ability to show sensitivity to interpersonal communication and demonstrate professional conduct and collaboration when working with others, as for example:

When you had to deal with someone of a different (from your own) sexuality or nationality, age or work ethic at your work place did you have any preconceived feelings or thoughts? If not, why? If yes, how?

Supervision or guided direction in the workplace is a direct measure of coordination and supports development of Learner Autonomy. This construct was assessed via the degree of assistance a student received during the placement and varied from inductions, meetings, feedback to face to face communication. Student responses were recorded to challenging situations during the placement and how they dealt with it, as for example:

How much assistance did you receive to understand your role? How easy/difficult was it to approach your supervisor? Was there assistance available to you when required?

The Role of the Mentor

In developing Learner Autonomy the role of the mentor becomes pivotal since the other three MLA constructs of Motivation, Adaptability and Communication, can be vastly influenced by the fourth construct, Supervision.

Engaging in Learner Autonomy requires a wide selection of personal and interpersonal skills, and a range of cognitive, metacognitive, affective and social skills. In addition, the work environment must provide opportunities for the learner to take control of their learning to promote learner autonomy. In other words engaging in Learner Autonomy is not the sole duty of the learner, but also that of the educator/mentor in designing suitable teaching strategies and increasing engagement. Initially, most students lack the ability to identify goals or <u>understand</u> their role, as for example in this study, 13.6 % had absolutely no understanding of their placement role, and 72.7 % had very little understanding when they first took on the placement. In scaffolding Learner Autonomy, the mentor role is highly relevant and therefore a major construct of Learner Autonomy. As students develop the necessary skills, they move from being *Educator Initiated* (Levels 1&2) status to *Student Initiated* (Levels 4&5) status. Autonomous learners have a capacity for critical reflection and decision making, as well as skills to carry out a self-directed learning programme, (Little, 1991; Holec, 1985). Autonomy therefore, is attitude to learning and a capacity for independent learning with a high level of engagement.

Critical Reflections and Levels of Autonomy

Higher autonomy in **Motivation** are achieved in reflecting on goals, aspirations, directions and willingness to engage:

> ... [I] wanted to combine my dive experience with marine education while learning and developing new skills. By using this placement I learnt to reflect on later job opportunities

> There is a big disconnect between what we learn and what happens. It is not a bad thing … it just gives a critical perspective which is an important take way for me

In contrast, regressive motivation lowers Learner Autonomy:

> Being at work only a few days at a time, felt like I was being teased with being exposed to a really enjoyable activity but not getting to do it

Achieving higher autonomy in **Adaptability** requires understanding and managing oneself and that of others, and reflecting on the understanding of emotional, social and cultural skills of empathy, tolerance and respect of differences:

> I have mastered all my co-ordination tasks … and I think I am becoming proficient and capable in self-management and in understanding others, to get things done successfully

Sometimes owing to difficulties in either getting a full time placement or time restrictions, part- time work can imposes problems on self-management, as the following typical reflection typifies:

> … coming once or twice a week to work threw me off because I felt I was only getting exposed to snap shots of the project each time and it kept changing … I would really like to work on a project from start to finish.

Achieving higher levels of autonomy in **Communication** requires critical reflection in the ability to understand, articulate, negotiate and discuss difficult situations with others:

> Many of the information that we learnt in the degree is to help us speak a common language with everyone.

> When I first took on the placement I had detailed conversation with my supervisor about my role, responsibilities and what they expected of me

Supervision is an important construct in the MLA since affirmative supervision encourages motivation and confidence and inputs positively to Learner Autonomy, as expressed in the following student reflection:

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xxx was fantastic helping me settle into my new position despite the fact that she was out of office most of the time, we were in contact via email and phone with weekly meetings. She also mentioned I was free to approach her if I had other questions along the way

In contrast, weak mentoring leads to disengagement and loss of learner autonomy:

My supervisor was absent a few times because of travel duties and client meetings making it hard to really connect with him…"; "I did not feel like working hard when my supervisor was not there …

Sufficient preparation, suitable supervision and mentoring arrangements are the three most crucial strategies of an effective placement (Patrick et al., 2009).

The MLA is a major role player in helping individuals assess and manage their workplace challenges:

One major challenge I faced was the ability to concentrate on a task at hand in isolation for long periods … as I felt quite boring and slow. I rushed my work … this produced poor results. After consultation with my supervisor I rectified … by breaking the task into smaller more manageable intervals and reconstructing to fix the problem. I learnt from my mistakes

In this example, the student was given direction to complete a task (Prescribed Direction) yet the **motivation** to engage was lost because the job was 'boring' and 'slow'. Having **communicated** and received more specific **support from the mentor** (Bounded Direction) the student **adapted** to the situation to create a solution.

It is also important to note that having a higher level of autonomy in one work skill does not necessarily guarantee high levels of autonomy in all work skills. In the example above, the student reflected and managed her work skill in Problem Solving. However she admits being a poor communicator:

I was not always able to articulate my ideas at meetings with professionally qualified … since I was unsure of how I will be received as a student

Limitations

One of the major issues in administering the study was the difficulty confronted by some students in understanding the concept of reflective thinking with the output in their journals being mainly descriptive rather than reflective and thereby restricting the responses to this study. However this was partly overcome at the face to face interview where the educator was able to direct the student through reflective probing to extract more information of a reflective nature.

Given the sample were larger, it would enable differentiation by discipline or type of placement organisation to assess whether one/both variables impacted on the development of Learner Autonomy. It was noted some students were unable to progress in their autonomy owing to the nature of the placement which was routine, or repetitive and / or the small size of the institution and the inability to work as team and receive mentor support.

CONCLUSION

In response to employer call for graduates with relevant work experience, recent studies show workers more satisfied when there is personal autonomy claiming, that increasing the level of learner control will increase the level of self-determination, and increase overall motivation in the development of learner autonomy (Chan 2001, p. 506). This study goes beyond developing work skills per se or passively bridging the gap between the employer and educator. In drawing on the model of Learner Autonomy (MLA) the study focuses on developing individual autonomy and building self confidence in adjusting to the changing employability of the future through critical self-reflection and scaffolded learner autonomy.

Student Autonomy in the workplace is the ability to take charge of one's knowledge and skills learning during a placement. Motivation, Adaptability and Communication skills together with strong Supervision play a key role in developing autonomy. The ability for students to be autonomous is dependent upon their educator/mentor creating a culture where autonomy is accepted (Barfield et al. 2001, p. 3) and they need to be trained accordingly

(Burkert & Schwienhorst, 2008). Student autonomy is important in placements since individuals must progress from a novice when graduating to a professional in their chosen career through career development (Bandaranaike & Kimmerly, 2014). Autonomous learners need to be actively engaged and motivated in their work (**Motivation**), practice social skills of empathy, tolerance and understanding of differences (**Adaptability**), possess the ability to explain, discuss and negotiate with others (**Communication)** or engage with cognitive, metacognitive and affective dimensions (Dickinson, 1995).

> People who take the initiative in learning (proactive learners) learn more and learn better than do people …who passively wait to be taught (reactive learners)…. They enter into learning more purposefully and with greater motivation (Knowles, 1975)**.**

This study has provided perspectives on how to develop and use autonomous learning. It also contributes to the understanding of student perspectives on learner autonomy, the involvement of students in learning process and of the factors that might be considered as obstacles to develop learner autonomy in WIL settings. In the short run greater learner autonomy implies greater self-confidence and maturity. Learner Autonomy enable students develop their own ability to assess the extent and future extension of their learning and monitor their own progress to identify strengths and weaknesses and prepare themselves for the future. Fostering learner autonomy enhances WIL pedagogy in that critical self-reflection guides students in their thinking and development of work skills.

There is considerable evidence that success in learning work skills and in depth critical reflection is conditional on learners taking control over their learning, being able to make choices for their learning and recognising that their learning successes or failures are to be ascribed to their own efforts and strategies rather than to factors beyond their control (Gandhimathi, 2016). Further study is needed to determine if pedagogy that promotes critical self-reflection and learner autonomy provides superior benefits to WIL than a focus on more technical aspects of employability skills and industry knowledge.

Learning and practicing Learner Autonomy in the twenty-first century is vital for future employability. Changing organisational structures, emerging career patterns and the gradual erosion of job security requires graduates to not rely on industry/business for carer planning but to think more of themselves as self-employed autonomous on career management on their own.

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The significance of work-integrated learning in enhancing employability: Perceptions of Namibian English graduates

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ABSTRACT

Employability is defined by Yorke (2006) as the state in which students and graduates can discern, acquire, adapt and continually enhance skills, understandings and personal attributes that make them more likely to find and create meaningful paid and unpaid work that benefits themselves, the workforce, the community and the economy. To develop graduate employability, Higher Education Institutions (HEIs) make use of cooperative education programmes such as Work-Integrated Learning (WIL), where students are required to spend time in the world of work to gain work experience and credits for their programmes. This study adopted Dacre Pool and Sewell's (2007) "CareerEDGE - the key to employability" model to examine perceptions of 9 graduates from the Namibia University of Science and Technology (NUST), who graduated with a Bachelor of English (as a second language), on the significance of WIL in enhancing employability. The study also aimed to provide an understanding of the projected WIL perceptions at NUST and the actual experience of graduates. This study found that on evaluating employability, factors such as culture, language, career interest, and type of workplace influenced employability for these graduates. However, it can be concluded that WIL does enhance employability at NUST provided that WIL is well constituted and managed at the HEI, the student and industry.

Keywords: Graduate Employability, Work-Integrated Learning, CareerEDGE, Graduate Employment

INTRODUCTION

Employability has become an eminent issue in Higher Education Institutions (HEIs) research around the world. This is due to its importance amongst students, graduates, industry and academics. Students enrol in HEIs to secure employment. However, the wold is rapidly changing, employers do not simply hire graduates after graduation. They have specific expectations from graduates/ prospective employees. Graduates are required to have certain employability skills that will immediately add value to organisations. Leong (2012) explains that employability is not just about getting a job but about developing attributes, techniques and experience to enable a student to get a job and to progress within a chosen career with a long term and sustainability viewpoint. Leong (2012) adds that when explaining employability, emphasis should be less on 'employ' and more on 'ability'. The student's employability skills "can either be inherent in certain individuals; or can be instilled and honed through effective pedagogical techniques; or else, can be developed through work experience (Syed, Abiodullah & Yousaf, 2014, p. 245). Work-Integrated Learning (WIL) and other cooperative education related programmes are some of the famously known strategies used in HEIs to develop and enhance employability skills. At the Namibian University of Science and Technology (NUST), different programmes have WIL as a compulsory course in their curricula. It is therefore compulsory for all students to go through the WIL course for credits, gain experience and to develop and enhance their employability.

The objective of this study was to evaluate the significance of WIL on employability from a group of 9 graduates who enrolled for the Bachelor of English at NUST in 2009 and graduated between the years 2012, 2013 and 2014. The study also aimed to get an insight into the employment journey of these graduates, whether WIL has helped them become employable and cope in the workplace and equipped them with employability skills, as it is the intention of WIL at NUST. In addition, the study aimed to provide an understanding of the difference between the

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projected WIL perception and the actual experience from the graduates. As argued by Syed, Abiodullah and Yousaf (2014, p. 243), "it is no longer sufficient for graduates to hold a university degree based solely on subject-related competencies. Their degrees need to be value-added in order to cater to the changing and challenging work situations." The value that should be added to university degrees is in forms of work experience and employability skills. "HEIs approaches to promote employability skills and attributes in graduates vary: they include support in career decision-making and job search, development of employability attributes as part of study programmes, placements/work experience and personal development planning" (Lowden, Hall, Elliot & Lewin, 2011, p. 10).

WORK-INTEGRATED LEARNING AND EMPLOYABILITY

Work-Integrated Learning (WIL) is a range of work-related activities and experiences built into a student's study programme (Leong, 2012). Oliver (2015) proposes a definition of work-integrated learning that recognises that:

> Effective learning for employability can occur: within or beyond the formal curriculum; in work that is related or unrelated to one's course; in actual or simulated experiences; in physical or digital workplaces and spaces; and/or in paid or unpaid employment (p. 61).

According to Jackson (2013), WIL comes in many forms; it is a flexible creature which can be adapted to different disciplines and organizational contexts" (p. 99). These forms may include sandwich programmes, apprenticeships, and credit-bearing WIL programmes, amongst others. Employers nowadays value employable graduates. They want graduates who are emotionally ready and able to adapt to any work environment as soon as they are recruited. Graduates hence need to enhance their employability through context-appropriate WIL related programmes. Syed, Abiodullah and Yousaf (2014) argue that "the more challenging or non-traditional employment opportunities graduates aspire for, the greater becomes the need to possess and exhibit higher levels of self-efficacy" (p. 245).

Employability is defined as "having a set of skills, knowledge, understanding and personal attributes that make a person more likely to choose and secure occupations in which they can be satisfied and successful" (Dacre Pool & Sewell, 2007). Employability can be ensured from WIL in HEIs programmes. Work-Integrated Learning Programmes in HIEs should therefore be designed with the active participation of industry, to provide the best possible programme directed at the world of work (Karlsson, 2010). Such programmes will ensure that students get the best out of WIL, the academic institutions will produce work-ready graduates and the industry will have employable graduates at their disposal. Barkhuizen and Schutte (2014) carried out a study to develop a model for WIL, in which they highlighted some of the most prominent graduate skills as: "interpersonal skills, motivation, good inter-personal communication skills, business skills and etiquette, team spirit and cohesiveness and showing interest", amongst others (pp. 11-12). In addition, Lowden, Hall, Elliot and Lewin (2011, p. 12) presented the combinations of transferable skills that according to them are particularly relevant for graduates to possess, which include "team working, problem solving, self-management, knowledge of the business, literacy and numeracy relevant to the post, Information Communication Technology knowledge, good interpersonal and communication skills, ability to use own initiative but also to follow instructions and leadership skills where necessary".

In today's era, graduates do not stay in one job for a long time. They change careers and have broad career exposure to choose from compared to the past. Career development has therefore become an important aspect among graduates. Career development is closely related to employability because through career development, graduates are able to develop and know which employability skills are essential for their own development. Leong (2012) argues that developing employability skills for graduates is an issue not only in relation to the first job students may obtain after graduation but for future points of career progression as well.

THEORETICAL FRAMEWORK

The model that informed this study is Dacre Pool and Sewell's (2007) "Career EDGE- the key to employability" model. This model comprises elements that are essential in defining employability and is adopted from existing research. Dacre Pool and Sewell (2007) argue that the "key to employability" model is ideal in issues related to employability as it is straightforward, coherent and practical for explaining and measuring students' and graduates' employability and can assist all WIL stakeholders to improve students and graduates' employability.

Employability has generally been referred to the ability to find employment after graduation. Dacre Pool and Sewell (2007) however argue that there is so much more to employability than simply gaining employment. Their model hence explains essential elements to be considered when defining employability. Figure 1 by Dacre Pool and Sewell (2007) explains the essential components of employability and how they relate to each other.
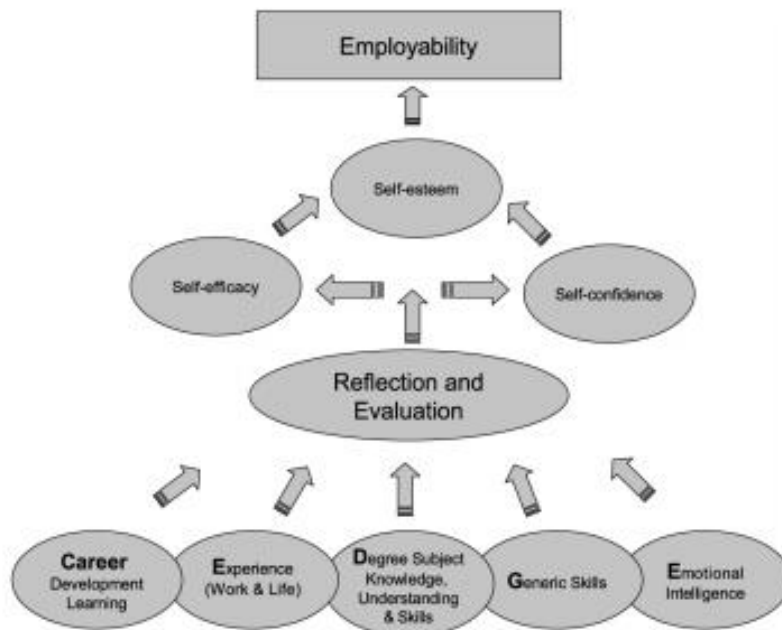
FIGURE 1: Essential components of employability

From Figure 1, Dacre Pool and Sewell (2007) metaphorically created the key which opens the employability door. The metaphorical model of employability, comprising of the elements shown above is therefore clearly stipulated in Figure 2.

The CareerEDGE represents the Degree subject knowledge, understanding and skills. According to Dacre Pool and Sewell (2007), the understanding of the students' qualification is important and is probably the central concept in the CareerEDGE model. This is because graduates with a better understanding of what they have studied generally have better chances of employment and finding good jobs. Employers at a large extent rate graduates employability on how successful they have completed their degrees, in terms of the grades they have acquired and the time taken to complete the qualification. However, subject knowledge alone does not guarantee employment among graduates. In Namibia, graduates may graduate with distinctions but they still find difficulties finding employment in the fields they have specialised and in some cases, finding employment at all.
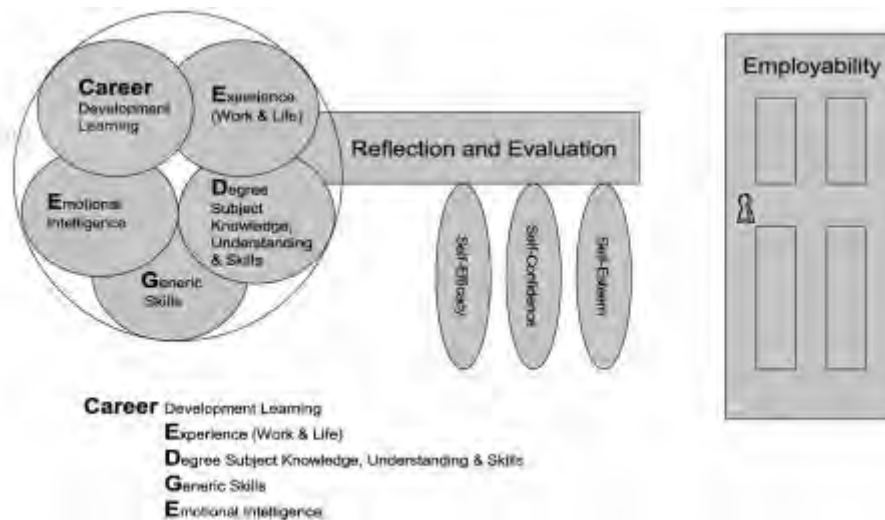
FIGURE 2: A metaphorical model of CareerEDGE- The key to employability

Generic skills used in the CareerEDGE model refer to employability skills that employers require from graduates. These skills are not always acquired from University degrees. Work-Integrated Learning and Cooperative Education programmes therefore come in hand as they provide the students with work experience and employability skills are developed this way. According to Dacre Pool and Sewell (2007, p. 283), "as with all the components in the model, in order to achieve their true employability potential, a graduate will need to have well developed emotional intelligence competencies". Emotional intelligence as explained by Salovey and Mayer (1990) (as cited in Coetzee & Beukes, 2010) "describes the extent to which individuals are able to tap into their feelings and emotions as a source of energy to guide their thinking and actions" (p. 441). Coetzee and Beukes (2010) conclude that emotional intelligence is an important aspect in employability as graduates with emotional intelligence tend to develop self-empowering career attitudes, skills and behaviours. This enhances employability among graduates. Syed, Abiodullah and Yousaf (2014) explain that emotional intelligence is among one of the employability skills which arouse a sense of security and dependability in potential employers. Coetzee and Beukes (2010) recommend that emotional intelligence be incorporated in career support programmes as one of the core elements.

Career development learning is another element in the CareerEDGE model. As explored by Watts (2006), career development is a vital component that should be included in all higher education programmes as these programmes will assist graduates develop employability skills as well as provide graduates with correct career directions. According to Omotayo, Oyewami and Ibinyika (2014), career development assists in graduates' individual career maps which illustrate their values, skills and other abilities that will guide graduates and employees to choose the right career directions and add value to their organisations hence being employable and valuable assets to their employers. Life and work experience are some of the key elements of WIL and the development of graduates' employability. Life and work experience are therefore integral elements in the CareerEDGE model they are some of the common strategies used in HEIs to develop employability.

Graduates need to be provided with opportunities to gain skills and experience in order to become employable. However, gaining skills alone doesn't alone ensure employability. Reflection and evaluation play important roles in ensuring employability. According to Dacre Pool and Sewell (2007), without reflection and evaluation opportunities, "a student is unlikely to give full consideration to how far they have come in developing their employability and what they may need to do in order to develop it further" (p. 285). Personal development planning then becomes crucial in the evaluation and reflection processes. Ward (2006) explains that:

> the relationship between Personal Development Planning (PDP) and Employability is central to the
> development of learners' ability to identify, articulate and evidence their learning and overall development

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and that this, in turn, provides the key to effective progression through learning and work throughout life (p. 5).

In regards to Self-efficacy, Self-confidence, and Self-esteem, Dacre Pool and Sewell (2007) explain the three closely-linked "Ss" to "provide a crucial link between knowledge, understanding, skills experience and personal attributes and employability" (p. 285). The "Ss" therefore perfectly fit in the CareerEDGE Model as self-efficacy, self-confidence and self-esteem as important qualities employers' value in a prospective employee.

METHODOLOGY

Participants

The participants purposively selected for this qualitative study are a sample of 9 graduates (from a group of 11, who couldn't be reached and participate in the study for different reasons) who graduated with the Bachelor of English from the Polytechnic of Namibia, now Namibian University of Science and Technology, in 2012, 2013 and 2014 respectively. All participants enrolled for the Bachelor of English in 2009 and completed a compulsory Work-Integrated Learning (WIL) course before graduation. All participants were employed after completion, although some are not currently employed. Some participants furthered their studies and some are currently furthering their studies. Although the results may not be generalised because all graduates could not participate in the study, the sample used makes up 82% of the population, therefore, the results provide a general insight of the majority's views on employability and the importance of WIL on enhancing employability.

Instruments and Procedure

A questionnaire comprising open-ended and closed questions was distributed to all participants. The questions in the questionnaire aimed to get an insight on the importance of Work-Integrated Learning (WIL)/internship and the role these programmes play in enhancing employability among graduates. The questions also intended to evaluate if these programmes actually produce the desired outcomes or not. The questionnaire further provided a chance for respondents to provide any further insights they may have on employability, WIL and the differences or match between projected WIL perception and the actual experience of WIL programmes. Respondents were further asked to reflect back on the experience they gained during the WIL period and the difference or similarity between the experience they had gained from WIL and skills learnt during actual employment.

Analysis

The analysis of this study was based on Dacre Pool and Sewell's (2007) CareerEDGE model. The themes identified from the questionnaire are used to present the analysis and discuss the significance of WIL on employability. Excerpts from the questionnaires answers are used to explain the participants' perspectives of WIL and the impact it has on enhancing graduates employability.

RESULTS, DISCUSSION AND IMPLICATIONS

Out of the 9 graduates who participated in this study, 2 are currently unemployed because they have gone back to school, one to further his/her studies and the other participant has enrolled for an undergraduate programme in a different field of study. 8 graduates relatively secured employment soon after completing their studies. Only 1 participant took 2 months searching for a job. This could be explained by this specific graduate's lack of interest in the English field of study. 5 participants have been employed by the same employer since graduation, with few part-time jobs in the same profession. Other participants who have had a maximum of three jobs had different reasons for change of jobs, one being, greener pastures (in terms of remuneration) and the rest, change was brought upon by personal reasons such as getting married and as well as moving closer to family.

Although English is the official language in Namibia, it is a second language to the majority of Namibians. The Bachelor of English programme trains graduates who are second language speakers of the English language. Their

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careers or work need a strong background of the English language which second language speakers may never fully attain.

Benefits of WIL

From all respondents, WIL has proven to be an important strategy in developing and enhancing employability skills at NUST. Some respondents explained that the WIL programme has enhanced their self-confidence, time-management and handling pressure in the workplace. WIL has different benefits for employers, HEIs, as well as students. Amongst different benefits WIL provides, one benefit is employment. From one graduate's perspective, WIL provides experience but most importantly, WIL programmes can secure graduates jobs. One of the participants who, after graduation, was permanently employed by the same employer during the WIL period stated:

> I was employed right after completing my final year, my employer during my Internship programme was impressed with my work, so I was tied down even before I could go job hunting.

One of the methods to measure employability as suggested by Dacre Pool and Sewell's (2007) "CareerEDGE model" is reflection and evaluation. The Namibian English graduates have gone through the WIL course for one semester and have expressed graduates and highlighted the benefits WIL to students. One graduate reflected:

> I have seen that Work-Integrated Learning/Internships really help a lot to prepare a student into the working world because it takes you through what happens in the real working world, allowing to practice all the theories you have learnt, allowing you to acquire knowledge of how to present all the knowledge you gained in a classroom to others and become a critical thinker in all that you do, as it will require you to do some kind of research at times.

Amongst other WIL benefits to students, self-confidence seems to be one the major skills that students acquired during WIL programmes. Students indeed feel they have become employable after they have completed WIL related programmes. One English graduate explained that:

> Through my internships, I was able to overcome my fear of standing in front of a large group and talk to them. I became employable because doing internships was one of the requirements to complete my degree, so when I completed my internships, I was ready for real employment.

In Namibia, students generally do not take generic skills that they need to develop for employment seriously in the course of their student life. Skills such as time-management, professionalism, being self-critical amongst others are not important to them. They however have high expectations of workplaces and employers when they go for their WIL. It is therefore a realization for most of them when they enter the world of work in terms of how they need act if they are to become employable. WIL therefore becomes an important component in HEIs programmes. After evaluating the experience obtained from WIL, one graduate reflected:

> WIL taught me to finish tasks within the specified timeframe, the importance of teamwork and taking advice as well criticism without feeling less important or discouraged.

The benefits of WIL should therefore be used to develop all programmes in higher education. This is because the majority of students enroll in institutions of higher learning to become employable. One participant explained:

> Internships are an integral part of every student's journey, in my view, it should be made compulsory for all final year students to ensure that the gap between life in the classroom and that of the workplace is bridged.

> Internship also allows students to secure jobs if they perform well, this helps to curb the trend of graduates sitting at home without jobs. Life in the job industry is nothing close to student life, hence students need adequate nurturing before they are dispatched into the industry. I believe students who have undergone internship have a better chance of adapting quicker in a workplace because the principles of the market such as punctuality, discipline and coping under pressure are already part of their DNA.

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Although some students simply go for WIL because it is required of them and they want to graduate, some actually take interest in their fields of study and want to apply what they have been learning in the classroom. These students tend to get more out of the WIL experience, these includes, prospective employers, career development opportunity, depth-understanding of their chosen professions as well as emotional intelligence. These graduates are generally more employable than others. One graduate stated:

> Going on internship was a learning process for me. I finally had the opportunity to practice what I had studied in university. It was also fun and emotional experience and was totally a growing experience that allowed me to be independent and confident in myself and what I do.

From the graduates reflections, WIL is beneficial to students in different ways but experience seems to be the central concept in WIL, Tucker (2006) and Burkle (2010) (as cited in Mah, Arain & Sharma, 2014) highlight that the value of the WIL programme to the student is the learning experience itself, which integrates all of the knowledge that the student has acquired on the programme and enables the student to develop and demonstrate analytical, judgmental, presentation and communication skills.

Employability Skills

The graduate employability skills the respondents in this study specified include hard-work, dedication, communication skills, self-expression, teamwork, determination, innovativeness, planning, flexibility, time-management and upkeep of the company's image, team-work, punctuality, leadership skills, decision-making skills and computing skills. These skills were obtained from WIL as well as actual employment and have enhanced the employability of these graduates. One stated:

> The skills learnt during employment are similar to skills I acquired from my internship. My internship was like a second qualification. I learnt so much, if not more than I did in my employment and university. Skills such as confidence, self-trust and the ability to work under pressure were acquired during internship and enhanced during my employment period. However, I personally think that work environments differ and what one's job description will determine what skills are enhanced and developed during employment.

There are some employability skills that the WIL programme could not provide the students with. When asked on which skills these graduates only got to acquire from actual employment, some mentioned: teaching skills, handling work stress, ability to work without supervision, meeting deadlines, innovation, patience, motivation skills, filing information. These skills may have not been acquired from internships because of the different work environments. Some students may get a totally different job from what they did during internship.

Some skills however remain a challenge in work places. The participants indicated that skills such as conflict management, micromanaging interns and colleagues, deadlines, handling workload, working with different personalities and gaining respect in a workplace remain a challenging even after 4 years of employment.

Projected WIL Perception vs Actual Experience

WIL equips graduates with necessary work experience and skills that enhance their employability. The WIL course at NUST is a semester course and operates as a WIL programme explained by Leong & Kavanagh (2013) which "connects students with sponsors who provide them with opportunities to enhance their skills, knowledge and abilities they have acquired during their programmes of study in real project work in host organisations", (p. 10-11). However, as shown above, some students have not had the chance to participate in Career Development Learning. This means that they may not really have had an opportunity to choose the careers they have always wanted to embark in, hence the change of profession later in life. Leong (2012) explains that developing employability skills for graduates is an issue not only in relation to the first job students may obtain after graduation but is also important at future points of career progression and students should position themselves in relation to future work and what they perceive to be appropriate and meaningful courses of future action to stay employable. Graduates may have acquired work and life experience, acquire a number of generic skills that they will use in their workplaces and help them cope as well as have a general understanding of the qualification they have studied,

however if there is a lack of interest in the career, which is usually enhanced and understood from career development learning, then these graduates employability in the fields they are in is never fully developed. These graduates also find it difficult to find internships because of the lack of interest in the field. One graduate who felt that she/he did not study towards the career of her/his choice stated:

It's very troublesome to actually find internships and often times it's not in the area that you wish to be employed in, from my experience. I had to take any internship opportunity, whether I wanted to work in that field or not, because internships are scares (sic) and often time's student have no idea where to start searching. I had to work in that field for two years because I only had that experience of employment and I needed a job. I than decided to enrol in another course of study in the hopes of finding something else.

The type of experience gained is also very important. Students should not simply get any experience related to their fields of study, but areas that they actually want to get employed in. For instance in this case, this specific graduate is currently enrolled in a Master's programme in English related studies. The WIL programme has been great, however it was not in the specific career direction he was interested in, although it was related to his profession. This graduate states:

I had a great internship but it did not help me much when I started teaching English in High school. I think the department can do more in helping students acquire skills more relevant to what they are to do after university. For example, adding an editing course, a teaching module, a speech writing module, creative writing and so on. These would make the job market easier to enter because students know what they are in for and what direction to follow in their careers. If they can't be integrated as modules then they should be put in as compulsory seminars, to just equip the students with the right knowledge.

In addition, the skills grained during WIL programmes may be generally enhance employability, but this is not always the case. WIL programmes only enhance employability when students are placed in work environments that are geared towards what students are interested in and are planning on furthering their studies in. This English graduate attested by stating that:

The skills I got as a teacher I learnt on the job. The university can do more in the process of trying to put interns in internships that are more geared towards the student's preferred careers.

Carbone, Hamilton and Jollands (2015) carried out a study on understanding the 21st century challenges in the Australian ICT industry. Carbone, Hamilton and Jollands (2015) found that students at times were not clear about how to close the gap between theory and practice, or where to learn their required employability skills. Conversely, the Namibian English graduates at NUST were presented with a WIL opportunity in attempts to close the gap between theory and practice, however, as shown in reflections above, some graduates did not benefit from this experience as they thought they would. Carbone, Hamilton and Jollands (2015) recommend that possibly, the future teaching pedagogies would benefit from realignment of curriculum with industry expectations, to meet the ever increasing expectations of employability from both industry and students. This also means that the industry should take in students whose interests are in their organisations and plan to advance their careers in those specific fields.

The difference in internships can therefore create a mismatch in employability skills gained, which makes it difficult for these graduates to cope in different environments. Although many employability skills are applied to all workplaces, there are skills one requires to have for employment. This English graduate has acquired Degree Subject knowledge, understanding and skills from University, as well as work and life experience during internship. While he was required to write, edit and proofread during his internship, he was employed as a teacher after graduation. Although the Degree knowledge required for both jobs is the same, teaching requires experience and other generic skills such as working with people, presentation skills and more. This graduate stated:

I worked at the British Council as an intern but got employed as a teacher after university. Two completely different jobs.

In regards to differences, one respondent felt that internships were different from actual employment in that they at times do not provide students with an opportunity to experience the real world of work. This may therefore limit

the employability of such students as they do not get a chance to fully acquire the necessary skills they will need when they get employed. Oliver (2015) declares that "simply being in a workplace where one observes or does menial tasks, is unlikely to make a significant difference to employability" (p. 61). One graduate who felt, she/he did not get the full WIL experience said:

> Internship is different because it is not really too much work because you have a mentor and you help where you can, but with actual employment you have to do everything, because you studied for it after all.

It is therefore vital that organisations provide students with an opportunity to experience the real world of work. This can be achieved by being treated like other employees. Mentors should simply act like supervisors at workplaces and treat interns as they would other employees. This is evident in a graduate's reflection:

> Internship is generally structured the same as actual employment in some organisations, only some do not treat interns as employees but as "interns". This means that interns may not be given real work activities but just something to keep them occupied. In one case I have observed an intern being overloaded with too much work and less supervised. This doesn't also give an intern the reality of the world of work but too much pressure as they find it difficult to cope or meet any deadline.

Conversely, there are cases where internships have actually met the student's expectations and perhaps the projected WIL perception, which is to gain experience and employability skills. This graduate stated:

> In my case, there is no much difference because I am still doing what I did during my internship, the only difference is the levels, I taught English as a Second Language to Grade 12 learners and I am currently Tutoring at an institute of higher learning in the Department of Language and Communication.

Another graduate in agreement stated:

> In my view, there should not be any difference. Employers can only prepare interns to be ready for the actual job by treating them like one of the fulltime employees. Interns should be given real-time targets and must be exposed to all the pressure that comes with the job.

According to Jackson (2013), for students to experience the world of work fully, they should be able to interact with a real-work context and undertake authentic work activities as part of their undergraduate experience. However WIL placements should be specifically designed to meet the students' specific-career needs. Jackson (2013) further stresses that "having practical experience in performing career-specific skills and tasks served to increase confidence and a sense of responsibility and accountability in students".

However, there are factors influencing WIL and students learning experiences that cannot be overlooked and are bound to influence WIL as they are inseparable from the students and their learning experience. Cultural difference and language are some of them. According to Ndung'u (2014), "culture gives an individual a unique identity. The culture of a community gives its people a character of their own. (p. 102). According to Ndung'u (2014), some characteristics of culture include various aspects of communication, attitude, etiquette, beliefs, values, customs, norms, food, art, jewelryclothing styles, and more''. It can therefore be concluded that culture often shapes an individual's mind-set and attitude and these attitudes will have an impact on the WIL because these various attitudes will determine how students evaluate their work experience and interact in the workplace at different aspects plus their learning experience. From one student's reflection, at times, communication, which is one of the important aspect of workplace etiquette can indeed become a challenge because of cultural differences. Gribble (2014) explored employability in different contexts and found out that the "Chinese society places high value on education with traditional Chinese culture holding the belief that passing exams and accruing good qualifications can convert students into government officials (as cited in Zefang, Yanbin, & Wenjiao, 2009). This is a similar situation in Namibia. Namibians graduates also have a belief that a good qualification and grades should automatically give them a high position. Gribble (2014) explain that this way of thinking influences students' attitudes towards learning and today many students still believe that higher education and higher degrees can lead to higher social positions and financial rewards (p. 7). Some students experience was therefore greatly influenced by this believe in that they felt, the experience doesn't match their expectations and in this way, culture becomes a

negative influence of WIL. Culture, however can also be the same aspect that teaches students how to manage these differences and create a holistic experience in the workplace.

CONCLUSION

Dacre Pool and Sewell (2007) explain that employability is a lifelong issue and nobody is ever perfectly employable. There will always be aspects of a person's employability that would require improvement. The CareerEDGE model adopted in this study does not depict a process that a student embarks upon during their time in higher education and then graduates with employability for life. The issues within the model are likely to be revisited many times to ensure adaptability to the demands of a changing world and a better chance of occupational satisfaction and success (p. 288). This is the reason this model is useful and may effectively be used to explain employability in different contexts.

WIL enhances employability among graduates. The skills gained during WIL are not only useful in the workplace but also improve career development among graduates. For some, careers are understood better only during the WIL period and students are encouraged to further their studies as result. Organisations however need to ensure that their internship programmes are of high quality where interns are treated just like other employees and not a students who simply need experience. This will enable them to experience the real world of work and gain real skills that they will be able to use in different workplaces after internship. From the perceptions of 9 graduates examined in this study, it can be concluded that for WIL programmes to be a success and be significant in enhancing employability, they need to be carefully handled by employers, academics and students. Inevitable factors such as cultures will however have to be considered by the employers especially for the benefit of the student interns in terms of intercultural communication in the workplace and general learning experience of these graduates.

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The uncertainty of information management for the work-integrated learning process through the lense on the theory of motivated information management

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ABSTRACT

The Information Management (IM) for the Work-Integrated Learning (WIL) process distinguish between two main levels of IM which are referred to as personal information management (PIM) and organizational information management (OIM). The concept boundary-spanning is also discussed as it impacts on the relationship between the triad partnerships on the IM function related to WIL. To strengthen this boundary-spanning between the triad partners of WIL the Theory of Motivated Information Management (TMIM) provides the foundation on which uncertainty that develops in the triad relationship of WIL can be used to facilitate solutions. The triad partnership for WIL is based on relationships. These relationships are critical to manage information for WIL as it requires specific links between the triad partners to facilitate an effective and efficient IM approach for WIL. This article highlighted how the TMIM can help to strengthen the boundary-spanning between the triad partners and how it can minimize the uncertainty between the triad partners.

Keywords: Work-integrated learning, Theory of Motivated Information Management, personal information management, organizational information management, boundary-spanning

INTRODUCTION

Work-Integrated Learning (WIL) is based on Information Management (IM) principles where each of the parties involved have a unique and critical role to play effectively and applicable to the specific circumstance (Abeysekera, 2006). The information flow between the triad partners namely Higher Education Institution (HEI) lecturer, industry mentors and students involved with WIL, should be meaningful information exchange or feedback (Chisholm, Harris, Northwood & Johrendt, 2009). The IM for WIL process distinguishes between two main levels of IM which are referred to as personal information management (PIM) and organizational information management (OIM).

PIM is the management of information in the every-day lives of individuals, how information is accessed that is needed to address business and personal needs. For example on a personal level the student, in order to prepare a CV or prepare for an interview, has a need for information and will search for such information using a variety of information sources. In the WIL programme this process is typical of PIM. On the other hand organizational information management (OIM) is considered as a separate core area of IM for WIL. Hicks, Culley and McMahon (2006) define IM from an organizational perspective, saying that it includes activities that support the information lifecycle from creation, representation and maintenance, to communication and reuse, as part of the management process of information. HEIs are typically organizations that are hugely reliant on the management of information sources. The system should be robust and can be changed when new areas need to be added to system functionality. Students are reliant on the information contained in the system, as all facets of study are affected by this information which include student throughput or graduation which is reliant on OIM. The WIL process can only be successful if it is guided by the IM technique boundary-spanning.

Boundary-spanning monitors the roles and communication which need to be well coordinated and recorded. Beechler, Sondergaard, Miller and Bird (2009:124) stated their thinking of boundary-spanning as a fluid, evolving way, as the piping system and the information that flows through them. All information which may change

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pertaining to any of the triad partners need to be updated and be available, for perusal in order to make the correct decision. Therefore, it is crucial that all parties engaged in IM for WIL are committed; understand their functions, roles and contributions in order to address the challenges faced by the HEIs in terms of environmental uncertainties.

To have an effective IM for WIL model, the exchange of information between the triad partners must be done through effective boundary-spanning. The feelings of uncertainty and emotions which are partly addressed by boundary-spanning are addressed in parallel with the theory of motivated information management (TMIM).

THEORY OF MOTIVATED INFORMATION MANAGEMENT

The theory of motivated information management (TMIM) is a theoretical framework developed to account for individuals' decisions to seek out or avoid information regarding particular issues (Fowler & Afifi, 2011:510). Fowler and Afifi (2011:510) stated that TMIM expanded on the foundation of several theoretical frameworks, namely uncertainty management theory, problematic integration theory, the heuristic systematic model, social cognitive theory and emotional appraisal theory. The objective of this theory is to provide insight into decisions made during interpersonal encounters.

The focus of this theory was to address specifically interpersonal encounters by the information seeker or in this article the information exchanges between the triad partners of WIL. Afifi (2010:96) argue that the TMIM bring together the diverse findings related to uncertainty management in interpersonal encounters, explicate the role of efficacy in the process and offer a framework that explicitly recognises both the information seeker and information provider in the information exchange. To visualise the TMIM process Figure 1 presents the information seeker and information provider roles to offer insight into the flow of information and a discussion specific to the IM for WIL follows to highlight the information in this example.
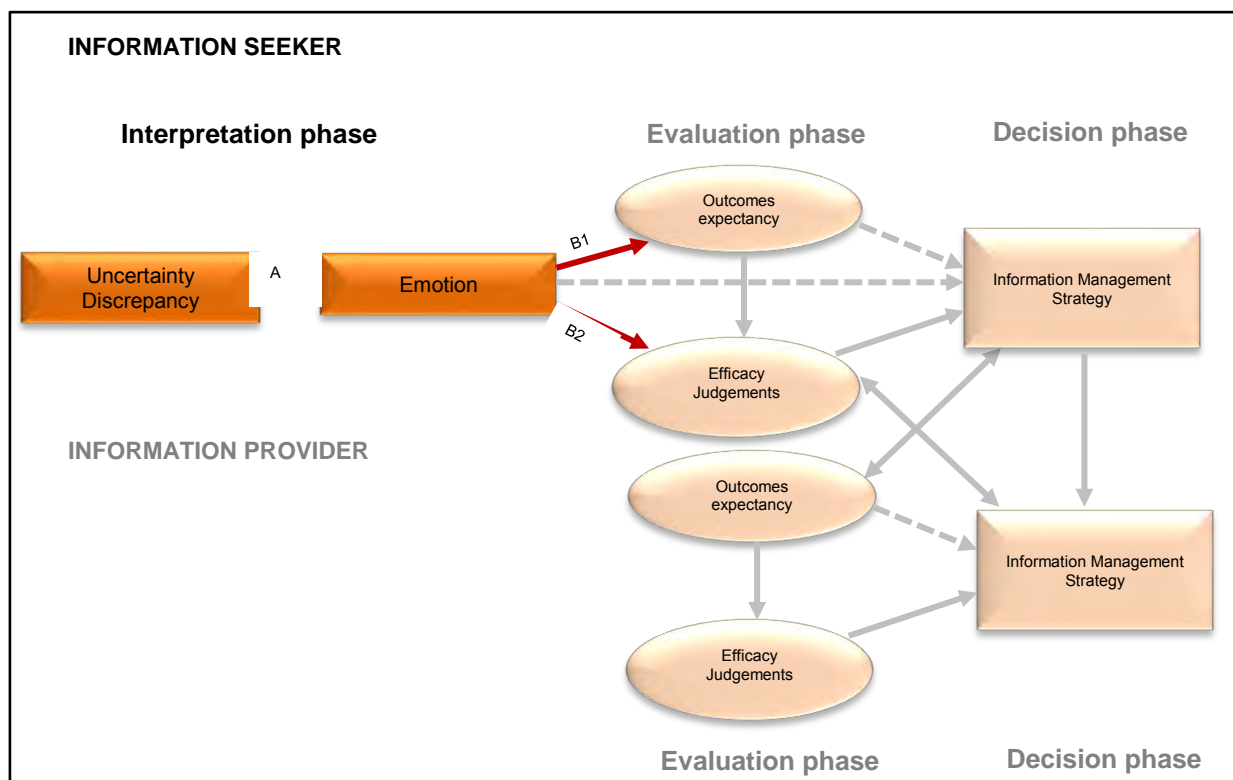
FIGURE 1:Model of theory of motivated information management (adapted from Fowler & Afifi, 2011:512)

The rationale of TMIM provides a framework to interpret and predict information seeking decisions of a user. In terms of the WIL process the triad partners are all engaged in information seeking in some way or another. The TMIM model guides the process as graphically displayed on the phases in which the triad partners engage to seek and provide information. The model in Figure 1 distinguishes between the different information that forms part of the TMIM phases and indicates the different processes which are part of this theory.

When the information seeker is required to obtain information the seeker of this information needs to determine which sources of information may provide the required information. The information seeker has to make a decision whether or not to request information from identified sources with the purpose of obtaining information that is needed to make decisions. The unique roles and functions of the information seeker are discussed as part of all three phases in the TMIM model. The unique roles and functions of the information provider are discussed as part of the evaluation and decision phases. TMIM is represented by the three phases, which moves from interpretation phase, to the evaluation phase reaching finally the decision phase. These three phases are discussed to explain the IM for WIL process as engaged by the triad partners in this article. The first phase of the TMIM is the Interpretation phase.

Phase One: Interpretation

According to Afifi and Weiner (2006:36) this phase involves individual assessments of the discrepancy between the information available and the information that the partners in this relationship desire. Awareness needs to be improved in addressing uncertainties which develops due to discrepancies between people, issues and level of uncertainty as experienced by partners involved in this relationship (Afifi & Morse, 2009:88; Afifi, 2010:97). In this article the awareness needs to be improved to address uncertainties between the triad partners namely the HEI lecturers, HEI administrators, students, student administrators, industry mentors and industry administrators. Fowler and Afifi (2011:511) further argued in order to recognise the realisation of the uncertainty factor of the decision is to continue with the search for information or to avoid the search for information, which may result in not anticipated negative outcome thereof. Even if information is relevant the user can decide to avoid the information for the sake of uncertainty.

The HEI lecturer needs to prepare the students for the WIL programme. These HEI lecturers need to liaise with industry mentors which are responsible for the WIL programme during the student placement. The HEI administrator needs to find a placement for the students by liaising and communicating with the industry administrators within the specific identified industry. Due to the number of HEI lecturers, HEI administrators, students, students' administrators, industry mentors and industry mentors the process of coordination becomes highly complex. The number of people in the mentioned groups and the complexity of these relationships where multiple role players are involved. Due to the complexity of multiple role players involved in the IM for WIL triad relationship the chances for uncertainty and discrepancies will increase.

Each bit of information that is acquired decreases the levels of uncertainty (Afifi & Afifi, 2009:1). One method by which people reduces, manage, or increase their uncertainty involves regulating their communication with others through revealing and concealing information. These uncertainty discrepancies need to be addressed through the concept of boundary-spanning. The HEI lecturer and HEI administrator can reduce the uncertainty discrepancy gap by involving all other role players of the triad partnership in the information exchange. Regulating uncertainty also involves managing, seeking, or filtering the information that is likely to affect the degree of uncertainty that is felt. Individuals sometimes also avoid seeking information because they are afraid of the outcome (Afifi & Afifi, 2009:2). To complete the discussion on the interpretation phase, uncertainty will be discussed using Figure 2. Thereafter the emotional impact will be discussed. The rational uncertainty is supported by the six propositions pertaining to relational uncertainty which correspond with features of interpersonal communication (Knoblock & Satterlee, 2009:111) as graphically displayed in Figure 2.

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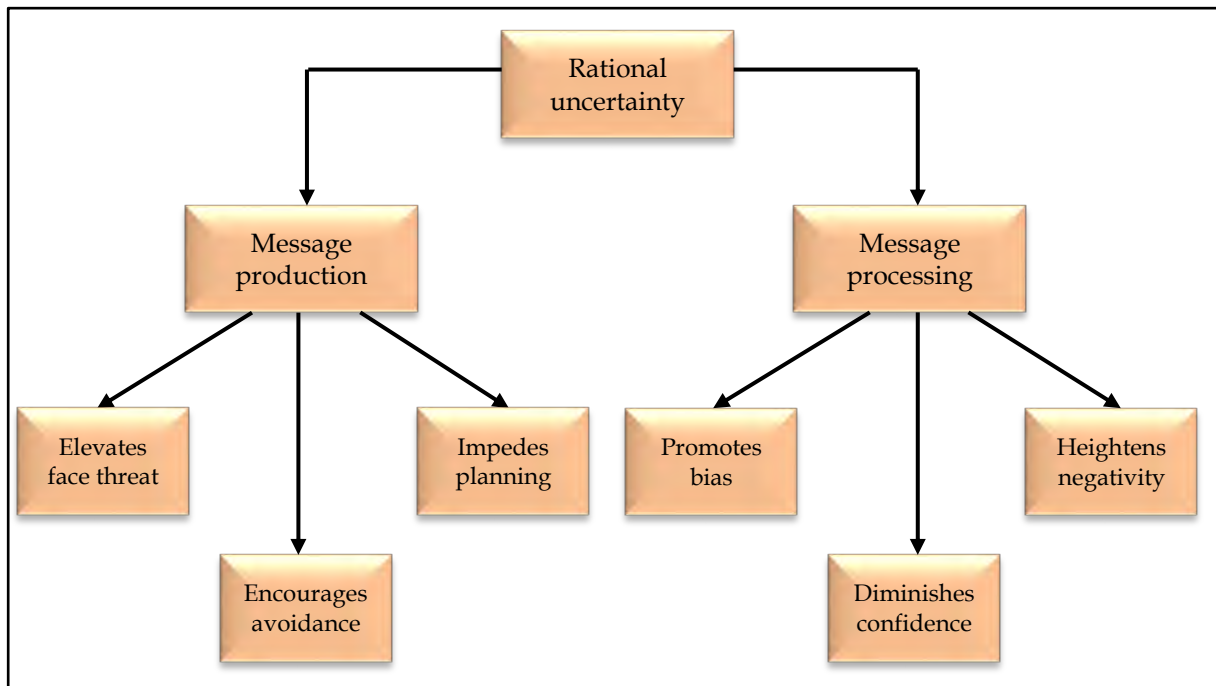
FIGURE 2: Propositions about relational uncertainty and communication (Knoblock & Satterlee, 2009:111)

Relational uncertainty analyses the way searchers of information produce messages and thereafter process these messages. Message production is affected by three phases, namely elevates face threat, encourages avoidance and impedes planning.

Elevates Face Threat

When the image of certainty is threatened or discredited in terms of what the person wishes to project, a face threat develops. People when uncertain do not want to communicate this image, as it may reflect negatively on what they perceive it to be. People also have a preferred image of themselves. In the triad relationships of WIL the partners involved have a preferred image of themselves. If the HEI lecturer or HEI administrator is uncertain of the industry needs, this uncertainty may reflect negatively on the capacity of the HEI lecturer or HEI administrator to provide professional guidance to the industry mentor and student.

Encourages Avoidance

When people avoid incidence which may threaten the image which will have an embarrassing impact on their competency and professionalism. An individual would rather avoid being exposing by not becoming involved in incidents which could harm the individuals' image. A HEI lecturer or HEI administrator have to represent the institution in a professional and competent manner. Similarly will this representative if experiencing a threat of being exposed to an incident which could harm their image, these incidents would be avoided.

Impeded Planning

As relational uncertainty increases message planning is affected in a negative way. People construct messages based on their knowledge, strategies and the impact of the message. As relational uncertainty increases such as a HEI lecturer or HEI administrator which is new to the WIL process and need to communicate messages when unsure of what needs to be shared. This HEI lecturer or HEI administrator may not know what is expected in terms of services to triad partners and may be influenced by feelings of uncertainty. The HEI lecturer or HEI administrator is also influenced by the threat of not generating the appropriate message, resulting in feelings of uncertainty.

Changes in the WIL process will have significant impact on the information exchange value chain as it affects all the different levels of the triad partnership. The second phase of Figure 1 in terms of the relational uncertainty pertains to message processing, that is divided into promotes bias, diminishes confidence and heightens negativity.

Promotes Biases

Relational uncertainty affects people's capacity to interpret messages based on insufficient background required to interpret a well prepared message. People who are under pressure may not take note of the full impact of the message and just simplify the information contained therein, to simplify the task and manage message volumes. HEI lecturers and HEI administrators are most of the time the same person within the organisation who needs to manage all processes related to this responsibility. The responsible individual who communicates information flow to the triad partners, needs to be aware and have the capacity to communicate effectively resulting in the receivers of information understanding the full impact thereof.

Diminishes Confidence

Relational uncertainty affects the self-value people have when communicating with others. People under relational uncertainty conditions may distrust their own skill level and knowledge base and thereby affecting their overall capacity to communicate effectively. A HEI lecturer undertakes an interview with an industry mentor on good practice models is required to identify the most effective way for students to experience client communications within the industry environment. During formulation of this process the HEI lecturer may become uncertain of his/her ability, to secure the required information which may impact on relational uncertainty. This uncertainty may result in a feeling of being unsure even though the HEI lecturer has the required expertise to develop the model formulation for student assessments for the WIL process.

Heightens Negativity

Relational uncertainty results in negative perceptions on capacity of individuals to handle interpersonal relationships. Relational uncertainty relates to negative feelings such as anger, frustration and poor self-confidence. HEI lecturers are people and do have emotions and also have individual experiences of feeling angry and frustrated at times. As representatives of HEI institution there is immense pressure on this representative to liaise and communicate professionally with industry mentors and students. During these interactions instances may develop which can generate emotions such as anger or frustration. These emotions impact on the mental state of the HEI lecturers. These HEI lecturers have a unique and important role to play in the IM for WIL process which is reliant on interpersonal relationship communication.

Although the proportions about relational uncertainty (in Figure 2) was illustrated from the perspective of the HEI lecturer and HEI administrator it should be kept in mind that the student and industry partners could experience similar relational uncertainties when in the role of information seeker.

In the explanation of the message production and message processing of relational uncertainty above, the uncertainty of the HEI lecturer or HEI administrator increases. This increase in uncertainty is the result of for example the HEI lecturer being unsure of what is expected of him/her or if he/she has the capacity to place the students for the WIL phase in an industry placement. This placement has an impact on the throughput rate of the students. The impact in terms of the capacity of the HEI lecturer to influence placement is critical as students will not be able to graduate, unless they have completed the WIL module. In the interpretation phase the HEI lecturer and HEI administrator considers information from students and industry. The HEI lecturer and HEI administrator could develop feelings of uncertainty which result in a feeling of emotion or anxiety.

The feeling of anxiety relates to the emotions. The HEI lecturer and HEI administrator at times when confronted with the decision to request information as the information seeker may experience feelings of anxiety which is an emotional state. This feeling of uncertainty which result in an emotional state such as anxiety is the first flow of information process as depicted by the arrow marked A in Figure 1. This uncertainty discrepancy causes anxiety or emotions in the triad relationship, which impact on the value of information exchange. The HEI lecturers

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involved in WIL need to sensitise the students and industry mentors to be aware of possible emotional issues, such as anxiety which may have an impact on the information exchange.

The HEI lecturer is often expected to visit the student during the students WIL placement term. For example the Electrical Engineering department at the University of Johannesburg (UJ) consists of the following triad partners on an academic and administration level. Two HEI lecturers, who are also responsible to act as HEI administrators, 250 students from the same department is part of the sample group and also act as 250 students' administrators, as students are responsible for administering their own studies. An average of four industry mentors (per company) and 150 industry administrators (companies) make up the industry component of the triad partnership. The total members in the relationship consist of 1,254 members. According to Hargie (2011:452) to determine the potential two-way relationship, the formula to chart the number of dyadic relationships (R) in a group, as a factor of number of members (n) is as follows: $R = \frac{n(n-1)}{2}$. The dyadic relationship calculation would then consist of [1,254x1,253]÷2=785,631 separate potential two-way relationships between members. This number reflects the massive increase in dyadic relationships when minimal numbers of individuals are added to the triad relationship. According to this example the HEI lecturers and administrators are the same two individuals. High levels of anxiety have been reported by the HEI lecturers due to the obligation placed on HEI lecturers to visit students at industry level on site visits. Due to the geographically location of the different industry partners, the sheer number of sites and student placement locations result in too many to be visited by the limited number of HEI lecturers. The inability of the HEI lecturers to visit students at industry level creates feelings of anxiety which the HEI lecturer has no control over. Another example reported that causes a feeling of anxiety by the HEI lecturer, is to ensure the students' logbooks with the required assignments are available to be marked by a specific due date. The marking of these industry assignments are critical to corroborate practical deployment success in terms of competency which is the requirement for the WIL module. These emotional levels have a direct impact on the evaluation and decision phases of the information seeker.

The triad partners will not move to the evaluation phase in the TMIM model in Figure 1 if they do not feel comfortable because of levels of uncertainty. According to Johnson (2009:188) the uncertainty of information sources affects people's perceptions which can impact on the employees' job satisfaction, productivity and overall performance and attitude, affecting stress levels and feelings of discomfort resulting in uncertainty.

When experiencing an emotion of uncertainty, the HEI lecturer or HEI administrator will enter the evaluation phase. The HEI lecturer or HEI administrator develops a perception of how effective a specific information management strategy would be to assess the capacity of the HEI lecturer or HEI administrator in an effective information exchange. The HEI lecturer is anxious because of his/her perceived incapacity to place all students in terms of the WIL process based on the availability of industry jobs. The negative outcome expectancy or negative efficacy judgements of the evaluation phase as depicted by arrows marked, B1 and B2 respectively in Figure 1, leads to the evaluation phase. Before the second phase is discussed it is important to understand that the seeking of information takes place during all three phases of this theory.

During each phase the triad partners of the WIL process seek information to address levels of uncertainty. The model of TMIM distinguishes between the information seeker and information provider. The information provider only forms part of the evaluation phase and decision phase and will be discussed as part of these phases. These unique and specific role players within the domain of TMIM have individual characteristics which distinguish their roles and functions. Any one of the triad role players plays the role of information seeker or provider. However due to the illustrative nature of the discussion the process is discussed in a simplistic way, from one perspective only. The evaluation phase as shown in Figure 3 of the TMIM theory will be discussed below.

Phase Two: Evaluation

This phase consists of two sets of perceptions namely the outcomes expectancy and the efficacy judgements as shown in Figure 3. Outcomes expectancy refers to the information which will be yielded when information exchange takes place (Afifi & Weiner, 2004:175). According to Afifi and Weiner (2004:175) engaging in search for

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information by an individual in order to reduce anxiety individuals' self-image is addressed when engaging in the information exchange.
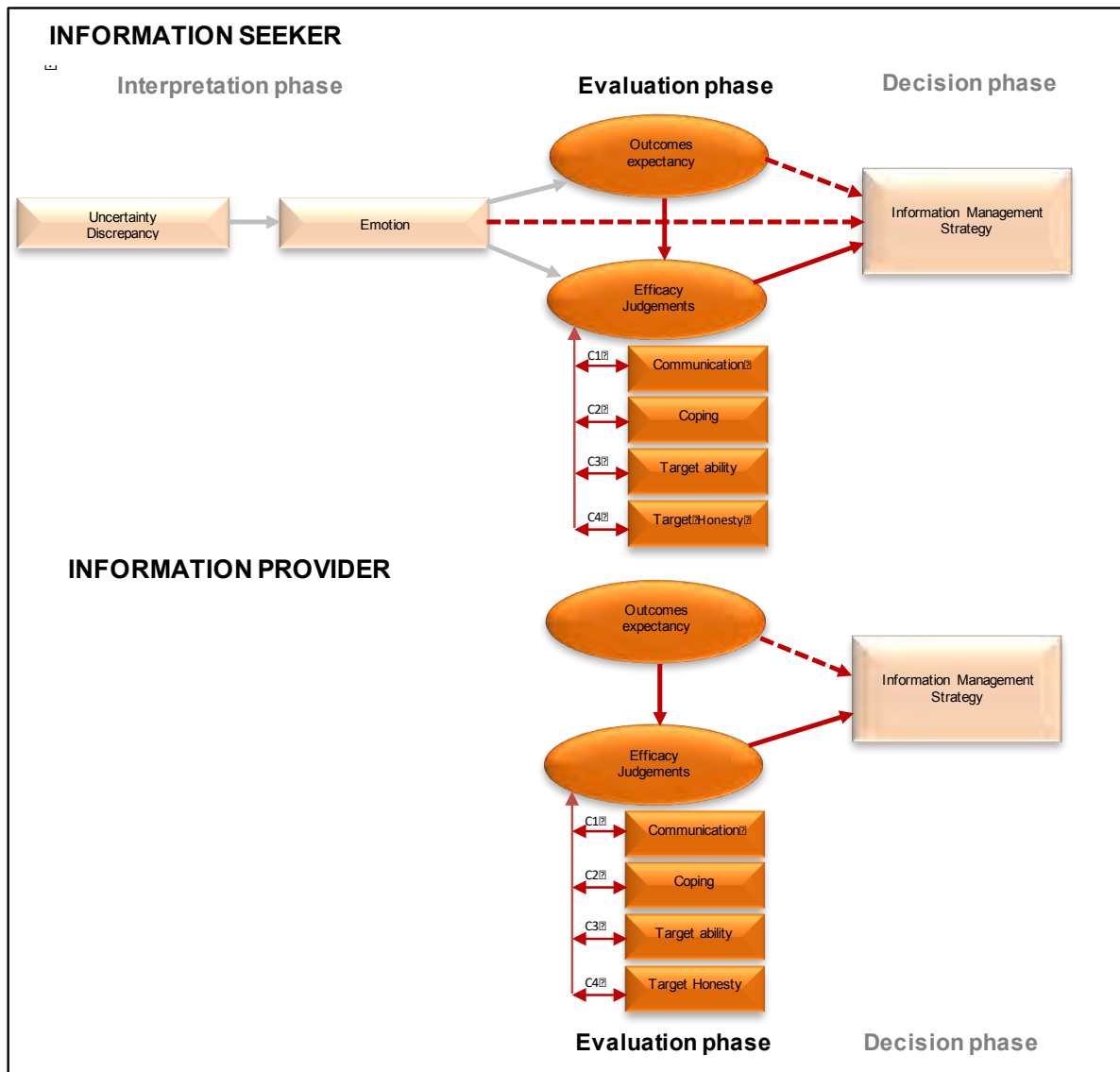
FIGURE 3: Model of theory of motivated information management (adapted from Fowler & Afifi, 2011:512)

Outcome expectancies and efficacy judgments beliefs are central to human behaviour (Afifi & Morse, 2009:88; Fowler & Afifi, 2011:511). In the triad relationship when engaging on personal level individuals differ in terms of the value and return they expect to achieve during an IM sharing experience. The result of the sharing will assist in shaping the efficacy judgements. Some HEI administrators would consider finding placement for students with an industry liaison as an important part of the WIL process. Although other HEI administrators would not consider finding placements for students as they only facilitate process where students source their own individual placements. Therefor the difference in the expectations of the HEI administrator will be determined by the responsibility and duty of the HEI administrator within the institution. The difference in the expectations of the seeker of information will be based on the anticipated value of shared information.

According to Guerrero, Andersen and Afifi (2011:84) people who feel a discrepancy between the actual and desired uncertainty, will rely on this phase. TMIM propositional framework applies only where individuals are actively interested in managing information and can see the value impact of the information to them. These individuals will intentionally engage cognitive and other resources (Afifi, 2010:96). According to Afifi and Weiner (2004:172) the IM process must begin with clarification and addressing levels of uncertainty. If the triad relationships between the

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partners in the WIL programme are uncertain about anything, emotions will appear that will have an influence on the evaluation phase.

Afifi and Morse, (2009:89) and Afifi and Weiner (2006:37) argue that this phase assesses their efficacy judgements in IM the potential outcomes. As shown in Figure 3 above the evaluation phase has two assessment factors based on the principle of an individual assessment of the benefits and costs to implement a specific IM strategy. This is done to first determine the outcome expectancy and the different efficacy judgements (Afifi, 2010:97). The decisions of the individuals depend on outcome expectancy and efficacy judgements.

Outcome Expectancy

The outcomes part of this phase reflects on the expected outcome. It is important for all triad partners to know what are expected from them and what the outcomes must be. There is a shift to reduce discrepancies detected and focus on outcomes expected. This outcome may be positive or negative, based on the experience of the triad partners. The information seeker may have feelings of success in gathering correct information and identify positively with the result. The success of this relationship experience can affect one's willingness to turn intention into action (Guerrero, Andersen & Afifi, 2011:84).

Chang (2009:9) further argued that there is a higher likelihood for an individual to make information seeking decisions, if more information is expected, which will add more to gain and have more rewards than risks. If the information seeker is under the impression that the information which will be secured, will not add value to the information already secured, the information seeker will refrain from searching this information to address the need of the uncertainty. The expected outcomes relate back to the securing of information. The HEI lecturer queries the industry mentor on student progress and levels of performance within positions as facilitated by WIL placement. The HEI lecturer realises requesting for information will have an impact on the efficacy judgements in terms of the benefits and cost associated with information exchange. This benefit and cost factor refers to the information gained process which is also called the efficacy factor (Afifi, 2010:97).

The arrow marked C in Figure 3 reflect the positive outcome expectancy that is associated with the efficacy judgements which act as a mediation phase. If the outcome expectancy is positive then the efficacy judgements will then be depicted by arrow marked D, which moves the process into the decision phase, discussed after the efficacy judgements are explained in detail. The efficacy judgements are influenced by the different efficacy components as depicted by arrows marked C1, C2, C3 and C4 (Figure 3).

Efficacy Judgement

Outcome expectancy focuses on results of conduct where efficacy focuses on the capacity of the information seeker to provide certain information. This process of information seeking has consequences which the information seeker has to contend with. For example the student requests the results of an industry mentor report as provided to HEI lecturer. This request for information can have detrimental consequences as the student may have failed practical tasks which have to be completed at industry level. The student continues with the request for information whatever the outcome.

The TMIM as a theory distinguishes between four unique types of efficacy judgements namely communication efficacy, coping efficacy, and two dimensions of target efficacy namely target ability and target honesty. These efficacy judgements are discussed below.

Communication Efficacy

Communication efficacy speaks of process C1 in Figure 3. Communication efficacy relate to the capacity of the searcher for information being competent in searching targeted information sources (Afifi & Morse, 2009:89). Afifi and Weiner, (2004:178) stated that communication efficacy takes place when information seekers feel that "they possess the skills to complete successfully the communication tasks involved in the IM process". The HEI administrators need to believe in his/her capacity or ability to fulfill the task presented, such as placement of

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students in terms of the WIL process. Communication efficacy has a detrimental impact as some of the HEI administrators are not familiar with or uncertain of the consequences of questioning information sources. These HEI administrators are also unsure if there might be a failure in communication efficacy processes. The information seekers namely the HEI administrators need to belief he/she has a competency to search for information of which he/she might feel ignorant of and how to share this feelings with the student or industry liaison.

Coping Efficacy

Coping efficacy speaks of process C2 in Figure 3. Coping efficacy provides insight into the capacity of the searcher of information having the required resources, be it emotional or otherwise to cope with information secured (Afifi & Morse, 2009:89). Afifi and Weiner, (2004:178) argue that the coping efficacy provides levels of believe that the individuals have in coping with emotional, instrumental and other resources, to secure the required information based on the IM levels to be achieved. The belief system of the triad partners in searching for information anticipating the results of the information exchange, which was unexpected and could result in a feeling of discomfort or awkwardness.

An example is that the HEI administrator need to clarify placement of students in terms of the WIL process, might experience uncertainties if they are responsible for finding placement for students. This uncertainty is experienced by the HEI administrators because of the expected outcome of this enquiry pertaining to the successful placements in terms of the students for the WIL process. This uncertainty results in feelings of anxiety associated with the request for placement and refrains from process as not being able to "handle" the outcome.

Target Efficacy

Target efficacy speaks of process C3 as well as C4 in Figure 3. Target efficacy relate to the reliability of the source of information being searched to provide the required information. Target efficacy is based on whether the searcher of information has accessed the needed information and will be honest in providing such information (Afifi & Morse, 2009:89). The efficacy targets the value of the source of information provided to secure the required information. The honesty of the search partner provides a truthful response to the result of the search (Fowler & Afifi, 2011:511). Fowler and Afifi (2011:511) further argue that efficacy beliefs impact on individuals IM choices based on the ability of information provider and the trustworthiness of the provider. Target efficacy is when the triad partners are confident in each other's ability to exchange information on request.

The dashed paths B3 and E in Figure 3 above represent paths that are partly mediated by other variables, with which the relevant variables have associations (Afifi, 2010:96). The size of the paths for example, the effect of emotion regarding the uncertainty discrepancy on the IM decision, will become reduced due to the effects of the direct (solid) paths. In other words, the uncertainty discrepancy related to emotions is still expected to play some direct role in the IM decision, but a small part of it[1].

The TMIM theory as shown in Figure 3 above clearly illustrate the presence of an information provider which is affected by the same processes of information management as the information seeker. According to Guerrero, Andersen and Afifi (2011:84) the information provider is challenged by similar factors in order to present the correct information to the correct information seeker. The main information providers in the triad relationship are HEI lecturers, HEI administrator, industry liaison, the industry mentors, student and student administer.

The uncertainties which develop in this relationship have two unique features. The relationship firstly focuses on the value of information gained with this interpersonal communication. The second feature focus on the value of the information provider. This unique feature of the TMIM is the direct acknowledgment of the role played by the information providers in the IM process (Afifi & Weiner, 2004:183; Guerrero, Andersen & Afifi, 2011:84).

The information provider as contained in Figure 3 share the TMIM structure with the information seeker. From previous discussions these processes are interdependent and part of the same process. The information provider

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[1] Personal communication with Afifi (2013)

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role is clarified with specific roles which are interlinked with the information seeker. The TMIM theory discusses specific stages pertaining to the role of the information provider and information seeker. According to Sprecher, Wenzel and Harvey (2008) TMIM has four stages which specifically look at unique applications to analyse relationships pertaining to information seeking and provider provisioning. The four stages are discussed as follows from the perspective of IM for WIL process.

Stage one in this article focus on experience of the individuals involved in the triad relationship seeking information. The triad partners involved in the IM for WIL are seeking for information. Students for example are seeking information about CV writing from their HEI lecturer. The HEI lecturer seeks information from students and industry about students' performance and working experience. The industry mentors or industry liaisons request information from the HEI lecturer, on the students' confirmation letter of proof of students' registration for WIL.

Stage two impacts on the expected result of the search of information. The value of the information in the triad partnership is determined by the relationship between the information seeker and the information provider. The student on completion of CV writing session provides the HEI lecturer and HEI administrator with the information which was requested. This information exchange impacts on the expectations of the information provider who is the student and the information seeker namely the HEI lecturer and HEI administrator. The expectations differ from the perspective of the information provider namely the student expecting a WIL placement based on the CV. The HEI lecturer and HEI administrator as information seeker expecting a well worded and complete CV as trained student in compiling the required document.

Stage three relate to the search for information be it directly or indirectly. The information seeker can search passively or actively. The basis of the search is founded on the uncertainly level experienced by anyone of the triad partners. Information may even be ignored or not taken into consideration based on the uncertainty level of the triad relationship communications. The student is uncertain about the quality of other CVs provided to HEI lecturer and HEI administrator. This uncertainty can indirectly in a passive or active way influences the student on the value of information exchange. There might be no grounds for this uncertainty but the mere possibility of uncertainty in the information exchange can have an impact on the information seeker.

The **fourth stage** relate to the provider of information. Information have value to both seeker and provider and the relationship of these two parties affects the value of the information shared, based on communication in the triad relationship. The student and industry mentor provide the HEI lecture with a feedback form based on performance and experience in the working environment. This information exchange affects all the triad partners as the students' career pathing is affected, the industry evaluation process has an impact and the HEI lecturer receives information on the standard of education shared with the student.

Multiple information exchanges corroborated the view that information seeker and information provider have an intertwined relationship and share functions and responsibilities. The complex nature of this relationship can be managed more effectively if an IM framework for WIL, strengthened by boundary-spanning is put in place to manage the triad relationship for WIL process. This IM framework for WIL process will support the mutual beneficial relationship for all the parties involved in this triad relationship.

The complexity of IM for WIL process between the triad partners, the associated information flows and relevant sources in this study find parallels with the TMIM. Afifi and Weiner (2006:36) commented on IM actions are accounted for and recorded with the TMIM capacity. IM for WIL is an information based process which is guided by strategies and processes which influence the success of the management of information that leads to the third phase of the TMIM theory.

Phase Three: Decision Phase (Information Management Strategy)

The third phase of TMIM theory is the decision phase as shown in Figure 4. In this phase the information seeker is confronted with the decision to search the source of information. In this process of decision making the TMIM identified three phases which are unique to the decision making phase (Figure 4).
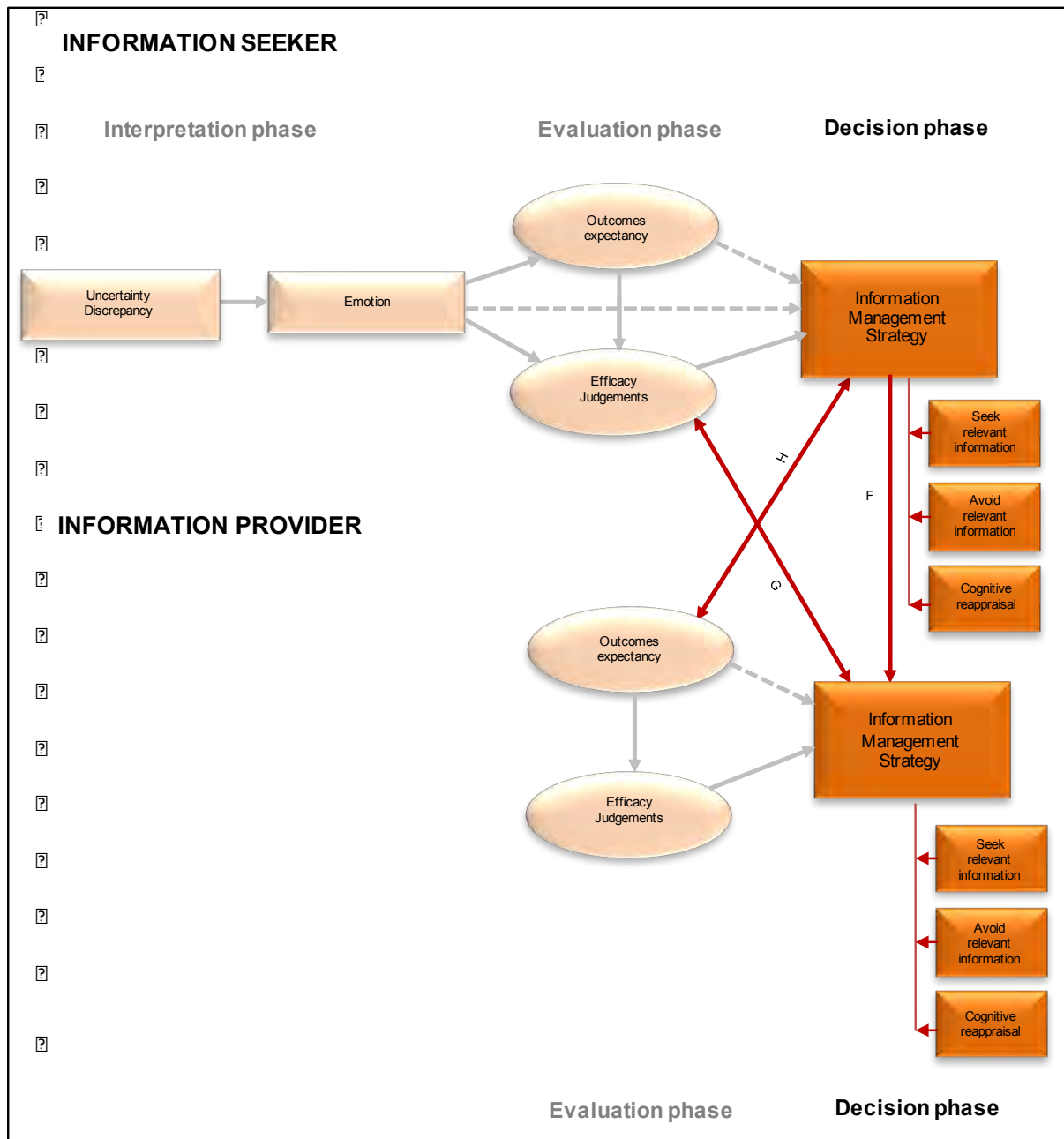
FIGURE 4: Model of theory of motivated information management (adapted from Fowler & Afifi, 2011:512)

During the decision on the information management strategy the information seeker have to decide to seek the information, avoid the information or engage in cognitive reassessments (Afifi & Morse, 2009:89; Fowler & Afifi, 2011:512). The three information management strategies will be defined as per their unique description.

Seek Relevant Information

Individuals engage in searches for information. The search for information results in levels of uncertainty with the seeker of information. The information seeker being uncertain of the results of the search will be affected by feelings of anxiety which impacts on the search being instituted. To address the threat of uncertainty the HEI administrator

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may adopt an approach, which would allow the information seeker the opportunity to change the information exchange criteria. The HEI lecturer and HEI administrator invites student to training session where information exchange takes place which allow the student as seeker of information, to be informed of what is required and thereby addressing levels of uncertainty. During the information exchange process the value of information presented may impact on the anxiety of the information seeker, which may implement measures to value the information exchange. If the information exchange is not relevant the second strategy namely avoid relevant information will apply.

Avoid Relevant Information

Individuals searching for information may at times make a decision to avoid information which may are irrelevant to the information exchange objective. The information seekers decision is based on the evaluation of the information exchange which values the relevancy of the information being exchanged. The information seeker would rather avoid the result of the search, which may provide relevant information but terminates the search for information rather than face the result of the information exchange. The student needs to engage the HEI lecturer to secure a placement opportunity based on CV requirement. The student as information seeker would refrain from requesting the result of placement rather than requesting information of placement appointments. The uncertainty of placement experience by the information seeker may result in the student withdrawing from the process due to anxiety impact. The information seeker if not successful during this information exchange strategy evolves into the third strategy namely cognitive reappraisal.

Cognitive Reappraisal

In this strategy the information seeker makes a cognitive decision to change his/her mind set to address feelings which impacts negatively on the information exchange. By addressing levels of anxiety and emotion the individual reappraise the request for information in order to secure the required information. This process is not influenced by superficial emotional stress to withdraw the information exchange but remove feelings of anxiety cognitively a boards the information exchange (Afifi & Weiner, 2004:183). The HEI lecturer when experiencing levels of uncertainty during information seeking exchanges have different ways in which to address uncertainty levels. The HEI lecturers are under extreme pressure to balance the placement of students at industry level and expectations of industry liaisons receiving well-prepared CVs. The feelings of emotional stress experienced by HEI lecturer is manage by way of reappraising the levels of anxiety and focusing on provisioning of the required candidates and industry partners based on the information exchange.

The principle of information exchange is associated with sharing of information between the triad partners. This sharing of information has certain consequences for the triad partners such as emotion when engaged in an information exchange. It is clearly displayed in the role of the information seeker and information provider roles within the TMIM theory. The process of requesting information and the activities related thereto has the consequence that the information seeker experience emotions, based on a personal perspective. The information seeker is unsure of the consequence of seeking information thereby displaying his/her inadequacy of competency by requesting the information.

The information seekers feeling of anxiety is compounded by the feelings of not having the required knowledge, needed to engage in information exchange. This feeling of being uncertain is amplified by resulting emotions which develop into feelings of anxiety. This feeling of anxiety is then filtered in terms of the TMIM model to determine, whether the decision to engage in information exchange will be proceeded with or refrained from. The resulting outcomes are associated with feelings of anxiety which is then filtered to the outcomes expectancy and efficacy judgments phase. This process in turn results in positive outcomes being sorted by the various efficacy judgments cycles, in a positive process.

Should the process however become negative the anxiety factor results in refraining from the information exchange no sharing of information takes place. By addressing this emotional inadequacies of the information seeker, be it the student, industry mentor or HEI lecturer the same principle applies. Anxiety will be part of information

exchange which is part and parcel of the process of addressing emotions associated with information exchange and a proper IM process which are being facilitated.

CONCLUSION

In this article it was found how important the triad relationships are for an effective IM for WIL process. The importance of the relationship is founded on the interaction of the triad partners on an academic as well as on an administrative level, between the triad partners. Through boundary-spanning the information exchange between the triad partners become well-managed and is critical to the IM for WIL process to address the uncertainty of the triad partners. The actions of flow of information and changes are monitored by boundary-spanning, resulting in an improved IM process. This process of sharing of information is also referred to as information exchange. Information exchange in the IM for WIL domain can take place on organizational and personal level. These different phases are referred to as organizational information management (OIM) and personal information management (PIM), which take place at different levels in the organization, be it the HEI or the industry, which are engaged in the WIL process.

Due to the complexity of multiple role players involved in the IM for WIL triad relationship the chances for uncertainty and discrepancies will increase. Therefore when information exchange takes place during the triad relationship it is critical to record these transactions, which is part of the boundary-spanning milieu and have to be monitored to ensure the IM for WIL process works well. When using boundary-spanning to facilitate the IM for WIL process it was found there were parallels with the theory of motivated information management (TMIM). The parallels being shared in using this TMIM theory as well as the concept of boundary-spanning provided insight into the need to better manage the IM for WIL process and how to address the uncertainty levels of the triad partners.

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University of Cincinnati Career Education Project

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ABSTRACT

In the summer of 2015 the Office of the Provost at the University of Cincinnati (UC) appointed a task force to plan the implementation of an ambitious campus-wide Career Education Initiative. The Provost's charge was to create a plan to restructure and better integrate the delivery of career education at the University. The task force worked over the academic year returning a report that articulated a shared university wide career education vision. The report mapped out the support structures needed to facilitate a successful transition of students all the way from admissions, through experience-based learning, to a chosen post-graduate occupation. The report resulted in the July 1, 2016 merger of the career services and the experience-based learning functions of the University forming the Division of Experience-Based Learning and Career Education. Division administration has, over the fall of 2016, pursued listening sessions with individual UC Colleges, with the objective to support them in achieving campus-wide career education requirements. This paper provides a status report of the initial 18 months of the Career Education Initiative.

INTRODUCTION

The University of Cincinnati (UC) is a public, urban research university with more than 44,000 students, 12 colleges and 379 degree programs. Building on more than a century of experience in cooperative education, the university has philosophically and structurally incorporated experience-based learning into its mission, both growing and evolving it over its 100 year history. Significant milestones include:

- Cooperative Education was pioneered by Dean Herman Schneider at UC in 1906 (Park, C.W. 1943).
- In 2004 the University, led by President Nancy Zimpher, embarked on a three-prong strategy which sought to combine (1) high impact research with (2) world-class experience-based learning in an (3) eclectic, interdisciplinary environment (Cedercreutz & Cates, 2010). Over the past 12 years, this strategy has proven to be very successful in that it has generated 50% growth in student enrollment—from 30,000 to 45,000 during this period. Simultaneously, the combined student salaries of the cooperative education program reached a total of $65 million earned over 5,500 work terms annually.
- In 2004 researchers from the University of Cincinnati received a FIPSE (Fund for the Improvement of Post-Secondary Education) grant resulting in a methodology that routinely uses employer assessment data to verify curricular efficacy (Cedercreutz, 2007; Cates & Cedercreutz, 2008; Cedercreutz et al 2008; Dressler et al, 2010; Cedercreutz & Cates; 2010, Cedercreutz et al, 2011).
- Between 2011 and 2013 the University centralized the offerings of Service Learning, Undergraduate Research and the transdisciplinary program UC Forward under the umbrella of the Division of Professional Practice and Experiential Learning.
- In 2012 UC required that all graduates complete at least one experience-based learning in order to graduate (University of Cincinnati, 2012). In the first year of the requirement, the university was able to offer in excess of 30,000 experience based offerings. This development also required that the University develop

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and implement a system to record and track experience-based learning which has in turn has allowed for greater benchmarking and enhanced reporting capabilities.

Currently, experience-based learning is undergoing yet another historic evolution in which the University is seeking to package experience-based learning as an essential part of a larger, more far-reaching portfolio: Career Education. Inherent in this concept is the notion that a university education should integrate the development of professional identity and cross-cutting skills in order to help students achieve post-graduate success. This recent evolution is partly driven in response to an increased demand from both students and parents that a college education launches students' careers and prepares them for sustained success (Young, 2016).

Perhaps equally significant to this evolution are the recent findings of an extensive employer survey (Hart Research Associates, 2015) reported by the Association of American Colleges & Universities (AAC&U) which concluded that many employers perceive college students to be lacking proficiency in interdisciplinary skills and knowledge that cut across majors. Employers cite these skills as essential to workplace success, with particular emphasis on written and oral communication skills, teamwork skills, ethical decision-making, critical thinking skills, and the ability to apply knowledge in real-world settings (Hart Research Associates, 2015).

In the summer of 2015 the Office of the Provost appointed a task force to formulate and implement a campus-wide Career Education Initiative which incorporates experience-based learning as a fundamental building block. The task force produced a report which articulated a shared university-wide vision for career education and mapped the support structures needed to facilitate the successful transition of all students from their first year, through experience-based learning, to a post-graduate path.

The report also resulted in the July 1, 2016 merger of the career services and the experience-based learning functions of the University forming the new Division of Experience-Based Learning and Career Education (ELCE). The new Division has an expanded mission to provide and/or support career education across the diverse landscape of all University of Cincinnati colleges. This merger also positions career education within the Academic Affairs, signaling the university's commitment to making career education an integral, academically-grounded component of a UC education. This career education initiative marks yet another historic evolution of experience-based learning at UC and supports Dey and Cruzvergara's (2014) argument that the career center of the future, in order to be effective, must be more influential on campus and be more strategically aligned with a university's priorities.

Goals of Career Education Initiative

As a result of internal dialogue, the Office of the Provost launched the Career Education Initiative with an initial charge as follows.

Scope: The project will focus on the delivery of career education and services to both graduate and undergraduate students across all University of Cincinnati campuses.

Definition: Career Education is defined as a pedagogic dimension that cuts through the entire curriculum (pre-admission to post-graduation).The pedagogy includes both traditional instruction as well as experience-based learning. Career Education supports the transitioning of the student to the next level in their career which may be employment (entrepreneur, private sector, public sector, non-government agencies and academia) or continued studies (graduate and professional schools). Career Education is summarized in the "Attract-Onboard-Learn-Train-Practice-Embark-Lifelong Learning" sequence.

Formative Assessment: Career Education is continuously assessed in relationship to its goal of preparing students to achieve their career goals and eventual gainful employment; equipping students with the skills and knowledge needed to choose a program of study to support informed career decision making and a 100% successful career transition of its students.

Learning Outcomes: The Learning Outcomes for Career Education are developed to support the academic and career progression of the student. Associated course offerings and support structures are continuously revised to ideally achieve a 100% success rate."

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The project was initially split into four phases including planning and decision-making (completed) and reorganization and implementation (partially completed). The deadline for the project as a whole was set at December 2019. The process was led by a steering committee composed of Vice Provosts (3), Associate Provosts (1), Deans (4) and students (2), representing a diverse set of perspectives. The steering committee utilized two main sources of information in the formulation of recommendations: an external consultant to survey current career-related offerings and perceptions on campus and a Career Education Liaisons Committee comprised of associate deans from individual colleges and leaders from key departments.

Process

The charge of the Provost included a plan for enhancing the integrated delivery of career education across campus. At the initiation of the project, numerous offices in the University were providing some degree of career education and services including:

A centralized Career Development Center, housed in student affairs, with an expansive mission of serving students and employers on a first-come, first-served basis.

Nine college-based career services offices, each operating independently with little coordination.

One academic division, the Division of Professional Practice and Experiential Learning, charged with facilitating the university's co-op program, academic internships, undergraduate research, service learning and the transdisciplinary program UC Forward.

Two specialized advising centers, housed in Student Affairs, offering some degree of career education and services, primarily to undergraduate students.

Given this organizational structure, it was evident from the start that the University was not allocating its resources effectively. The Career Education Initiative presented an opportunity to create a shared vision and to more efficiently leveraging shared resources.

This first step in this process was to gauge student, employer, alumni, faculty and staff perceptions about the quality of current career-related offerings and services at the University. The research team led by the external consultant gathered data from employers, graduate and undergraduate students, recent alumni, faculty and staff using the following data collection methods:
1. Three employer focus groups (24 participants total)
2. Survey administered to UG seniors and recent alumni (468 respondents)
3. Survey administered to faculty and staff involved in career education (55 respondents)
4. Five student focus groups (42 participants total)
5. Graduate student survey (643 respondents)

KEY FINDINGS:

1. Student populations that are underserved with regard to experience-based learning, especially students in the College of Arts and Sciences, are looking for increased opportunities to engage in real-world opportunities with many expressing the sentiment that such experiences should be integrated and mandatory parts of their UC education.

2. For those student populations for whom experience-based learning is already well-integrated, participants expressed a desire for enhanced quality and support (e.g., greater communication between faculty, students, and employers).

3. In general, students expressed an increasing need for more involved mentorship. It is clear that a large part of the student body is looking to engage in meaningful dialogue with role models that have navigated the path before them. Students use concepts such as advising, mentorship, role models, peer groups, networks, etc. to describe their needs.

4. Faculty, staff and students expressed the need for better dissemination of career education information to increase awareness and accessibility.

5. Students, faculty, staff and employers all mention the need for greater soft skill development (e.g., emotional intelligence, problem-solving, leadership, teamwork, communication).

<div align="center">RECOMMENDATIONS</div>

As a result of the findings, the steering committee proposed (1) the development of a crosscutting career education framework to provide a singular conceptualization of career education which can then be applied appropriately within the contexts of the twelve UC colleges and (2) the centralization of some offerings and services. The committee's recommendations called for "transformative change," noting that

> "The professional evolution of students cannot be promoted by simply adding course requirements as curricula are already quite full. Student requirements related to career education will be best achieved through a *strategic transition* from what is perceived to be a fractured and intermittent system of career education to an integrated, continuous and seamless infrastructure of developmental career education offerings and curricula. This will require changes in our pathways, requirements, systems, abilities and attitudes".

Recommendations specific to the development of a crosscutting career education framework included:

> **Crosscutting Requirements:** The General Education requirements will eventually be used as a framework for supporting the goals of this proposal. UC's baccalaureate competencies will be expanded to specifically address graduate career readiness. Colleges and units will then create overarching student career learning outcomes for each degree program and specific pathways for achieving these outcomes that will likely include a mix of 1st-Year, Mid-Collegiate and Capstone experiences, designated courses (identified with a new "career" course attribute), workshops, shadowing opportunities, etc. The pathways will be built in a way that integrates career readiness throughout the curricular and co-curricular experiences and not as an additional requirement. While the General Education framework is not part of a graduate degree, a similar approach will be taken by graduate programs. Each program would devise specific ways within their curriculum to create clear links to post-graduation careers.

> **Individual Development Plans** (IDP)**:** IDPs will form a vehicle that helps students formulate and develop their individual careers throughout the curriculum. Deepening the use of Individual Development Plans will help students make intentional choices regarding both their academic and career plans (selection of courses based on professional goals for example) and strengthen their interaction with advisors, mentors, faculty and community partners. Students will be introduced to IDPs during their first year. The plan will be refined through major exploration, major declaration, mentor selection, experience-based learning, career transition and/or graduate studies.

> **Centralized Systems:** In the long-term, the development of centralized systems to support all facets of career education and experience-based learning across campus, including an employer/community partner portal, the assessment of student learning and the reporting of campus-wide data (placement rates, etc.) will be required.

> **Career Education Pathways:** All students will be offered successful career education pathways (i.e., from education to employment). These pathways will be implemented in a college specific manner.

> **Centralized versus Decentralized Operations:** The implementation committee will define which majors will benefit from centralized versus decentralized support with regard to the development of their career pathways.

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Recommendations specific to the centralization of offerings and services included:

Centralized Actions comprise the modalities associated with the establishment of a Career Education-Focused Division through the merger of the Division of Professional Practice and Experiential Learning (ProPEL) and the Career Development Center (CDC). The reorganization strives to build a critical mass of ability and understanding by co-locating faculty, administrators and staff. The division will elevate the service to previously underserved majors and employers, by building effective career pathways taking students all the way from admission, via experience-based learning to gainful employment or graduate school. The operation will be scalable, allowing expansion into a variety of majors campus wide. The merger capitalizes on the pedagogic core knowledges of the Division of Professional Practice and Experiential Learning as well as the employer relations core knowledge of the Career Development Center. The goal is to provide students with seamless longitudinal career education pathways. The new Career Education division would:

1. Support the colleges in their curricular development as it is related to career education.
2. Support the colleges in the incorporation of meaningful and impactful experience-based learning into their curricula.
3. Support students who are already involved in experience-based learning programs by providing a seamless transition from co-op and internship into full-time employment.
4. Support the student body at large by providing a one-stop resource for both experience-based learning opportunities and post-graduation professional pursuits. In this, the Division would work closely with colleges with similar operations.
5. Support streamlining relationships with employers and community partners by providing a point-of-initial-contact for co-op, intern and full-time recruiting.
6. Support the university's general education core and lead the development of career education outcomes.
7. Support the university through on-going, data-driven monitoring and assessment of student learning and development, while providing data to inform ongoing curricular enhancements.
8. Support both university and faculty efforts related to the scholarship of teaching and learning as they relate to both experience-based learning and career education.

Development of crosscutting career education framework

The newly formed Division of Experience-Based Learning and Career Education is currently leading the effort to develop a crosscutting career education framework. The first step in this process is to develop student learning outcomes specific to career education that can be incorporated into curricula and degree programs. Strategically, these career education student learning outcomes should align with related outcomes in development through the advising and first-year experience offices and should support and complement the university's general education requirements. Additionally, outcomes must be specific enough to be measurable, yet broad enough to allow for each of the Colleges to incorporate the outcomes in a way that meets the unique needs of the students. This will require that all colleges provide input during the developmental phase, possibly via the Career Education Liaison Committee. The goal is to have a completed career education framework by summer 2017.

Additionally, the university's general education requirements will be modified through the approved faculty governance process and in the spirit of continuous program improvement to reflect these new learning outcomes and their assessment.

Development of a Centralized Division:

The implementation of the project has followed the schedule as presented in Figure 1.

ACTION	JUL	AUG	SEP	OCT	NOV	DEC
- Merger	▓					
- Relocation		▓				
- Organizational & Space Development			▓	▓	▓	
- Listening Sessions with colleges				▓	▓	
- Reorganization						▓

FIGURE 1. Schedule of the initial six months (July 1 – December 31, 2016) of organizational development.

Shortly after the merger was announced, the two units physically merged into a single space. While this presented logistical challenges, the physical merger has proven to accelerate the cultural merger of the two units which have traditionally had different reporting lines. The former Career Development Center, which historically reported to the Vice President of Student Affairs, is now part of Undergraduate Academic Affairs. This change serves as tangible evidence of the university's commitment to make career education an academic, integral part of students' education.

The development of the new organization was driven by an internal planning committee. The committee's first step was to interview all affected staff, faculty and administrators to (1) uncover redundant offerings, services and operations and (2) understand the strengths and preferences of each individual so that these could be factored into decisions regarding personnel.

Simultaneously, during October and November of 2016, a team from the Division pursued individual listening sessions with Deans, Associate and Assistant Deans from appropriate colleges to gauge career education needs and determine areas for collaboration. Key takeaways from these listening sessions include:

1. **Colleges with well-established mandatory co-op programs** are highly prepared to implement career education. In these cases the implementation simply requires the integration of additional career services with the existing experience-based learning component. This can generally be done on a centralized level.

2. **Professionally-oriented colleges** including Nursing, Education and Pharmacy in general have a strong portfolio of experience-based learning and career education incorporated into their programs requiring little direct support from the new Division. However these colleges may benefit from support and guidance in the implementation of the new career development learning outcomes.

3. **Liberal arts and sciences programs** tend to have a weaker connection to employers outside of academia. Centralized support can be very beneficial in helping students identify and articulate the skills gained through their program in a professional context. This is perhaps the largest opportunity for growth in terms of experience-based learning and career education.

4. **Graduate programs** typically have a favorable faculty to student ratio. Graduate students are typically very well advised with regard to their opportunities to pursue an academic career however pace of graduates significantly outnumbers the positions available. Therefore, graduate students will need strong support in the identification and pursuit of non-academic careers.

5. **Two-year programs offered at branch campuses** form a special category, in that a wide majority of the students work considerable hours per week. Many students do further transition to a four year environment, before completing their two year degree. There is thus very little time for the students to engage in experience-based learning. Dovetailing branch campus programs well with the upper division in main campus four year programs, does however form an effective way of supporting the career education of these student populations.

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By January 2017, the Division had completed 8 out of 13 Listening Sessions with those remaining scheduled to take place in February. Once completed, the data from the sessions will used as a basis for the Division's planning of future programs and offerings. Additionally, the expanded of mission and offerings will require significant growth in student participation and thus in a performance –based budgeting environment, will generate new revenue to provide programming for 44,000+ students enrolled at the University. Once career education learning outcomes are in place, systems and reporting mechanisms will need to be developed to support ongoing assessment, specifically related to students' post-graduation pursuits. The implementation of these initiatives will be pursued by the Office of Institutional Research.

CONCLUSION

The Career Education Initiative illustrates the continued evolution of experience-based learning at the University of Cincinnati. The project is moving on schedule, with the objective of having the pedagogy implemented by the bicentennial of the University in 2019.

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Assessment model: A case study of chemical engineering work-integrated learning at Durban University of Technology

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ABSTRACT

In professions like teaching, health sciences and engineering, students need to cover a significant amount of work based learning through practice before obtaining a qualification. A university qualification does not automatically confer employment in a rapidly changing global economy. Employers are also challenging higher education institutions to describe better what students can actually do on graduation, and not just what they know. This has spurred on the introduction of the work based learning model adopted by the department of chemical engineering. The learning outcomes for work-integrated learning have to be aligned to the qualification outcomes to ensure that the theory is applied in a practical environment. The department of Chemical Engineering has developed a work-integrated model for technicians which includes assessment of learning outcomes that are aligned to the outcomes of the National Diploma. Students are required to spend 12 months of the three year Diploma in a work environment. The assessment is comprised of both qualitative and quantitative assessments. The assessment model includes technical reports which require the completion of specific outcomes based on the knowledge areas for chemical engineering technicians, workplace accreditation and assessment, supervisor assessments, student assessments and oral presentations. This model has been approved by the professional accreditation body and the quality assurance bodies within the institution. The department has been able to work closely with various industries on an ongoing basis to ensure that students are assigned suitable tasks during the 12 month training period to ensure the completion of the prescribed outcomes.

INTRODUCTION

Work-integrated learning (WIL) takes place through learning through work, learning for work and learning at work. Students can be employed on contract or as full time employees whose program of study is embedded in the workplace, and is designed to meet the needs of the university program and the goals of the industrial partner. In the last decade educational researchers have become convinced that learning in context is more effective than traditional ways of learning such as through textbooks and lectures. For example, child street vendors in the streets of Brazil used creative mathematical approaches to resolve problems in their sales but could not solve the same problems using abstract theorems and a pencil–and–paper approach. Apprentices gain experience through observation, coaching and practice guided by mentors as they learn specific skills. Simply moving the students from the classroom to a workplace does not guarantee that learning will be significant or that it will be transferable. Ill-designed workplace experiences, like ill-designed and poorly delivered classroom instruction can damage or demotivate students. The work-integrated program developed for chemical engineering technicians has been aligned to the professional body accreditation requirements and the university's internal quality assurance guidelines. An annual review of the work-integrated program allows for constant improvement.

BACKGROUND

Cash and Light (2011) have argued that there is a close link between engineering education and higher education, where external influences from professional bodies and industrial concerns tend to prescribe the graduate attributes of students preparing for the workplace. The curriculum is constantly under debate in engineering education, largely focusing on what the graduates can "do" when they enter the workplace (Bronkhorst, 2013).

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At placement students are responsible for two types of work: regular tasks and separated tasks. Regular tasks are routine work that is also performed by permanent employees and separated tasks are extra projects that are specifically assigned to WIL students. For engineering students the latter is preferable. Projects that focus on the improvement of product yield, process or system efficiency, or on the reduction of operating and production costs are perceived as the most important by the placement host company. Employing WIL graduates help industry to reduce the training costs of new employees and also allows the trainees to become familiar with the company's structure. Contract posts enable the company to assess the employee's suitability during the probation period. Students are involved in both technical and non-technical work. For example, a replacement of a pump requires technical knowledge to rate the pump, but the procedures for procurement and dealing with suppliers and contractors is also learnt through this exercise (Thonglek, 2014).

Engineering technicians are expected to solve technical problems in the workplace. Some help engineers to design and carry out research and development tasks. They build or set up equipment. They can perform experiments, collect data and perform analyses. They are also involved in quality control and product checking. A key element of WIL is that there is an academic and an industrial mentor who work closely together to ensure specific placement in the company that will enable the achievement of the learning outcomes. The student is the key factor in this partnership because they have to engage in the various tasks or projects (Samadi, 2013).

Assessment is the act of collecting data, assessment methods are procedures to support the data collection and evaluation are the interpretations made of the evidence collected (Rogers and Sando, 1996). Assessing learning in the workplace is critical because it adds to our understanding of how people learn in different contexts. If industry becomes the curriculum for student' learning then the activities that take place in the workplace becomes the standard by which student's performance can be judged. In practice the evaluation and assessment of learning are very difficult. The academic and the industry partner need to ensure that the student is engaged in learning activities that are likely to result in achieving those outcomes. One way of assessing is to consider it as a course unit with credit points based on certain criteria. Assessment of these criteria will require students to submit assignments about their learning, attend workshops, present a paper, maintain a portfolio, peer group reviews and reports from supervisors. There has to be more than one type of assessment to accommodate various learning styles (Abeysekera, 2006).

WORK-INTEGRATED LEARNING AT DUT

A well-structured workplace integrated program should include the following elements: (a) clear outcomes with specific criteria, (b) a structured plan for progress reporting, (c) work based experiences to develop transferable skills, (d) documented evidence, (e) mentoring and support, (f) administrative structures to coordinate and manage the program, (g) quality assurance measures. The ongoing demand for work ready graduates is increasing since industry key focus is on production for profit. The work-integrated program at DUT was developed using the above elements but within the guidelines of the professional graduate attributes as prescribed by the Engineering Council of South Africa (ECSA) for chemical engineering technicians. It is important that specific outcomes are agreed upon before an industry placement is finalised. It is vital that the student gains the necessary skills in the industry sector while meeting the educational outcomes set out in the curriculum of the engineering qualification. In addition to transferring a given body of technical knowledge, emphasis should also be placed on the development of critical thinking, analytical reasoning, problem solving, creativity and research techniques that together supports the ability for life-long learning. Interpersonal skills, leadership, ethical values, the ability to work effectively in groups, and both oral and written communication are regarded as essential.

The national diploma in chemical engineering at DUT aims at producing a person qualified in the control and effective functioning of processes in the chemical and allied industry. The graduate will be typically involved in jobs such as plant operations and supervision, plant and equipment design, technical services, technical sales, consulting work, and research and development. The diploma is a 3-year qualification, the first two years of which constitute the theoretical component. Experiential learning 1 & 2, the experiential training component of the diploma, is the third and final year of this qualification. It is characterized by the integration of theoretical

knowledge and practice. Experiential training, also known as In-service training or work-integrated learning, is the distinguishing feature of the progressive and innovative approach to higher education adopted by university of technologies, and is a focal point of the vision statement of DUT in particular. It can be described as a process of education which formally integrates a student's academic studies on campus with relevant and productive work experience in industry. Keeping this in mind, it must be emphasized that the work done during this period should be a reflection of the third year of vertical learning. The three participants in this program are the employer, DUT and the student.

ASSESSMENT

A person who graduates with the national diploma in chemical engineering is expected to be competent to:

- Identify, assess, formulate and solve process related technical and operational problems creatively and innovatively
- Perform elementary process equipment design in order to modify existing sections of the plant and evaluate efficiencies of various process equipment
- Setup, operate, control, and improve production processes and schedules to meet customer and business requirements
- Communicate effectively both orally and in writing with a variety of audiences using appropriate structure, style and graphic support
- Ensure that the manufacturing process meets Safety, Health, and Environmental requirements
- Use computer technology in the application of engineering methods, skills, and tools
- Identify his/her own strengths and limitations, and manage and direct his/her own learning and development.

Whilst some of these competencies have been developed during the academic part of the qualification at DUT, further development will take place during the experiential training period. To successfully meet the requirements for WIL, a number of specific tasks/outcomes must be completed during the year. These tasks/outcomes are outlined in this manual, and each task/outcome has been assigned a credit value of 10. A student must ensure that at least a total of 120 credits as assigned to the specified outcomes are completed to the satisfaction of the industrial and DUT mentors. Also included in the list is the assessment criteria that will be used to evaluate the student's report and this would account for an additional 40 credits.

TABLE 1: Timeline and criteria for the 12 month training period

Timeline	Criteria
Month 1-3	Payment of registration fee
	Registration of Experiential Learning 1 and 2 with the department
	Employer and student details
End of academic term (month 1-3)	1st technical report
	1st visit and assessment by the DUT mentor / lecturer and
	Accreditation of the employer
End of academic term (month 4-6)	2nd technical report
End of academic term (month 7-9)	3rd technical report
	2nd visit and assessment by the DUT mentor / lecturer (if necessary)
End of academic term (month 10-12)	4th technical report
	Oral presentation
	Student assessment of the workplace
	Supervisor's assessment of the student Summary and proof of employment
	Certificate of Employment

CASE STUDY: WIL

Academics expect students to develop technical skills that are difficult to obtain in a classroom setting. Placement in an industrial setting gives them a chance to use theories to solve real-life problems and develop application skills. The following outcomes outlined in Table 2 are examples of 3 of the 17 outcomes that are part of the 12 month training period for the work-integrated learning program. Chemical engineering students are capable of practising in various industry placements. The majority of students are offered work placements or "jobs" in the petrochemical industry, water and related industries, the energy sector and chemical manufacturing. Students are required to work independently to understand the objectives, develop strategies to tackle problems and find solutions which would benefit the company. This independent learning varies from student to student. In order to prepare students workshops before and during placements are held on the guidelines and requirements for the WIL program. The outcomes are outlined in the form of a printed manual, but these are explained in greater details at student workshops held at the university. Students are helped on an individual basis to apply the outcomes in the specific industry that they are employed in.

TABLE 2: List of Competencies / skills / specified outcomes

Specified outcomes	Assessment criteria	Credit Value
The learner will be competent to:		
Produce a process flow diagram (PFD) of the process under consideration and describe in appropriate technical terms the processing route of the product/s of the plant/section of plant under consideration	– A brief introduction to this outcome/task is presented. – The overall purpose of the plant / section of the plant is described, with the aid of a process flow diagram. – Chemical reaction/s involved in the production of product/s from the raw materials utilized in the plant /section of the plant is described. – Physical operations involved in the production of product/s from the raw materials utilized in the plant /section of the plant are described. – Computer generated PFD is produced – All major streams and equipment are labeled – Stream information in the required format is presented on the PFD – Acceptable symbols and notation are used	10
Perform a comprehensive multiple unit material balance for the plant / section of plant under consideration	– A brief introduction to this outcome/task is presented. – A flow-sheet / process block diagram for the plant/section of plant under consideration is presented – The basis for the calculations is clearly defined – Acceptable SI units consistently throughout the balance is used – All assumptions are clearly stated and fully justified – The balance is presented in a clear and methodical manner – A summarized balance in the form of a table is presented (all streams and losses must be accounted for)	10
Perform a comprehensive multiple unit energy balance for the plant / section of plant under consideration	– A brief introduction to this outcome/task is presented. – A flow-sheet / process block diagram for the plant/ section of plant under consideration is presented. – The correlations that are used to determine thermal and physical properties of the various streams under consideration are clearly stated and properly referenced. – Acceptable SI units are used consistently throughout the balance. – All assumptions are clearly stated and fully justified. – The balance is presented in a clear and methodical manner. – A summarized balance in the form of a table is presented (all streams and losses must be accounted for).	10

CONCLUSION

In South Africa, the accreditation panels visit each university to grant accreditation to their programs. A mapping exercise is done to ensure that the university is meeting all the requirements of the accreditation document. When universities initially design their curriculum it is aligned to the outcomes of the professional body. The dilemma lies in the delivery and the quality assurance mechanisms to ensure that accreditation is achievable. This process keeps the department of chemical engineering on constant alert to ensure that the outcomes of the qualification are met, especially the work based learning component since the learning takes place externally from the university. The university also has internal quality assurance procedures in place to ensure that the outcomes of the program are met on an annual basis while the professional accreditation requirements have to be met on a four year cycle.

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Contemporary impact of University of Technology's new curricula on industry's needs: A case study of Durban University of Technology in South Africa

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ABSTRACT

University of Technologies (UoTs; refer to list of acronyms in the appendix) as Higher Education Institutions (HEIs) are not well known and accepted in the South African Industrial sector at present, these UoTs have to be known, understood and accepted by our contemporary Industrial Partners and the local community. Educational Institutions known as Technikon's, now UoTs, at the time of their departure to the new Institute of Technology, were well acknowledged and well recognised, especially by industry partners, who found Technikon students highly competent, employable at that time. Students too had come to realise that their probabilities of getting a career/jobs with a Technikon qualification were greater than with an ordinary traditional university degree. This flagship and trademark is now absent in industry and the challenge these days is to get the current Universities of Technology to the same level of awareness as quickly as possible. Most of all, it is just as important to get each and every one to understand and consent that in the present Higher Education Landscape that all universities in South Africa are of equal status. Universities only differ in their application of knowledge to students. Currently, it is accepted that UoT qualifications are second best as compared to a traditional University qualifications. Majority of DUT qualifications differ greatly from the traditional university in that Work-Integrated Learning (WIL) forms a major component in majority of the diploma programs. This paper will therefore address the contemporary impact of the new UoTs curricula on Industry's needs.

INTRODUCTION

The primary reasoning for this research is the adverse acceptance from Industry's inputs at DUT Advisory Board Meetings and buy-in into this new restructuring and curriculation that has dropped off the B-Tech Degree and in its programs and like the Engineering faculty have dropped off Work-Integrated Learning (WIL) component in the new curriculum.

In the sixty's UoTs were known as colleges. The South African government had identified six technical colleges for establishment and development as Colleges of Advanced Technical Education (CATEs). Thereafter, in 1979 these Colleges of Advanced Technical Education were redesignated as Technikons. They were established as post-secondary higher education institutions, offering career orientated certificates and diplomas. Subsequently, in 1993 the Technikon Act granted Technikons permission to award degrees.

The Committee of Technikon Principles (CTP) motivated the redesignation of Technikons to become University of Technologies (UoTs) due to their degree awarding status to bring Technikons in line with global trends. This redesign from Technikon to University of Technologies (UoTs) became a reality after the announcement by the Minister of Education (Dr Blade Nzimande in October 2003). At this juncture some Technikons merged with universities to be known as comprehensive universities. In 2006 DIT changed to DUT but only since 2008 DUT set out on the beginning of a long journey to launch DUT as a first choice, career orientated higher education institution in KwaZulu-Natal (KZN), specialising in making education useful, thereby, producing high quality graduates that are hands on the day they commence working in industry.

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One of the main focus and function of UOT education is to prepare students for the local job market. From an Industry perspective Industry's inputs to UoTs is not being addressed. Gathering from the above, Industry has to deal with name changes, recurriculation and restructuring of courses and qualifications at UoTs as compared to the traditional University. Industry has to now contend with this new UOT qualifications and have to re-evaluate it into its staffing structures and place the new UOT students accordingly within their organisational structures.

The focal point of this research will be to evaluate Industrial Partners view point on the impact of this continual new recurriculation and restructuring at UoTs. UoTs restructure and recurriculation is unlike the traditional University, in that the traditional university degree has not lost its grading to as compared to UoTs qualifications, which causes a great deal of improbability in assessing and equating UoT qualifications on a continuous basis.

This discussion will incorporate an investigation into the need for the restructuring process, explore possibilities of maintaining a stable structure at UoTs as compared to the traditional University suited to Industry. The rational to this research is that our Industrial Partners are not accepting and not content with fluctuations to the structure and continual recurriculation at UoTs on a continuous basis. With this new restructure and recurriculation and new qualification Industry will once again have to realign itself with these continuous changes which affects placement of students and salary structure adjustments in Industry.

The objective of this research is to explore Industry's comments and acceptance with the new structures implemented at UoTs and their adjustments in future with these new qualifications. The research methodology that will be employed will be a questionnaire designed to gather relative information from Industrial Partners, DUT Staff and Students and analysed both qualitatively and quantitatively.

The final contribution of the research will help to make clear to and guide the Department of Higher Education, UoTs and the local community from an Industry perspective of their needs as to student calibre, their approach work (work ethics) and qualifications required by them. This research will be conducted in and around KZN region with industry partners, DUT staff and students.

RESEARCH PROBLEM AND AIMS

Universities of technology in South Africa largely echo in their vision, mission, objectives, a distinctive approach to research, relationship to and with industry, technology and knowledge transfer, access and career oriented academic programmes, excellence in teaching and learning, preparation of students for the world of work and developing leadership in technology take priority in educating the nation.

However, because universities of technology as higher education institutions are little known in South Africa at present, these universities have to be known, understood and accepted by our contemporary Industrial Partners. According to Du Pré (2009) the traditional Technikon's, at the time of their demise, were well understood and well accepted, especially by industry, who found their students highly employable. Students too had come to realise that their chances of getting a job with a Technikon qualification were greater than with an ordinary traditional university degree. That flagship has been lost and the challenge is to get universities of technology to the same level of awareness as quickly as possible.

Students entering higher education institutions in South Africa are seeking career orientated institutions as a practical and a career-focused university qualification. Adult workers without a university qualification are seeking the need for the recognition of their prior learning and experience and being able to move on from there on and industries are looking for graduates with practical, hands-on experience, who can commence working with very little supervision upon entering the workplace.

Universities of Technology are adopting a narrow focus by equipping students only with technological competencies and practical skills to deal with these issues in the global market. The purpose of universities of technology is to educate and develop students who can participate effectively to the benefit of society, in the global market. Universities of technology, normally broaden student's educational approach and expose students to a

range of disciplines. Thereby enabling them to make intellectual judgements and selections about a range of issues involving technology.

Students should be encouraged to think about the broader issues relating to technology. In this way they will not only be prepared for a more meaningful and more responsible role in society.
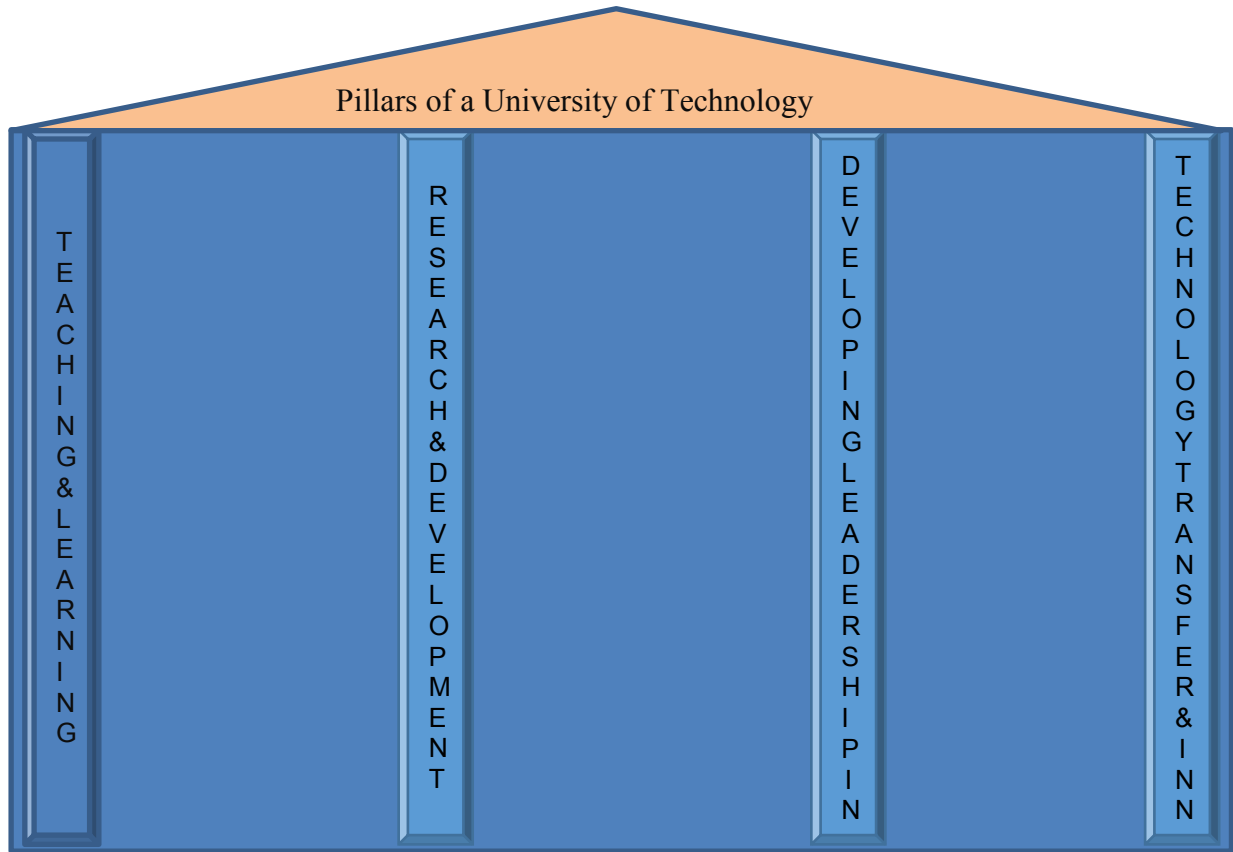
FIGURE 3: Pillars of a UOT

LITERATURE REVIEW

According to Prof. Roy du Pré (2010:1): South Africa has not previously encountered such an institutional type in its history. The discussion is to introduce the reader to the "new kid on the block", but at the same time to reinforce the academic credentials of this technology higher education sub-sector. Universities of technology came into being as part of the major reconfiguration of the higher education landscape, which took place from 2004 onwards. Through a process of mergers and redesignation, South Africa's 36 higher education institutions (21 "traditional" universities and 15 technikons) were trimmed down to 23 – comprising 11 "traditional" universities (some of which were merged with others), 6 "comprehensive" universities (arising out of mergers between a traditional university and a technikon), and 6 universities of technology (created from 11 merged and unmerged technikons). Universities of technology have as their foundation the former technikons which built a solid reputation in providing career-oriented programmes. These prepared graduates for the world of work. Their research was of an applied nature and their links with industry ensured that technikon programmes remained relevant, up-to-date, and that their graduates were familiar, through work-integrated learning, with the way industry functioned. Throughout the world, universities of technology have made a major impact on the development of their countries and regional economies by preparing graduates for the world of work, and applying their research skills to identifying the problems and needs of society and industry, and together finding solutions to those problems.

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Curriculum refers to the means and materials with which students will interact for the purpose of achieving identified educational outcomes. Arising in medieval Europe was the trivium, an educational curriculum based upon the study of grammar, rhetoric, and logic.

According to United Nations Education, Science and Cultural Organisation (UNESCO) (2016): Curriculum evaluation is a necessary and important aspect of any national education system. It provides the basis for curriculum policy decisions, for feedback on continuous curriculum adjustments and processes of curriculum implementation.

The fundamental concerns of curriculum evaluation relate to:
- Effectiveness and efficiency of translating government education policy into educational practice;
- Status of curriculum contents and practices in the contexts of global, national and local concerns;
- The achievement of the goals and aims of educational programmes.

According to United Nations Education, Science and Cultural Organisation (UNESCO) (2016): Student assessment is an important aspect of curriculum evaluation which helps to facilitate the understanding of the impact and outcome of education programmes. A fundamental measure of the success of any curriculum is the quality of student learning. Knowing the extent to which students have achieved the outcomes specified in the curriculum is fundamental to both improving teaching and evaluating the curriculum.

DUTs new qualifications and restructuring started some time in 2008 and in now ready for implementation. Some faculties have commenced and others will start next year with the new qualifications. Concurrently, they will phase out the old diploma and Bachelor of Technology Degree. From Industry Advisory Board meetings industry has voiced its concerns with this new qualification and structure.

Curriculum Evaluation

The term "evaluation" generally applies to the process of making a valued judgment. In education, the term "evaluation" is used in reference to operations associated with curricula, programs, interventions, methods of teaching and organizational factors. Curriculum evaluation aims to examine the impact of implemented curriculum on student (learning) achievement so that the official curriculum can be revised if necessary and to review teaching and learning processes in the classroom and workplace. Curriculum evaluation establishes:
- Specific strengths and weaknesses of a curriculum and its implementation;
- Critical information for strategic changes and policy decisions;
- Inputs needed for improved learning and teaching;
- Indicators for monitoring.

Curriculum evaluation may be an internal activity and process conducted by the various stake holders within the education system for their own particular purposes. These stake holders may include national Ministries of Education, regional education authorities, institutional supervision and reporting systems, departments of education, schools, industry and the local community. Curriculum evaluation may also be external or commissioned review processes. These may be undertaken regularly by special committees or task forces on the curriculum, or they may be research-based studies on the state and effectiveness of various aspects of the curriculum and its implementation. These processes might examine, for example, the effectiveness of curriculum content, existing pedagogies and instructional approaches, teacher training and textbooks and instructional materials.

With the introduction of the new degree programs at DUT and the phasing out of the current national diploma and Bachelor of Technology Degree programs has caused concerns within the industrial sector and the local community.

Student Assessment

The ultimate goal of curriculum evaluation is to ensure that the curriculum is effective in promoting improved quality of student learning. Student assessment therefore connotes assessment of student learning. Assessment of student learning has always been a powerful influence on how and what teachers teach and is thus an important source of feedback on the appropriateness implementation of curriculum content.

Fulfilling the diverse objectives of diagnosis, certification and accountability requires different kinds of assessment instruments and strategies selected to achieve specific purposes. Assessment of student learning could be summative or formative, and there are various types of tests to address different needs such as standardized tests, performance-based tests, ability tests, aptitude tests and intelligence tests at DUT. Although, the online teaching, evaluation and monitoring system is available to DUT staff, e.g. Blackboard and Online University Management Systems (OLUMS), staff are reluctant to take advantage of these facilities.

Student Access and Equity: The Policy of Increased Participation

One of the fundamental goals of higher education transformation in South Africa is the achievement of equity in the higher education system. This goal is clearly articulated in key policy documents, such as the National Commission for Higher Education (NCHE) report, the Education White Paper 3, and the National Plan for Higher Education (NPHE). According to the NCHE report, in order to address effectively the needs of equity and redress, the tension between equity and development would have to be resolved through a policy of increased participation. In order to achieve this, NCHE advocated a change from an "elite higher education system" to a "mass higher education system" and estimated the overall participation rate of the relevant age group (20-24-years-olds) as 20% in 1996 and projected a further increase of up to 30% by 2005, the great bulk of which would "need to come from the Black community". In other words, student numbers, including private higher education enrolments, were expected to rise from some 800 000 in 1995 to nearly 1.5 million in 2005 (Department of Education, 2001, p. 19). Following a recommendation of the Council on Higher Education, and taking into consideration financial constraints, the Department of Education agreed to increased participation rate from 15% in 2001 to 20% by 2010-15 (Council on Higher Education, 2004, p. 63).

According to MacGregor, (2008): Based on available evidence, the assumptions on which this expansion was premised were unrealistic and problematic, particularly in terms of projected numbers of high school leavers with the required credentials for study in higher education. As a matter of fact, due to the poor mathematics and physical science at senior certificate grade 12 level majority of the matriculated students do not qualify entry into universities. Thus, increased participation is not meeting the NPHE target, not only because of the poor school-leaving examination results, but also because of where those youngsters who manage to get into the system come from: most of them are from elite schools. This situation has forced universities to accept underprepared students, the vast majority of whom are from severely disadvantaged backgrounds.

The responsibility for education in South Africa is shared by the Department of Basic Education (DBE) and the Department of Higher Education and Training (DHET). The DBE deals with all schools from Grade R to Grade 12, and adult literacy programmes, while the DHET deals with universities, and other post-school education and training, as well as coordinating the Human Resource Development Strategy for South Africa (HRDSSA). The DBE develops, maintains and supports a South African school education system for the 21st century in which all citizens have access to lifelong learning, as well as education and training, which will, in turn, contribute towards improving quality of life and building a peaceful, prosperous and democratic South Africa. A National Curriculum and Assessment Policy Statement (CAPS) is a single, comprehensive, and concise policy document, which has replaced the Subject and Learning Area Statements, Learning Programme Guidelines and Subject Assessment Guidelines for all the subjects listed in the National Curriculum Statement Grades R - 12.

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The National Curriculum Statement Grades R-12 represents a policy statement for learning and teaching in South African schools and comprises the following:

- Curriculum and Assessment Policy Statements for each approved school subject as listed in the policy document National policy pertaining to the programme and promotion requirements of the National Curriculum Statement Grades R – 12;
- The policy document National policy pertaining to the programme and promotion requirements of the National Curriculum Statement Grades R – 12 which describes the number of subjects to be offered by learners in each grade and the promotion requirements to be obtained; and
- The policy document National Protocol for Assessment Grades R – 12 which standardises the recording and reporting processes for Grades R – 12 within the framework.

In line with this new CAPS program DUT has relined its entrance levels into its qualifications and some cases introduced bridging/enhancement programs to assist students to cope, especially the disadvantaged students that do not make the entrance levels.

According to Mthembu, Orkin and Gering (2013:4)." Universities of technology (UoTs) achieve developmental impact through differentiated curricula, allowing graduates to undertake mid-level occupations in the workplace. This mandate differs from that at traditional universities in six respects: diploma level entrants, labour market focus, workplace-oriented learning, applied research and innovation, practical graduate attributes, and symbiosis with the workplace on curriculum development. These differentia imply criteria for an 'ideal curriculum' at a UoT: demand among employers, affordable class-sizes, available qualified staff members, articulation to higher qualifications, and space to be created in the programme and qualification mix".

The South African National Framework (2008)

The South African National Framework (2008), currently under review. These developments oblige UoTs to review who they admit and teach, what they teach, who teaches it, how they teach it, and what the overall outcomes should be. The prime purpose of UoTs such as DUT is to achieve a developmental impact on their region through differentiated curricula (Du Pré 2009): by admitting students with diploma- rather than degree-level university entry qualifications, and by equipping them with the graduate attributes and specific niche-oriented qualifications that will actually secure them mid-level jobs and a viable career path.

According to Nwalila (2010) 'The different key sectors [of our region] do not seem to be strategically positioned to deal with the 21'st century "unknown" challenges, and we often seem to be quick to fall back to traditional, "known" approaches and solutions'.

South African Unemployment Rate

According to statistics SA, South Africa has one of the highest unemployment rates in the world. The jobless rate in South Africa went up to 27.1 percent in the third quarter of 2016 from 26.6 percent in the previous period, reaching the highest since 2004. Unemployment Rate in South Africa averaged 25.35 percent from 2000 until 2016, reaching an all-time high of 31.20 percent in the first quarter of 2003 and a record low of 21.50 percent in the fourth quarter of 2008 (South African Unemployment Rate): (2000-2016).

With this in mind, will Universities of technology (DUT) in South Africa take priority in educating all UoT qualifying students for the nation?

However, because universities of technology as higher education institutions are little known in South Africa at present, these universities have to be known, understood and be accepted by our contemporary Industrial Partners. The traditional Technikon's, at the time of their demise, were well understood and well accepted, especially by industry, who found their students highly employable.

According to Roy Du Pre (2010): Universities of technology in South Africa are well on their way towards becoming first-choice institutions for: school-leavers wanting a practical, career-focused university qualification; adult workers needing recognition of their prior learning and experience and being able to move on from there and

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industries looking for graduates with practical, hands-on experience, who can commence "hands on" running when they enter the workplace.
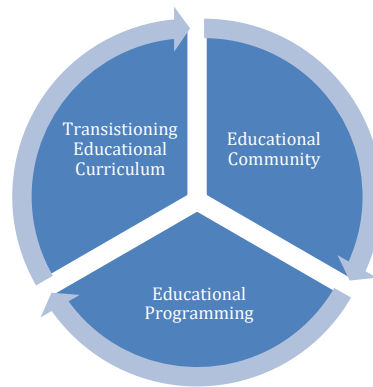
FIGURE 2: Curricula Revision

Within the literature on curricular revision, DUT recognised and identified three major were principles. First, the society and culture that DUT serves. Second, the industrial society propagates itself with educational programming. Third, systemic change, in educational curriculum, is often difficult at best and controversial at worst. These three elements combine to offer a strong foundation from which DUT educators can begin to address what is taught at all levels at DUT, the needs of a respondent society in KZN, and the changing roles of classroom practitioners and students.

Borrowman (l989) stated that education is the process by which individuals gain knowledge, skills, values, habits, and attitudes. Societal behaviours, cultural norms, and practical needs compel the combination of various mechanisms of knowledge and information. Hence, the educational curriculum is vitally important to a society's success and may become extremely controversial when conflicting views emerge.

Finally, as noted earlier, systemic change, as in the form of transition educational curriculum, is often a challenge to all concerned and in some cases, may even create a negative, conflict-ridden environment. It is an accepted fact that without acceptance and buy-in by all major constituencies, long-lasting systemic change cannot occur. Beyer and Liston (l996), James B. MacDonald (l975) suggested that "in many ways, all curriculum design and development is political in nature".

Henderson & Hawthorne, l995; Jelinek, l978; Kallen, l996; Patterson, l997; Toch & Daniel, l996, Wagner, and l998 presented strong arguments that outdated strategies (the implementation of curriculum) had to be discarded and ineffectual methodology eliminated. Concurring with these views that change was not only necessary but imminent, Scott (l994) declared that curriculum revision projects of the past twenty years had in reality been dismal failures with a high cost to taxpayers, students, and educators.

Accepting that changing an educational curriculum can be a challenge, the involvement of all stakeholders, especially individuals who are directly involved in student instruction, is an especially vital piece in successful curriculum revision. The review of literature substantiated the concern that until the parameters of curriculum revision are defined and understood, the process will suffer from confusion and failure for decades to come.

Employers want graduates who not only enhance the organisation, but are also likely to take the organisation forward in the face of constant change (Harvey and Mason, 1996:17). The lack of work experience by graduates often results in unemployment or underemployment. Employers believe students need to be more prepared for the workplace. According to Teichler (2000.87), graduates do not possess the desired work place attributes.

Duignan (2002:214) and Fallows and Steven, (2000:75) states that an important objective of WIL programmes is to increase the employability of students and not the academic performance of students. At the same time Falconer and Pettigrew (2003:53) suggest that graduates need to bear in mind that they are not only progressing academically and with technical knowledge, but also with transferrable skills which other employers are seeking in graduates.

According to the White Paper (2013, 64) learners exiting universities are not finding work easily, because they are often described by employers as lacking the necessary skills. Similarly research evidence found that having a tertiary qualification does not necessarily prepare graduates for the work environment (Kruss, 2004; Griesel & Parker, 2008; Reinhard, 2006)

Weaknesses or Problems with Previous Studies

Crebert et al. (2004) found evidence that students who complete work placements do not encounter major difficulties in applying their generic skills in the work place. However, a recent study of business graduates (Jackson, n.d.) found WIL made very little difference to the transition of skills from university to the work place.

Similarly, the White Paper (2013:64) states that often "work placements are unstructured and do not contribute to the outcomes of the qualification".

STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS OF UOTS

No organization will survive long without adjusting to the patterns of change found in the larger world outside. Some changes help and some may hinder. When developing a long-range plan, corporate managers and public managers have often sought to understand an organization's potential within its changing environment by engaging in an analysis of strengths, weaknesses, opportunities, and threats—often abbreviated as a "SWOT" analysis—because such an approach can be informative and provide perspective.

Strengths

Strengths mentioned are institutional features that are broader than specific programs. Probably they would bear even if strong programs were eliminated or if outstanding individuals left the university.

State Funding: UOTs receive state funding to subsidise their expenditures. Sponsorships, research and other third stream income boosts the income of OUTs.

University of English Medium System: DUT being a University of English Medium System confers respect within the province. Being part of a recognized and dominant state university system also communicates that a young UOT is in the mainstream of higher education and thus gives credibility across the nation and beyond.

Faculty: DUT has five faculties, namely:
1. Faculty of Accounting and Informatics
2. Faculty of Applied Sciences
3. Faculty of Arts and Design
4. Faculty of Engineering and The Built Environment
5. Faculty of Management Sciences

These faculties offer major programs of study across the full range of academic disciplines. It awards degrees from the associate through the PhD. Therefore, the university is capable of responding to the individual higher education needs of a great variety of people.

Undergraduate Core Curriculum: DUT provides all its undergraduate students the advantages of a broad core curriculum, which include a significant general education component in baccalaureate degree programs and consistent with the requirement of the Department of Higher Education and Training. DUT is an accredited institution by DHET and also by a number professional governing bodies. The core curriculum, is reviewed and updated from time to time, which instils a broad foundation of knowledge and skills equipping individuals to manage their lives in today's complex civilization and to be flexible in the work force in the future.

Convenient Class Schedule: Juggling university attendance, job, and family obligations is a constant challenge for many DUT students. Therefore, in addition to the traditional day-time class periods, the campus has for decades offered classes during the late afternoon and evenings to fit the daily routines of students. Classes can also be

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offered at a number of convenient off-campus sites around the country if the numbers warrants this. This approach to scheduling is typical of metropolitan universities as they meet the varied needs of the clientele of an urban area.

Outreach Units: DUT has a number of first-rate outreach units that are vehicles for extending university expertise and services to people in the immediate community and throughout KwaZulu Natal.

Campus Diversity: Currently, the DUT hosts students from the local, national and international communities that want to study at DUT. A true rainbow nation.

Technology: DUT offers students on-line class schedules, on-line registration, on-line student aid applications, and a wireless network on campus. Departments offer programs of study that prepare students to work at the forefront of the knowledge-based economy. One striking piece of evidence of DUT's incorporation of technology into the instructional program is the foremost record of DUTs faculties in offering on-line courses.

Grant and Contract Funding: DUT faculties and staff have achieved considerable success in increasing resources through successful submission of proposals for grant or contract funding.

Weaknesses

State Funding: As noted in the preceding section, state funding is a strength when put in the perspective of the size of the grant that would be required to provide funding equal to the annual state appropriation. However, when compared with the funding levels that other public universities end educational institutions receive, the level of state support for DUT is a weakness. With the limited funding of the average of universities across the country with a similar set of programs, it is difficult for DUT to pay competitive salaries, provide a competitive number of scholarships, keep abreast of technology, adequately fund the library, maintain buildings, etc.

Assets for Recruiting Recent High School Graduates: Recent high school graduates are often eager to step into adulthood by getting away from home when enrolling in University. Recent high school graduates leaving home for the first time, and especially their parents, often desire the convenience and sense of security that goes with living in university student housing on campus. As a commuter campus, DUT throughout its history has not been well-positioned to compete for the best entering student against institutions with abundant student housing and long traditions of student life on campus. DUTs student village which is near completion will assist in attracting better students to the campus. A related weakness is the limited supply of private scholarships to attract entering students and then retain them in subsequent years of study. Most DUT students each year, receive financial aid (state grants and loans and institutional academic scholarships)

Graduation Rate: Of first-time full/part-time entering students at DUT, six years later approximately 25.5 percent of them would graduate. At an institution with substantial part-time enrolment and an average course load of 10.2 credit hours per semester, it is to be expected that a lower percentage of students will graduate in six years as compared with more traditional campuses with much higher percentages of full-time students.

Limited Alumni and Development Programs: Although the alumni office and the development office have both done well with the resources available, the fact is that institutional investment in them has been limited. Accordingly, their activities and successes have also been limited—as measured by frequency of contacts with alumni, number of participants in alumni activities, and the number of donors and levels of donations in the annual giving programs.

Opportunities

Is something a strength or an opportunity? Is it a weakness or a threat? Persons involved in strategic planning—at least of the academic variety—will often debate these two questions and reasonably come to different conclusions. Location, for example, is clearly a great advantage for DUT and might be defined as a strength. But it is an advantage not of the university's own making, so here it is viewed, on balance, as an opportunity.

Location: DUT has a singular advantage among universities in KwaZulu-Natal in its location in the centre of city of Durban. Location gives DUT numerous opportunities to make higher education available to recent high school

graduates and also to many older, place-bound citizens and to the members of the large professional communities that are concentrated in KwaZulu-Natal. The availability of jobs in an urban area draws numerous students, both undergraduate and graduate, to academic programs at DUT. Many persons attracted to the urban area for jobs or other reasons bring with them uncompleted education plans, which is one reason DUT enrols a large number of transfer students.

- Location gives DUT numerous opportunities to leverage its resources and enrich the curriculum and provide students with learning experiences through partnerships with government offices, courts, law firms, non-profit organizations, businesses, and others.
- Location gives DUT numerous opportunities to develop joint programs with other public institutions of higher education, VETs Technical Colleges

The reality is that DUT is located in a great place for building a powerhouse university. EThekwini (Durban) area offers opportunities galore, in number and depth, unmatched elsewhere in the state.

Threats

It requires little imagination to draw up an extensive list of potential developments that might adversely affect an organization's well-being or survival at some point in the future. The focus here is not on the hypothetical but on threats that would be classified as present and active or near-term.

Increased Competition for Students: The expansion in the number of private schools/institutions has brought new students into higher education while the demand for higher education is on the increase. Most of the new private institutions are located in and around DUT have had little adverse impact on the enrolment at DUT

Selected Planning Implications: The university's planning environment is always complex and always changing. In order to serve the public interest to the fullest extent, faculty and administrators must be mindful of opportunities and threats while understanding the institution's strengths and weaknesses.

Here are planning implications of the foregoing discussion of strengths, weaknesses, opportunities, and threats:
- Each strength must be protected and built upon.
- The university needs to redouble its efforts to improve student retention and graduation rates—because of the state interest in more four-year college graduates and because a comparison with peer institutions suggests this institution should do better.
- The university should redouble its own efforts and also work with other universities to develop well-based measures of learning outcomes.
- The university should increase the number of student scholarships and honours courses and programs in order to attract larger numbers of well-prepared entering students.
- The university should focus more attention on opening the door of higher education to foreign students.
- The university should expand cooperative relationships with Technical Colleges to enable both to be more successful in meeting the needs of students and the country.
- The university should recognize and pursue a university interest in the revitalization of the area of the city around the campus.

MEASURING THE KEY ATTRACTIVENESS FACTORS FOR SOUTH AFRICA

The International Institute for Manager Development (IMD) has released its annual Competitiveness Report, ranking 61 countries, including South Africa, according to their ability to effectively compete on a global scale.

In the 2016 iteration, South Africa managed to increase its ranking by one place – though the country remains at the lower-end of the list, out of sync with its population size and economic weight.

The report is based on data from international organizations (IMF, World Bank, etc) as well as private firms – with further information gained from surveys with top executives and managers.

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South Africa was ranked 52nd out of 61 countries, dragged down by its poor performance across 18 indicators where the country was ranked last or second last (60th or 61st). This is compared to the 6 indicators where South Africa ranked first or second.

Notably, when measuring the key attractiveness factors for South Africa – which is based on responses from business leaders – not a single response was given in favour of government, where government competency scored a rating of exactly 0%. According to the report, the country's legal framework (79.2%), levels of corporate governance (68.8%) and cost competitiveness (64.6%) were the most attractive features of the country.

Strengths and weaknesses of South Africa Globally

IMD's analysis found that South Africa is the most affordable country to do business in out of all the countries measured – and the country benefits from having highly developed financial systems.

Across the report's 340 criteria analysed, these are the 6 areas in which South Africa shows the most strength:
1. Cost of living (1st)
2. Secondary school enrolment (1st)
3. Cost of office rent (2nd)
4. Export concentration (2nd)
5. Effective personal income tax (2nd)
6. Stock market capitalization (2nd)

However, on the down side, South Africa's weaknesses cannot be ignored – massive labour and health problems, coupled with high levels of pay disparity, inequality and a poor education system, drag the country down.

These are the 18 areas where South Africa performs the worst:

1. Unemployment rate (61st)	10. Gini coefficient (60th)
2. Relocation threats of production (61st)	11. Immigration laws (60th)
3. Labour relations (61st)	12. Equal opportunity (60th)
4. Life expectancy at birth (61st)	13. Workforce productivity (60th)
5. Health problems (61st)	14. Worker motivation (60th)
6. Youth unemployment (60th)	15. Human development index (60th)
7. Employment (%) (60th)	16. Access to water (60th)
8. Relocation threats of R&D facilities (60th)	17. Educational system (60th)
9. Relocation threats of services (60th)	18. Future energy supply (60th)

From the above it can be seen that the educational in South Africa needs to be uplifted to change the ranking of the country. UoTs have a major role to play in education our current and future leaders.

CONCLUSION

In conclusion this empirical study is necessary to inform both the institution and Industries of the view points on the new UOT curriculum and also enlighten industries of the new focuses in Higher Education in South Africa.

This review of literature has raised a number of concerns, which have relevance to the current study. These include the following:
- Employability skills or generic, core or key skills are high on the skills and education agendas in most developed countries.
- Greater Industry participation with UoTs.
- The development of employability skills in learner workers
- Industry needs highly effective workers in order to cope with the lean staffing and competitive environment of the twenty-first century and this has been a major impetus behind industry involvement.

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- There is some underlying disagreement about the appropriate allocation, between the education sector and employers, of the costs and effort involved in the development of employability skills.
- Some employers have a preference for young workers although such workers may not necessarily have well-developed employability skills.
- Employers have a number of strategies for socialising new staff, although there has been little research into the application of these strategies specifically to learner workers.

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ACRONYMS

CATE	Colleges of Advanced Technical Education
CHE	Council on Higher Education
CPUT	Cape Peninsula University of Technology
CTP	Committee of Technikon Principals
CUT	Cape University of Technology
DHET	Department of Higher Education and Training
DIT	Durban Institute of Technology
DoE	Department of Education
DUT	Durban University of Technology
DVC	Deputy Vice-Chancellor
HEI	Higher Education Institution
HEQC	Higher Education Quality Council
HEQF	Higher Education Qualifications Framework
KZN	KwaZulu-Natal
NCHE	National Commission for Higher Education
NPHE	National Plan for Higher Education
NQF	National Qualifications Framework
NRF	National Research Foundation
NSC	National Senior Certificate
NSFAS	National Student Financial Aid Scheme
RSA	Republic of South Africa
SPSS	Statistical Package for the Social Sciences
STEPS	Strategic Transformation of Education Progress and Structures
UNESCO	United Nations Education University of South Africa
UoT	University of Technology
WIL	Work-Integrated Learning

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Identifying student work skills and personal values for work-integrated learning: A host organisation perspective

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ABSTRACT

There is a wealth of experience and expertise in managing and supervising existing student placements as part of the Work-Integrated Learning experience (WIL). However, to maximise our capacity to address the potential diversity of WIL students, there is a need for greater insight into the key demands and expectations of relevant industry/host organisations. Such knowledge is fundamental to develop and refine existing frameworks for assessing student suitability for placement and employability, which in turn will inform the preparational learning for placement and the student's success in placement. This paper shares and discusses the interim findings from the first stage of an incremental survey conducted with placement host organisations across disciplines in Planning & Sciences, and Social Work & Human Services, in an Australian university. This cross-disciplinary research uses a quantitative data collection method and analysis of preselected work skills and personal value attributes, informed by relevant literature across both discipline domains on tertiary student work placements and fundamental employability facets. Through this approach, the potential and value of cross-disciplinary research, teaching and cooperation is highlighted, concluding that the trend shown in the data points towards an imperative to include a focus on personal values within tertiary education teaching practices.

Keywords: Employability; work skills; personal values; Work-Integrated learning; graduates, soft skills, hard skills

INTRODUCTION

WIL has become an integral and important aspect in tertiary education for a wide range of reasons. One of the many aspects emphasised is, to educate and prepare students for successful integration into employment. With the rising costs in tertiary education, potential students undertake research associated with universities' employability ranking, to decide where best to prioritise their investment. In turn the ranking is also highly instrumental to universities for establishing them in the appropriate education market, in their bid for student numbers.

But what exactly are those required work ready skills? Are those baseline skills for employability success differing depending on the discipline or field of work? Finding answers to those questions can enable tertiary education providers to evaluate current teaching practice in the light of employer's expectations, but also provide greater clarity on the definition of work ready skills.

This research project is designed to investigate diverse industry or host organisation perspectives on the fundamental work skills and personal values desired from tertiary work placement students. The research will directly contribute to the limited existing literature and understandings of the nexus between cognitive (thinking/mental skills/knowledge) and affective (emotion/feeling/ attitude or self) learning domains across different disciplines (based on Bloom's Taxonomy of Learning Domains - 1956).

The results are further intended to inform the development of "best practice" suitability assessment frameworks and curriculum design for preparational learning for diverse work placement opportunities, and subsequent graduate employability. Consistently, in spanning a period of over two years the project facilitates knowledge reiteration based on industry feedback and/or changing demands.

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LITERATURE REVIEW

Over recent years the pool of scholarly literature around Work-Integrated Learning (WIL) is filling up steadily. Depending on academic disciplines and geography WIL is also referred to as practicum, field placement, internship, job shadowing, cooperative education and work experience (Von Treuer, Sturre, Keele, & McLeod, 2010). This article uses the term WIL as the blanket description of the variations in terminology. A wide range of literature discusses necessary core skills required by students for successfully completing their WIL training from the perspective of meeting academic requirements. Here the focus is on the important element of applying appropriate assessment tools (Jackson, 2015; Agllias, 2010) but also how to design curriculum to bridge the theory learning and practice learning nexus through the development of best practice models (Coll et al., 2009). Most of the literature discusses the topic of core skills with the inclusion of a host organisation's or employer's perspective. Here it becomes increasingly apparent how elusive the concept of core skills is. For example, existing models differentiate between disciplinary skills, generic skills but also include elements such as disciplinary content knowledge and workplace awareness (Bennett, N., Dunne, E & Carre, C., 1999). Yorke and Knight (2004) refer to the USEM model, which is an acronym for four inter-related elements of employability, namely: Understanding, Skills, Efficacy beliefs and Metacognition. The USEM model forms part of a large body of research-based scholarly work on employability, but still or because of its complexity these models do not articulate to non-experts in the field, such as students and their parents, what exactly is meant by employability.

Marketplace informed literature, such as available through Career Advise portals and institutions is discussing graduate employability with a reference to required soft skills (Skills, 2011). Balcar (2016) and Hurrell, Scholarios & Thompson (2013) take up the task of discussing their understanding of the soft skills and hard skills debate by connecting increasing focus on the productive potential of soft skills to changes in the labour market. Over the past 25 years the move to a global economy with its increasingly competitive labour market lead to a shift in defining employability from training for a 'job for life' to 'employability for life' as noted by Moreau & Leathwood (2006). Consideration is also required of the impact of a declining manufacturing economy due to automatisation and an ever increasing reliance on service-based occupational structures and expansion in low-level service jobs on the skill sets demanded of employees (Hurrell, Scholarios & Thompson, 2013). Taking into account the Australian Bureau of Statistics (ABS, 2016) findings that the proportion of people studying has increased across most demographics over the last ten years highlights another trend in the changing labour market, which reflects employer's expectations where a degree is now more often a pre-requisite for a job, not representing anything more than a 'threshold to requirement in addition to other evidence of suitability' (Purcell, Morley & Rowley, 2002 as cited in Moreau & Leathwood, 2006, p.308). Such assertion implies an understanding of tertiary education as a domain where so-called hard skills – discipline specific knowledge - are being actively taught and measured, whereas soft skill is a more elusive concept in limited connection with a qualification (Balcar, 2016).

Lloyd and Payne (2009) argue that the relabelling of social competencies that otherwise could be considered as personal attributes, dispositions or behaviour to 'soft skills' bears some very practical and analytical dangers. For example, Payne (2006) argues that there might be great limitations in training 'genuine empathy and compassion' that underlies soft skills as they are understood as 'deeply wired in the brain through a combination of genetic imprinting and primary socialisation' (p.20). Balzar (2016) offers another definition of soft skills 'as learned behaviour based on individual's predisposition' and argues that therefore soft skills are indeed to some extent 'acquired skills' and more than 'psychological traits, preferences, motivation and other predispositions usually called non-cognitive abilities' (Heckman et al., 2006; Heckman and Rubinstein, 2001 as cited in Balcar, 2016, p.454).

Despite their differences, both positions have in common that some form of biological preposition is assumed that allows a person to function better or more effectively in the emotional realm of human interaction. Hong (2016) discusses such observation to ascertain that often 'soft' skills are associated with women, while 'hard' – rational, analytical – skills are to be found in men. Without going any deeper into a discussion around the gendered perception of what is referred to as soft skills or hard skills it is important in so far as to provide an explanation for our conscious decision of refraining from this terminology around soft and hard skill in our survey. This move is further supported by an understanding of the acquisition of skills and values and its resulting attitudes and

behaviours as discussed in Social Work & Human service's relevant literature. With a definition of values as standards of behaviour, this profession's central focus is on making sense of values and ethics and their influence on a person's actions and behaviour (Chenoweth & McAuliffe, 2015). In this context values and the resulting attitudes and behaviours can be seen as socially constructed and therefore changeable. This perception is in so far relevant as it then allows for the conclusion that values, personal or professional, can indeed be taught and therefore grounded in a solid knowledge base otherwise referred to as hard skills.

As employers are in the position to hire or fire it appears highly important to explore their expectations of graduates' work skills and personal values. It appears that not much literature focuses yet on the interrelation between personal values and work skills and its translation into graduates' employability success. In this context personal values, it appears, is a set of 'soft skills' which, if it's addressed at all, is rather taught alongside work skills and academic knowledge, in its extent depending on the discipline, but also on the individual educator. Personal values therefore, can be seen as a set of skills that is to be expected, implied and assumed to be possessed, but not actively taught.

This research project looks at the nexus between skills and values in a broad cross disciplinary context and from a host organisations and industry perspective. The focus is on the host organisations perspective as they are the potential future employer of new graduates.

METHODOLOGY

This is a preliminary, explorative and investigative study with the focus on inclusion of an employer's perspective to fill the gap between tertiary institution's learning outcomes and employer's expectations.

Based on the application and feedback from the previously developed Work Skills Development framework (WSD) (Bandaranaike & Willison, 2010), and internal piloting, the research survey has been designed as an online questionnaire delivered by the Survey Monkey software platform. Specific work skills and personal value attributes have been informed by relevant literature on tertiary student work placements and fundamental employability facets.

Participants have been recruited on the basis of existing and newly established contacts identified as relevant University (sample study) student placement host organisations in the broad areas of Science, Planning and Social Work.

In addition to personal, host organisation and discipline related details, the survey consists primarily of two rank order questions followed by an open ended "other" option which allowed participants to provide alternative suggestions or recommendations. The first question relates to work skill priorities with 14 predefined work skills and the second question considers personal values with 10 predefined personal values to rank according to the participant's priority. The order of options had been randomised for each survey to reduce positional bias. After the initial 6-month period, which concluded in December 2016 the responses received were analysed through the use of Survey Monkey query outputs in the form of weighting scores based on the ranking process.

As the planned time frame for this research project spans over a period of 24 months, the data received was analysed after the first 6 months to discuss preliminary trends. It is hoped with consecutive data analysis in 6-monthly increments to provide further interim and incremental results.

Given the diversity and vast spatial distribution of potential host organisations (within Australia) the online/electronic format was expected to be the most convenient, accessible and suitable for cross-disciplinary data collection and analysis, albeit a paper version of the online survey being available for participants with limited internet access and mailed out on request and data manually entered into survey monkey on return for collation.

PRELIMINARY RESULTS AND DISCUSSION

For the analyses of the received survey data three perspectives have been applied – an overall perspective irrespective of discipline background, then an analysis from the perspective of the discipline of Planning & Sciences

and third the currently available data has been analysed from the perspective of the Discipline of Social Work & Human Services.

The survey asks participants to rate a list of 14 predefined work skills with '1' being the most important work skill in their organisation and '14' the least required work skill. Next, the host organisation rates a list of 10 preselected personal values, with '1' being the most important personal value and '10' being the least important personal value. Each question also provided the participant to elaborate about a work skill or personal value that is of importance to them, in regards to employability, and not been captured as yet in the predefined selection.

Organisations invited to participate in this survey had a university student, from the sample study site, on placement at the time of the survey. The invitation for participation was emailed out to student placement host organisations in August 2016. In total 123 placement organisation had been invited for participation in the survey with 24 responses received, which translates into an overall return rate of just under 20%. Categorisation according to disciplines indicated, a response rate of 33.3% for student placements in Planning & Sciences with 15 host organisations approached and 5 responses received. The return rate from host organisation in the Social Work & Human Services sector stands at just under 18% with 18 responses received from 107 invited organisations.

Work Skills

The preselected work skills given to participants for ranking according to organisation's priority comprised: Identification and use of appropriate resources; Self-management, time management and goal setting; Problem Solving; Teamwork skills; Critical thinking and reflective practice; Context specific knowledge, Professional conduct and work ethic; Communication (listening, verbal/non-verbal, written); Cultural sensitivity and competence; Computer/digital and technical literacy; Interpersonal abilities; Leadership/Management; Lifelong learning; Focus on service-user. The selection of these specific work skills is drawn from the list of expected learning goals attached to course subjects in both disciplines.

Analysing the data across all participating disciplines (see Appendix, Fig.1) Communication, and Professional conduct are ranked highest, followed by Critical Thinking. The lowest ranked work skill across all disciplines is Leadership/management.

Categorising by disciplines show that within the discipline of Planning & Sciences (Fig. 2) the ranking of the two highest prioritised work skills is still the same. A variation of outcomes occurs in the third highest ranked work skills, which is, Self-management, Time management and Goal setting. This may be attributed to the overall type of work, which might be more individualist and project focused as compared to the field of Social Work & Human services delivery where Leadership / Management is ranked the lowest.

The results for the Discipline of Social Work & Human Services (Fig. 3) match with the overall analysis of the work skills appraisal. Critical thinking and reflective thinking is a set of skills extensively taught to students and an integral requirement of the profession itself, and this employer ranking is no surprise. The matching results (Fig. 4) between the Discipline of Social Work & Human Services and the cross discipline results is most likely caused by the numerically higher participation from professionals in the field of Social Work & Human Services.

In overall, the data reflects other research undertaken around the topic of employability skills where communication skills including writing skills and organisational skills have been identified as universally requested work skills (Burning Glass Technologies, 2015; Hansen & Hansen, 2016). It needs to be addressed that from the researcher's perspective the work skill around organisational practice had been grouped under Professional Conduct & Work Ethics. It should be noted that employers listed the following work skills as essential to them and their area of work. These have not been listed in the original work skill list in this research. They are:
- A better understanding of business practices - e.g. letter writing, report development, briefing papers etc.
- Organisation skills
- An interest in working in the sector post-graduation
- Counselling
- Ability to take direction

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- Group work/informal education
- Conflict and Mediation skills

Therefore, the original list needs to be amended to include above facets.

Personal Values

A set of 10 preselected personal values was presented to the survey participants for ranking according to their organisation's priority - Empathy; Positive attitude; Innovation; Honesty/integrity/morality; Dependability/reliability/responsibility; adaptability and flexibility; professionalism; self-confidence; willingness to learn and Initiative/motivation.

The data analyses for both disciplines combined (Fig. 4) shows willingness to learn as the highest ranked personal value, followed by Honesty/Integrity/morality and positive attitude in third place. The personal value of innovation is the least prioritised personal value in this current data analysis.

Analysing the data according to disciplines shows some greater variation than in the previous categories pertaining to work skills. Host organisations in the Disciplines of Science & Planning (Fig. 5) rank dependability/reliability/responsibility in first place, followed by positive attitude and a willingness to learn. The lowest priority was given to the personal value of self-confidence.

In comparison, host organisations in the Discipline of Social Work & Human Services (Fig.6) prioritised the personal value of Willingness to learn in first position, followed by Honesty/Integrity/morality and then Empathy. The lowest priority was given to Innovation. Seeing though that Self-confidence is ranked as the second least required personal value, there appears to be a trend across both disciplines. The differentiation in priorities by disciplines is not surprising given the nature of each discipline.

The provided additional personal value attributes that participants missed from our pre-defined list were Ethical practice and Accountability in the Discipline of Social Work & Human Services. The comment provided from the Discipline of Science & Planning reads as following: "Good Work Ethic - Being prepared to work hard at the start on simple task. To (sic) many students show up thinking that the task they are given are beneath them - rush them and prepare products that is of a very poor standard." These comments again suggest modification to the pre-selected personal values to capture further detail.

The survey results to date show some interesting trends in regards to host organisation's expectations of student's work skills and personal values. Further research is required to capture a more comprehensive picture and to establish if trends can be confirmed at the conclusion of the research project. Either way, the present data can be used to evaluate which of those prioritised work skills and personal values are being currently included in the teaching of placement students.

From the preliminary data it is clearly evident that a close interrelation between preferred work skills and personal values exists as we argue that work skills such as Professional conduct & work ethics and Communication requires a set of personal values identified as Honesty/Integrity/morality supported by a willingness to learn.

CONCLUSION

The introduced methodology and survey framework presents a useful tool which can be easily used in any discipline setting to widen the available research data. It also suggests many potential implications, prospects and avenues for development. Participant's time investment into the survey is minimal with an anticipated 5-10min to complete the survey, which potentially helps to encourage a higher return rate.

The existing data shows consistency in work skills across the researched disciplines, but also implies an early indication that there may be a differentiation in the ranking of personal values depending on discipline background. The limited availability on literature around host organisations or employer's expectations and requirements of specific personal values in their employees suggests a limited recognition of the interrelation between personal values and work skills.

Therefore greater awareness around the importance of personal values and an integration of the same into teaching and placement preparation for students is essential to fill an identified gap. The data received up to this point suggests that an expansion of the quantitative data collection through qualitative research methods could possibly provide some detailed answers to filling this identified research gap. This would allow for an exploration of survey participant's understanding and interpretation of the interrelation between the selected work skills and personal values to explore the assumptions made in this study, that of employer's preferences for core personal values differ according to professional background.

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Parameters of a "good" professional experience: Employer perspective

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ABSTRACT

Historically, researchers have provided a sound understanding of what WIL students expect in a good internship or co-op experience. Less evidence is available on what WIL host organizations believe a good experience should be. This paper brings together two employer studies that address this issue: The University of Waterloo study of 374 direct co-op supervisors and the Collegiate Employment Research Institute at Michigan State University study of 1191 internship/co-op recruiters and managers. Combined evidence illustrates the commitment of these WIL organizations to providing experiences that allow students to learn by gaining mastery of their assignments, make progress toward their career goals and expand their interest. Good WIL experiences also provide opportunity for the creation of mutual benefit between students and their hosts

Keywords: host organizations; beliefs; successful WIL experience

INTRODUCTION

The success of WIL programs depends on satisfying multiple stakeholders. Host organizations are of central concern. They invest significant resources in recruiting, training, and supervising students, and expect benefits in return. Various members of the host organization play important roles in determining the success of the WIL experience. Supervisors, for example, provide students with insight into life as industry professionals (Rowe, Mackaway, & Winchester-Seeto, 2012). To create sustainable WIL partnerships and to prepare students for successful relationships at work, it is important to understand host organization members' experiences and perspectives towards WIL.

Previous research has focused on student perspectives, including what students believe contributes to a high-quality or successful work term (e.g., Drewery et al., 2016; Drewery, Pretti, & Pennaforte, 2015; Hurst, Good, & Gardner, 2012). Less research explores the ways in which members of the host organization come to understand WIL, including for example how they perceive their own roles and the roles of others. One notable exception is provided by Pretti, Drewery, and Nevison (2016). The authors of this study examined host organization supervisors' (*n* = 14) perspectives towards WIL, including perceived challenges and the strategies they use to overcome those challenges. Pretti et al. (2016) found that host organization supervisors differ in their views regarding the student-supervisor relationship. While some supervisors believed their own role to be one of teaching and mentoring and the role of the student to be one of a learner, others revealed a somewhat contractual perspective (i.e., "the student is here to work for the organization").

With Pretti et al. (2016) as a point of departure for the study of host organization members' perspectives, additional research will help to clarify how these important stakeholders perceive their involvement in WIL. As such, the purpose of this study is to examine host organization members' perspectives towards WIL. We focus specifically on two important groups of host organization members: host supervisors and host recruiters. Host supervisors are those who directly oversee WIL student performance in the workplace. They have many important functions, including acting as a career coach and providing insight to workplace culture (Winchesto-Seeto, Rowe, & Mackaway, 2016). Supervisors' perspectives towards aspects of WIL likely guide their expectations and therefore

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their experiences and evaluations. Recruiters, too, are integral to the success of WIL. The ways in which they view WIL guides recruitment goals and decisions. Thus, the perspectives held by these groups have important implications for the recruitment and supervision of WIL students.

PRESENT INVESTIGATION

This study was guided by two key questions. First, we asked *what do host supervisors and recruiters believe students are in the organization "to do"*? In answering this question, we examine two related aspects of students' roles. Based on the work of Pretti et al. (2016), we examined whether host supervisors and recruiters view students primarily as "learners" or as "employees". Pretti et al. (2016) revealed that organizational members may vary in their view of the student along a spectrum from "learner" to "employee". The authors specifically characterized perspectives at the "learner" end of the spectrum as having a focus on student development and the belief that the student is in the organization primarily to learn. At the other end of the spectrum, the "employee" end, organizational members view the student as another worker on the team with accountabilities that need to be achieved. Pretti and her colleagues noted that many host organization members simultaneously view students as both "learners" and "employees". Whether supervisors and recruiters have similar perspectives towards WIL remains unclear. Given the different roles and functions of supervisors and recruiters, we wondered whether the first person students meet – the recruiter – might look at WIL in a similar light as a later person who students meet – the supervisor.

A second aspect of students' roles that has not been explored in the literature involves who ought to benefit from WIL: the student or the organization. Recruitment and supervision of WIL student can derive great benefits (see Braunstein, Takei, Wang, & Loken, 2011) yet are not without costs, such as those associated with onboarding new employees (see Hurst et al., 2012). Given their membership within the organization, it is reasonable to expect that supervisors and recruiters might hold organizational benefits such as increased profits or increased productivity as more important than student benefits such as an opportunity to connect theory and practice. Conversely, supervisors and recruiters might believe that student benefits are most important, perhaps because of an authentic concern for student development or because high- quality experiences are linked with conversion of students into full-time employees (Hurst et al., 2012).

The second question that guides this study is *how do host supervisors and recruiters define successful work terms?* Understanding perspectives towards "success" will help to prepare students for their roles in creating successful WIL experiences. Studies have revealed characteristics of successful work terms from students' perspectives (e.g., Drewery et al., 2015; Hurst et al., 2012) yet related research from host organization members' perspectives is less available. A review of the literature (e.g., Braunstein et al., 2011; Dressler & Keeling, 2011) suggests a number of criteria that supervisors and recruiters might use to define successful work terms. Some of these criteria, such as whether the student learns or develops a strong professional network, are consistent with student-success perspectives. Others, such as whether work that would not have otherwise been completed is accomplished, or whether supervisors directly derive benefits are consistent with (general) organizational-success perspectives or supervisor-success perspectives. It is plausible, for long-term gain reasons, that supervisors and recruiters would place the most importance on student-success factors. Alternatively, supervisors (specifically) and recruiters might primarily value organizational or supervisor success criteria. Understanding the dynamics between these perspectives for host organization members will help to prepare stakeholders to create successful WIL experiences.

METHOD

Data and Participants

Participants were host supervisors in organizations that had recently hired from the University of Waterloo co-op system (*n* = 374) and host recruiters in organizations across the United States surveyed annually by Michigan State University (MSU) (*n* = 1191). Supervisors were invited to complete a 10 minute online questionnaire of their experiences in WIL. Recruiters completed a survey administered by MSU in which the same questions distributed to supervisors was embedded.

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Students' Roles. Two measures of participants' perspectives about students' roles were taken. The first measure tapped whether participants perceived their student to be primarily a student or primarily an employee of the organization. Participants read "I see my student as…" and then responded on a six point semantic differential scale where 1 = an employee first and a student second and 6 = a student first and an employee second. They also read "My [co-op student/intern] is with our organization…" and then responded on a six point semantic differential scale where *1 = to work* and *6 = to learn*. Scores for the two items were combined to form an overall "employee vs. student" measure. Scores ranged from two to 12 such that higher scores represented a perspective that the student is primarily a student (vs. an employee).

The second measure tapped whether participants perceived their student primarily as the generator of value in the WIL experience or as the recipient of value in the WIL experience. Similar to the first measure, participants read three more items and responded on six-point semantic differential scales ("I expect my [WIL] student to…" *1 = give the organization as much as they get back* to *6 = get from the organization more than they give*; "Regarding my role…" *1 = the student is a resource for me to use* to *6 = I am a resource for the student to use*; and "It is more important that…" *1 = my organization benefits* to *6 = the student benefits*). Scores for these three items were combined to form an overall "value generator vs. recipient" measure. Scores ranged from 3 to 18 such that higher scores represent a perspective that the student should receive more value than the organization in the WIL experience.

Successful Work Terms. Participants read 10 statements written to reflect potential indicators of a successful WIL experience from an employer perspective. These statements were written based on earlier interviews with employer representatives (Pretti et al., 2016). Each statement reflects benefits derived from a stakeholder in the WIL experience. Specifically, five statements reflected benefits derived primarily to the student ("The student learns from the experience", "The student is genuinely interested in the work/organization", "The student acquires skills and knowledge that will be beneficial in future work", "The student sees the experience as meaningful", and "The student creates professional networking connections"), three statements reflect benefits derived by the organization ("The company's profit rises due to the student's presence/actions", "The student completes work that would otherwise not be completed", and "The quality of student work is comparable to a full-time employee's output") and two statements reflect benefits derived by the supervisor ("My personal burden of work is lowered", "The student does not need much training"). Participants ranked the importance of each statement in terms of its contribution to a successful work term from 1 = most important to success to 10 = least important to success. Importance scores for "student", "organization", and "supervisor" were obtained by calculating the mean rank of items within each respective group.

RESULTS

Question 1: What Do Host Supervisors and Recruiters Believe Students Are in the Organization "To Do"?

Independent samples t-tests were used to assess whether host recruiters and host supervisors differed in their perspectives about students' roles (i.e., employee vs. student, and value generator vs. recipient). Results suggest that host supervisors (M = 6.97, SD = 2.37) relative to recruiters (M = 6.07, SD = 1.65) see students more so as students, $t(1702) = 8.35$, $p < .001$. Recruiters' scores are near the middle of possible scores, suggesting that they perceive students simultaneously as employees and students. Similarly, supervisors (M = 11.17, SD = 2.76) relative to recruiters (M = 10.41, SD = 1.99) see students more so as recipients of value, $t(1709) = 5.98$, $p < .001$. Scores on this measure were generally "high" (i.e., above the middle of possible scores) suggesting that both recruiters and supervisors see students as the primary beneficiaries of the WIL experience.

We further explored whether scores on two dimensions of hosts' perspectives about students' roles (again, employee vs. student, and value generator vs. recipient) might be used to describe hosts' general perspectives about WIL students. These measures were used in a two-step cluster analysis to determine how many general perspectives there might be and the nature of those perspectives. The analysis was carried out for supervisors and recruiters separately. Results (Table 1) revealed that host supervisors tend to have three distinct perspectives. The

largest group sees students primarily as employees and as recipients of value in the WIL experience. The second largest group sees students as students first and as recipients of value. The final group sees students as employees first and as generators of value. ANOVAs revealed statistically significant differences between groups for each of the two role measures.

TABLE 1. Results of two-step cluster analysis for host supervisors

	Role Measures	
Perspectives (Proportion)	Employee vs. student [*]	Generator vs. recipient [**]
Group 1: Students/recipients (32.1%)	8.62 [c]	14.22 [c]
Group 2: Employees/generators (29.9%)	4.21 [a]	9.24 [a]
Group 3: Employees/recipients (38%)	7.75 [b]	10.11 [b]

Notes: * scores range from 2 to 12 where higher scores represent student more than employee; ** scores range from 3 to 18 where higher scores represent students as recipients of value more than generators of value; subscripts denote statically significant (p < .05) scores within columns (i.e., between perspectives) where a < b < c

TABLE 2. Results of two-step cluster analysis for host recruiters

	Role Measures	
Perspectives (Proportion)	Employee vs. student [*]	Generator vs. recipient [**]
Group 1: Employees/mutual (28.0%)	4.00 [a]	10.82 [b]
Group 2: Employees/recipients (46.1%)	6.90 [b]	11.44 [c]
Group 3: Employees/generators (25.9%)	6.80 [b]	8.06 [a]

Notes: * scores range from 2 to 12 where higher scores represent student more than employee; ** scores range from 3 to 18 where higher scores represent students as recipients of value more than generators of value; subscripts denote statically significant (p < .05) scores within columns (i.e., between perspectives) where a < b < c

The same analysis was conducted for host recruiters (Table 2). Consistent with the supervisors, the largest group saw students as employees first and as recipients of value in the WIL experience. The second largest group saw students very much as employees first and believed that there should be mutual benefit between the organization and student. The final group saw students primarily as employees and as generators of value for the organization.

Question 2: How Do Host Supervisors and Recruiters Define Successful Work Terms?

We next sought to examine how supervisors and recruiters' perspectives towards WIL might be linked with perspectives about "successful" work terms. One-way ANOVAs were conducted independently for the supervisor sample and recruiter sample in which group membership (ascertained from the cluster analysis) was the independent variable, and importance scores for "student", "organization", and "supervisor" were the outcome variables. Results are presented first for supervisors and then for recruiters.

Supervisors. Supervisors' ranking of student, organization, and supervisor benefits differed between groups based on perspectives about students' roles (student benefits: $F_{(2, 373)} = 38.37$, p < .001; organization: $F_{(2, 373)} = 31.76$, p < .001; supervisor: $F_{(2, 373)} = 15.50$, p < .001). Table 3 summarizes the results. Consistently across the groups, student benefits were ranked as being the most important to a successful WIL experience. Organizational benefits were ranked as being more important than supervisor-specific benefits. Despite differences between groups in terms of the importance of each set of benefits, this pattern was consistent across groups.

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TABLE 3. Results of ANOVA comparing mean rankings of success criteria across perspective groups in the supervisor sample

	Mean Ranks		
Perspectives (Proportion)	Student	Supervisor	Organization
Group 1: Employees/mutual (28.0%)	4.23 [a]	8.73 [b]	8.58 [c]
Group 2: Employees/recipients (46.1%)	5.67 [c]	7.17 [a]	6.90 [a]
Group 3: Employees/generators (25.9%)	4.97 [b]	7.74 [a]	7.71 [b]

Notes. Subscripts denote statically significant ($p < .05$) scores within columns (i.e., between perspectives) where a < b < c

Recruiters. Similarly, there were significant differences between groups for all three sets of benefits in the recruiter sample (student benefits: $F_{(2, 1190)} = 38.45$, $p < .001$; organization: $F_{(2, 1190)} = 29.41$, $p < .001$; supervisor: $F_{(2, 1190)} = 15.32$, $p < .001$). As Table 4 suggests, recruiters, regardless of their perspective, tending to rank student benefits as being the most important to a successful WIL experience, and ranked supervisor benefits as being more important that organizational benefits.

TABLE 4. Results of ANOVA comparing mean rankings of success criteria across perspective groups in the recruiter sample

	Mean Ranks		
Perspectives (Proportion)	Student	Supervisor	Organization
Group 1: Students/recipients (32.1%)	4.47 [a]	8.42 [b]	8.44 [b]
Group 2: Employees/generators (29.9%)	4.37 [a]	8.46 [b]	8.68 [b]
Group 3: Employees/recipients (38%)	5.17 [b]	7.39 [a]	7.80 [a]

Notes. Subscripts denote statically significant ($p < .05$) scores within columns (i.e., between perspectives) where a < b < c

DISCUSSION

The success of WIL programs involves considering the perspectives and needs of the key members of host organizations. However, the views these individuals have towards WIL are under-represented in the literature. Previous research (e.g., Drewery et al., 2015) has instead focused primarily on students' perspectives regarding what makes for a "good" WIL experience. As such, we sought to explore two key questions: what do supervisors and recruiters believe students are "to do" in the organization. We wondered whether these two groups of important organizational stakeholders would feel as though WIL students were primarily students or primarily employees. Although scores are relatively neutral, results suggest that organizational members see students as employees first. This could mean that organizational stakeholders believe that their WIL students are fully integrated and temporary members of the organization. We also wondered whether supervisors and recruiters would report that students (versus the organization) should be the primary recipient of value generated by the WIL experience. Again, scores were rather neutral, suggesting the host organizational members believe that the co-creation of value between WIL students and their hosts is key to the success of WIL experiences. This might suggest that host organizational members buy-in to the notion of WIL as a pedagogical model and a tool for bringing talented individuals into the organization. Indeed, they recognize that students can be in the organization simultaneously to learn and to provide benefit to the organization.

Finally, our results demonstrate that host organization members' perspectives towards WIL are linked with their criteria for successful work terms. Participants consistently ranked student-oriented benefits, such as students' learning outcomes, as being the most important criteria for a successful work term. Supervisors reported supervisor benefits, such as the student accomplishing tasks without the need for help from the supervisor, as being the second-most important set of success criteria (ahead of organization benefits), while recruiters reported

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organization benefits, such as the company's profits rising due to student participant, as being second-most important. This is perhaps unsurprising given that supervisors are likely to consider the inputs of time and energy they invest in students against the benefits they derive, and more than recruiters will prefer students who are ready to make an immediate impact. This provides insight into the importance of preparing students to transition into the workplace seamlessly in order to satisfy the needs of supervisors.

Whether participants viewed students primarily as "learners" or employees, and whether they saw students as beneficiaries or benefactors, did not have a large impact on opinions of "successful" work terms. In general, supervisors and recruiters reported that criteria indicative of student success, such as the student building new skills and having a meaningful experience, were the primary indicators of a successful work term. These results further suggest that host organization members understand WIL as a pedagogical model and that they are committed to providing experiences that allow students to learn by gaining mastery of their assignments, make progress toward their career goals and expand their interest.

CONCLUSIONS AND FUTURE DIRECTIONS

The results presented in this study help to reveal a picture about host organization members' perspectives towards WIL. Such a picture may inform efforts to support supervisors, recruiters, and WIL students alike. Successful work terms are those in which both students and organizations benefit. To maximize mutual benefit, recruiters might seek students based on students' personal and professional interests above and beyond skill sets. Those students who are most interested in the work for intrinsic reasons may be better positioned to make a positive impact (Drewery, Pretti, & Barclay, 2016). WIL practitioners might educate students regarding host organization members' perspectives to better understand the needs of recruiters and supervisors. Doing so will better prepare students for their interactions with the organization during recruitment (e.g., in interviews) and during the work term.

This study might inform a number of directions for future research. We focused only on two forms of in only two countries. Given the pervasive use of WIL across the globe, it seems important to replicate this study in other contexts. Future studies should also consider factors that are associated with host organization members' perspectives. This line of research could include an exploration of both antecedents and consequences of these perspectives. Why do supervisors and HR managers feel the way they do about WIL? One aspect we suspect may be important involves remunerating students. Virtually all supervisors in our sample supervised paid co-op students, and roughly 80% of recruiters recruited paid interns. Might paying students influence definitions of success and perceptions of students' roles in achieving that success? Alternatively, how might these perspectives be associated with students' experiences? It may be that the perspectives held by recruiters and supervisors shape interactions with students, such as during interviewers or during the work term. Answers to these and related questions might inform a larger conversation about supervisors' influences on students' experiences in WIL.

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A flipped work-integrated learning model for information technology postgraduate students: Bringing industry into the University

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ABSTRACT

The introduction of WIL to Monash University, Faculty of IT's postgraduate programs needed a robust, inclusive, easily repeatable and scalable model which catered for a significant number of international students in a cohort of approx. 200 students, with ever-increasing student enrolments. A one-semester capstone WIL program was designed to deliver confident, resilient students with an entrepreneurial spirit, prepared not just for that first job, but for a working life that we could not begin to imagine. With innovation and community service at the heart of the program, the students with guidance from industry and academic mentors, develop IT applications to address societal issues, using publicly available 'big data' to drive their thinking. Students work in teams in authentic studio learning spaces - designed to facilitate group work, peer learning and mentoring. Central to this model is industry engagement – organisations sponsor individual studios, assigning expert industry mentors, who visit their studio teams regularly, enhancing the program's inherently practical focus, by contributing to the development of IT skills and student employability. The industry mentors play a key role coaching, questioning and providing feedback on process and product. Teams also visit their sponsor's organisation and engage in a range of experiences such as immersion days, review sessions, organisation tours and presentations to senior management. This paper describes the journey of this successful program, discussing the ideas trialled, the many lessons learned along the way, the benefits to both students and industry, and identifies the factors critical to the success of the program.

INTRODUCTION

In 2014, the Faculty of Information Technology (FIT) at Monash University in Melbourne, Australia set out to introduce work-integrated learning (WIL) for the students in its postgraduate IT degrees. Several factors drove this initiative: student feedback from evaluation of our existing postgraduate courses and feedback from our international recruitment team highlighted the strong demand for a work experience component in the masters programs; the academic research literature highlighted the importance and value of WIL as a means of preparing students for future employment in an increasingly competitive labour market (Lawson, 2012; Nagarajan, 2012); and FIT's success in delivering WIL programs in its undergraduate degrees made the Faculty's leadership team keen to try to replicate it at the postgraduate level.

The new WIL program needed to be robust, inclusive, easily repeatable and scalable to cater for students (mainly international) from a diverse range of IT programs, with ever-increasing enrolments. The nature of our requirements presented difficulties in finding a WIL model that could be used as a template for the program. With inspiration from many of the WIL models from our own backyard and globally, we flipped our work experience thinking and created a model that brought industry into the university rather than sending students out to industry. A one-semester capstone WIL program was designed to deliver confident, resilient students with an entrepreneurial spirit, prepared not just for that first job, but for a working life that we could not begin to imagine. Drawing on the experience of four iterations over two years, this paper outlines the program's journey, detailing the challenges, the lessons learnt, the benefits to both students and industry, and the critical success factors.

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PROGRAM AIMS

From the inception of the project to develop a postgraduate WIL program, a number of key objectives were identified which the program needed to satisfy.

- *Inclusiveness:* To accommodate the full spectrum of abilities present in a student cohort which included a high percentage (up to 70%) of international students.
- *Scalability:* To have the capacity to easily scale up or down to cater for changes in student enrolments.
- *Sustainability:* To fit within the constraints of the Faculty's staff profile and budget, and had to be able to be repeated every semester.
- *Duration:* To fit within a single semester of study in which it could act as a capstone unit for a coursework masters program.
- *Real world relevance:* To offer an authentic, practical experience based on current industry practice and technologies.
- *Industry practitioner engagement:* To enable meaningful engagement between industry practitioners and the students and their work.
- *Professional skills enhancement:* To facilitate multiple opportunities for students to develop highly sought after professional skills in key areas as identified by the Monash Careers Service Student Futures Platform (Monash Careers, 2013): such as planning and organization, teamwork, intercultural competence, problem identification and solution, use of tools and technology and professionalism.
- *Stimulation:* To offer students an experience which would challenge and extend them and encourage them to develop and apply skills in higher-level thinking.
- *Student attitudes:* To meet university objectives for developing student attitudes in a number of key areas:
    - o To adopt an innovative and entrepreneurial mindset;
    - o To become independent, lifelong learners;
    - o To be able to apply the knowledge and skills learned elsewhere in their course and learn new skills as they did so;
    - o To develop a service mentality and a willingness to help their community;
    - o To engage in reflective practice as part of a continuous improvement cycle.

There was nothing particularly unusual about these, which are common to many WIL programs (see for example HEQCO, 2016, Patrick et al., 2008). The challenge was to create a program which could be tailored to meet the specific requirements and circumstances of the university, the faculty, our academic programs and the students.

LEARNING FROM PREVIOUS WIL EXPERIENCES

Our approach to deciding how to do this was heavily influenced by our previous experiences with WIL programs. FIT at Monash has had a long history of operating WIL programs in various forms within its undergraduate degrees.

The first of these programs which influenced our thinking was our highly-regarded small-business undergraduate capstone program. In this program students work in teams of 4-5 developing an IT system for business clients sourced from partnerships with local government. A detailed outline of the program can be found in Edwards et al., 2015, in which it is presented as an exemplar of this approach to WIL.

Successful as it has been at undergraduate level, there were a number of issues which made this approach unsuitable for our postgraduate degrees. The first of these related simply to practical operational problems. With postgraduate student numbers currently approaching 200 per semester and growing rapidly, the need to run the program twice a year would mean sourcing about 100 small business clients every year - a daunting, resource-intensive task, that would not meet our requirements for scalability, sustainability and easy repeatability. Further, the undergraduate program was very structured, bound by the need to satisfy strict client needs, with little independence given to the students. This did not accord with the Addendum to the Australian Qualifications Framework which specifies that graduates at a masters level are required "to have expert, specialised cognitive and

technical skills in a body of knowledge or practice to independently analyse critically, reflect on and synthesise complex information, problems, concepts and theories" (Council A.Q.F., 2013, p. 5). We felt that students moving from our undergraduate to our postgraduate programs would expect an industry engagement program that extended them and offered different challenges to those encountered at undergraduate level. The diversity of the student cohort was also seen as a major problem. English proficiency of international students is the most common barrier cited by industry to engaging international students in a WIL experience. (Gribble et al., 2014) The undergraduate program had already experienced this thorny issue, which was addressed successfully with purposeful group formation which ensured a suitable mix of domestic and international students in teams. However, this solution would not work with the predominantly international population of our postgraduate programs.

An alternative WIL model was the Faculty's successful industry-based learning (IBL) program. It is a selective-entry program which FIT has operated successfully since 1988, in which students undertake 6-month long placements with one of our industry partners. It currently places approximately 140 students each year with our 35 partner companies (typically large companies, such as banks, consulting companies, major utility providers and the like). Despite its success, its selective entry feature predicated on academic excellence made it unsuitable for the postgraduate WIL program which must be completed by all non-research postgraduate students. Further, industry focused heavily on communication skills during the selection interviews, and this was likely to be problematic for many of the international students who were still developing their English language skills. And like the capstone program it would be exceptionally challenging to place 200 students every semester.

Our experience with these two undergraduate WIL models provided us with valuable general knowledge and understanding of how WIL can work, as well as giving us specific lessons in things such as a framework for the development of IT systems, the use of studio learning spaces and academic mentors, and a tried and tested assessment structure. We also knew that fundamental to the success of the undergraduate programs was the strong working relationship with industry. This good-will with existing industry partners could be harvested to bring industry elements into the postgraduate WIL program – the question was 'How?'

THE PROGRAM

Some of the inspiration for the key decision on the program design came from the research literature. A number of the WIL models described in the literature highlighted the potential value of the use of mentoring for international students (Kay et al., 2016). Discussions with some of our industry mentors indicated that they were enthusiastic about the idea of a mentoring program which would enable them to pass on their knowledge and experience to our students. This provided the seed for the idea of flipping industry engagement – inviting industry to come to us, rather than having the students go out to industry. By combining this idea with many elements from our own WIL models, a one-semester (12 week), double-subject capstone program with flipped industry engagement was designed.

Students in the program are allocated to teams of 4-5 members, and five teams are allocated to a studio learning space - a modern learning environment designed to facilitate group work, peer learning and mentoring, where the focus is on the student rather than the teacher. Guided by industry and academic mentors, the students develop IT applications to address societal issues or opportunities, using publicly available 'big data' to drive their thinking. The inspiration for the use of big data came from hackathons which industry are using more frequently to drive innovation in their organisations. The unstructured data sets encourage students to develop an entrepreneurial mindset as they grapple with making something of value out of 'nothing'. They are challenged to define their own scope, without a clearly presented problem/opportunity space. The teams critically analyse multiple data sets, extracting knowledge and insights from the data, and thinking innovatively to identify real-life problems and/or hidden opportunities. The end goal is the identification/definition of problem/opportunity, and the development of a complete IT solution in response to it, to be completed and fully operational by the end of the semester.

To ensure IT currency, students develop their systems using the agile development philosophy which aims to deliver working functionality in 2 week blocks. The process involves continual review and reflection, developing

students' ability to evaluate and respond flexibly to unexpected events. They learn to embrace change, and most importantly, learn how to learn (essential for an IT professional), as their industry mentor feedback often results in quite dramatic changes to their systems. In just one semester, they wrestle with excitement and intense pressure as they work in a landscape with no boundaries. They reflect on and evaluate the underlying principles of their approach, and focus on the importance of stakeholders for successful project delivery. At the end of the semester, there is a public Expo at which students demonstrate their final products to an invited audience from within the university and from industry and government. These participants have shown a keen interest in the applications produced, and some students have received employment offers the Expo.

In transitioning from 'student' practice to professional practice, the students learn the importance of discernment and judgment in effective communication to all stakeholders/audiences and learn to operate successfully as an effective team member in a multicultural setting. Weekly, they close the learning loop, evaluating, assessing and communicating both personal and team progress, engaging in meaningful reflective practice. In doing so, they are pushed beyond the comfort of their discipline boundaries and current IT knowledge, as they not only practise their craft in an industry setting, but also develop some of the sense of community service we strive to achieve in the program.

Teamwork is essential for career success in most disciplines, and this is especially true of IT (Nagarajan, 2012; Fleischmann & Ward, 2014). While the students are regularly required to work in teams on individual assignments throughout their course, they have no experience working with a team over an extended period of time. They have not had to deal with emerging problems over time which have to be resolved to achieve success. The program gives them this opportunity. To help the teams succeed, they are actively formed based on a variety of factors for example, work style (based on DISC profiling), discipline stream, academic performance, skill set, gender, country of birth and time spent in Australia. The aim in team formation is to create a team environment that engenders success, improves productivity, enhances peer learning and helps develop intercultural communication and respect. The postgraduate students come from a wide spectrum of cultural backgrounds, IT disciplines and academic capabilities, and are specialising in degrees across a variety of different IT disciplines - business information systems, information technology (with various majors), data science, networking and security. While this is not truly multi-disciplinary in the sense described by Wilson (2015) or Fleischmann & Ward (2014), it nevertheless gives students a chance to appreciate the value of taking multiple different perspectives to a problem space. They learn to appreciate and respect differences and adapt to different cultures, aptitudes, behaviours and working styles. Collegiality rather than competition is emphasized, with the aim of achieving positive outcomes for all stakeholders.

The program has run four times since its inception. The initial implementation was run as a pilot, with 25 students in two studios with two industry sponsors. This was then scaled up with close to 200 students in its latest iteration. The basic structure of the program has remained the same, but minor incremental modifications and improvements have been made with each iteration. Two lead academic mentors organise and manage the program, assisted by two academic tutor mentors per studio to guide the learning. Students meet in their studios for 3-hour mentoring sessions, twice a week for 12 weeks. Their academic tutor mentors are with them at every session, while their industry mentors attend every fortnight. The whole student cohort attends 2 weekly seminars which are designed to set the scene for upcoming activities, reflect on issues and revise key content relevant to the stage of their system development. The seminars are facilitated by the lead academics and industry presenters. This structure has made the program scalable and resource friendly as the main staffing resource are tutors, and only 8 organisations are needed to provide the industry mentors to support the eight studios.

The industry mentors are central to the success of the program. Our partner organisations each sponsor a studio of five teams, and provide a contact person to manage their engagement, plus at least two (often four or more) expert, enthusiastic mentors who visit the studios every fortnight for 3 hour mentoring sessions. We had initially hoped that the same mentors would attend regularly, however this responsibility was often too great an imposition. Together with our partners we conceived a realistic, flexible model where different mentors could attend, sharing the workload and ensuring continuity through sharing information via our e-portfolio (described below). It was

interesting to see that many mentors could not resist returning to see first-hand the difference they make, and the progress of their teams.

The mentors represent the spectrum of IT capability from CIOs to programmers, and provide students with varied industry perspectives. They give advice and support on technical, development, management and collaboration issues, and provide feedback and ideas on the artefacts being developed. Whilst they are keen cheerleaders providing positive reinforcement, they also play the role of devil's advocate, questioning and challenging teams' decisions, and encouraging students to reflect on the consequences of their actions.

Industry involvement has continued to evolve over the life of the program with each new industry partner offering high-value variations to the model which are then shared amongst partners. Teams are invited to visit their sponsor organisations and engage in a range of experiences, opening their eyes to the world of work. Examples include: an immersion experience where the organisation's studio teams spend a day in the organisation, visited by many different staff members each sharing their industry experience and giving students an invaluable window to possible future career paths; a presentation to the organisation's senior management providing excellent confidence-building experience and exposure; a bird's eye view of their systems being used in the User Experience lab of an organisation; and post implementation reviews at the organisation (an idea which started at one organisation and has now become the norm in the program).

We have been gratified at the enthusiasm that industry partners have for the program. Our other WIL collaborations with industry partners offer them defined, tangible benefits such as student placements and system products, which are often used to justify the engagement. Our challenge with the postgraduate WIL program was to entice industry to give many hours of their time when there were no obvious tangible benefits on offer. Our approach has been based partly on appealing to their sense of corporate service responsibility and partly on highlighting the intangible benefits which may not be immediately apparent in the financial bottom line. To date this approach has been successful, with many industry partners having participated in every iteration of the program. Efforts have been made to make engagement as easy as possible and reduce the impost on the industry mentors' time. A technology-enabled communication model via a shared e-portfolio, gives mentors access to the progress and activities of their teams, and is a repository for key discussion points, new ideas, problems, etc. It also helps ensures continuity. Session guidelines are emailed to mentors for perusal before each session, and a pre-session briefing ensures that the mentors know what to expect from the team during that session, and highlights ways they can engage. At the end of mentoring sessions, the mentors meet with Monash academics to debrief and provide feedback about the students and the program.

The program has been very positively received by the students, industry and the University. Examples of student feedback can be seen at http://www.monash.edu/it/future-students/industry-experience/postgraduate-industry-experience-projects while some of our industry partners have described their mentoring experience at http://www.monash.edu/it/future-students/industry-experience/postgraduate-industry-experience-projects

The University is funding a grant to share our practice with other Monash faculties with a view to adapting the model to suit other discipline contexts.

LESSONS LEARNED AND CRITICAL SUCCESS FACTORS

There have been many lessons learned in the development and implementation of this program, with the following being the most critical.

Selecting and Adapting the WIL Model:

As the research literature has highlighted (for example, Rowe et al., 2012a; Edwards et al., 2015) there is a wide range of possible approaches which can be taken to WIL and there are many examples of successful models for WIL programs (Patrick et al, 2008). It is tempting to try to save time and effort by simply selecting one of these models 'off-the-shelf' and trying to 'shoe-horn' your program to fit it. On the basis of our experience this is unlikely to be successful. The set of circumstances which apply to any given academic program are unique to it, and the

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kind of WIL model which suits needs to be chosen accordingly. It is vital first to consider a range of possible approaches in order to find the basic WIL model that best fits your parameters, and then to adapt that model as necessary to suit your requirements.

Sourcing Suitable Staff Resources

Our experiences support the findings of previous studies (e.g., Rowe et al., 2014a; Rowe et al, 2014b) that managing and teaching into WIL programs is intense and requires a higher staff workload than 'normal' teaching units. It also requires a broader skill set from the teaching staff (Rowe et al., 2012b). The staff team members must be committed to the ideals of the program, and together the teaching team must cover the breadth of knowledge required for the discipline specific capstone. Exemplary planning and organisation skills are required to effectively manage the program as with the short duration there is no down time. Excellent communication skills and capacity for pastoral care are a must for dealing with highly stressed students, working under pressure throughout the semester. It is also vitally important to be able to professionally present the program to industry, understanding and responding to the needs of each unique industry partner, not dealing with them as an amorphous group.

Supportive Senior Leadership

The special requirements of a WIL program make strong support from senior leadership essential. There are two key practical aspects to this support. Firstly, they must be willing to provide the additional resources which the program needs. We estimate that the postgraduate WIL program costs approximately 50% more than an equivalent 'normal' Monash teaching unit. Without recognition of the extra staff workloads imposed by the program, the burden on teaching staff would become unsustainable. Secondly, management must be willing to accept the need to employ teaching and support staff who have the range of specialist skills and industry knowledge required by the program. These skills are not necessarily the same as those typically found in academic staff in a research-intensive university. Specialist staff with an industry practice focus, who do not fit into the standard academic mould, may need to be employed to manage and work in the program.

Active Industry Engagement

The role of the industry partners as involved and active participants is vital to the success of the program. Our agile model of continuous improvement, where we speak to our industry partners at every visit as well as at a major review at the end of semester ensures that the program is constantly evolving to meet all stakeholders needs. Industry partners give us feedback about what works for them, what works for the students, and importantly they see benefits for themselves. While they are excited to be guiding the next generation of IT professionals and playing a role in curriculum development, they have found it personally rewarding to make a meaningful social contribution to the broader community through the applications being developed, and are often surprised at the professional development opportunities the mentoring presents them. It has also had other spin-off benefits for the university. The regular presence of 30+ industry mentors at our Faculty every fortnight has led to multiple university collaborations outside the program – including guest lectures, curriculum advice, workshops and research projects.

Balancing Freedom and Control

Although the program design seeks to empower the students and encourage them to innovate and learn to become independent learners, we found that initially most students lacked the necessary maturity and capacity for self-management, and the confidence that they could achieve the required outcomes in the time available. We found it necessary to provide them with more structure and guidance in the early stages of the program until they had begun to develop their confidence and skills. For example, our initial program design gave the students the freedom and responsibility to choose their project theme on their own, but they tended to flounder and take a long time to settle on a problem/opportunity that they could address. We had to adapt our approach to provide more direction by suggesting broad themes to help guide their thinking.

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CONCLUSION

Fundamental to our new WIL postgraduate program is a flipped way of collaborating with industry, a way of sustainably providing a large number of students (many international) an industry based experience. For decades, work-integrated learning models have focused on internships, capstone projects providing services for business and mentoring relationships with industry mentors often for a lucky, few students. Our program model will lead to extending WIL to many more students, providing a pedagogical framework which encourages students to bring together what they had previously learned, and encourages them to develop skills to pick up new knowledge and skills independently - essential for a career in IT. In addition, the program creates an environment where students enhance their employability skills essential for career success, and actively engages industry in influencing the next generation of IT professionals.

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Career direction or re-direction: The impact of work-integrated learning on exercise and sports science students

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ABSTRACT

Exercise and sports science (E&SS) is an umbrella term that encompasses a range of career outcomes including; strength and conditioning, health promotion and exercise rehabilitation. Universities delivering E&SS programs provide work-integrated learning (WIL) opportunities to enable students to integrate theoretical knowledge into the workplace and assist students to make decisions about their future careers. Research in other disciplines indicates influential relationships exist between WIL and career choice. The aim of this study was to determine the influence of WIL experiences on the future career choice of E&SS students and to identify the reasons students would or would not remain at the WIL agency for future employment. An online survey was distributed to final year E&SS students at Federation University Australia who were completing their 80-hour WIL placement. The survey explored WIL experiences and the impact on career aspirations (*n*=20). Chi-squared analysis showed positive WIL experiences significantly influenced a student to pursue a career in the same field (p=0.049) with WIL agencies playing a leading role in providing an inspiring and supportive atmosphere. However, negative experiences did not discourage students from choosing a career in the same field (p=0.093). Reasons for not pursuing employment within the field were lack of interest in the work and lack of full-time employment. These findings suggest that E&SS students should not be deterred when experiencing a negative WIL placement. Rather, students should use all WIL experiences to assist with decisions on subject choice, future WIL placements and, more importantly, future career options.

Keywords: Work-integrated learning, career choice, exercise & sports science, placement

INTRDOUCTION

The exercise and sports science (E&SS) discipline encompasses a variety of career outcomes. According to the governing body Exercise and Sports Science Australia (ESSA), these may include sports science, coaching and development, strength and conditioning or corporate health (ESSA, 2016a), with work environments comprising sporting academies, sports clubs or health clinics (York, Gastin & Dawson, 2014). Due to the broad nature of the E&SS discipline, higher education (HE) providers involved in the delivery of such programs must provide a range of theoretical information and experiences for students to match such a variety in career outcomes. One method to achieve such a variety in experiences during HE is through the use of work-integrated learning (WIL).

Work-integrated learning is a compulsory aspect for HE providers of accredited E&SS programs (ESSA, 2016b). Work-integrated learning allows undergraduate students to gain practical experiences applying, advancing and consolidating theoretical knowledge learnt within the HE classroom in a workplace setting (Huq & Gilbert, 2013; Lester & Costley, 2010, Patrick et al., 2008). While under the guidance of a supervisor, WIL provides an opportunity for students to experience a variety of agencies within the E&SS discipline (Fleming & Ferkins, 2006; Tinning, Jenkins, Collins, Rossi & Brancato, 2012; Vågstøl & Skøien, 2011). Earlier research suggests that many HE students do not actively reflect on their future careers until graduation (Lau & Pang, 1995; Perrone & Vickers, 2003). Within the E&SS discipline, research also indicates that E&SS students may not be fully aware of the roles that are available in the industry (York et al., 2014). Given this lack of career reflection, and the broad variety of careers available in E&SS, WIL is an opportunity for HE students to use their experiences to assist them to identify their preferred

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future career choice (Dressler & Keeling, 2011; Fleming & Ferkins, 2006). Previous research in other allied health disciplines, including nursing and occupational therapy (OT), have indicated that positive and negative WIL experiences do impact the future career choice of their students (Boyd-Turner, Bell & Russell, 2015; Chiang et al., 2014; Crowe & Mackenzie, 2002; Keller & Wilson, 2011).

POSITIVE INFLUENCES OF WIL ON CAREER CHOICE

Past research has consistently identified that WIL supervisors play a major role in the future career choice of students (Boyd-Turner et al, 2015; Chiang et al., 2014; Crowe & Mackenzie, 2002; Keller & Wilson, 2011; McCall, Palermo & Wray, 2009). A supervisor who was approachable and reported as having a positive attitude, were key reasons that influenced a WIL student to choose a career path within the same sub-discipline as that of their WIL placement (Boyd-Turner et al., 2015; Chiang et al., 2014; Crowe & Mackenzie, 2002; Keller & Wilson, 2011). Furthermore, a WIL placement where the supervisor was available and able to support students consistently throughout was considered a positive experience, and therefore a positive influence, on future career choice (Boyd-Turner et al., 2015; McCall et al., 2009). Considering that E&SS students have multiple WIL placements and supervisors throughout their undergraduate program, supervisors may also significantly influence the future career choice of graduates.

The surrounding atmosphere and working environment of the WIL agency also plays a role in creating a positive experience for students. Productive staff interactions, clear communication amongst staff and demonstrated team spirit were considered key positive experiences that encouraged a student to remain within the agency for future employment (Chiang et al., 2014; Keller & Wilson, 2011).

Exposure to practice areas within WIL also directed students to their chosen career path. Crowe and Mackenzie (2002) and, more recently, Bennett and Hartberg (2007) identified that students who were exposed to specific practice areas within OT and physiotherapy respectively, were more likely to pursue that area of practice in the future. Taking into account the broad nature of the E&SS discipline, HE providers must not underestimate the influence of exposure to many areas across E&SS, when designing WIL courses.

NEGATIVE INFLUENCES OF WIL ON CAREER CHOICE

Conversely, there is evidence to suggest that a negative experience can have the reverse effect and discourage the student from seeking employment within the specific discipline. The most common negative WIL experience was linked to the supervisor and fellow WIL agency staff. A supervisor who was not engaged (Crowe & Makenzie, 2002) and staff who displayed a negative attitude towards their working environment (Boyd-Turner et al., 2016) were considered negative experiences by students. Keller and Wilson (2011) found that a lack of interpersonal skills of the supervisor was deemed a negative experience, potentially influencing the enjoyment of the placement and therefore future career direction. In view of the impact a negative WIL experience had on OT (Crowe & Makenzie, 2002) and nursing students (Boyd-Turner et al., 2016) and their future career, a negative WIL experience may redirect an E&SS student from following that same career path.

Tinning et al. (2012) indicated that prior to 2012, minimal research had been conducted in the area of WIL and the impact that WIL courses may have on E&SS students. A 2016 online database search using key words, including 'work-integrated learning' and 'exercise and sports science,' confirmed that very few studies have been completed on WIL within E&SS programs. Furthermore, no research has been identified within the E&SS discipline that focuses on the career direction, or redirection, of HE students following a WIL experience.

AIMS

The study aims were to explore the ideas and concepts of WIL experiences from a student perspective to determine:
- What makes a WIL experience positive,
- What makes a WIL experience negative,
- The influence a positive or negative WIL experience has on the future career choice of E&SS students.

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METHOD

Theoretical Perspective

Taking into account that each E&SS student will be exposed to a number of different WIL placements and their learning and experiences will differ, Illeris' Learning Theory, developed in 2002, provides a conceptual lens through which to view this study. Illeris' Learning Theory evolved from a constructivist perspective and determined that learning occurs on an individual level due to unique, past life experiences (Illeris, 2003). Illeris' Learning Theory depicts that learning occurs through the interaction between the learner and their surrounding environment (Illeris, 2003). Emotional, social and motivational experiences also impact significantly on the learner, as does the cognitive experience (Illeris, 2003). Each student will therefore view their WIL experience differently due to the interaction between their own past experiences and current social, emotional and cognitive nature. Illeris' Learning Theory captures these unique experiences and assists in explaining the impact of a WIL experience on an individual, E&SS student.

Survey Development

Due to the lack of research available on the impact of WIL experiences on E&SS career choice, Keller and Wilson's (2011) OT study was used to guide the questions for this study. Modifications were made to the survey to suit the E&SS cohort including naming the final survey the "Professional Practice Experience Survey," or the PPES. Further demographic questions and positive and negative WIL experiences that impacted future career decisions were also included.

Using LimeSurvey 2.00+ (LimeSurvey, 2015), a pilot survey was conducted with a fourth year Graduate Diploma of Clinical Exercise Physiology student cohort (*n* = 19) from Federation University Australia. This cohort was selected as they had most recently completed the undergraduate E&SS WIL placement course and had a strong understanding of the course requirements, enabling the pilot survey participants to answer with current knowledge and accuracy. The pilot survey responses were reviewed to ensure the survey was "user friendly," and confirm robust statistical analysis processes with a statistician. In response to the pilot survey responses and feedback, several minor modifications were made and the PPES was finalized for use (Appendix 1). The results from the pilot survey were not included in the final reported research data for this study.

The final PPES comprised of seven demographic questions, including one question to determine participant eligibility and four open ended questions. The open ended questions explored participant responses about individual WIL experiences and the impact on future career choice. One 5-point Likert scale question was used to measure the strength of relationship between the WIL experience and future career choice.

Participant Recruitment

Following Human Research Ethics Committee approval (A13-108), participant recruitment was directed at the final year E&SS student cohort at Federation University Australia. All third year students (*N* = 80) enrolled in the WIL course were invited to participate via an email disseminated by an independent senior researcher. At the time of the research, the independent senior researcher was not teaching or responsible for any associated grading of the invited participants, ensuring a dependent relationship between the researcher and the participants did not exist.

The participants were targeted as a sample of convenience due to their current enrolment in the WIL course which required students to complete a minimum of 150 WIL hours during their enrolment, including an 80 hour major WIL placement. Eligibility was determined by participants needing to have already completed, or be in the process of completing, their 80 hour major WIL placement within the E&SS industry. This inclusion criteria resulted in one participant being ineligible for participation in the study.

Timeline of Survey

The PPES was open for a period of eight weeks. All participants were emailed an invitation to participate in the study and were provided with instructions on how to access the PPES via a LimeSurvey 2.00+ (LimeSurvey, 2015) hyperlink. The plain language information statement outlined the research and informed the participant that their involvement was voluntary. Participant's granted consent when they selected the "yes" button to continue the survey, with all data being automatically coded anonymously where specific participant responses could not be linked to any individual participant.

Reminder emails were sent to the prospective participant cohort by the independent senior researcher every two weeks to encourage participation. After eight weeks, the survey was closed and all PPES data was downloaded into an Excel spreadsheet and stored in a password protected file for security purposes.

Data Analysis

The results of the PPES were transferred from Excel to PASW SPSS Statistics 21 (IBM Corp, 2012) for analysis. Statistical analysis included frequencies for all descriptive data, cross-tabulation for inferential statistics and chi-square tests for statistical significance (set to $p < 0.05$ confidence level). Qualitative data obtained from the open ended PPES questions was analysed using a thematic analysis approach which allowed analysis of the text for core meanings and patterns (Patton, 2002).

RESULTS

Descriptive Statistics

The survey participants consisted of 12 males and eight females ($n = 20$), with a mean age of 22.3 ± 2.7 years (Table 1). The most common entry point into the E&SS program for survey participants was immediately after completing high school (35%). Other survey participants started their E&SS program following deferral (30%) or as mature age entry (25%). Half of the survey participants were not employed within the E&SS industry at the time of the survey. When reviewing the relationship between student status and employment status, the respondents who worked full time in the industry (20%) were all mature age entry students.

TABLE 1: Age and gender distribution of participants within the Professional Practice Experience Survey (PPES)

Age	Males ($n = 12$)	Females ($n = 8$)	Total ($n = 20$)
20	1 (8.3%)	1 (12.5%)	2 (10.0%)
21	3 (25.0%)	4 (50.0%)	7 (35.0%)
22	4 (33.3%)	3 (37.5%)	7 (35.0%)
23	0	0	0
24	2 (16.6%)	0	2 (10.0%)
25+	2 (16.6%)	0	2 (10.0%)

As illustrated in Table 2, the most common minor stream choice for survey participants was the rehabilitation stream (70%) with smaller numbers of participants in each of the coaching (15%), education (10%) and health studies (5%) streams. This was reflective of the larger E&SS cohort ($N = 80$).

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TABLE 2: Minor stream choice of survey participants compared to the full E&SS cohort

	Study Participants		Full E&SS Cohort	
	n	*%*	*N*	*%*
Coaching	3	15.0	8	10.0
Education	2	10.0	15	18.8
Health Studies	1	5.0	1	1.2
Rehabilitation	14	70.0	56	70.0
Total	20	100	80	100

Positive influences of WIL on career choice

Following thematic analysis of the open ended survey questions, the primary reason (50%) survey participants would consider a future career within the same agency as their WIL placement was because they considered the work interesting and enjoyable (Table 3). One survey participant expanded on this idea by commenting that something different was happening each and every day, therefore the work maintained their interest.

The second most common reason (38.8%) survey participants would consider a future career within the same agency was due to a positive working environment (Table 3). From the survey participant's perspective, a positive working environment included a positive atmosphere, being able to build rapport with fellow staff members and the rewarding feeling of helping other people. One survey participant considered that even though the WIL placement was highly stressful, the atmosphere and working environment of the agency was positive.

TABLE 3: Survey participant responses for reasons to apply for a job within the same or similar E&SS agency as a WIL placement (n = 16)*

	Interesting & enjoyable work	Positive working environment
Major placement agency	✓ ✓ ✓ Interesting area of work with different things happening each day. It is rehabilitation directed and this is what I am after. Interesting.	✓ ✓ ✓ ✓ ✓ ✓ The atmosphere and working environment is positive even though it is highly stressful, which I enjoy. Great environment, great way to meet contracts throughout the field of strength and conditioning. Good working environment … is why I accepted the position
Other professional practice agencies	✓ ✓ ✓ ✓ ✓ ✓ I enjoyed assisting and taking the warm-ups pre-game and the post-game recoveries. I enjoyed working with the people I worked with. I really enjoyed the experience and has encouraged me to try and complete further study.	✓ If every school had such well-behaved energetic students I would look into doing school sport coordination.
TOTAL	9	7

Note: ✓ = when a survey participant's response matched the coding.

* 4 participants failed to provide a response.

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Negative Influences of WIL on Career Choice

As detailed in Table 4, the primary reason (50%) survey participants would not consider a future career within a WIL agency was due to a lack of interest in the specific E&SS area. One participant considered their lack of interest in the WIL agency as a positive experience, explaining that it "was helpful in defining my minor stream study."

The second most common reason (33.3%) survey participants would not consider a future career within a WIL agency was due to the lack of full time, paid employment within that agency (Table 4). Participants considered that a shortage of full time work was an issue that would discourage them from applying for future employment within the same agency. The opportunity for volunteer work only, rather than paid employment, was also thought of as negative.

TABLE 4: Survey participant responses for reasons not to apply for a job within the same or similar E&SS agency as a WIL placement (n = 15)*

	Lack of interest	Lack of full time work
Major placement agency	✓ ✓ ✓ ✓ I'm not interested in working in a school setting like my placement was. A lot of computer based work where I would rather be up and about physically doing things.	✓ ✓ ✓ ✓ ✓ It is only part time and volunteer pay. The job would only be part time. The agency that I completed it at is on a voluntary basis … I would prefer to apply for a job that actually paid for the services that I can provide.
Other professional practice agencies	✓ ✓ ✓ ✓ It was slow and frankly boring. I'd prefer to be involved with a company who have more happening each day.	
TOTAL	9	6

Note: ✓ = when a survey participant's response matched the coding.

* 5 participants failed to provide a response.

Location of the WIL placement played a minor role in the results, with 11% of survey participants claiming the location of the agency would prevent them from considering a future career within the same agency. Two elements were considered within the 'location' theme: (1) distance to travel from their home town to the agency and; (2) the potential change to current living arrangements and the need to relocate to a capital city.

Relationship Between WIL Experience and Future Career Choice

Pearson's chi-square test confirmed that a participant who had a positive experience during their 80 hour major WIL placement was significantly more likely to pursue the same or similar setting for their future career choice ($\chi 2$ = 3.88, p = 0.049) (Figure 1). However, a student who had a negative experience during their 80 hour major WIL placement was not necessarily deterred from pursuing the same or similar setting for their future career choice ($\chi 2$ = 0.007, p = 0.093) (Figure 1).

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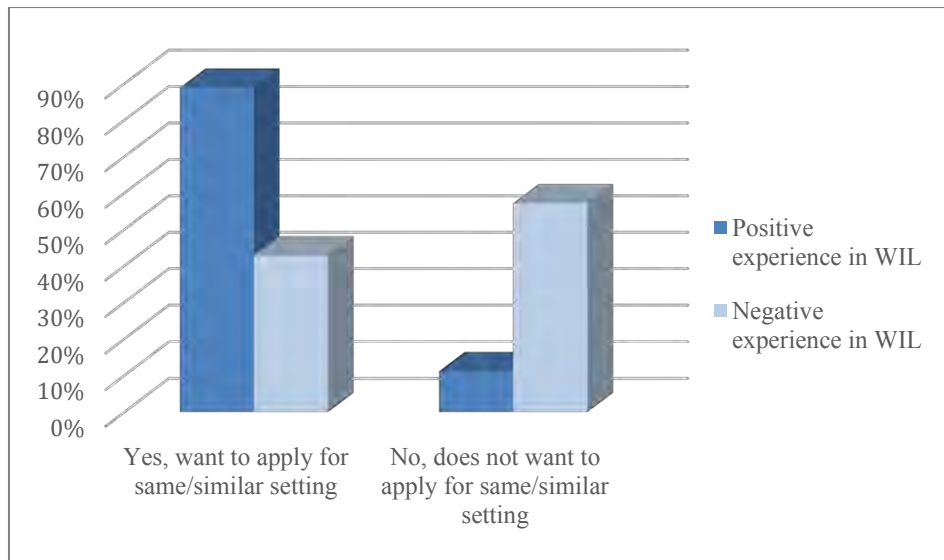
FIGURE 1: The impact of a positive or negative major WIL placement experience on future career choice in the same or similar setting.

DISCUSSION

Positive Influences of WIL on Career Choice

When asked to identify a major reason to seek a future career within the same or similar setting as their WIL placement, half the current survey participants revealed that completing interesting and enjoyable work was a positive experience that encouraged them to continue within the same or similar setting. These results are comparable to the earlier work of Crowe and Mackenzie (2002), with 50% of their OT student participants stating enjoyment and interest in the specific clinical area as the primary influence on future employment choice. Occupational therapy students identified that a personal interest in their position and enjoyment of the clients with whom they worked, played a key role in their preferred future practice area (Crowe & Mackenzie, 2002).

A further motivation for the current E&SS participants to seek a future career within the same or similar setting as their WIL placement was a positive working environment. These findings are supported by previous research with OT cohorts (Chiang et al., 2014; Keller & Wilson, 2011). Despite the supported findings, the definition of a positive working environment differed slightly when comparing the current study to that of Keller and Wilson (2011). A positive working environment for E&SS survey participants consisted of a positive and high energy atmosphere while being able to build rapport with colleagues. In comparison, OT students considered a positive working environment to include three factors: the spirit of teams, the value and respect demonstrated by other allied health professionals for the OT role, and the level and quality of supervision (Keller & Wilson, 2011).

Despite E&SS participants in the current study failing to acknowledge the positive impact a WIL supervisor may have on their future career direction, the results do indicate that there are a variety of experiences within the E&SS industry which constitute a positive experience. A positive experience varied from student to student which strongly aligns with Illeris' Learning Theory regarding the impact an individual's experience plays on their specific learning outcomes (Illeris, 2002, 2003). Results from the current study are consistent with the findings of Crow and Mackenzie (2002) where a single, positive WIL experience for students was difficult to predict.

Due to the individual variation in what was considered a positive experience within an E&SS WIL setting, it may be difficult for the supervisor to ensure a positive experience for all students (Crowe & Mackenzie, 2002). Research has demonstrated that even though the planned WIL experience and agency setting is the same, not all students will find the experience positive (Crowe & Mackenzie, 2002).

Negative Influences of WIL on Career Choice

Survey participants were asked to identify a major reason for not seeking a future career within the same or similar setting as their WIL placement. A lack of interest in the specific E&SS field was nominated as the major reason why the current study participants were disinterested in pursuing a career in the same or similar field, which supports Crowe and Mackenzie's OT research (2002). The current study demonstrated that E&SS students were deterred from following a career path if they were disinterested in the WIL placement. Therefore, WIL may not only play a leading role in helping undergraduate students to determine where they want to work, but also where they do not want to work. With such a variation of employment options in the E&SS industry, WIL could allow students the opportunity to eliminate potential job opportunities early on in their undergraduate program, in turn assisting students to decisively select both future WIL placements and minor stream courses.

Exercise and sports science students considered a lack of full time employment within the WIL agency a negative reason to not consider a future career within the same or similar setting. The opportunity for only part time employment or volunteer work within the WIL setting was also a deterrent.

These results align with research in OT, and although this was not a major finding in earlier research (Crowe & Mackenzie, 2002), a small number of OT students indicated that the availability of jobs was a deciding factor for their choice of future practice area (Crowe & Mackenzie, 2002). These results indicate the opportunity for full time employment within the WIL setting appears to have greater impact on E&SS students compared to OT students. Given that previous E&SS research suggested that E&SS roles, and more specifically sports science roles, are often of a part time nature (York et al., 2014), further investigation may be required to establish the employment status of E&SS students upon graduation, taking into consideration the available opportunities for full time work when compared to other allied health graduates.

Relationship Between WIL Experience and Future Career Choice

This study revealed that E&SS students who had a positive experience during their 80 hour major WIL placement were significantly more likely to pursue the same or similar setting for their future career choice. Although the specific definition of a positive working environment differs between allied health professionals, the impact of a positive working environment on a student's preferred future career choice is apparent. Within the field of E&SS, study participants acknowledged that enjoyment and completing interesting work within the WIL placement was paramount for them to remain within the setting for their future career choice.

There is consensus between E&SS and OT students when defining a negative WIL experience, however the outcome of such an experience was different for the student cohorts. This study revealed that an E&SS student who had a negative experience during their 80 hour major WIL placement was not necessarily deterred from pursuing the same or similar setting for their future career choice. The contrasting outcome of a negative WIL experience to the preferred future practice area for E&SS students could be attributed to the differences between OT practice areas and E&SS practice areas. Occupational therapists may work in various clinical settings, including mental health, schools or aged care (Occupational Therapy Australia, 2016a), where the primary role of an occupational therapist is to enable clients to participate in activities of daily living (Occupational Therapy Australia, 2016b). In contrast, E&SS graduates may work in a much broader range of practical settings and with a wide range of roles, including: exercise physiology; biomechanics; coaching / development officer; and, strength and conditioning specialist (ESSA, 2016a). In view of the broad career options for E&SS students, observation of the data within the minor study streams for this study could not ascertain any significant characteristics that might suggest minor stream choice influenced these results. Further investigation regarding the influence of such wide-ranging roles for E&SS graduates may enhance current employment attitudes for E&SS students, HE providers and ESSA.

Upon comparison of the differing research outcomes of a negative WIL experience for E&SS students to Crowe and Mackenzie's (2002) OT study, future research may need to delve further into the strength of influence of a negative WIL experience for E&SS students. Although an E&SS student may be able to identify a negative experience as part

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of their WIL placement, the student may also be able to recognize that the negative experience only relates to the specific agency, rather than the sub-discipline as a whole.

CONCLUSION

Taking into account the small sample size, the results of this study have provided an understanding of the influence of WIL experiences on the future career choice of E&SS students within one HE institution. Work-integrated learning not only allows E&SS students the opportunity to help direct what career path to follow but, as the current study supports, what career path to avoid. Results demonstrate that a positive WIL experience which provides interesting and enjoyable work and a positive working environment will encourage an E&SS student to pursue the same or similar career as that of their placement.

A negative WIL experience did not discourage an E&SS student from pursuing a career in the same or similar field as that of their placement. Exercise and sports science students considered that a lack of interest, lack of full time employment and location of the WIL agency were reasons not to apply for work within the same or similar E&SS setting.

Improved understanding of the relationship between a positive or negative WIL experience influencing career choice may assist WIL stakeholders for future WIL experiences. Although a negative WIL experience did not dissuade a student from following the same or similar career path, the importance of creating a positive and welcoming environment for E&SS students cannot be underestimated. Ensuring a strong, working relationship between HE providers and external agencies will assist in a smooth transition for students between the HE learning environment and the WIL agency, by reducing the gap between theory and practice to significantly benefit the student. Additionally, E&SS students who report a negative experience during WIL should not be alarmed. The opportunity to experience different areas of the E&SS discipline during WIL, and either direct, or re-direct, their future career path is invaluable.

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APPENDIX 1

Professional Practice Experience Survey (PPES).

Question	Answer	
Demographics		
Age		
Gender	Male / Female	
What was your student status when commencing the Bachelor of E&SS?	High school leaver	Mature age
	Deferred entry	Other
What is your current employment status in the E&SS industry?	Full time	Casual
	Part time	Not at all
Please identify your chosen minor stream for the Bachelor of E&SS:	Sport coaching	Education
	Health studies	Rehabilitation
Have you progressed through your Bachelor of E&SS program within the minimum time allocation? If no, please give reasons.	Yes / No	
Have you progressed through your WIL courses within the minimum time allocation? If no, please give reasons.	Yes / No	
WIL History		
Are you currently completing or have finished completing your major WIL?	Yes / No	
Have you, or would you apply for a position with the agency you completed / are completing your major WIL placement at?	Yes / No	
What are all the reasons that might make you *want* to apply for a job within the major WIL agency?		
What are all the reasons that might make you *not want* to apply for a job within the major WIL agency?		
Your WIL major placement experiences make you want to apply for / accept a job in the same or similar setting?	5 point Likert scale: 1 = strongly agree; 5 = strongly disagree	
Have you had any other WIL experiences at another time and location that would make you *want* to apply for a job with that agency? Please give example/s of this experience.	Yes / No	
Have you had any other WIL experiences at another time and location that would make you *not want* to apply for a job with that agency? Please give example/s of this experience.	Yes / No	
Completing a minimum of 300 WIL hours over the past three year program has adequately prepared you for future work within the E&SS industry:	5 point Likert scale: 1 = strongly agree; 5 = strongly disagree	

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The initiative/foundation "kreative koepfe" (creative thinkers)

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ABSTRACT

Low fertility rates and high life expectancies have caused Germany's working-age population to shrink. This has forced Germany's current population to carry the burden of their aging population. Companies in Germany have been struggling to fill positions due to the lack of a working class. While currently the numbers for enrollment in the area of STEM (science, technology, engineering and mathematics) has stagnated, companies are trying early on to encourage pupils to become more interested in these areas. One mean as recruitment tools are internships that are trending especially in Germany due to this struggle in the hunt for talent. The initiative/foundation „Kreative Koepfe" (Creative Thinkers) which is being introduced here, is already stepping in earlier by approaching younger pupils. They are approaching pupils between the ages of 12 – 18 already in the classrooms by bringing them together with companies to create an interest in working in technical areas. In this way, they hope to reduce a potential deficit of workforce in the STEM area.

Keywords: Work-integrated learning, new approach, Germany, Creative thinkers, Schools and Companies

BASIC PROBLEM – GERMAN DEMOGRAPHICS

Germany in particular is a severe example of an aging population. Figure 1 shows increased life expectancy in Germany; the nation's life expectancy had a sharp increase from 1871 to 1949, with gains of 29 and 30 years for males and females respectively. By 2005, males were born with a life expectancy of 76.2 years and females with 81.8 years. For 2050, the projected life expectancy is 83.5 years for males and 88 years for females (Hamm et al. 2008).

Germany's life expectancy has been ten years above the world average since 1990, and also one to two years above the average of high-income countries (The World Bank Group 2017).
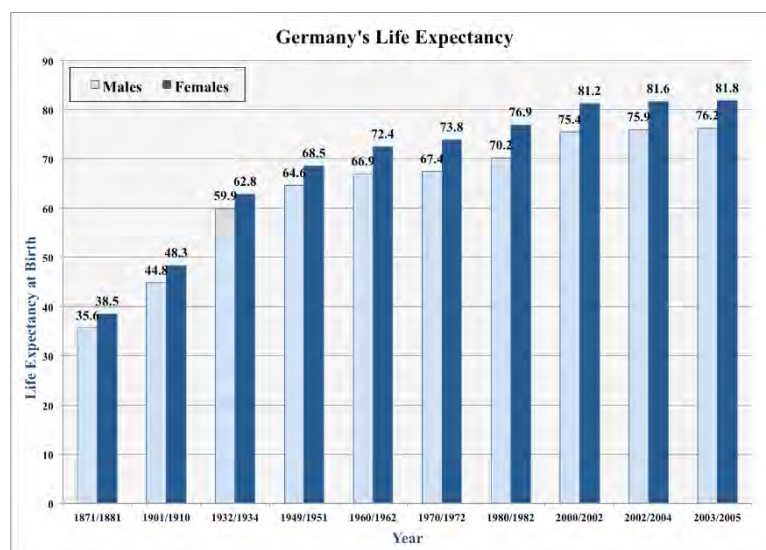
FIGURE 1: Germany's Life Expectancy by Gender 1871 – 2005. Source: Adapted from Hamm, Seitz, and Werding (2008) P. 14.

The replacement fertility level, or the amount of children born per woman to maintain positive population growth, is currently 2.1 children. However, this figure was 1.3 in Germany in 2005. There has a been a long term decline in fertility in Germany since the early 1900s, exacerbated by crises such as World War I, the Great Depression of the 1920s and 1930s, and World War II, shown in Figure 2.
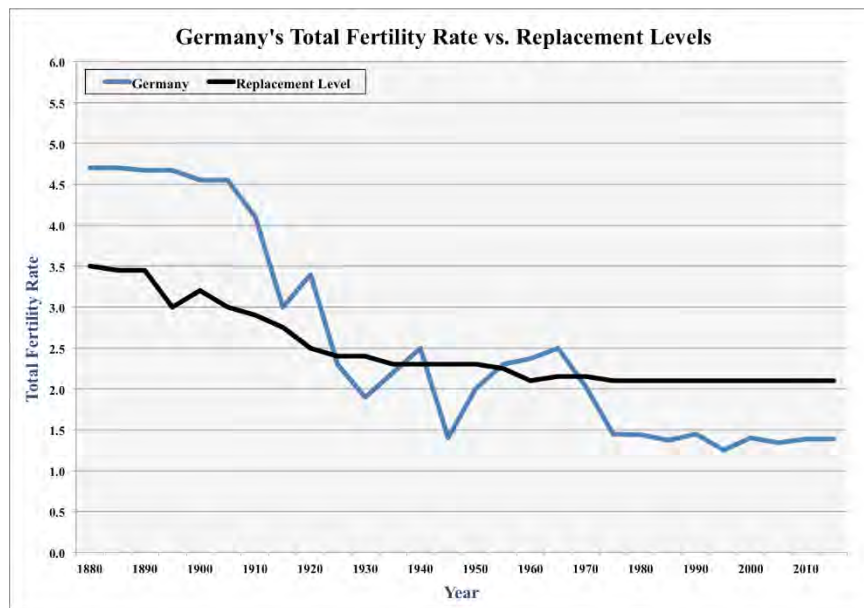
FIGURE 2: Germany's Total Fertility Rate vs. Replacement Levels. Source: Adapted from Hamm, Seitz, and Werding (2008) P. 12. and The World Bank Group (2017).

Continued low fertility rates can be explained by the following: rising age at first marriage, rising age of mothers first birth, increasing level of childlessness, social factors such as lack of partnership and increasing divorce, and economic pressures such as an unsatisfactory work-life balance (Hamm et al. 2008).

Compared to global fertility rates, Germany had a TFR of 1.5 in 1990 with the world average at 3.3 and high income countries at 1.9. Still in 2013, Germany had lower levels compared to the world average of 2.5 and high income countries' average of 1.7 (The World Bank Group 2017).

Globally, the old-age dependency ratio for people 65 years and older was 32 elderly people depending on 100 working-aged people in 2005. By 2020, this is expected to increase to 52 and then 64 by 2050. The population of 60 years and older in 2050 will represent 40.4% of Germany's total population. Germany's population pyramid in 1910 had the shape of a triangle. High mortality caused the elderly population to stay small. By 2005, the baby-boomers of post WWII had reached working-age and were beginning to retire. Unfortunately the age composition of Germany in 2050 will represent stark demographic changes. The population of older people will be replaced by a smaller and smaller number of young people due to the low fertility rates being under replacement levels (Hamm et al. 2008).

Many different aspects of an economy are affected by the age of its constituents. German companies are already experiencing the effects of an aging population and these demographical trends can be linked to the declining skilled workforce and can explain the trend in internship popularity. Over 51% of German enterprises connect the population changes with the lack of skilled labor; the hunt for talent and even customers has become ever difficult (Statista 2012).

Kreative Koepfe – A Way to Connect Pupils to the Industry in a Creative New Way

The Kreative Koepfe is a foundation to foster pupils' enthusiasm for science, technology, computer science, and mathematics. The foundation connects pupils and companies in the Main-Tauber-Kreis region, located in southern Germany in the northern parts of Baden-Württemberg. It also provides a platform for the pupils' innovation and

creativity to flourish. The pupils are able to tinker and fiddle with technology in order to bring their ideas to life. The companies, pupils, and schools all benefit from this partnership.

Due in part to the aging demographics in Germany, and the trouble with seeking talent for the workforce, this foundation could revitalize the workforce and continue to propel Germany to the forefront of innovation. The future of the program relies on continued interest from pupils and companies within the Main-Tauber-Kreis region.

COMPETITIONS AMONG PUPILS THROUGHOUT GERMANY

Competitions similar to Kreative Koepfe are common throughout Germany. Through these academic events, pupils are encouraged to create something new, and are rewarded based on different criteria.

The Jugend Forscht Foundation

The most important and well-known competition throughout Germany is "Jugend forscht". This competition was founded in 1966 in response to the Sputnik shock and education crisis within Germany. The idea was based on the American example of science fairs, in which young people present their research projects and inventions to an expert jury, and the public. Jugend forscht began at a local level, growing to the national level (Stiftung Jugend Forscht e.V. 2017).

Today, young people aged 14-21 years old can compete in Jugend forscht in the areas of, the working world, biology, chemistry, natural sciences, mathematics, computer science, physics, and technology. Partner companies are key for success because they support the competition, donate prizes, and encourage activities related to the initial competition. Currently, there are over 250 partners, ranging from small and global companies to universities, research organizations, foundations, and associations, with an annual donation base totalling more than 10 million euros. Today, 112 competitions are held at the state, and regional level. Competitions are also held in different age groups and since the founding, over 235,000 young researchers have participated.

Kreative Koepfe Compared to Jugend Forscht

Where Jugend forscht focuses on the most creative pupils with the best grades in the educational system, Kreative Koepfe instead encourages pupils at every skill level. Kreative Koepfe believes that people are very innovative at all levels and that creativity is not only present at the top (Kreativekoepfe 2017).

THE MAIN-TAUBER-KREIS REGION

The Main-Tauber-Kreis region is located in northern Baden-Württemberg and was established in 1973 from the merging of Bad Mergentheim, Tauberbischofsheim and Buchen. Baden-Württemberg is the most southwest state of Germany and its capital is Stuttgart. Main-Tauber-Kreis gets its name from the two large rivers in the area. The Main forms the northern border of the district and the Tauber flows through the district from the southeast to the north. As of December 2014, the population was 130,299 people with a low unemployment rate of 3.7%. Main-Tauber-Kreis has the lowest population density of Baden-Württemberg (Main-Tauber-Kreis 2017).

World Renowned Companies

The Main-Tauber-Kreis region is home to 23 world-renowned companies (Firlus-Emmrich, T 2014). These world leaders are defined as "hidden champions" in Hermann Simon's book, *Hidden Champions – Aufbruch nach Globalia* [*Hidden Champions – Awakening to Globalia*] (Simon, H. 2012). The three criteria for being a hidden champion are:
1. One of the top three companies on the world market or the top in a continent,
2. Turnover of less than 5 billion euros, and
3. Low awareness among the public.

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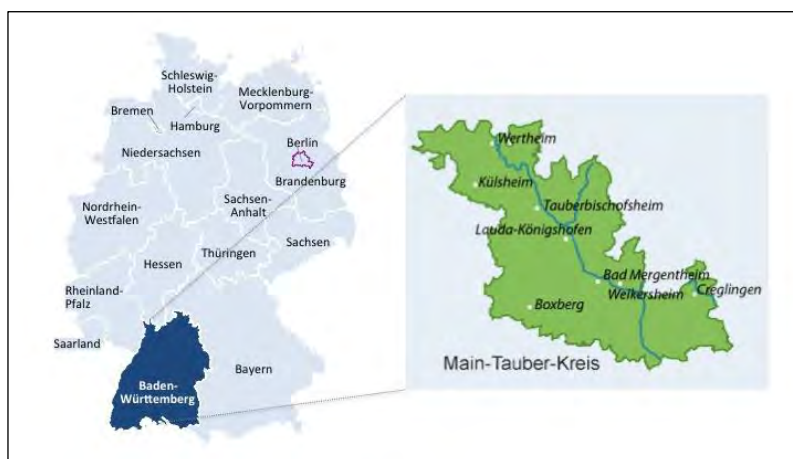
FIGURE 3: The Main-Tauber-Kreis Region, www.main-tauber-kreis.de

Market leader claims in the region of Main-Tauber-Kreis are heard from Wittenstein AG; "We are driving innovation" (Wittenstein AG 2017), Michael Weinig AG; "The world largest manufacturer of equipment and systems in the processing of massive wood" (Michael Weinig AG 2017), and Lauda GmbH; "The global leader in the manufacture of innovative constant temperature equipment and systems for science, application technology, and production, as well as for high quality measuring devices" (Lauda GmbH 2017). Many other companies in the region also describe themselves as a leader in their promotional materials and in interviews (Wirtschaftsjunioren 2017). The state of Baden-Württemberg is second within Germany in terms of amount of hidden champions, according to Simon. Within Germany, Simon names 1,307 companies that are defined as hidden champions (Simon, H. 2012). However, every company within Germany has a huge problem, the aging workforce.
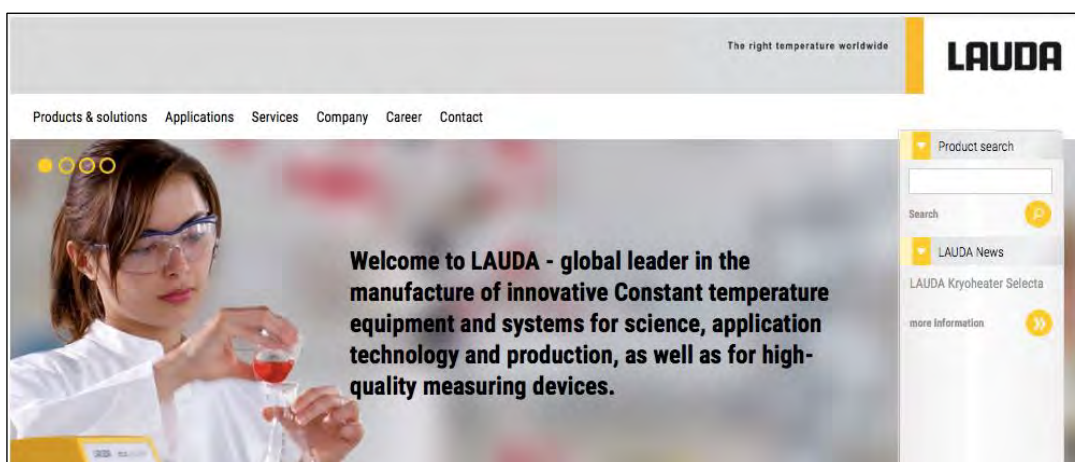
Source: "Weltweit Die Richtige Temperatur." (2017) *LAUDA*.

Baden-Württemberg Aging Workforce

Baden-Württemberg, along with the rest of Germany, faces an aging workforce. High life expectancies coupled with low fertility rates have caused a stall in replenishing the amount of eligible workers. This has had a negative effect on industry in the area as companies struggle on their hunt for talent. Qualified, mobile workers with high education credentials are needed. The loss of human capital in some regions will be irreversible (Brachat-Schwarz, W. 2014). 51% of German enterprises have connected the lack of a skilled workforce with the evolving demographics. Due to this problem, Human Resource managers have faced mounting problems. It is now essential for companies to clearly communicate the benefits and quality of working at their company. Companies need creative new approaches to win over the pupils. Kreative Koepfe and similar programs are key recruitment instruments. At an early state, the program would both stimulate recruitment, and enforce retention. This is an ideal partnership that companies should be taking advantage of. (Scheidt, S. and Hilpert, D.)

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Kreative Koepfe (Kreativekoepfe 2017) was founded in response to the factors listed above. The region of Main-Tauber-Kreis is home to world-renowned companies, yet suffers from an aging workforce. This future problem is discussed and considered in various meetings at different levels (regional level is the Regional Association of Heilbronn and the local level is the Main-Tauber-Kreis region) and among companies. Internships are recognized within Germany as a way to bring pupils closer to the practical world at an earlier age. German companies now see internships as a way to create opportunities for pupils to become potential future applicants and employees.

At the turn of the millennium, the Main-Tauber-Kreis region came upon the idea of also connecting pupils with companies from an even earlier age. This is easily explained by the events in the manufacturing industry. In this technical field, skilled workers are sought after and the inflow is lower than necessary. Local companies recognized this issue and combatted it by creating an opportunity for pupil-company partnerships, Kreative Koepfe. The idea is simple: everyone is creative, contact the schools and seek faculty members who would like to promote the developmental and creative side of pupils. Would the pupils like the opportunity to achieve something and develop their own ideas? The companies are, by nature, interested in engaging future, potential employees as soon as possible. Bringing together these two groups is truly a win-win situation.

FIGURE 4: Kreative Koepfe Logo

If the pupil has an idea worth pursuing by a company, the pupil and company are able to work together to develop the idea into a legitimate product or business proposition. Ideas can fall into four categories, science, technology, computer science, and mathematics.

The Founding

Kreative Koepfe was founded in 2002 by Bartec GmbH, IHK Heilbronn-Franken, Sparkasse Tauberfranken, Stadtwerk Tauberfranken, and Wittenstein AG, as well as the municipalities of Bad Mergentheim, Igersheim, and Weikersheim. The Co-author of this paper, a professor of Strategic Management and Marketing at the ESB Business School at Reutlingen University, has acted as academic partner and head of the jury. After the companies were contacted, recruiting on the pupils' side began.

A coordinator, presented Kreative Koepfe to the local schools to find motivated faculty to promote the program. Then the competitions began. A further strengthening of the bond of companies and of the competition was with the founding of the foundation "Junge Kreative Koepfe" in 2005. New companies continue to strengthen Kreative Koepfe and have joined the foundation. In June 2010, Roto Roof and Solar Technology joined and Audi joined in late 2015 as members of the foundation.

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FIGURE 5: Kreative Koepfe Timeline

The Basic Idea

Many actors support the process and development of Kreative Koepfe. Each player from the schools themselves, the pupils, the judges and the company experts, plays an important role in the success of Kreative Koepfe.

- The foundation "Junge Kreative Koepfe" supports and strengthens the strategic expansion of competition.
- Supporters are the dedicated businesses and communities in the region.
- Experts on the company side are employees and support the pupils throughout the implementation phase. They cultivate the pupil's ideas, especially in creating concepts and developing solutions. They are key in the implementation phase in which the pupils work closely with the companies on their premises.
- Judges evaluate the ideas of the pupils. First, to decide which of the 300 applicants move on from the application phase to the implementation phase. Then to decide the prize winners. Judges are composed of distinguished experts in their specific industries, in the business, science, research, teaching, and public sectors.
- Sponsors can be companies or communities and help in the implementation of the competition, and of project ideas. They may contribute expertise or financial resources.
- Partners are organizations that support the competition by donating prize money.
- Dedicated teachers that support the pupils throughout the competition and implementation phases. They are truly a prerequisite for success.
- Pupils aged 11-19 are the participants. They include pupils from the local region and handicapped pupils are included.
- Competition management is the entity responsible for planning, managing and controlling the contest. They keep in contact with all actors, including the pupils, companies, communities, sponsors, schools, and so on.

Further competitions, as extension of the original Kreative Koepfe have been founded within the Main-Tauber-Kreis region in Tauberbischofsheim, Wertheim, and Neckarsulm.

Benefits to Pupils and Partner Companies

The two largest benefactors are the pupils and the companies. The pupils benefit through the exposure of real-life experiences and knowledge gains. Pupils are given the chance to immerse themselves in the world of inventors and bring their ideas to life. They get a hands-on experience and insight into the professional life of technicians and developers. Each year, pupils discover previously unused potentials and realize unsuspected talents. Additionally, pupils develop individually on a personal level and can be recognized and rewarded for their outstanding efforts. Overall, Kreative Koepfe is not only a professional experience but also a personal journey for each pupil.

The companies benefit by sparking interest as future employers in the pupils. As stated previously, Germany suffers from both an aging population and a low fertility rate. This means that their talent pool is shrinking. A

problem specific to the Main-Tauber-Kreis region is the low population density and inclination of pupils to leave their rural community for university and subsequently, future work prospects. Kreative Koepfe allows companies to create bonds with pupils from a young age, cultivate a positive assessment as an employer and most importantly assists in their hunt for talent.

Six Stages in Kreative Koepfe

There are six main stages in Kreative Koepfe: presentations to local school, application phase, kick-off event, implementation phase, presentation to the judges, and judges' decisions and prize ceremony. These stages occur every year from October to May.

	Present to Local Schools	• Members of the foundation visit schools in the region in October • This is the first contact with pupils
②	Application Phase	• Applications must be submitted online by December • Around 300 applications are received – judges then choose 25
③	Kick-off Event	• Pupils present their idea to all relevant parties • The pupil-company pairings are decided
④	Implementation Phase	• The practical experience begins in January • Pupils work with the companies for 3 months
⑤	Presentation to the Judges	• 25 groups present their idea and prototypes • 8-10 judges rate the "products" in 4 categories, plus the best presentation
⑥	Judges' Decisions	• The judges' decisions are announced • A local sponsor hosts a prize ceremony in May

FIGURE 6: The Six Stages in Kreative Koepfe

Stage One

Presenting to the local schools is undertaken by representatives of Kreative Koepfe. These representatives visit the schools in October in order to spark interest of the pupils. It is the first contact the program has with the potential participants, and allows pupils to ask any open questions. The program's success relies on the combined efforts of both the school and the dedicated teachers. Approximately 20 schools are contacted in each of the four competitions (Bad Mergentheim, Tauberbischofsheim, Wertheim, and Neckarsulm).

- Occurs in October
- Foundation representatives visit the local schools to present the idea of "Kreative Koepfe" in class
- Any questions by pupils are answered at this time
- The support by the schools is the vital part to this stage, as they support the pupils in their inventive endeavours
- Approximately 20 schools are contacted/per contest/side

Stage Two

The second stage is the application phase and they are due by December. The pupils may either submit an idea alone, or with a team of up to five members. Applicants must submit their idea online, including a short description of the innovation. Approximately 300 applications are received and the judges then need to select 25 who proceed to the next stage.

- Due in December, pupils can submit ideas alone or with a team of up to five members
- Applicants must submit their idea online and must include a short description of their innovation
- Approximately 300 applications are received/per contest side
- Each idea is ranked with 0-10 points in 4 categories
- The judges access the ideas in order to choose the top 25 ideas

Stage Three

Stage three is the kick-off event. At the time, the pupils and teams present their ideas in a short presentation to the relevant parties. Here, the company partners are decided and stage four can begin immediately. This stage occurs second week of January and is set up as an informational fair.

- Occurs second week of January
- Representatives of the companies, press and local VIPs
- 25 groups/projects that have been chosen in stage 2 present their idea in order to find their company match
- Work with the company begins immediately

Stage Four

Stage four is the implementation phase which occurs next and lasts from Mid-January to April. This is the internship-like stage of the competition and allows for the company experts to meet with the pupils over the course of three months to develop their ideas. The partnerships may meet between 3 and 20 times on the company's premises. The company experts offer guidance, and support the pupils in the development of concepts and the realization of their ideas. Two training sessions occur during this stage: "From the Idea to the Project Results" and "Presentations and Communication". Through these two training sessions, pupils learn important basics of communication as well as the necessary tools for a perfect presentation.

- Runs from Mid-January to April
- Pupils work together with their partner company at their premises
- Experts (employees) help shape the idea and help to solve conceptual problems
- Pupils and company partner can meet between 3 and 20 times
- Includes two day-long training sessions: "From the Idea to the Project Results" and "Presentations and Communication"

Stage Five

Stage five is the presentations to the judges and occurs in April. After three months of tinkering and meticulous work, the pupils have the chance to present their progress to the judges.

The pupils attempt to convince the judges of their idea and the judges then evaluate based on four criteria: innovation and creativity, conservation of resources, technical realization, and marketability, as explained in the Evaluation by Judges section.

- Participants give a 20 min presentation of their ideas and the developed prototypes
- Participants answer questions about problems encountered and their work experience
- Participants are judged on four criteria → see above
- Judges decide the ranking and the prizes awarded

Stage Six

Stage six includes the judges' decisions and the prize ceremony. The judges' decisions are announced in April and are followed by a prize ceremony in May. Evaluation by the judges is based on a ten-point scale; the company employees who worked with the pupils also complete this evaluative form. The prize ceremony is hosted by a local sponsor and attracts over 500 attendees annually. Here, the pupils are recognized for their outstanding work in front of the relevant parties and actors and local press. It is a local event of high prestige.

- The ceremony takes place in May,
- The outstanding performance of the pupils is celebrated at a prize ceremony hosted by a local sponsor
- All participants get prizes, 6 Categories – in addition to the 4 "Main Categories" two more categories "All over Winners" and "Best presentation"
- Between 500 and 600 attendees are expected at the ceremony, in addition to the local press, CEOs and political VIPs
- In the following days/weeks intensive coverage by press

Evaluation by Judges

There are four criteria for evaluation that the judges must use to assess the ideas of the pupils:

- Innovation and Creativity
- Conservation of Resources
- Technical Realization
- Marketability

The final presentation is assessed and awards may be granted on these criteria and an overall winner is also chosen. These five criteria are rated on a one to ten-point scale. An award is also given to the school with the most participants. In order to promote recognition, every submitted idea receives an award.

Innovation and creativity is concerned with how much of the future is infused into the idea. Does the idea reflect or contradict a future trend? The originality is evaluated: is the idea multifaceted? Is this idea new? Does this idea modify or recombine existing ideas or products?

Conservation of resources is whether or not the idea has a positive effect on our environment. Does the idea save energy, improve the use of energy or raw materials, reduce emissions or substitute a current harmful practice? Is the idea sustainable? Did the pupil think of conservation during the development?

Technical realization is based on the possibility of immediate functionality. Can the product or idea be implemented? How difficult is the product to produce? Is a working result expected?

Marketability is how easily the idea could be marketed and whether the idea would be able to be brought to market. Could this product or development find a market and go into circulation? Has the pupil completed specific analyses in the form of market research? Has the pupil completed calculations in the form of business plans and potential savings?

The presentation is evaluated on whether the pupils include all relevant information. The construction, especially the outline, consistency, length and description of the progress of the project, is evaluated. The judges also consider the use of media and the presenters' language, expression, interaction, and sense of teamwork.

Press Coverage

The local and regional press regularly reports on the progress and events of Kreative Koepfe. Usually, each of the four competitions receives coverage in the form of three half-page articles throughout the run-time of each annual competition. These reports occur after the kick-off event (stage three), presentations to the jury (stage five), and the award ceremony (stage six). Common publications with Kreative Koepfe articles include Fränkische Nachrichten, Tauberzeitung, und Main Post, and their respective websites.

FIGURE 7: Local Press Coverage of Kreative Koepfe

Previous Product Creations

Some pupil innovative creations that were developed over the years were asked by the jury to file with the German patent office. To give an overview of the (innovative) creations the realized ideas of the 2015 winners are shown. Markus Münig for his Intelligent Smoke Detector, Samuel Abel for his Wear Sensors for Drills, and a team of Maurice Greco, Eline Zondermann, and Alicia Eckert for their Hot Case.

FIGURE 8: Pupil Prototype: Intelligent Smoke Director – Markus Münig

Markus Münig won the overall prize in 2015 for his Intelligent Smoke Detector and hailed from the Kopernikus-Realschule, Bad Mergentheim. This smoke detector, shown in Figure 8, was not an entirely new innovation, but Münig impressed the judges by combining many ideas and functions. This smoke detector is able to detect smoke and heat, has replaceable batteries, can be connected with other detectors via a network, signals when the batteries are low, can be attached to the ceiling magnetically, and flashes in addition to the loud alert noise.

FIGURE 9: Pupil Prototype: Wear Sensor for Drills – Samuel Abel

The Wear Sensor for Drills, shown in Figure 9, was created by Samuel Abel and was awarded first prize in the conservation of resources category. Abel hails from the school, Lorenz-Fries-Schule Bad Mergentheim. Abel, a student at a school for the handicapped, recognized the problem with expensive drills. These drills often break down because the charcoal pencils wear on the drill. This problem cannot be detected from the outside and opening the drill can be cumbersome. It is sent for service, and often earlier than it truly needs to be. This costly process was solved by drilling a small hole in the case of the drill and attaching a removable measuring unit. This small measuring unit makes a tremendous cost difference.

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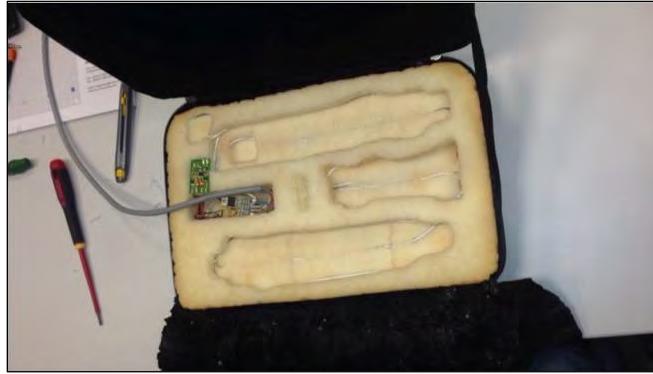2017, Chiang Mai, Thailand

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FIGURE 10: Pupil Prototype: Hot Case - Maurice Greco, Eline Zondermann, and Alicia Eckert

Lastly, the team of Maurice Greco, Eline Zondermann, and Alicia Eckert from the school Deutschorden-Gymnasium, Bad Mergentheim, won first prize in the marketability category for their Hot Case. Their idea developed from basic need; clarinet and flute players have a big problem with the temperature of their musical instrument. If the instrument gets too cold, for example at an outdoors winter event, the expensive instruments can break with this cold shock. The working prototype, shown in Figure 10, is a heated clarinet case in which the instrument stays at a temperature that it can be played.

DISCUSSION – THE FUTURE OF KREATIVE KOEPFE

Demographics in Germany and especially in the Main-Tauber-Kreis area indicated a dire need for a future pool of skilled workers. Due to the commonality of experiential learning in the German education system, businesses in the region formulated Kreative Koepfe to connect with young pupils as future potential employees.

The three aforementioned winners show that everyone can have good ideas, yet in many cases, anyone can have an idea, but it is missing the chance for development and implementation. Through Kreative Koepfe, pupils at all educational levels and ages are given the chance to implement their idea with strong guidance from a company. The result has turned into a triple-win situation.

Pupils get to know companies and how they work. Companies get to know potential employees and their strengths. Finally, schools teach not only theoretical issues but are also able to show the worth of creativity and development of ideas. On the basis of projects, pupils can see how the real world works in addition to the learning done at the school. Pupils participating in the competition are always welcomed back to the companies to learn on the spot more about their products and production processes.

Kreative Koepfe could develop into a model for use around Germany, in which young people are exposed to a practical experience during school time. The German manufacturing industry can benefit especially from a program similar to Kreative Koepfe. This is a way to inform young people very early and inspire them for training in the technical field or for subsequent engineering studies.

The successful system of internships in Germany gained by the idea of Kreative Koepfe a new stone in its mosaic of education. German Business locations might become even more prosperous by joining this new, innovative initiative. The idea of "Kreative Koepfe" might be a blue print for rolling out such competitions internationally.

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Labour market needs and graduate competence: An examination of the gap between employer expectations and new engineering graduate performance in Thailand

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ABSTRACT

This study was conducted with the objectives of exploring and assessing the levels of employers' expectation and perception toward competencies of new engineering graduates in Thailand. To measure the levels of expectation and graduate performance, 639 employers rated the competencies of each new graduate using five-point Likert scales. The results indicated that there were significant differences in the mean scores for expectation and performance. The mean values of the levels of expectation are higher than those of the engineering graduate performance in all aspects. That is, there is a substantial skills gap or mismatch within the labor force. To increase the employability through the graduate competencies, Higher Education Institutions (HEIs) need to enhance learning experiences of students, shift graduate competencies, both hard and soft skills, with focused expertise in their field, as well as connect the real world of business. The Cooperative Work-Integrated Education (CWIE) approach has been proven to be one of the most effective choices to achieve this.

Keyword .Graduate Competence, Employability, Employer Expectation, 443 Engineering Graduate, Workforce Skill.

INTRODUCTION

One of the most important roles of HEIs around the world is preparing their students for future careers, life and social prosperity. To assess HEIs' effectiveness in preparing quality human resources for employment, learning outcomes and ensure that they have the skills and knowledge requirements for jobs, employers' perceptions and expectations of the competence and employability skills of new graduates are widely used. High expectation is often there, especially for engineering graduates, because the advancements and innovations in engineering are playing a more dominant role in driving economic and social development. It is not only a decisive factor pushing productive forces and labor productivity in the economic and industrial sectors, but also a key force improving the quality of human life and culture (XI Jinping, 2015). However, employers often complain that today's new engineering graduates are inadequately prepared for the workplace and lack even basic skills needed for the job markets (International Engineering Alliance, 2013 as cited in Khampirat, 2016, August).

In the context of Thailand, Thailand has been successful in expanding educational opportunities and increasing numbers and percentages of students attending to university as well as in the number of new HEIs (OECD, 2013; Benveniste, 2010). But there are raised concerns about the quality of graduates, the World Bank reports that there is a gap between the quantity and the quality of graduates (Benveniste, 2010).Studies by Wongboonsin and Wongboonsin (2009), Lathapipat and Chucherd (2013) and Nguyen (2014) indicated that the basic issues related to the quality of Thai education and workforce are for examples the severe shortage of technical skills, mismatch between graduate skills and what the labor market needs. The report of World Bank (2012 as cited in Chalamwong, Hongprayoon, & Suebnusorn, 2012) described that Thailand has for a long time encountered 'skill shortage' and 'skill gap' because educational provision of the country usually led by 'supply-driven', not 'demand driven'. It is indicated that a mismatch between academic training and the skills demanded by industries (Benveniste, 2010). Recently, the World Economic Forum (2015) assessed 124 countries, focusing on education, skills and employment

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outcomes. Thailand has a low share of its workforce in high-skilled occupations, at 14.2% of its workforce and its very low level of high skills diversity (ranked 90th).

To prepare students to be productive members of society and workforce and for ensuring graduates meet modern labor market demands in competitive world (Hainline, Gaines, Feather, Padilla, & Terry, 2010), a measurement model to assess the gap between employers' expectation and perception toward the graduate performance must be studied in detail. Chiandotto, Bini, and Bertaccini (2007 as cited in Khampirat, 2016) explained that measuring the quality of graduate against perception from the view of employers may be considered as the mirror image of efficiency and effectiveness in higher education system.

PURPOSE OF THE RESEARCH

The purposes of this study were as follows: (1) To test the reliability and validity of graduate competence instrument when applied in engineering graduates in Thailand. (2) To compare the mean score of employers' expectation and perception towards performance of new engineering graduates.

LITERATURE REVIEW

Body of Graduate Competence and Employability Necessary for Enterprise

The engineering field is a demanding one that requires a broad knowledge base and high skill, as well as combinations of theoretical knowledge and skills, to achieve successful performance as a professional and appropriate to the context. In the context of employment, a new graduate in engineering must demonstrate their competencies and employability skills which match modern workplace demands to gain employment and prosperity of both individual and the organization. Graduate competence and employability are crucial issues for HEIs worldwide and have often been cited by employers as the skills most critical to workplace success (UNESCO, 2012) and fundamental in undergraduate programs in developed economy and society (McKinnon & McCrae, 2011). Which benefits and increases prosperity to graduates themselves, institution, government, workplace and community (Yorke, 2006) as well as reduce social problems (Scottish Centre for Healthy Working Lives, 2015). The definition of employability is also known as job readiness skills (Shafie & Nayan, 2010) and generally refers to a wide range of having the skills and ability that enable find employment and remain employed. Whilst graduate competency can be defined as a range of employability skills or abilities that graduates may develop during their life through the study courses, training, work experience, interests and extra-curricular activities (RMIT University, 2015), for which HIEs and stakeholders (economic and industrial sectors) can cooperatively prepare students for their future working life and interaction with others in a diverse community. Downey et al. (2006) defined the global competency of engineers as "the knowledge, ability, and predisposition to work effectively with people who define problems differently than they do, including both engineers and non-engineers". The American Society of Civil Engineers (2008) describes the minimum cognitive levels of achievement for learning outcome of undergraduate civil engineer in three categories, (a) the foundational category (b) the technical category and (c) the professional category. In the context of Canada, the Canadian Engineering Accreditation Board (CEAB, 2014) describes graduate attributes as what students are expected to know and be able to do at the time of graduation as well as what is expected to continually improve. Whereas, a global cities education network report by Soland, Hamilton and Stecher (2013) measure competencies in three dimensions: cognitive competencies, interpersonal and intrapersonal competencies.

Skill Mismatch

The mismatch in the labour market can be concluded into three forms, namely: (i) qualification mismatch (ii) education mismatch (over-education/under-education at individual and firm levels), (iii) over-skilling/under-skilling, (iv) skill shortages (v) skill gaps and (vi) skill obsolescence (Cedefop, 2010). More recently, several literature has focused on the skill matching challenge and skill mismatch with the factors that contribute to these challenges. In this context, Modestino, Shoag, and Ballance (2016) reported that there is a strong time-series relationship between employer skill requirements and aggregate labor market slack. A mismatch issue has been discussed in

both several advanced economies and countries with low expenditures (Craigie, Gillmore, & Groshenny, 2012; Kupets, 2015; McGowan & Andrews, 2015). Furthermore, over education in human capital is one of concern for graduates when the years of education institution required for the job are less than the individuals have (Caroleo, 2013; Kupets, 2015; Varakamin, 2016).

METHODS

Participants

The participants in this study were employers in enterprises of new graduates in the fields of engineering in Thailand (N = 639 employers), who responded to the questionnaire, as regards the employers in size of enterprise, medium organizations with less impact (101 – 500 employees) were more highly represented among enterprises in the participants. The number of employees was unknown in 59 enterprises. Employers in these enterprises assessed 403 male and 236 female engineering new graduates.

Measures

The instrument used in the measurement of employers' expectation and perception on competencies of graduates was the questionnaire was developed on the basic of theory and desirable characteristics of graduates by Khampirat (2008a; 2008b). This questionnaire consists of 55 items covering four aspects namely: HUMANWARE, ORGAWARE, INFOWARE and TECNOWARE. The detailed definitions of the aspects as constructs in this study were presented in Appendix. To measure the levels of employers' expectation and perception towards performance of graduates, employers rated the expectation and performance of each new graduate using a five-point Likert-type scales (1-5).

Procedures

It was important to get a good response rate and good information from participants in enterprises so that the results could be generalized to the population of interest. In this study, the colorful paper questionnaires were delivered through postal services and respondents were requested to return them to the author by mail or through email or fax. The questionnaire packed include an envelope with a return address, information about this research project, instruction guide explaining how to answer the questionnaire and how to return it. All participants were invited by telephone with the understanding that their participation is completely voluntary. For employers who did not reply in the first 4 weeks, the researcher contacted them by telephone again and then a second copy of the same questionnaire was posted to remind them of the importance of the survey and the value of the response to it (Dillman, 1978, as cited in De Rada, 2005). Since the participants gave their valuable time and information, it is important to acknowledge that the researcher provided the individual gift, paper diary or pen, to all of the employers for involvement in this study.

Statistical Analysis

Quantitative data analysis was used in this study. Descriptive statistics was used to analyse the characteristic of participants, whereas inferential statistics, dependent (paired) t-test was used to test the gap between expectation and perception scores. Cronbach's Alpha reliability was used to measure internal consistency. Guildford (1965) and Nunnaly (1978) state that the value of Cronbach's alpha higher than 0.70 indicates high reliability, 0.7-0.35 is acceptable reliability and below 0.35 means low or unacceptable reliability. CFA was employed to test the construct validity of measurement model of graduate performance when applied in perception of employer in engineering graduates.

Reliability

The Cronbach's alphas for seventeen indicators and four aspects ranged from .694 to .969, which exceed the guidelines adequate reliability (Guildford, 1965; Nunnally, 1967; George & Mallery, 2003). The Cronbach's alpha values confirmed that the scales can be used to measure the employer expectations and graduate performance with confidence.

Construct Validity : *Results of the Second-Order Confirmatory Factor Analysis*

The results of the second-order CFA (Figure 1) indicated that the proposed model that allowed four error terms to be correlated provides an adequate fit (x^2 = 956.828, *df* =459, *p* -.000). The overall goodness-of-fit of the model, measured by the normed chi-square or ratio of x^2/df, is 2.08 suggesting that the proposed model fits the data. The other fit indices (RMSEA=. 0.041, 95% C.I. = 0.038-0.045; CFI=, .981; TLI = .977; SRMR =.030) also confirmed that the hypothesized model fits well and, all the standardized factor loadings are statistically significant and salient (β > 0.6, *p*<.000). The parameter estimates indicated that all the four indicators contribute significantly to the measurement of the employer expectations and engineering graduate performance. As seen in Figure 1, the highest factor loadings of employer expectations model were found for factor TECNOWARE (.955). Meanwhile, the highest factor loadings of engineering graduate performance associated with factor ORGAWARE (.996).
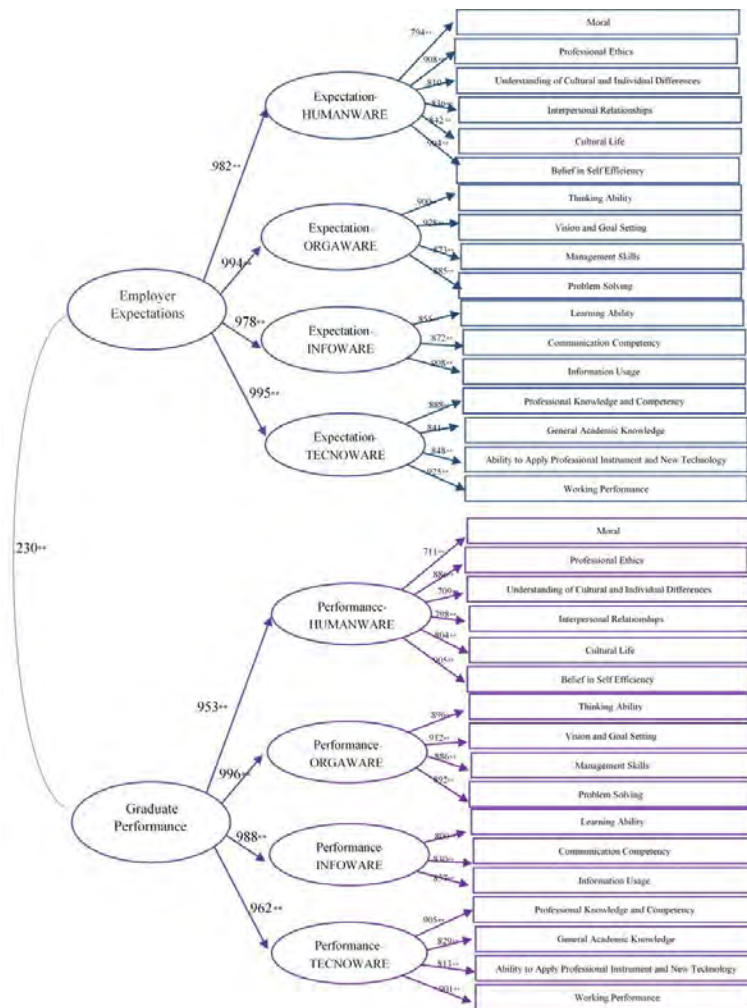
FIGURE 1: Second-order two factor CFA of employer expectations and graduate performance, with standardized coefficients. Note * :Estimate is significant at *p*-value <.05, **p*-value <.01.

Comparing The Mean Score of Employers' Expectation and Perception Towards Performance of New Engineering Graduates: Results of Dependent T-Test

The statistical analyses, dependent t-test, showed that employers' expectation and perception towards performance of graduate was significant different at .01 (p< .01) in all aspects and indicators. Employers' expectation on HUMANWARE (M=3.94, SD=.0.50) had a mean scores higher than graduate performance (M = 3.74, SD = 0.51), t(638) = 9.53, p = .00, two-tailed. The mean difference is 0.20. Employers' expectation on ORGAWARE (3.88, SD=.0.55) had a mean scores higher than graduate performance (M = 3.41, SD = 0.58), t(638) = 18.75, *p* = .00, two-tailed. The mean difference is 0.47. Employers' expectation on INFOWARE (3.83, SD=.0.54) had a mean scores higher than graduate performance (M = 3.46, SD = 0.56), t(638) = 15.52, *p* = .00, two-tailed. The mean difference is 0.37. Employers' expectation on TECNOWARE (3.85, SD=.0.54) had a mean scores higher than graduate performance (M = 3.50, SD = 0.56), t(638) = 15.35, *p* = .00, two-tailed. The mean difference is 0.56. In addition, size of organization was proposed to study the expectations and performance levels. The comparison between the mean values according to the size of enterprise and each aspect were given in Figure 2.
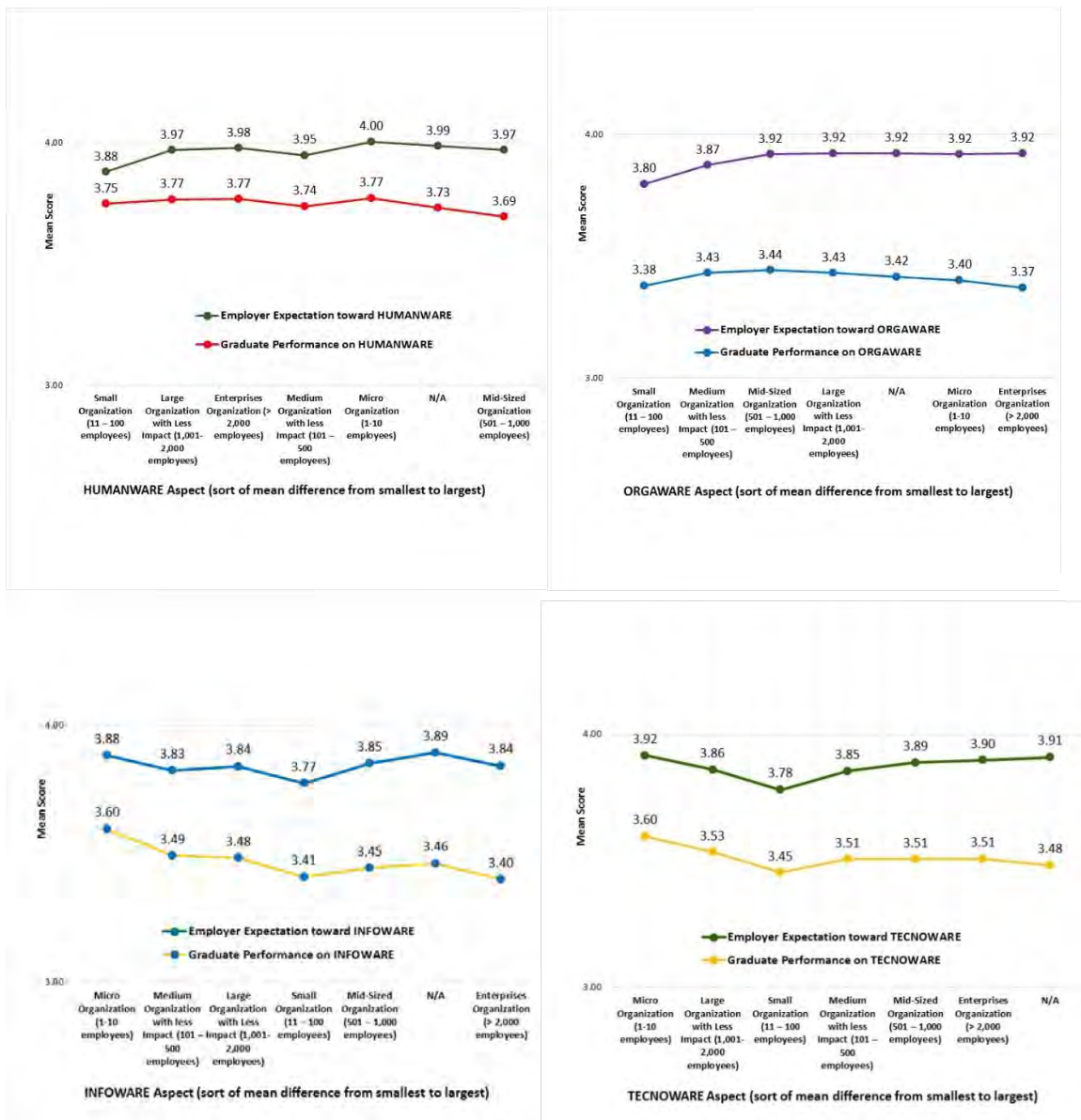
FIGURE 2: Comparison between the mean values for employers 'expectations and engineering graduate performance according to the size of enterprise and each aspect.

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This research findings showed that there is a significant difference gap between employer expectations and what new graduates are doing to the productivity of its workforce and add value to themselves and the organization in all aspects, especially in areas such as problem solving, thinking ability, vision and goal setting, working performance and learning ability. The most important area for the new graduate labour market needs were TECNOWARE, followed by ORGAWARE, HUMANWARE and INFOWARE, respectively. The employer expectations were quite high which demonstrated that business sectors are facing the skills shortages and mismatches and new graduates are not yet equipped with the proper soft and hard skills to succeed in the today's workplace. Which is similar to previous findings of Lathapipat and Chucherd (2013), Vorhauser-Smith (2014), Nguyen (2014) and IMD (2014), on the basic issues related to the quality of Thai education and workforce are for examples the severe shortage of technical skills, mismatch between graduate competences and what the labor market needs. The challenges facing the development of students and graduate competence in Thailand are convoluted and diverse (Maxwell & Kamnuansilpa, 2016).

Since graduate skill and employability and employer's assessing have become an increasingly important element of curriculum development processes (Department for Business, Innovation and Skills (BIS), 2011). This trend may have been partially influenced by current economic developments (BIS, 2011), and the competition between HEIs to improve educational quality in the context of the sustained growth and diversification of higher education systems (Hénard, 2010). Whilst engineering activity requires several roles, from an engineering professional, technologist and technician point of view, it involves the purposeful application of mathematic, sciences and engineering knowledge, which is essential to meeting the needs of people, social, and economic development (IEA, 2009). It is important to develop graduate's potential to acquire competence to practice at the appropriate level for individual practice and team work and match workplace requires. To further improve employability through the graduate competencies, this study provided a series of recommendations as following:

1) There is a significant difference gap in developing sustainable networks and building capacity of students for knowledge and skill development and work readiness to key and various stakeholders: government, HEIs, community, industry and other stakeholders have to work together to prepare students for their future working world through various approaches, in which the cooperative and work-integrated education (CWIE) or Vocational Education and Training (VET) approaches have been proven to be one of the most effective choices (Khampirat, 2016; Kramer & Usher, 2011).

2) Raising academic success, personal growth and career capital as well as creating ambitious career goals for students through comprehensive career development system and academic courses that start at the first year to final year (Pop, 2016) or/and goes all the way through and professional from student life to real life.

3) Promoting student self-assessment and improving learning through self-assessment: because an engineering course is one of the most difficult courses (Fang, 2012) and motivation for learning is often difficult in the first years (Baillie & Toohey, 1997, as cited in van Hattum-Janssen & Pimenta, 2006), engineering students can apply the learning outcomes and career checklists to help them succeed with coaching and monitoring. Alternatively, to encourage students to reflect on their learning or CWIE experience, self-assessment can begin with setting learning outcomes and career targets and also tracking.

4) Building organizational culture for working in partnership between support staff and student. It is one of the key benefits to improve effective and appropriate graduate competencies.

5) Promoting, creating and raising awareness of all parties such as for institute (every faculty member, administrator, and support staff) employers and students on the value of CWIE standards are crucial and having a strategic value (Khampirat & McRae, 2016). It is important to change a work process, improve organizational effectiveness and promote sustainable growth through corporate social responsibility.

Finally, because the 4WARE model of assessing a new graduate competence perspective was a highly reliable measuring instrument and well goodness-of-fit. It covers all aspects of graduate competences for employability,

learning outcomes and the employability skills of new graduates. Its appropriateness to the capacity of intellectual, capacity of human capital for workforce in a new economy and technology systems for the 21st Century. Therefore, this systematically tested measurement model could be applied with some modification in globe. This is important because the development of graduate skills and competencies have been the target of HEIs in every country.

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APPENDIX

New Graduate Competence Measurement Questionnaire

Level of perception/quality/satisfaction

1=strongly disagree (not at all satisfied/not effective); 2=disagree (slightly satisfied/needs improvement); 3=neither disagree nor agree (moderately satisfied/satisfactory); 4=agree (very satisfied/highly effective); 5=strongly agree (extremely satisfied/outstanding)

Competence/indicator	Items
1 .HUMANWARE) Being skillful and intellectual to live in a knowledge-based society properly, and able to work in a society with diversities(.	
1.1 Moral (3 items)	1.1.1 Be honest, trustworthy, behave based on moralities, and be a good citizen.
	1.1.2 Be disciplinary, respect rules/regulations, orders, society, and work.
	1.1.3 Sacrifice to common interests .
1.2 professional ethics (4 items)	1.2.1 Devote the best abilities to work.
	1.2.2 Accept recommendations, advices, or criticisms, and get ready for improvement .
	1.2.3 Express responsibility to duties and self -decisions .Be trustworthy .
	1.2.4 Be aware that work quality must meet the standards of the profession .
1.3 Understanding of Cultural and Individual Differences (3 items)	1.3.1 Be able to work with other people with educational, social, and cultural differences .
	1.3.2 Respect human dignity .Preserve your own rights and respect others .'
	1.3.3 Honor other people .Accept their roles and responsibilities .Treat them with respect.

Competence/indicator	Items
1.4 Interpersonal Relationships (3 items)	1.4.1 Maintain good relations .Be able to build both internal and external relations leading to advantages to your work .
	1.4.2 Be able to manage interpersonal communications and efficient negotiations .
	1.4.3 Be generous and amiable.
1.5 Cultural Life (3 items)	1.5.1 Be aware of your roles and responsibilities toward the society .
	1.5.2 Have peaceful mind and happiness in life.
	1.5.3 Have good personalities .Be enthusiastic and mature .
1.6 Belief in Self Efficiency (3 items)	1.6.1 Express expectations of your own abilities to accomplish work or other tasks/activities.
	1.6.2 Have good motivations and goals .
	1.6.3 Conduct self-evaluation in views of work competence and knowledge for the continual development of work .
2 .ORGAWARE) Being skillful and competent in regard to organizational management for the development and efficient success of work(	
2.1 Thinking Ability (3 items)	2.1.1 Show creativities .
	2.1.2 Be able to analyze and synthesize for efficient solutions as well as decisions .
	2.1.3 Be rational and count on reasons .
2.2 Vision and Goal Setting (4 items)	2.2.1 Carry organizational and work visions.
	2.2.2 Be able to manage work priority .
	2.2.3 Be able to set work plans and clear goals .
	2.2.4 Be able to adjust yourself to changes, situations, and environments in the organization.
2.3 Management Skills (3 items)	2.3.1 Interact with other people and cooperate with co-workers for efficient achievements according to goals .
	2.3.2 Be able to work alone/solo successfully and efficiently .
	2.3.3 Be a competent representative of the group.
2.4 Problem Solving (3 items)	2.4.1 Be able to solve problems efficiently and rapidly.
	2.4.2 Be able to identify problems and develop new guidelines for solutions .
	2.4.3 Be able to deal with conflicts efficiently.
3 .INFOWARE) Being able to communicate, collect information/data, search for information to enhance knowledge and to support work ability as well as other abilities(	
3.1 Learning Ability (2 items)	3.1.1 Be able to improve yourself, search for new knowledge as well as work skills continually .
	3.1.2 Be able to learn by yourself, learn to select, and understand what is learned .
3.2 Communication Competency (5 items)	3.2.1 Be able to use Thai language in writing for effective communication)with clear and correct writing grounded on fundamentals of Thai language.(
	3.2.2 Be able to use Thai language in speaking for effective communication)speak clearly, hit points, have good speaking manners, and present appropriate correct gestures and expressions .(
	3.2.3 Be able to use English skills for necessary communications .
	3.2.4 Be an efficient listener)catch points, have good listening manners, and present appropriate correct gestures and expressions .(
	3.2.5 Understand what is read .Be able to summarize and interpret contents efficiently .
3.3 Information Usage (3 items)	3.3.1 Know how to utilize necessary information for decisions and solutions .
	3.3.2 Be able to use the library, the Internet, and other sources efficiently so as to search for information, to conduct a research, or to develop career.
	3.3.3 Be able to handle, analyze, and present information understandably and systematically.

4 .TECHNOWARE) Possessing skills relating to profession and expertize in the subjected field and duties(.	
4.1 Professional Knowledge and Competency (4 items)	4.1.1 Be educated and professional in your program/field.
	4.1.2 Have knowledge on the field connecting with your duties .
	4.1.3 Be able to apply knowledge/ideas/points of view of your field to tasks assigned.
	4.1.4 Be able to present essential innovations/strategies to work .
4.2 General Academic Knowledge (2 items)	4.2.1 Be able to apply basic calculations correctly for solutions and decisions .
	4.2.2 Know how to apply knowledge/ideas/points of view of other fields to tasks assigned .
4.3 Ability to Apply Professional Instrument and New Technology (3 items(	4.3.1 Be skillful and able to use devices, equipment, or tools in career taken .
	4.3.2 Be skillful in using modern technology such as computers for efficient work performance .
	4.3.3 Be skillful in availing of technology and know how to select technology for work development.
4.4 Working Performance (4 items)	4.4.1 Be able to finish work within scopes and time limits efficiently following determined work quality as well as standards .
	4.4.2 Get productivities/outputs from performance in line with standards of the organization .
	4.4.3 Be able to look for guidelines and alternatives for constant work improvement .
	4.4.4 Be able to pull through under pressure and be patient with hard work efficiently .

APPENDIX : PRELIMINARY RESEARCH FINDINGS SOURCED VIA SURVEY MONKEY
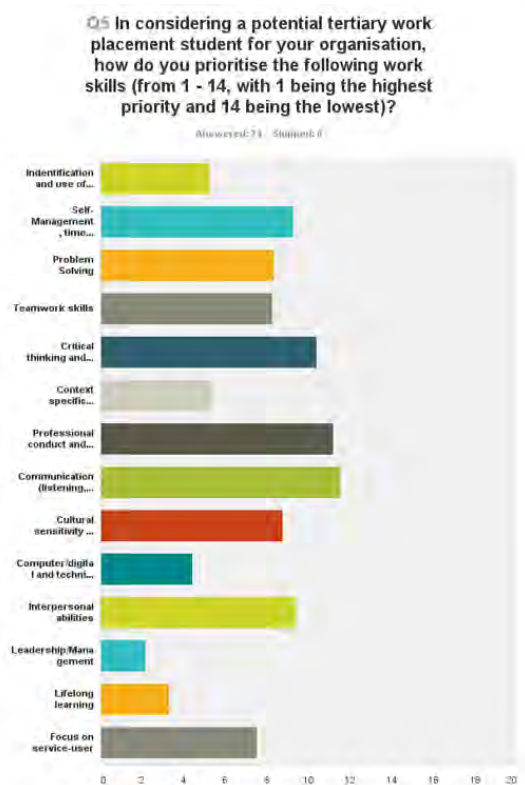
Fig. 1: Ranking of work skills across ALL disciplines
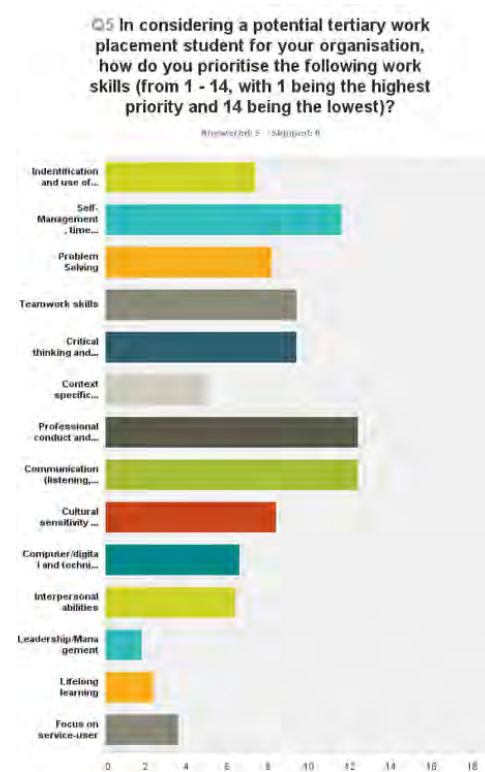
Fig. 2: Ranking of **work skills** in the Discipline of **Planning & Sciences**
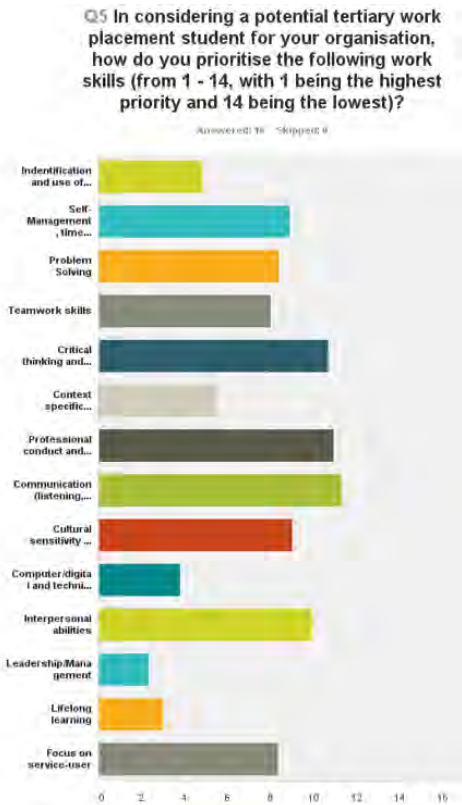
Fig. 3: Ranking of **work skills** in the Discipline of **Social Work & Human Services**
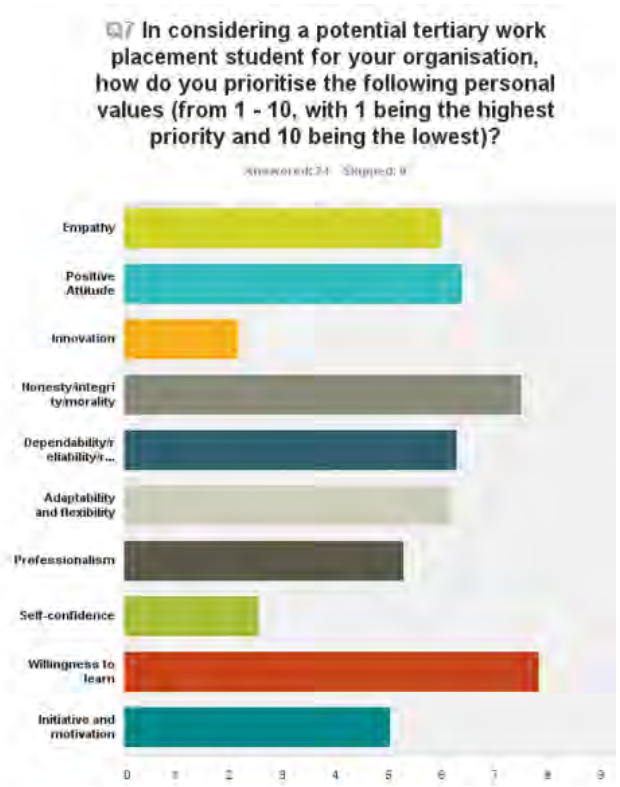
Fig. 4: Ranking of **personal skills** across **ALL Disciplines**
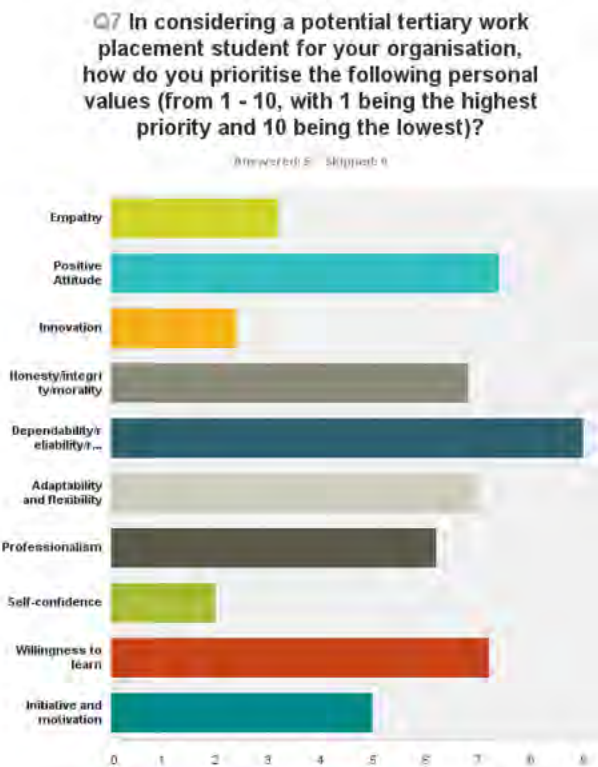
Fig. 5: Ranking of **personal skills** in Disciplines of **Planning & Sciences**
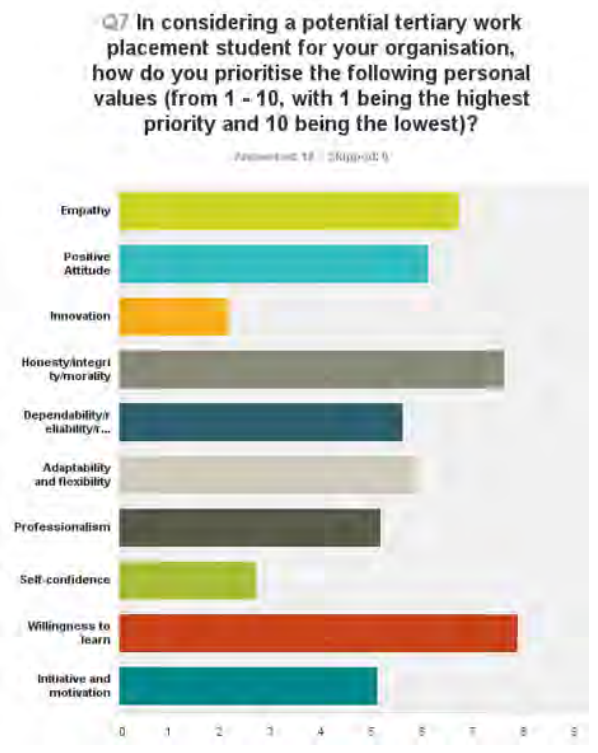
Fig. 6: Ranking of **personal skills** in Disciplines of **Social Work & Human Services**

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Student and graduate perspectives on the impact of support for learners by facilitators of work-integrated learning: A case study of Durban University of Technology

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ABSTRACT

Students and graduates are on the receiving end with regards to the development of the practice of WIL. In South Africa, students are not involved or even consulted when Universities of Technology (UoTs) strategize and implement the plans for the facilitation of WIL in different programmes that are offered. This is happening despite the fact that students and graduates are expected to perform well and exhibit the desired outcomes of WIL. Also, there is no evidence to ascertain the fact that students are adequately prepared before being sent to industry for WIL. Yet they are expected to hit the ground running at the end of the exposure. It must be noted that students are from different backgrounds. Most of these students are very young and were in high school before enrolling at DUT. This paper is looking at exploring the views of students and graduates with regards to the impact of learner support by the facilitators of WIL. The outcome can also be used as a device to measure the effectiveness of learner support facilitation.

Keywords: Employers; Work-Integrated Learning; Co-operative Education Practitioners; Graduates; WIL students.

INTRODUCTION AND BACKGROUND

This paper is looking at exploring the views of students and graduates with regards to the efficiency of WIL. The responsibilities of the Co-op Practitioners are to act as counsellors, role models, leaders, motivators, guiders, advisors, marketers as well as public relations practitioners. Zegwaard and Laslett (2011: 105) also explained that at the University of Waikato, the placement co-ordinator remains in contact with the student during placement by visiting at least once to ensure placement progression and for pastoral oversight. They further explained that during the visit, students are queried on their learning progress, tasks undertaken, development of their understanding, and progress of their placement reports. If any problems have arisen, they are discussed and resolved. The other important engagement that a placement co-ordinator from Waikato does is to meet with the employer to discuss progress, gauge the student's performance, establish better university/industry links and allow employer to complete a simplified work performance evaluation form at the end of the placement.

In this investigation, Co-operative Education Practitioners (Co-op Practitioners) refers to every person who takes part in the facilitation of WIL e.g. WIL Co-ordinators, Learner Support Practitioners, Co-operative Education lecturers, Placement Officers, University Mentors, Academic Staff.

Work-Integrated Learning Students

Students enrol at an institution of higher learning with a specific purpose: to acquire a qualification, find employment, be independent and obtain an advice in their chosen career (Nofemela, 2015: 92) citing (Moleke, 2015). Today's interdependent and complex world requires that we prepare young men and women for innovative competency through co-operative and work-integrated education (Moletsane and Moloi, 2015: 1). Work-integrated learning is a process mainly implemented in universities for the purpose for giving students exposure to the working environment and thus enhancing their employability (Wheeler, 2015: 104) citing (Windberg, Engel-Hills, Garraway & Jacob, 2011). Placements that are merely observational in nature are not deemed acceptable according

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to Copper (2011: 244). This suggests that students who undertake WIL need to gain hands-on experience. Therefore, they always need to be supported by the Co-op Practitioners before and during their period as WIL students. Du Pre` (2009: 25) describes WIL as a strategy of applied learning (learning integrated with work) which involves a structured educational programme that combines productive relevant work experience with academic study and professional reflection. He further explains that students are required to undergo a period of on-the-job training as part of their degree and/or diploma studies. This period varies from weeks, to months, and a year (in some programmes) in their final year of study. The main advantage is that students gain experience in a professional field during their formal studies and begin a working life with knowledge of the market place, organisational structures and employer expectations. Edwards, Martin and Rees (2012: 28) explained that providing clear documentation on academic/learning and administrative matters around WIL, and identifying the support available if needed, to students and supervisors in the field allow each to make the most of the workplace opportunity and assists them to establish realistic expectations and achieve learning outcomes. Boles and Beck (2007: 5) identified the benefits of WIL as a preparation of students for the world of work and their place in it, and to provide organisations with better educated and work-ready employees.

Graduate attributes

The role and ultimate measure of an institution's success should not so much be the throughput of its students, but whether or not its graduates are able to find employment and meet the requirements of the employers with respect to their performance. It is imperative for an Institution of Higher Learning to keep abreast of the evolution that characterises the world of work and to understand the different needs of the different sector with respect to the type of graduate that they produce (Nofemela, 2015: 92). The demand for graduates who can function effectively in the workplace has resulted in University of Technology and Comprehensive University in some instances experiencing mission drift, losing the focus on their mission of producing technicians, technologists and other mid-level skills at undergraduate level (White Paper for Post-School Education and Training, 2013: 11). The committed support of its external partners (industry, government and the non-profit sector) are critically important for the success of DUT as it endeavours to meet the need to produce socially responsible graduates who are conscious of their role in contributing to the national development effort and social transformation (DUT Strategic Plan 2015 – 2019: 4). One of the major challenges to which the National Skills Development Strategy is responding to, is the inadequate skills levels and poor work readiness of many young people leaving formal tertiary education and entering the labour market for the first time (NSDS III, 2011: 6). This could also reduce the employability of successful graduates. Employability is more than the development of attributes, techniques or experience just to enable a student to get a job. Rather, it is about growing as a person and learning to know oneself within the working environment (Wheeler, 2015: 106). Also, there is pressure on HEIs from both government and employers to produce graduates who are employable in the sense that they have the attributes, capabilities and dispositions to work successfully (Griesel & Parker, 2009: 1). Furthermore, universities are faced with increasing pressure to produce employable, work-ready graduates for a constantly and rapidly changing work environment (Jacobs, 2015: 41). According to The New Growth Path document released by the Economic Development Minister Ebrahim Patel in December 2010, the government will set targets for growth in the public service to meet the needs. This will be combined with measures to expose young people to work experience through internships in the private and public sector (The New Growth Path, 2010: 13). Brimble and Freudenberg (2010: 2) highlighted that WIL is aimed at improving the employability of graduates by giving them valuable practical experience which is directly related to courses being studied a university.

According to Clements and Hays (2012, 3) in general, it can be said that (a) graduates themselves often report lacking important understanding about workplace culture and behaviour, not to mention feeling inadequate with respect to practical skills and (b) managers in employing organisation consistently rate new graduates as poorly equipped in terms of practical and interpersonal skills (citing Wendlandt and Rochlen, 2008) for additional strong support of this assertion. A number of research reports across the different disciplines have identified that employers consider that it important for graduates to have a broad range of both cognitive and behavioural competencies (Hodges, 2011: 55). One can realize by looking at these graduate attributes that some of them cannot

be taught in a classroom. They require mentorship and guidance with a lot of interactions between employers, students and mentors from the university. This can also form part of learner support. There are strong indications that Co-operative Education builds better student's academic results because of the connections made between theory and practice, which adds meaning and understanding to student's knowledge, and thus performance improves (Crump & Johnsson, 2011: 287).

METHODOLOGY

During the presentations of the investigations and mini-projects that are done by WIL students whilst in industry, a relevant questionnaire was distributed to them. At the same time, every student who is registered at DUT has an email address that is kept in the DUT4life database. A questionnaire was sent to students and graduates using this database.

The sample for students and graduates

The sample of students consisted of the role-players involved in WIL. In total, 200 questionnaires were despatched and 188 were returned with a 94 percent response rate. A group of 104 graduates of DUT was given a questionnaire that was specially designed for them.

RESULTS AND DISCUSSION

Below are the findings for WIL students and graduates.

Findings of WIL students

Two-thirds (65.7%) of the students indicated that it took less than one month. Edwards, Martin and Rees (2012: 28) highlighted that the length of placement can vary from a few weeks to full one-year internships.   A little less than 5% indicated that it took more than a year.

TABLE 1: Time interval by manner of sourcing a placement

			How did you find your placement to undertake WIL?		Total
			Via DUT Co-op unit	Self-application	
How long did it take to get a placement after you were	< 1 month	Count	43	76	119
		% within How did you find your placement to undertake WIL?	46.7%	85.4%	65.7%
		% of Total	23.8%	42.0%	65.7%
	1 - < 3 months	Count	27	11	38
		% within How did you find your placement to undertake WIL?	29.3%	12.4%	21.0%
		% of Total	14.9%	6.1%	21.0%
	3 - < 6 months	Count	12	0	12
		% within How did you find your placement to undertake WIL?	13.0%	0.0%	6.6%
		% of Total	6.6%	0.0%	6.6%
	6 - < 12 months	Count	4	0	4
		% within How did you find your placement to undertake WIL?	4.3%	0.0%	2.2%
		% of Total	2.2%	0.0%	2.2%
	Over a year	Count	6	2	8
		% within How did you find your placement to undertake WIL?	6.5%	2.2%	4.4%
		% of Total	3.3%	1.1%	4.4%
Total		Count	92	89	181
		% within How did you find your placement to undertake WIL?	100.0%	100.0%	100.0%
		% of Total	50.8%	49.2%	100.0%

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There are two main reasons for this:
1. The discipline is saturated in such a way that the supply of graduates exceeds the demand on the field.
2. The relationship between the hosting organisations and the university is badly managed. Hence this study recommends the training of Co-operative Educaion Practitioners.

According to (Clarke and Llewellynn, 2012: 149) the learning is embedded in the practices and relationship of the workplace and assists in fashioning member identity and meaning. Table 1 above indicates the time interval by the manner of sourcing placement. It is noted that 85.4% of the students who made a self-application were placed within a month, compared to 46.7% who had gone via the Co-operative Education office at DUT. At the moment, the Co-operative Education at DUT is understaffed. This suggests that more resources such as manpower should be allocated to the Co-operative Education so as to improve the sourcing of placements. The most effective and valuable learning experience for people in work, is often that which occurs through the medium of work, or is prompted in response to specific workplace issues (Clarke and Llewellynn, 2012: 149) citing (Eraut, Alderton, Cole and Senker, 2000; Eraut, Steadman, Maillardet, Miller, Ali, Blackman, et al., 2005; Felstead, Fuller, Unwin, Ashton, Butler and Lee, 2005).

Figure 1 shows the aproximately a quarter of the students (24.3%) indicated that they did not receive any visits from the university mentor. Students involved in business activities especially in marketing had learned some technical skills, for example modification of garments, photography some farming activities (Ahmad, Keat and Mahat, 2012, 6). These researchers (Ahmad, at el., 2012, 6) explained that during this period, several visits were made by the lecturer to motivate students and to consult both students and entrepreneurs if they face any difficulties. Most respondents (43.1%) had a visit once a semester. Five percent had visits more than twice a semester. The Swinburne University of Technology in Australia is supervised in each discipline, establish and monitor the learning outcomes of each placement (Dunn, Fonseca and Schier, 2012: 137).
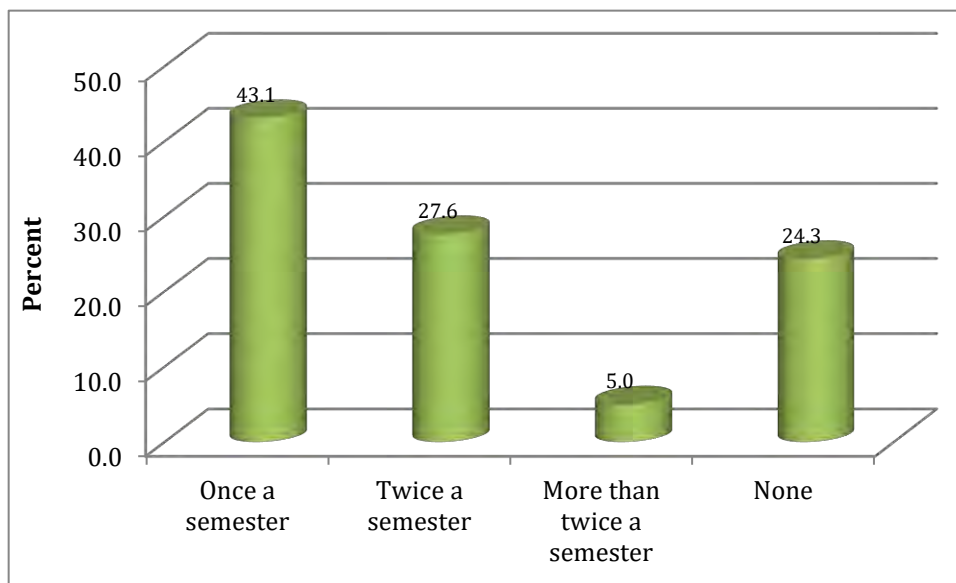
FIGURE 1: Number of visits by univesity mentor per semester

Brown, Butler, Field, Gamble, Kift and Mcnamara (2012: 4) citing Gardner (2012) warranted that a further vital component of any positive transition to the world of work is support for students to manage their planning and development processes, and the provision of opportunities for them to consider how their own knowledge and skills might interact with different professional skills set. According to Forbes (2007: 1) students placements are managed by staff whose role and responsibilities have not been linked to the integration of work-based learning outcomes. This is also a reality in some programmes at DUT.

Figure 2 indicates the influence of other people on the respondent whilst on WIL. (The percentages are per option. Totals would not add up to 100% as multiple responses were allowed). According to Keating (2012: 95) citing Hillman (2010) whether a mentor's impact is positive or negative depends in large part upon how well informed

and skilled the mentor is, and upon the mentor's commitment and availability. Most respondents (43.6%) identified the Industrial Supervisor as being the most influential as shown in Figure 2. This is attributable to the direct instruction and training that respondents receive whilst on training. The Co-operative Education or WIL programme are functioning as a training ground for students to develop these skill sets (Drysdale and Mcbeath, 2012: 169) citing (Freudenberg, Brimbel and Cameron, 2011). Also, Figure 2 denotes the least of respondents fellow WIL students (11.2%) shown that least influential.
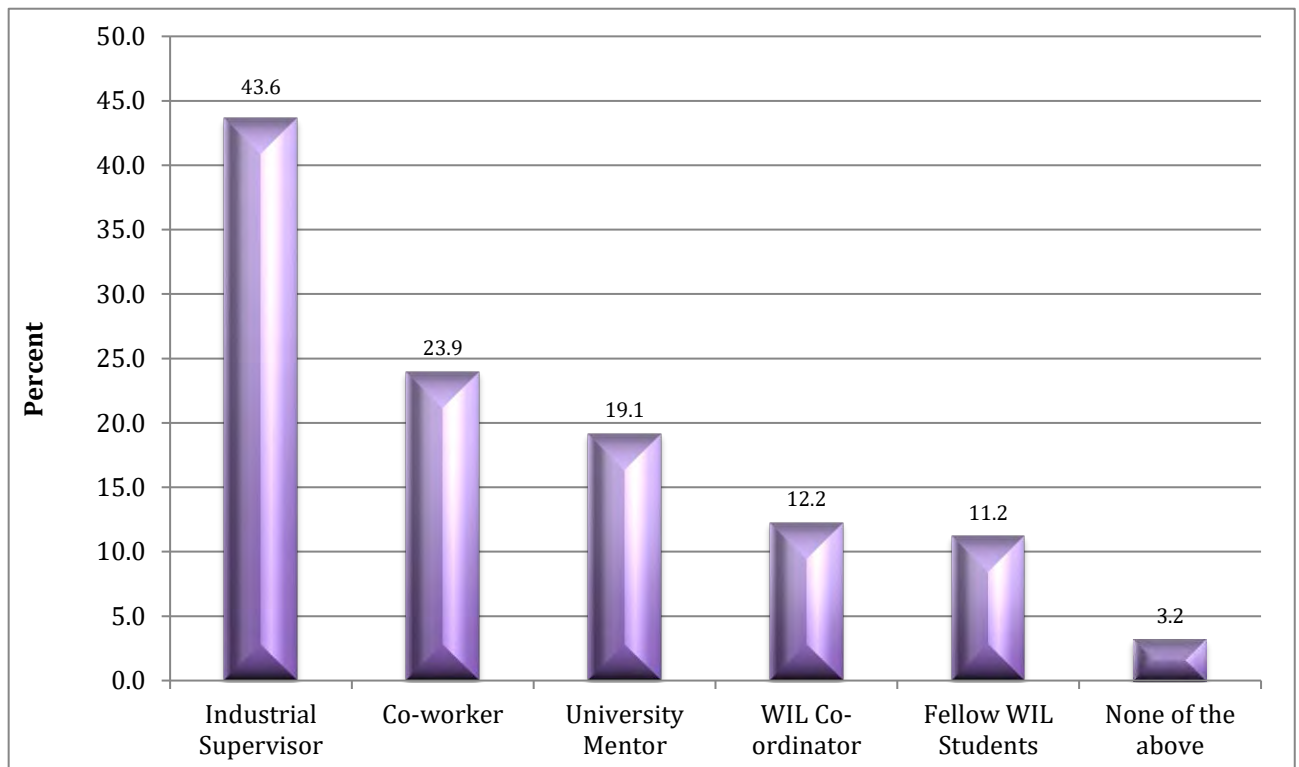
FIGURE 2: Person who impact on student's learning

Findings of graduates

The Figure 3 indicates the current occupation of the graduates. More than half of the respondents (52.0%) were employed in the field of their qualification. Also, this trend toward Work-Integrated Learning programme is equally motivated by the expectation from employers that new university graduates will enter the workforce with higher levels of competency in their field of study and have the skills necessary to transition successfully into the workplace explained by Drysdale and Mcbeath (2012: 169) citing (Gardner and Chor, 2007). A quarter of the graduates are unemployed (25.5%) and graduates that are employed - not relevant to qualification (20.4%). DUT has a CV database for the employers that are recruiting for the graduates. According to the National Strategy on Work-Integrated Learning in University Education (2015: 2) in Australia many employers already provide these opportunities. The reason for participating is varying, but research shows businesses that participate in WIL see its value in the graduates who enter the workplace.
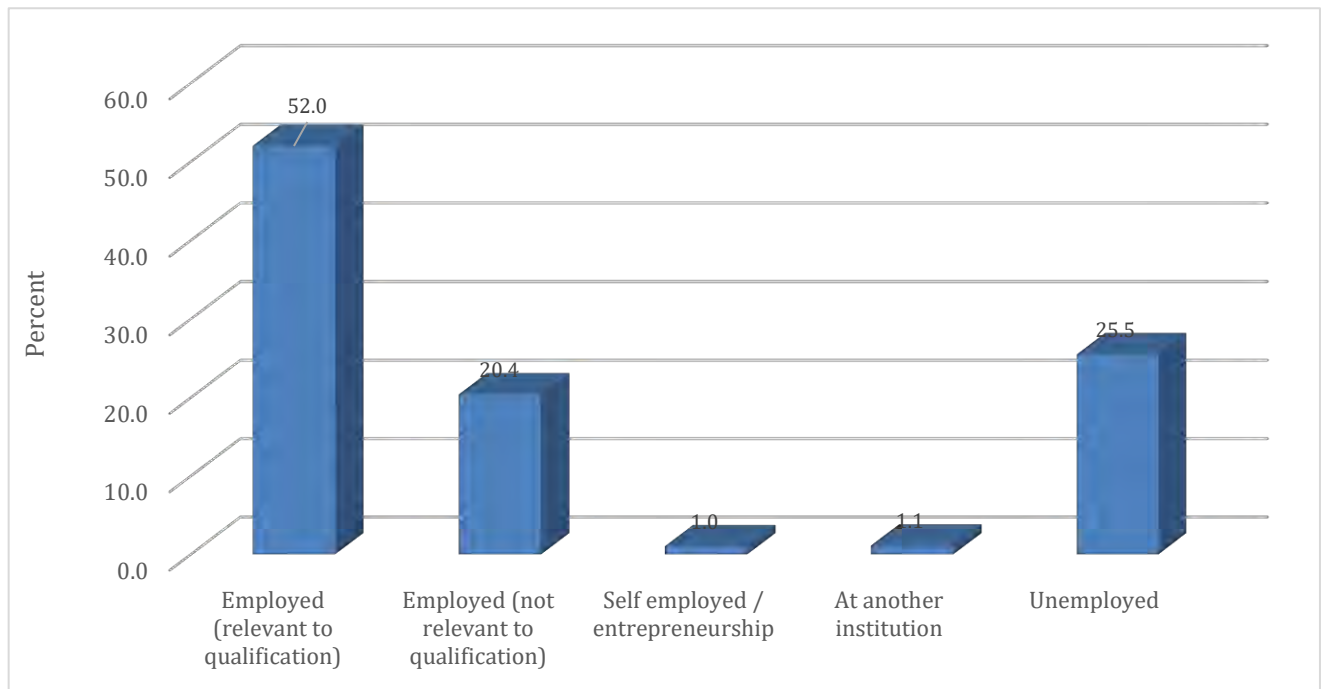
FIGURE 3: Current occupation of the respondents

Figure 4 is the summarised rating of various supporting related statements. The trend is that the support structures have been good or better than that. The graduates indicated that the support of the University Mentor good (48.2%) regarding academic teaching, learning and assessment. Furthermore, Koch (2012: 2) alluded to the fact that the work-integrated learning implies that students should be involved in meaningful performances, tasks and learning areas which are set out clearly by the UoT. Moreover, the graduates indicated that the support of the Industrial Supervisor good (42.0%) regarding the day to day supervision. According to Ferns and Moore (2012: 207) WIL is an effective means of preparing graduates for the world of work and encompasses a range of experiences.
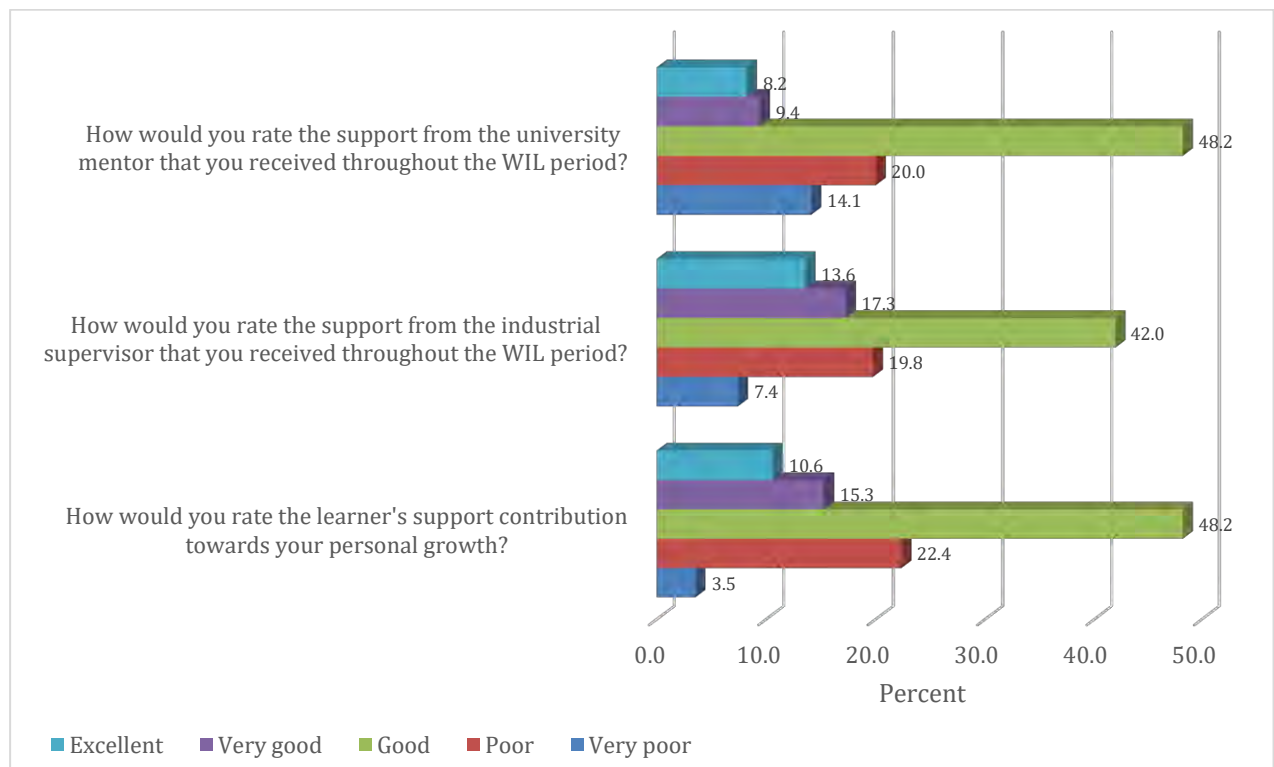
FIGURE 4: Various learner support related statements

The graduates rated the learner's support contribution towards their personal growth 48.2%. This is interesting because the graduates have got good behaviour towards the work ethics and looking mature for interview and community at large. According to the National Strategy on Work-Integrated Learning in University Education (2015: 2) in Australia, graduates identify WIL as having positive impact in making the transition to work and their competitiveness in the labour market, often identifying the practical experience they gained through WIL as crucial to getting a job.

The length of time that it took to find employment after graduating is shown in the **Figure 5** below. Nearly a quarter of the respondents (24.7%) indicated that it took less than a month. It is interesting to know that the graduates indicated that 21.6% is still searching for an employment opportunity. Whereas, 12.4% and 18.6% of graduates indicated that the length of time to find employment is (1 – 3) months and (3 – 6) months, and over a year respectively, as shown in the Figure 5. Ferns and Moore (2012: 207) highlighted that WIL is regarded as a mechanism for addressing the requirement to embed employability skills into the student experience and provide accountability measures. According to Clements and Hays (2012, 3) in general, it can be said that (a) graduates themselves often report lacking important understanding about workplace culture and behaviour, not to mention feeling inadequate with respect to practical skills and (b) managers in employing organisation consistently rate new graduates as poorly equipped in terms of practical and interpersonal skills (citing Wendlandt and Rochlen, 2008) for additional strong support of this assertion.
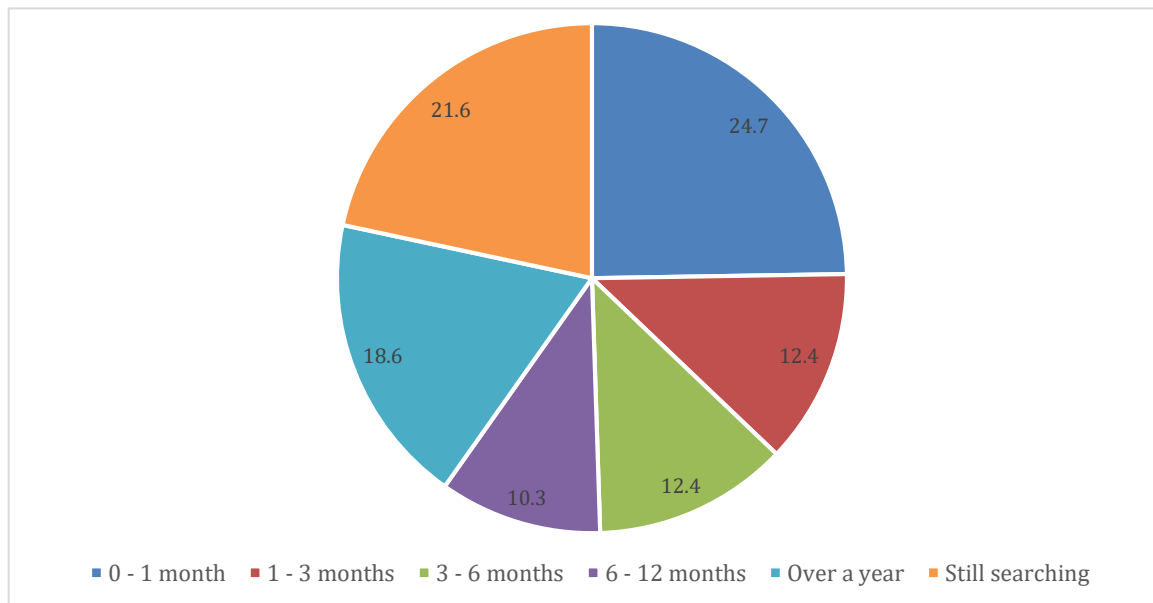
FIGURE 5: Time for the respondents to source their current employment

Figure 6 indicates the skills and traits that are deemed necessary for learner facilitation. High levels of importance are assigned to all characteristics. A particular strength of the WIL experience is the ability to enhance those soft skills that could not be learnt in the classroom environment (Edwards, Martin and Rees, 2012: 2; citing Fleming, Martin, Hughes and Zinn, 2009). The respondents indicated that being sensitive (83.3%) to the WIL students, extrovert person (75.0%) and having social skills (73.7%) ranked among the lowest of these. Dunn, Fonseca and Schier (2012: 136) citing (Hodge, Smit and Jones, 2004) highlighted that student learning must also involve more than skills acquisition and workplace competencies, with the development of 'soft skills' which relate to the practical application of theoretical principles and the student behavioural development.
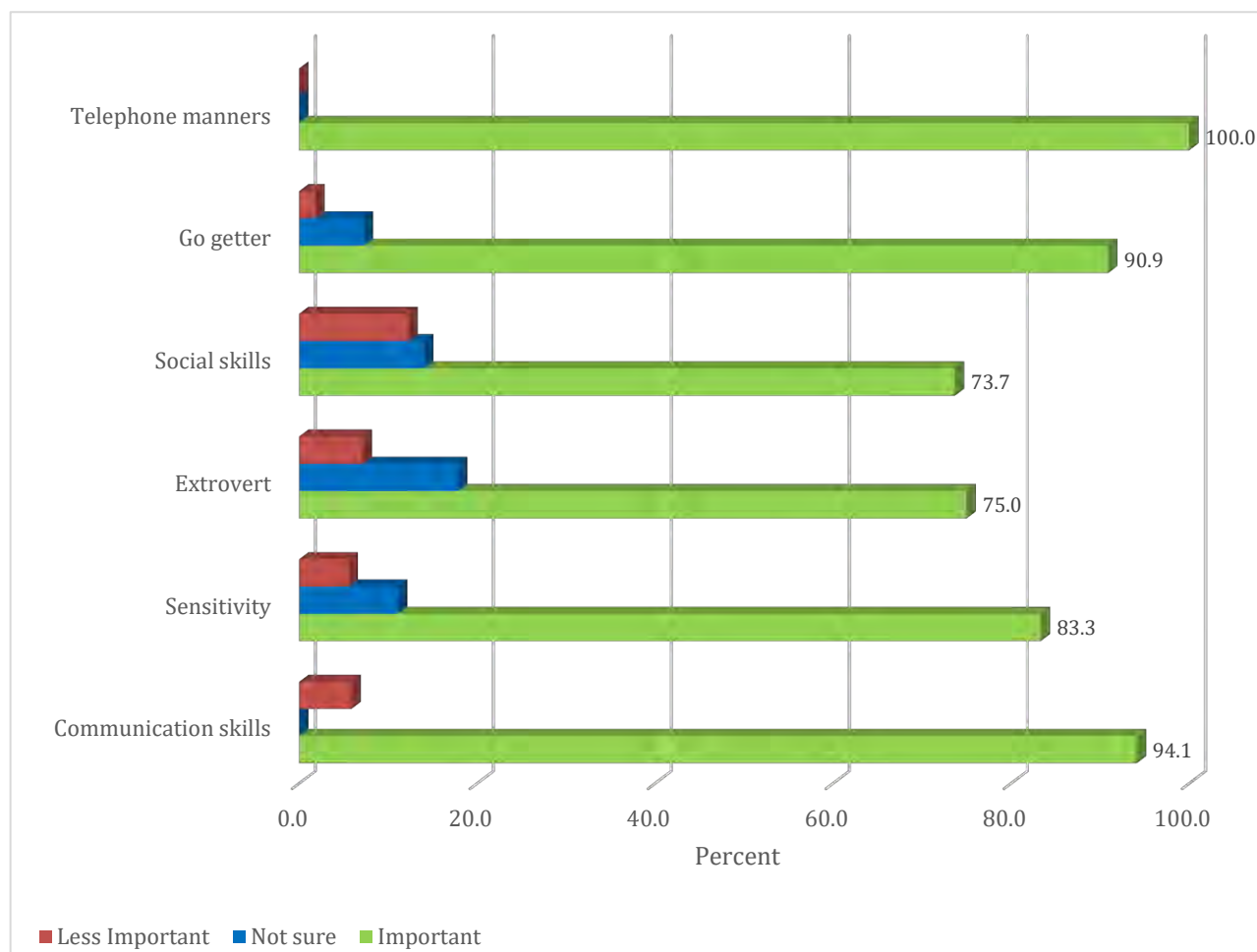
FIGURE 6: Skills and traits that are deemed necessary for learner facilitation

Table 2 below is a summary of what respondents believe are characteristics or qualities that an industrial supervisor must have. (The percentages are per option. Totals would not add up to 100% as multiple responses were allowed). While school based learning is important in helping students develop skills for knowledge acquisition and critical thinking, the opportunity for workplace experience should allow them to apply their knowledge to real world situations and develop interpersonal skills such as conflict resolution, communication and networking Drysdale and Mcbeath (2012, 170) citing (Hanneman and Gardner, 2010). Many studies confirm the value of learning in the workplace, including learning professional skills and knowledge, improving self-confidence, promoting reflective thinking and building networks for their career (Hodgson, 2010, 2) citing (Crebert *et al.*, 2004a; Dressler and Keeling, 2004; Graham and Megarry, 2005; Morgan and Turner, 2000; Spowart, 2006; Wilson and Pirrie, 1999).

TABLE 2: Characteristics and qualities that an industrial supervisor must have

	Frequency	Percent
Outspoken, open-minded and a good listener	2	1.9
Strong, highly skilled and positively minded	1	.9
Aware of university requirements, student interests, learning and development, liaise with university mentors	5	4.7
Good leadership, organizational and problem solving skills	3	2.8
Must be friendly and open-minded	1	.9
Interpersonal, time management, communication and entrepreneurial skills	2	1.9
Supportive and encouraging	7	6.6
Technical and people management skills	1	.9

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	Frequency	Percent
Understanding, empathetic, encouraging and approachable	2	1.9
Must be dedicated, innovative and motivated	2	1.9
Responsibility and commitment to students	2	1.9
Should have the necessary qualification, experience and leadership skills	4	3.8
High self-esteem, strong, persevering, intelligent and respectful	1	.9
Able to lead, analyse, motivate and offer moral support to learners	1	.9

Table 3 is a summary of what respondents believe are characteristics or qualities that a university mentor must have. (The percentages are per option. Totals would not add up to 100% as multiple responses were allowed). This is an effort to improve student's ability to provide greater evidence of the development of graduate attributes and employability skills (Dunn, Fonseca and Schier (2012: 144).

TABLE 3: Characteristics and qualities that a Co-op Practitioner must have

	Frequency	Percent
Outspoken, open-minded and a good listener	2	1.9
Good leader, positive attitude, tolerant and patient	2	1.9
Good understanding of the industry	5	4.7
Good communication skills	2	1.9
Supportive, encouraging and dedicated	8	7.5
Time management and mentoring skills	1	.9
People management skills	2	1.9
Understand learner's capabilities and offer proper direction	3	2.8
Must be a specialist in one or more areas of operation	2	1.9
Should have the necessary qualification and experience	1	.9

CONCLUSION

Time interval by manner of sourcing a placement of students was indicated to be less than one month for 65.7% respondents shown in Table 1. This is not bad at all however it must be improved. In Figure 1 the quarter of student indicated that they did not receive any visits from the university mentor. This should be improved to be 0%. Industrial supervisors were singled out by students to have had a positive impact on their learning during WIL. This is shown in Figure 2 and suggests that they must be properly supported in terms of capacity building in order to boost their confidence in the work that they do. This can be achieved by offering short courses and hosting mentorship workshops to train them and improve their skills. Figure 3 indicated that more than half of the graduates (52.0%) were employed in the field of their qualification. This suggests that DUT has more half graduates are placed on their right industry. In Figure 4 the graduates indicated that the support of the University Mentor good (48.2%) regarding visits to the industry, work-integrated learning and assessment of reports.

The length of time that it took to find employment after graduating is nearly a quarter of the graduates (24.7%) indicated that it took less than a month as opposed by WIL students (65.7%) above. This is shown in Figure 5. Skills and traits that are deemed necessary for learner facilitation especially by Co-op Practitioners for WIL or graduates are shown in Figure 6. The characteristics and qualities shown in Table 2 and 3 are very much important.

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Current work-integrated learning practice in South African technical and vocational education and training colleges: A concern for student employability

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ABSTRACT

South Africa is faced with challenges that include high unemployment rates, low levels of skills and declining quality of the education system. Work-Integrated Learning (WIL) is regarded as an appropriate pedagogical approach that could improve the quality of education and enhance student employability. It is against this background that this paper presents the research findings on how WIL is understood, planned and implemented by the South African Technical and Vocational Education and Training (TVET) college staff, using a qualitative approach. The research findings from focus group interviews revealed that WIL is defined, understood and practised differently across TVET colleges and that there is conceptual confusion in terms of the WIL terminology. The research also highlighted lack of standardised procedures and proper plans for preparing, placing, assessing and monitoring students for workplace-based learning. The research indicated that WIL is an unfamiliar and emerging concept in the TVET sector. The paper expresses a concern and raises questions in relation to the contribution of the reported WIL staff practice to student employability. The paper also calls for the promotion of WIL as an effective teaching and learning approach for staff development programmes. The paper uses the following theory of change: If WIL is used as an approach that underpins staff development programmes, staff will deliver high quality WIL that will develop student employability skills and graduate attributes for self-employment. Such graduates will in turn have a significant contribution to South Africa's socio-economic growth and social development.

INTRODUCTION

South Africa is faced with challenges that include high unemployment rates, low levels of skills and declining quality of the education system. One of the contributing factors to this situation is that Higher Education Institutions (HEIs) have been producing unemployable graduates In an attempt to address this situation, the South African Education and Training system is now geared towards preparing students for employment and self-employment through emphasizing the development of employability skills and experience of real world situations. The White Paper on Post-School Education and Training that was published in 2013 has a section on Education and the Workplace (RSA DoE 2013). Work-Integrated Learning (WIL) is regarded as a fundamental part of a student's education and training system. WIL is seen as an important element in the learning repertoire of both staff and students as it provides the key opportunity for students to explore the world of knowledge at the nexus of theory and practice (CHE 2011). It contributes to graduate maturation and work-preparedness, and in the South African context it improves their employability. Workplace learning partnerships between employers and educational institutions are therefore viewed as central to providing practical learning that is in line with the curriculum.

In South Africa there are many misconceptions about WIL, and Workplace-based Learning (WPBL) in particular – as well as considerable changes in the revised programmes that understand WPL as not only basic skills development but also as advanced practice that deepens conceptual development through the integration of theory and practice (CHE 2011). Although there is often contestation about the various terms associated with various forms of work-integrated learning, the significance of learning through doing is not disputed. Work-integrated learning is therefore in essence about *learning*, and not about working (Blom, 2013: viii). Fundamentally, it is a form of learning that occurs at the interface of theory and practice and in conditions that are representative of the workplace.

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Definition of Work-Integrated Learning (WIL)

South Africa's Council on Higher Education (CHE) (2011), describe WIL as an umbrella term to describe curricular, educational and assessment practices, across a range of academic disciplines that integrate formal learning and workplace concerns. The integration of theory and practice in student learning is seen as occurring through a range of WIL approaches. Examples include: action-learning, apprenticeships, cooperative education, experiential learning, inquiry learning, inter-professional learning, practicum placements, problem-based learning, project-based learning, scenario learning, service-learning, team-based learning, virtual or simulated WIL learning, work-based learning, work experience, workplace learning, and so on.

Legislative Framework for WIL

The guidelines for WIL practice are documented in South African official documents that include the Higher Education Qualifications Sub Framework (HEQSF), the White Paper on Post School Education and Training and the National Skills Development Strategy 111.

The Higher Education Qualifications Sub Framework (HEQSF) (2012: 49) states that:

> Where the entire WIL component or part of it takes the form of workplace-based learning, it is the responsibility of the institutions that offer programmes requiring credits for such learning, to place students into appropriate workplaces. Such workplace-based learning must be properly structured, properly supervised and assessed.

The National Skills Development Strategy 111 highlights the need for higher education institutions to enter into agreements with Sector Education and Training Authorities (SETAs), and other stakeholders in order to increase opportunities for workplace learning and post graduate work. This strategy also makes it clear that it has become necessary to make university degrees 'work-relevant' and to produce graduates that would, in time, supply the workforce with the skills needed to drive economic growth (Department of Higher Education and Training, 2011).

WIL Practice

Studies indicate that WIL is effective under the following conditions:
- When the academic/cognitive level is appropriate (Flower & Hayes 1980; Hager & Beckett 1995)
- When the language/communication practices are appropriate (Gonsalves 1992; Hornberger 2004; Belcher & Braine 1996)
- When there is sufficient scaffolding or guidance for the learning (Lave & Wenger 1991; Rose 2004)
- When there are opportunities to debrief and discuss (meta-learning) (Schön 1987; Boud & Garrick 1999)
- When lecturers and students understand the relevance of the task (Bereiter & Scardamalia 1987; Dias et al 1996).

Employability

Employability is abroad term that has been defined in various ways by several authors (Knight and Yorke, 2004; Harvey, 2005; Price and Maier, 2007). The most widely accepted definition is that employability is "a set of achievements, understandings and personal attributes that make individuals more likely to gain employment and be successful in their chosen occupations" (Knight and Yorke, 2004:3). Knight and Yorke (2004) also describe employability as "a blend of understanding, skilful practices, efficacy beliefs, and reflectiveness" From these definitions it is clear that employability relates to skills, the attainment of employment and the ability to move between positions. It is, however, difficult to determine which competencies will secure and retain a position for graduates in the world of work.

The Role of TVET Colleges

Several studies indicate that the TVET sector in numerous countries was formulated to increase the number of employable young people by affording them the opportunity to acquire practical knowledge and requisite skills

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training needed in the job market or for immediate self-employment (Akoojee (2003; UNESCO, 2004; Afeti 2012; Amedorme and Fiagbe 2013. Literature indicates that there is a need for expanding the role of TVET colleges. According to Fraser (2014: 494-502), the South African government has indicated that all TVET colleges must undergo developmental transformation that relates to the setting up of national training bodies and the introduction of laws to strengthen their national vocational training programs.

Given that South Africa is currently faced with challenges such as chronic unemployment, inequality, and poverty; McGrath (2012) also states that "the South African TVET system needs to be strengthened in order provide access to high quality technical vocational education for all (youth and adults), without losing sight of the TVET's special relationship with the world of work. Abban and Quarshie (1996) point out that one of the most important features of TVET, as recognized by African governments, is its orientation towards the world of work with the curriculum emphasizing the acquisition of employable skills in order to integrate the youth into the working world (King and McGrath, 2004). UNESCO (2004) also place emphasis on the need to expand the role of TVET colleges and identify the two major objectives of TVET as the urgent need to train the workforce for self-employment and the necessity to raise the productivity of the informal sector.

In an Australian context, Wheelahan (2015), points out that "a settlement between civil society (employers, labour and occupational groups), the state and educational institutions would result in broader qualifications that emphasize educational and vocational purposes rather than being narrowly tied to specific jobs, as is currently the case" (Wheelahan (2015: 127).

Work-Integrated Learning is seen as a vehicle for expanding the role of TVET colleges (Cavanagh 2013:1-14). Currently, WIL is practiced in 50 registered and accredited public TVET Colleges in South Africa which operate on more than 200 campuses spread across the rural and urban areas of 9 South Africa's provinces. There are currently ±650 000 students in public TVET Colleges (DHET 2015).

It is against this background that research was conducted with South African Technical and Vocational Education and Training (TVET) college staff in an attempt to find out how college staff understood, planned and implemented WIL and to determine the extent to which staff WIL practice enhanced college students' employability.

THEORETICAL FRAMEWORK

The literature on learning theories associated with WIL suggests that WIL is rooted in experiential learning theories that place emphasis on the importance of student involvement, experience and engagement. WIL is also viewed as rooted in the theories of constructivism. To ensure that WIL promotes substantive learning WIL connects students' experience to reflection and analysis in the curriculum. This paper regards experiential learning as the pedagogical foundation for WIL that transforms learners, helps them revise and enlarge knowledge and alters their practice.

RESEARCH APPROACH

A qualitative research approach was used in an attempt to .answer the following research question:

- What are the existing staff practices with regard to WIL in industry settings in the TVET context? (e.g., planning WIL, placement practices, monitoring, assessment and WIL partnership management)

It was envisaged that the research findings would indicate the extent to which WIL staff practices are aligned with South African policy guidelines for WIL and the manner in which WIL practices enhance TVET College students' employability.

Data Collection

Focus group interviews were conducted with staff responsible for WIL at 18 TVET colleges. Two colleges (one urban and one rural) were selected from each of the 9 provinces. Ten to twelve participants were selected and the selection criteria were that participants should be WIL experts at HOD Level and WIL lecturers.

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As the WIL practice is influenced by the way WIL is defined and understood, the participants were requested to define or explain how they understand WIL

Defining or Understanding WIL

The research findings indicated that WIL is defined and understood in different ways by the research participants. Four groups referred to WIL as just an exposure of the students to the workplace. One group in the Free State Province limited the definition of WIL to workplace-based learning and another group in the Western Cape stated that "WIL is industry-based learning". Two groups referred to WIL as "practical implementation of students' theoretical knowledge and "provision of opportunities for students to perform certain industrial tasks, so that students realize that what is taught in class is done in the real world". WIL was understood by eight groups as an integration of theory with practice. Six groups regarded WIL as an overarching term or umbrella concept for a variety of WIL modalities. Two colleges in the Western Cape mentioned that WIL prepares students for their future careers. One college in the Gauteng Province described WIL as "a method for improving teaching and learning in the class room." Some of the TVET colleges indicated that the terminology that relates to WIL is confusing. One group in the Eastern Cape described WIL as a "conceptual confusion." Others noted that WIL is still in its infancy and therefore unfamiliar to some staff members.

Practitioners' Current WIL Practice

The research participants were requested to describe how they (a) prepare students, college staff and workplace mentors for WIL; (b) place and monitor students' WIL activities; and (c) assess students' WIL activities (d) manage WIL partnerships

Preparing for Workplace-Based Learning

The research participants mentioned various ways or processes and procedures for preparing students, college staff and workplace mentors. Such processes and procedures include the following:

- Induction programmes for students, staff and employers were mentioned by eleven groups.
- Eight groups mentioned work readiness classes that focus on CV writing, communication, report writing, workplace etiquette, interviews, dress code, provision of logbooks, workplace mentorship and aspects of the task books.
- One group also mentioned that students are prepared through simulation room exercises and that for the 18 months NATED programmes, students are given lists of activities in which they should participate in order to be awarded the Diploma.
- The teaching of theory was mentioned by one group as another way of preparing students for the workplace.

Although the preparation of students was described well and viewed as "important for the success of WIL", some of the research participants mentioned that in some cases "there is no proper plan for student preparation and that student preparation often depends on lecturers that sacrifice their own time for their students". There was also an indication that the research participants would have preferred task books for NATED programmes and not just a list of activities: "There are no tasks books for NATED programmes and this is a disadvantage for NATED students"..

It was also noted that there are no standardised procedures for preparing students for workplace-based learning and that there was no uniformity in departmental and college practice. "Some [departments] involve employers and some simply place the students"

Placing WIL Students

The responses relating to student placements indicated that for some colleges work placements are regarded as an important component of the college curriculum. "WIL is one of the three components in the college curriculum. The first component is the theory, the second component is practical tasks in the college and the third component is workplace experience". The manner in which college students are placed in workplaces is described below.

1. The responsibility to find workplace learning opportunities largely lies with students. "Students find their own host employers and the college checks that the employers meet the placement criteria. Lecturers and the WIL co-ordinator assist the students who are unable to find places".

2. There are attempts to build working relationships between TVET colleges and workplaces. "The college tries to place students in the same workplace as used in previous years in order to build and maintain working relationships."

3. The placement practice and the duration for student placements vary according to college programmes. One group stated that "Engineering studies are not placed as the large number of students makes it difficult to find sufficient workplaces. The college is looking into placing electrical NCV students. The NCV is depriving students as there is not sufficient exposure to the workplace. The learnerships and internships in the NATED programmes provide students with longer (from 18 months) and better WBE." "At present NCV students are not ready to enter industry".

4. There is a relationship between the placement times for NCV students and the 5 day workplace exposure of college lecturers. "NCV students are placed in the June/July holiday - The college annually budgets R100 per day per student placed for a maximum period of 5 days". "Lecturers and the WIL co-ordinator go into the workplaces to monitor students during their placement in the June /July holiday. Lecturers gain industry experience through conducting monitoring visits". "Usually when lecturers do their 'five day' industry exposure they visit students".

5. College lecturers have mixed feelings about the placement times for NCV students "Lecturers are reluctant to monitor students during their holidays – they are not given additional remuneration". "Students go during holidays, can work-based exposure not be interwoven into the curriculum?".

Monitoring College Students' WIL Activities

The responses of the research participants revealed that TVET colleges use the following ways to monitor students that are placed in workplaces. .

1. Time sheets that are sometimes used to comply with the requirements of SETA "payments" (stipends) for the students

2. Student visits that enable WIL staff to speak with both the student and workplace supervisor.

3. Logbooks: The use of logbooks as a monitoring tool also seemed to be popular practice as it was mentioned by 5 groups. It was also pointed out that the logbooks provided college lecturers with employers' written feedback on the activities that were undertaken by students in the workplace. Student reflective feedback formed an integral part of the logbooks.

4. Task books: The task book that has built in signatures from supervisors for different tasks as well as an evaluation form, was mentioned as another monitoring tool.

5. Job cards: For automotive lecturers job cards that have spaces for written feedback are used.

6. Records that include 'to-do-lists' and 'checklists.*"We develop the checklist and to-do-list for students" "Our campuses have records to track students and their performance"*

WHATSAPP & Facebook groups: Use of social media was mentioned by two groups

It was mentioned that the monitoring process has its own challenges. "There is no policy to guide monitoring" and "there are no formal strategies in place to measure the impact of WIL, better measuring instruments are needed". Although attempts were made to monitor students the challenge is that you do not achieve 100% monitoring". "Lecturers are reluctant to monitor students during their holidays – they are not given additional remuneration" "There are no opportunities for student reflections"

Assessing Students' WIL Activities

A variety of WIL assessment systems that were mentioned by the research participants included the following:

1. Workbooks, task books and assignments
2. Logbooks: Although four groups mentioned logbooks as an assessment tool, one group indicated that

> "All students going into the workplace use a logbook otherwise they can't claim their stipend from the SETAs".

It was further confirmed that WIL is not assessed in some programmes:

> For Nated courses there are no assessment tools because the students have completed N4 – N6. Once they have finished that, they just need a form which they bring back to administration and the examination officer who sends it to Pretoria and they get their Diploma

> A current weakness in the system is that students are not getting evaluated on their internships - they do not return to the college after having completed the internship

> It is a challenge to measure the impact of industry placement (of both students and staff) in the classroom. This is an area that needs development.

Managing WIL Partnerships

When the research participants were asked to describe how they managed WIL partnerships they could not answer the question. Instead they mentioned the challenges they face in managing WIL partnerships. The most commonly reported challenge (from ten colleges) related to gaining industry buy-in, support and cooperation.

Three groups noted that companies are not interested in TVET college programmes because the curriculum does not meet up with what the industry requires. "National exams do not test what is happening in industry".

Lack of human resources was mentioned as another challenge. "We have only one WIL coordinator and there are too many students. Lecturers do not have time to go and visit students in industry. Time and heavy workloads are also an issue".

Another challenge relates to the lack of funding for WIL. "Some business partners are not able to pay stipends for WIL students. Employers select students that are funded by the SETAs, and students want stipends".

Another challenge relates to who covers the cost of insurance of students in the workplace: Some respondents mentioned that students have a negative attitude to and lack of commitment for WIL. "At present the partners find the students lacking in soft skills." "Students often do not do their part, which leads to negative feedback from industry."

Respondents also highlighted costs related to transport and the distances students need to travel to reach WIL placements, in which cases additional accommodation costs are incurred. A further challenge relates to the lack of communication and coordination between the college and the workplaces. An additional challenge is that workers sometimes feel threatened by students and think that students are going to take their jobs. Confidentiality issues are also a barrier. In some industries no workplace-based learning can be done due to secrecy policies. The challenge raised by one college in the Western Cape was that lectures are teaching vocational subjects but have no knowledge of work context.

DISCUSSION

From the research findings it is evident that there is conceptual confusion in terms of the WIL terminology and that WIL is an emerging concept in TVET, and perhaps a term and practice that not all staff are familiar with. Consequently, WIL is understood and practised differently across college s and differently between departments within colleges.

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The research has noted the reported lack of synergy between the workplace and what is being taught. There is no standard practices in which employers are selected to participate in WIL, not all learning programmes are aligned with industry, and there are few instances of businesses or industry involved in curriculum design. This is likely due to a standard DHET curriculum being followed. The DHET is responsible for developing the TVET curriculum, and lecturers are involved in such processes when called upon by the DHET.

Although the research participants mentioned various ways or processes and procedures for preparing students, college staff and workplace mentors, the research revealed that there are no standardised procedures and proper plans for preparing students for the workplace and that there was no uniformity in departmental and college practice.

The placement practice and the duration for student placements vary according to college programmes and the responsibility to find workplace learning opportunities largely lies with students. Lecturers and WIL co-ordinators assist the students who are unable to find places.

Although students' WIL activities are monitored through time sheets, student visits by lecturers, logbooks, task books, job cards, social media and other rrecords that include 'to-do-lists' and 'checklists, the research revealed that the monitoring process has challenges that are attributed to an absence of policy guidelines for monitoring WIL and formal strategies and measuring instruments for assessing the impact of WIL. Consequently, 100% monitoring is not achieved. It is important to note that most of the student visits that were mentioned were related to 5 day visits of NCV students by lectures that were doing their 5 day SSACI work-based exposure. What also needs to be noted is that in some cases logbooks are used as SETA monitoring tools for the payment of stipends rather than for assessment purposes. Other challenges relate to difficulties in monitoring due to reluctance of lecturers to monitor students during their holidays and to a lack of preparation and commitment on the part of some students.

While WIL is not always assessed, when it is, the most common form is via logbooks, task books and portfolios of evidence. This practice is not in line with the Higher Education Qualifications Sub Framework (HEQSF) (2012: 49) which states that "It is the responsibility of the institutions that offer programmes requiring credits for [the WIL component], to place students into appropriate workplaces. Such workplace-based learning must be properly structured, properly supervised and assessed."

Research has also highlighted several challenges in relation to WIL partnership management in the South African TVET sector. The current WIL staff practice is a cause for concern and it is for this reason that the following questions are posed:

1. If the current WIL practice of TVET college staff is characterised by so many challenges, to what extent is WIL able to enhance college students' employability?
2. How should alignment of the WIL practice and the legislative framework be ensured?
3. How can WIL staff practice be improved?

CONCLUSION

From the research findings it can be concluded that current WIL staff practice in South African TVET colleges has little or no significant impact in enhancing college students' employability. It is recommended that the current WIL practice described above be followed up with individual and/or focus group interviews with college students in order to triangulate the information received from the lecturers with students' WIL experiences.

It is also recommended that WIL should be promoted as an effective teaching and learning approach for staff development programmes to raise general awareness and capacity around WIL facilitation. Adopting WIL as a pedagogical approach could enable staff to deliver quality WIL programmes that could enable students to be employable and contribute to South Africa's economic growth and social development

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Innovative training for work-integrated learning in electrical engineering: Opportunities and challenges

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ABSTRACT

Work-Integrated Learning (WIL) is an essential component of any engineering programme. The balance of theory, practicals and work experience makes the diploma in electrical engineering a popular qualification with students and employers in South Africa. The Engineering Council of South Africa (ECSA) published new standards for WIL, which will allow for more flexible teaching and learning. Students will be able to apply their knowledge using various methods, not just work-based learning. The new standards will be harnessed to create a 70-credit project for those students unable to obtain work placements. In this paper we will evaluate the project undertaken to investigate the new opportunities available with the new standards, evaluate the successes and address the challenges related to the pilot project we implemented last year.

Keywords: Work-Integrated Learning, Electrical Engineering and Distance Learning.

INTRODUCTION

The concept of graduateness in higher education has become a topical issue worldwide. The quality of a graduate is not simply the ability of a student being able to pass exams, but a measure of the student's ability to enter into the workplace as well as the reputation of the institution itself. There is increasing emphasis on work based learning, as it aims to integrate academic study and practical work experience. Integrating theory and practice in an engineering curriculum is mandated by a number of accreditation bodies in the world, including the Engineering Council of South Africa (ECSA). The exit level outcomes prescribed by ECSA (ECSA, 2002 & HEQF 2007) require engineering students to apply scientific, engineering and complementary knowledge to solve well-defined engineering problems while also completing engineering procedural designs. Unisa is therefore mandated by ECSA to provide quality engineering education programmes which adhere to the high standards set forth by the Washington, Sydney and Dublin accords (International Engineering alliance, 2012). These new standards have enabled us to introduce a 700-hour project into the work-integrated learning (WIL) for the National Diploma in Electrical Engineering at Unisa.

National Diploma in Electrical Engineering

A student must obtain 360 credits in order to qualify for a three-year National Diploma in Electrical Engineering at UNISA. These credits are secured by passing twenty 12-credit subjects, each consisting of a theoretical and practical component, with an additional 120 credits being awarded on completion of one year's suitable work experience, i.e. work-integrated learning (WIL). A student who is unable to complete the WIL component cannot be awarded the qualification, even though the student might have passed all required academic subjects. (SAPSI 150, 1997). The main reason for implementing the new 700-hour project is to enable such students to finalise their studies.

WORK-INTEGRATED LEARNING IN ELECTRICAL ENGINEERING

The design, monitoring and evaluation of, WIL as well as visits to industry in the engineering disciplines are structured to meet the requirements as set out in the purpose of the qualification, the required outcomes and the criteria used by the accrediting body, ECSA. Strict guidelines exist that need to be adhered to if worldwide accreditation is to be maintained.

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In the existing system the student and mentor / training manager together draw up the appropriate WIL training programme in consultation with a Unisa representative. The first six months of WIL learning is finalised once 10 modules have been completed successfully. During this first WIL training period, generic training areas that are relevant to all areas of specialisation are dealt with (CHE 2011, Unisa 2015 & Unisa 2012). The students may register for the second six months of training after successful completion of 15 modules. This second period of WIL training is specific to the student's area of specialisation, be it computer systems, clinical engineering, electronics and electronic communication, power engineering, process instrumentation or mechatronics.

In the new standards the following are seen as acceptable work-integrated learning (ECSA, 2014):
- Work-directed theoretical learning
- Problem-based learning
- Project-based learning
- Workplace learning
- Simulation

As a result of the new standards ECSA has published for WIL we have been able to adapt our WIL programme based on these new standards and piloted a project at the Florida campus. The advantage of the new standards is that it allows more flexibility and the work-integrated modules will be funded.

Discussion

The intention is to develop WIL into 12 credit modules for inclusion into the main curricula. A total of 6 12 credit modules will make up the 72 credits (minimum of 70 credits required) and will be a combination of the new approved WIL standards. This will be a major challenge requiring much deliberation with service providers in developing these modules for endorsement by ECSA and approval by SAQA. The general opinion is that the WIL component in the old diploma was paramount to the successful acquisition of employment by students and hence should be retained in the curriculum even if in different forms. This will ensure that higher education institutions will not have the burden of having to place students in industry, as the WIL components will now be in the form of modules based on the new standards.

WIL PROJECT: AUTOMATE A MICRO-BREWERY

The purpose of WIL is to enable the learner to connect academic learning with workplace practice. The new standards can be summarised as follows (ECSA 2014):

The qualification is primarily Vocational or Industry related. The programme shall have a core of integrated project work that provides a viable platform for lifelong learning. The Exit level outcomes of qualification for well-defined problems are (ECSA, 2014, & Unisa 2011):
- Problem solving
- Application of scientific and engineering knowledge
- Engineering design
- Investigation
- Engineering methods, skills, tools, including information technology
- Professional technical communication
- Impact of engineering activity
- Individual team work
- Independent learning
- Engineering professionalism
- Workshop practical as part of an integrated project

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Discussion

Students will have be required to meet all the outcomes listed to be able to register with the engineering council. Well defined problems are solved by using acceptable engineering standards. A wide variety of skills will need to be acquired and assessed by students in WIL for the new programme.

Project based learning brings together intellectual enquiry, real world problems and student engagement in meaningful work. The improvements in technology and the new standards have made it possible to include simulated learning for Programmable Logic Controllers, Variable Speed Drives and Human Machine Interfaces to form part of our WIL programme. We invited students who were unable to find a workplace placement to participate in projects that we identified. In 2015 and 2016 twenty six students participated in the projects at the Florida campus. These projects were all related to plant automation for a micro-brewery and would include training. We arranged two day training sessions on:

- easy programmable controllers (PLC's), This training enabled the students to do programming in ladder. The second session covered timers, counters and markers.
- XC programmable controllers (PLC's), This training enabled the students to do programming in Instruction List and function blocks. The second session covered analogue signals and PID loops.
- Human Machine Interface (HMI). This training enabled the students to do programming in Gallileo. This covered touch screen control and visualisation.
- variable speed drives (VSD's). This training enabled the students to control the speed of an induction motor safely for different applications.

While training the students were given a choice of projects in which they could apply this knowledge. These projects where for temperature control, automating the milling process, visualisation of the brewing process and recipe control for different types of beers.

Discussion

As we had the equipment and expertise at the Florida campus we trialled the new 70 credit WIL requirement over two years. As this qualification is offered by open and distance education we made videos of the training sessions and these will be used to for students that are unable to attend training sessions.

FIGURE 1: The Micro-brewery that needs to be automated

Each student was given the software so they could do the simulations at home. This way less time was needed to be on campus. Once the students had completed their work they could link their programmes to the actual

equipment on campus for final testing. As functionality counted 30% of the final mark this was a very important part of the project. They could now take readings, analyse the results and compile a portfolio. Assessment is integral to effective curriculum design and the implementation of this WIL project, students were required to present their projects at the end of the year.

Discussion

As we supply students with the training and the simulation software students are able to do a large portion of the preparation work at home. Once the students are ready to connect their designs to the actual equipment; this has to be done at the campus to meet the functionality requirement. The challenge is to enable students to do this throughout the country and this will require agreements with other institutions.

FINDINGS AND CHALLENGES

The purpose of this paper was to highlight how technology enhanced learning has been used to integrate theory with practice in an electrical engineering project which would assist students to do a 700 hour project towards their WIL.
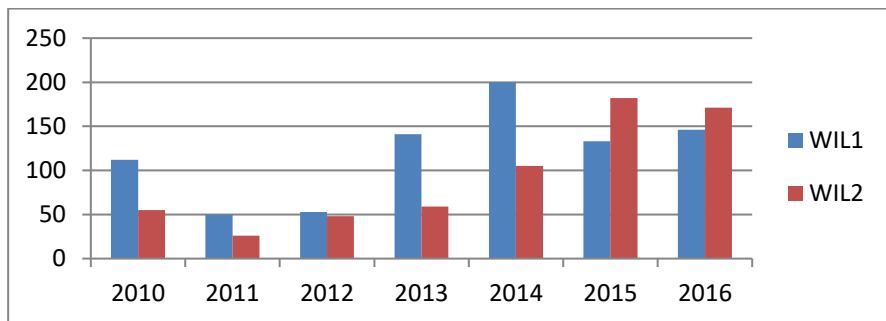
FIGURE 2: Number of students registered for WIL from 2010 to 2016

There has been a significant increase in the number of part 2 WIL (area of specialisation) students for 2015 and 2016. We were able to offer 26 students the opportunity to partake in the projects at Florida. As 21 of these students successfully completed the project in 2015 and 22 in 2016 we will expand on the programme in 2017. A major area of concern is how to introduce the programme at other venues throughout South Africa.

Discussion

The challenge will be to implement this 70 credit model for a larger group of students that are situated throughout the world making use of open and distance learning tuition model.
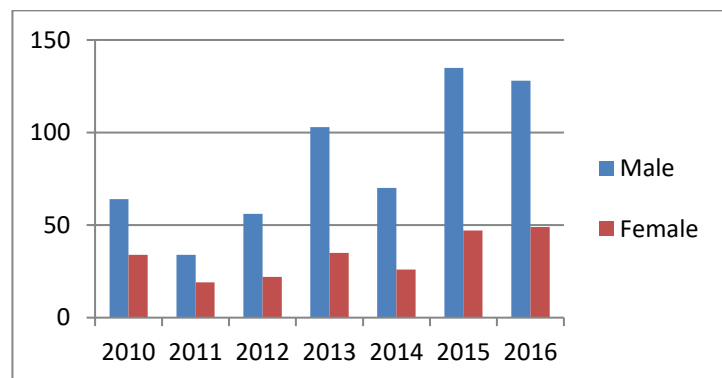
FIGURE 3: Number of students by gender registered for WIL from 2010 to 2016

From 2010 to 2015 more than twice the number of male students compared to female students have registered for WIL.

Discussion

More promotional work must be done to promote interest in electrical engineering for women.
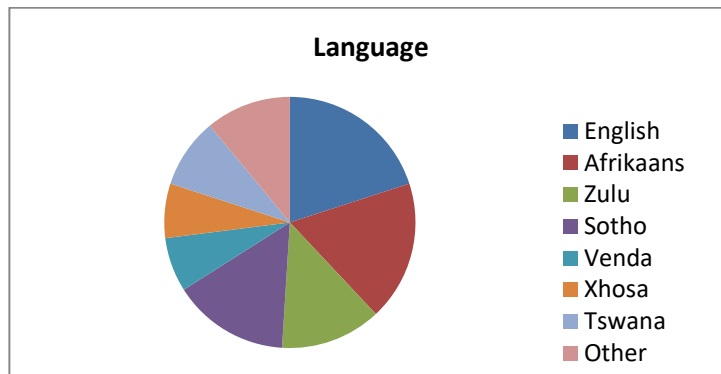
FIGURE 4: Languages spoken by students registered for WIL in 2016

Unisa's language of tuition is exclusively English for electrical engineering. Most students therefore receive tuition in a language other than their mother tongue.

Discussion

Additional support must be made available to students regarding language and communication must be done in understandable English.

The opportunity to include the additional types of work-integrated learning in our assessment approved by our accrediting body will resolve some of the challenges that open and distance learning poses. We will be able to include these in our new qualifications that we are busy developing. The costs of the site visits will still remain a costly exercise.

Discussion

We have piloted a programme in plant automation. The challenge is to expand this to electronics, telecommunications and power engineering.

CONCLUSIONS AND RECOMMENDATIONS

The implication for students in the past was that they had to be employed at some time in the course of their studies by an employer able to offer the relevant and necessary work-integrated learning. If students were not able to complete the work-integrated learning, they could not be awarded the National Diploma, even though they might have passed all the required academic subjects.

Project-based learning that brings together intellectual enquiry, real world problems and student engagement in meaningful work will enable us to offer WIL projects on campus. Work-integrated learning is an essential component of any engineering programme. The balance of theory, practicals and work experience is what makes the diploma in electrical engineering a popular qualification with students and employers. The only way to ensure that Unisa's Engineering programmes are relevant, keep abreast with modern technology, meet local and international standards and fall within the universities strategic plans, require that our department work closely with industry, accrediting bodies and other stakeholders.

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Assessing graduates competencies in Namibia: A second-order factor analysis

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ABSTRACT

The purpose of this research was to assess graduates' competencies from a university in Namibia using a self-report five-point Likert scale and to examine the construct validity of the instrument through a Confirmatory Factor Analysis. This study adopted the quantitative method of analysis for a total of 196 graduate participants. The Second-order Confirmatory Factor Analysis (CFA) was performed to examine the responses to the 5 factors and 20 indicators of graduate competencies. The CFA results confirmed that the hypothesized model was a good fit to the empirical data set of Namibian graduates, as all standardized factor loadings were relatively high and statistically significant.

Keywords: Graduate Competency, Employability, Confirmatory Factor Analysis

INTRODUCTION

One of the major challenges facing Higher Education Institutions (HEIs) in the 21st century is to improve effective and appropriate graduate competence, thus leading to reduction in the skills mismatch (Quintana & Calvet, 2012), thereby enhancing employability skills to fit employment in public, private and voluntary sector organisations. This study is a second-order factor analysis aimed to assess competencies of graduates from a university in Namibia. This study was adopted from a graduate survey by the Namibian Ministry of Higher Education, Training and Innovation and the National Council of Higher Education (NCHE) in 2013. The graduate study was initially launched for three universities in Namibia. This study however only utilised data from one university. The main purpose of this survey was to assess graduate employability and mobility which should benefit, students, HEIs, the industry, higher education and the country's development at large.

Namibia has been reported to be one of countries with the highest unemployment rates in the world (Kanyenze & Lapeyre, 2012; Jauch, 2012; Mwinga, 2012). However, In fact, the Namibian Labour Force Survey in 2008 had revealed that the unemployment rate in Namibia currently stood at 51.2% (Ministry of Labour and Social Welfare, 2008). In a detailed analysis of the status of unemployment rate in comparison with the population in Namibia, Mwinga (2012) arrived at different results. He noted that the larger portion of the Namibian generation is the youth or middle aged, but high concentration of the labour force was in the age groups of 15-19 and 20-24. Hence efforts to improve the unemployment rate include: reforming the educational and training systems in Namibia, and developing community based employment creation programmes amongst others. Similarly, the Afronaut Foundation (2012) points out that vocational training, youth expos and intervention programmes for employment and economic growth are some of the strategies used to better the situation. However, more still needs to be done to reduce the high employment rate in Namibia. The Afronaut Foundation (2012) also suggests academic ways of increasing employability among Namibians such as the creation of platforms to improve communication; improvement of the education system and the promotion of vocational training. These should be underpinned by opportunities to share knowledge and mentoring. Most importantly, the Afronaut Foundation (2012) underscores the value of getting educated in order to improve chances of employability.

HIEs in Namibia are making an effort to integrate cooperative education in their academic programmes to enhance employability of graduates. Although cooperative education in Namibia is still in its infancy stage, professional or more traditional programmes such as Education and Nursing have always had courses that gave the students an

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opportunity to practice what they have learnt in the classroom. Thus, surveys such as these strengthen and promote the relationship between higher education institutes and industry which is essential in producing employable graduates. Measuring graduate attributes therefore brings about appropriate measures to ensure that HEIs indeed integrate the aspect of cooperative education and collaborate with industry to have curricula that addresses graduate attributes and employability.

PURPOSES

The purposes of this research were to :
1. assess graduates 'competencies from a university in Namibia; and
2. examine the construct validity of the instrument using second-order confirmatory factor analysis.

LITERATURE REVIEW

Graduate Competency and Indicators

According to Rychen and Salganik (2000), competency is knowledge, skills, and ability to apply knowledge and skills, as well as appropriate emotions and attitudes, and effective management in a specific context. It combines stable traits, learning outcomes, belief-value systems, habits, and other psychological features. Competency will therefore entail the three dimensions of skill development, namely: (i) cognitive skill, (ii) non-cognitive skill or behavioural, and (iii) technical skill (OECD, 2015). Trinder (2008) suggested that "competency is the ability to apply knowledge and skills to produce a required outcome. It is the ability to perform activities within an occupation; to function as expected for employment; and the ability to do a job under a variety of conditions, including the ability to cope with contingencies" (p. 165). While EU defines competences as a combination of knowledge, skills and attitudes appropriate to the context, the key competence is the need in all individuals for personal fulfillment and development, active citizenship, social inclusion and employment (Chiarle, 2013).

A global cities education network report by Soland, Hamilton and Stecher (2013) measures competencies for 21st century in three dimensions, namely (1) cognitive competencies, (2) interpersonal competencies: refer to competencies that are important for constructive interactions and relationships with other people, (3) intrapersonal competencies, which means attitudes and dispositions that influence how students solve problems and apply themselves in school, work, and other settings. Goel (2006) from the Jaypee Institute of Information Technology, India distinguished three dimensions of competencies in global graduates in information technology and these are: (1) attitudes and perceptions: which affect a professional's ability to practice; (2) productive habits of mind, given that the most effective professionals develop powerful habits of mind that enable them to think critically and creatively; and (3) meaningful usage, extension, and acquisition of knowledge. Downey et al. (2006) defined the global competency of engineers as "the knowledge, ability, and predisposition to work effectively with people who define problems differently than they do, including both engineers and non-engineers". With right attitudes and perceptions, professionals use their productive habits of mind to acquire and integrate knowledge. Consequently, the combination of attitudes, perceptions, and productive habits help them to extend, refine and use knowledge for meaningful tasks. Interestingly, Duoc and Metzger (2007) in Vietnamese institutions developed three competencies, namely professional skills, business skills and personal attributes based on twenty-eight attributes for quality of business graduates. Khampirat (2016) measure competencies of new graduates covering four aspects: humanware, orgaware, infoware and technoware. There are also a number of studies that have proposed various competencies required or expected of graduates.

Furthermore, these reviews identified attributes such as competency in various skills attitudes knowledge, and engagement with the broader measurement issues of society as necessary. Thus, this study uses "competency" in line with the definition of attributes.

METHODS

Participants

The present study used a cross-sectional design to a targeted a population of graduates from one university in Namibia. Of the total respondents - 196 graduate, 62.69% were females and 37.31% males. About 84.46% had parents whose highest level of education was less than bachelor's degree. The participants were graduates from the fields of Business Studies, Economics and Management (76.11%), Information Technology and Computer Science (8.33%), Engineering (7.78%), Natural Sciences (3.33%), Architecture (2.78%) and Education and Social Science (1.67%).

Materials

This study was adopted from a graduate survey by the Namibian Ministry of Higher Education, Training and Innovation and the National Council of Higher Education (NCHE) in 2013. The questionnaire consists of twenty items or indicators. The students were required to rate themselves on each of the indicators on a five-point Likert scale, where the lowest value 1 = low level of competence; 5 = highest level of competence. There were no reverse-coded statements in the scale.

Procedure

The graduate study from which this study was adopted aimed to assess the employability and mobility of graduates. One of the main outcomes of this tracer study was to establish graduate attributes of Namibian graduates from three universities in Namibia, although the results are only based on competencies of graduates from one of these Universities. This was a quantitative study in which a five-point Likert scale, structured questionnaire in which open ended questions were incorporated in the process of collecting data were used. The University was involved in the survey development training as the first phase and in the process of customization and developing hard copy survey.

The NAMTRACE workshop which discussed the methodology to collect data appropriate for all universities was conducted and launched. Media such as Television, Newspaper and Radio were used for the survey awareness campaign and for students at regional centres, local radio stations were used. To complete the questionnaires, pin/survey reminders were sent out via SMS to participants. The University followed up on the students telephonically regarding the completion of the questionnaire. The university was also involved in the institutional workshop to address challenges of system integration and loading the technical data collection software.

Data Analyses

The participants' responses were analyzed using SPSS for Windows, by which means (M) and standard deviations (SD) were calculated. The Pearson correlation (r) matrix was constructed to examine the relationship between the indicators in the model. To investigate the construct validity of the Namibian Graduates' Competency model, second-order CFA was made using Mplus 6.12. The CFA seeks to determine if the number of factors and the loadings of measured variables (indicators) conform to what is expected on the basis of a priori theory.

RESULTS

Data Screening

Since statistical methods in this study were sensitive to outliers and missing data, it is important to identify and make decisions about what to do with them (Stevens, 2002). The data was screened for univariate outliers. Five case out-of-range values, due to administrative errors, were identified and recoded as missing data. Twelve cases with more than 10% missing data were deleted from the study by the Listwise data deletion and then replaced with the all missing numeric values with the mean of the variable (Hair, Black, Babin, & Anderson, 2010). Replacing missing value with the mean is a popular approach since the mean of the score on the variables does not change, however,

the variance estimation is reduced (Martin & Bridgmon, 2012). The minimum amount of data for the CFA was satisfied with a final sample size of 196 and about 10 cases per indicator (Muthén, & Muthén, 2002).

Descriptive Statistics

Based on the statistical analyses of 196 participants, the mean scores for graduates' competence are presented in Figure 1. Graduates seemed to report themselves high on all indicators, with the highest ratings in "ability to work independently" (M= 4.53, SD=0.56), whereas "resilience" received the lowest rating (M= 4.22, SD=0.65).

Rating of Competencies

Competency	Rating
resilience	4.22
initiative	4.30
conflict management	4.30
flexibility	4.32
decision making skills	4.33
analytical skills	4.33
leadership skills	4.35
concern for order, quality and accuracy	4.37
problem solving skills	4.37
self control	4.38
interpersonal skills	4.38
achievement orientation	4.39
self confidence	4.42
professionalism	4.42
writing skills	4.43
time management	4.46
communication skills	4.49
teamwork and cooperation	4.50
ability and willingness to learn	4.52
ability to work independently	4.53

FIGURE 1 :Mean score of graduates rated themselves on competence.

The Pearson correlation coefficients measured the strength of the association between two indicators ranging from .133 to .685 and the positively related. It appeared that, the correlations between all indicators were statistically significant (*p*<.01), except for "communication skills" and "achievement orientation" did not correlate significantly (*r* = .133, *p*>.05). A positive correlation (+) indicates that if one variable increases the other variable will also increase, whereas negative correlation (-) means that if one variable increases, the other variable will decrease. These correlation values support the use of factor analysis in this study (Hair et al., 2010, Munro, 2005).

Exploratory Factor Analysis

Exploratory factor analysis (EFA) is a statistical method used to reduce a large number of observed variables into a smaller set of variables (which refer to as factors or components) and establishes the structure or relationship between measured variables and factors (latent constructs). EFA with varimax rotation was performed and described the relationships among 20 items with five components. The EFA demonstrate that 5 new components which were labeled "Professional and Communication", "Teamwork and Critical Thinking", "Self Control" "Self-

Regulation" and "Management and Resilience" have related to the Namibian Graduate Competence model. They can explain the proportion of variance accounted for by each component: 43.17%, 9.39%, 6.10%, 5.05% and 4.65% respectively – a cumulative total of 68.34% (total acceptable).

Second-Order Confirmatory Factor Analysis

Figure 2 shows the results of the second-order factor analysis. The path diagram displayed the fit indices, standardized factor loadings (standardized regression weights), squared multiple correlations (R^2) of the first-order factor model (Zone A) and the second-order factor model (Zone B). It appeared that, the proposed model that allowed four error terms to be correlated provides an adequate fit x^2= 316.724, df = 159, p = .000). The overall goodness-of-fit of the model, measured by the ratio of x^2/df is 1.992, suggesting that the proposed model fits the data reasonably well. The other fit indices (CFI = 0.921, TLI = 0.906, RMSEA = 0.071, SRMR = 0.052) also confirmed that the hypothesized model fits well. The standardized factor loading estimates indicated that all the five factors and twenty indicators contribute significantly to the measurement of graduate quality. The factor loading describing the relationship between each factor and their indicators in the first-order model (Zone A in Figure 2), as well as between each factor and the graduate competence factor in the second-order model (Zone B in Figure 2), were all sizeable and significant at p < .01. Indicators with high standardized factor loadings (> 0.6) indicate better indicator or strong relationship.
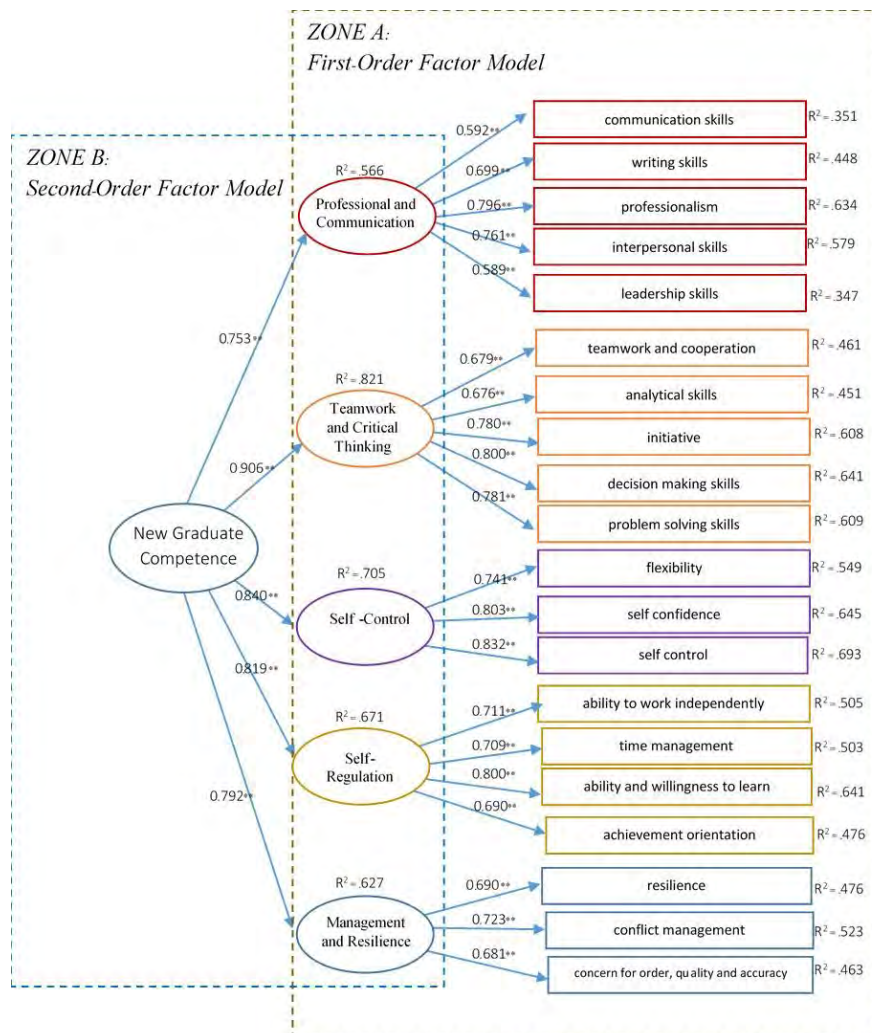
FIGURE 2 :Second-order factor model of Namibian graduate competencies. Note * :Estimate is significant at *p*-value < .05; **p*-value < .01.

Zone A in Figure 2 was the first-order factor model, representing the relationship among the factors and their indicators. The square multiple correlation (R^2) values included in Figure 2 showed the reliability of the

measurements (R² ranging from .351 to .693); communication skill (R² = .351) and self-control (R² = 0.693) are the highest and lowest, respectively. The high loadings suggest quite high shared variance between the factors.

All the second-order factor model in Zone B of Figure 2, shows that the standardized factor loadings were quite high. These factors could, therefore, explain the competencies of graduates from 75.30% to 90.60% of the total variance (R² ranging from .753 to .906), and support the hypothesis that the graduate competency scale has a global factor composed of these five factors, as well as the twenty indicators.

CONCLUSIONS AND DISCUSSION

Competency of graduates internationally is becoming a topic requiring greater attention as governments, industry and students place pressure on universities to account for the return on societal investment in higher education. This research study presented the quality of graduates' competencies from one university in Namibia using self-assessment questionnaire to gather data, as well as tested the reliability and validity of the instrument for measuring the competencies. The research findings showed that graduates reported themselves high on all indicators, with the highest ratings in "ability to work indepe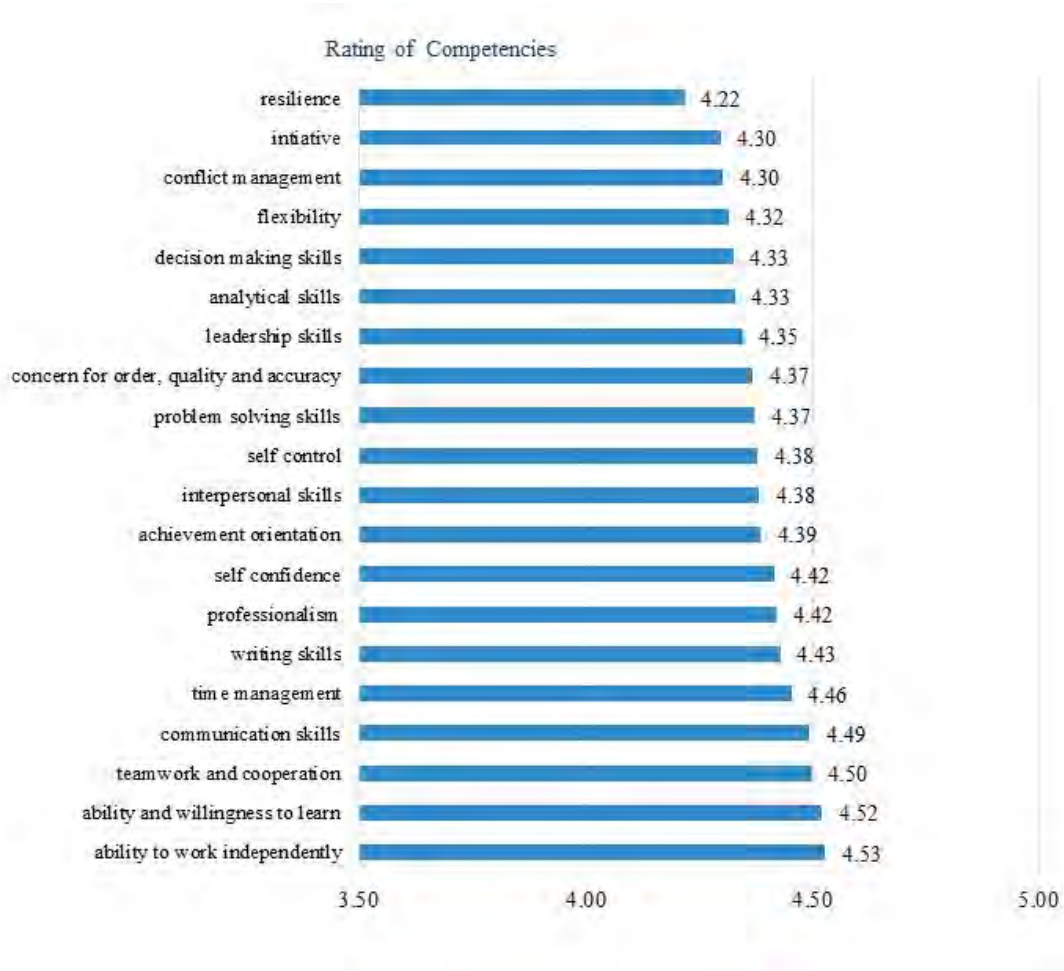ndently", whereas "resilience" received the lowest rating. This study suggested that these positive outcomes on all indicators are associated with the influence of undergraduate student socialization in their HEIs. They provided a good chance and good relationship to the students. HIEs in Namibia also are making an effort to integrate cooperative education in their academic programmes to enhance competencies and employability of graduates. Terenzini, Springer, Pascarella, and Nora (1994) indicated that African American students who collaborated with peers to study had positive gains in critical thinking. The empirical evidence of Terenzini, Pascarella, and Blimling (1996) also suggests that faculty-student contact outside the classroom are associated with gains in the academic and cognitive development, personal/interpersonal development and intellectual growth (Pascarella & Terenzini, 2005). The professional socialization process that occurs at HEIs has a direct effect on their competencies, learning outcomes, various dimensions of career interest and career choice (Pascarella & Terenizini, 1991; Padgett & Johnson, 2008). Thus, Namibian graduates showed the most gains in generic skill and intellectual achievements. In addition, this result could predict that they had the most satisfaction with their university experiences, both academic and non-academic. This means that graduates obtained diverse experiences and had the great commitment to their institution which the university provided a wide variety of study programmes, activities, WIL, and pay attention to the learner's experience and the skill/career development of students. The experience therefore has a positive relationship with the learning outcomes and competencies as well.

A secondary interest was the quality of the instrument which the second-order CFA results confirmed that the five factors and the twenty indicators define the graduate quality construct well. It appeared that Teamwork and Critical Thinking Factor are the most crucial factors for Namibian Graduates' Competence Model. This is not surprising, considering that Teamwork and Critical Thinking Factors are perhaps exactly the kind of competence that graduates regard as the great importance in the competency and needs to their jobs.

Furthermore, results of the second-order CFA revealed that Professionalism, Decision Making Skills, Self-Control, Ability and Willingness to Learn, and Conflict Management were the most important indicators for Professional and Communication factor, Teamwork and Critical Thinking factor, Self-Control factor, Self-Regulation factor, and Management and Resilience factor, respectively. It was assumed that there were the most relevant to student competence for the workplace. HEIs should consider these indicators to develop and encourage their students for ensuring that students received developmentally appropriate opportunities to apply their knowledge to enhance competencies, lifelong learning and employability. There are various activities, teaching and learning methods that can be used to develop and encourage students to achieve this competence such as experience inside and outside classroom/institution, seminars, laboratory courses, projects, study visits, and CWIE. These effective methods will provide an opportunity to connect the world of work and can assume that students would pick up appropriate skills and competencies for their prosperity as well as career and professional development.

Finally, the results could be beneficial in the development of competency and employability skills of graduates. However, as the focus of employability shifts to employment, graduates need to be well prepared for entering the

workforce and understand that their competencies, which match to the real work world, are as important as the work itself. Most importantly, students could employ this instrument to assess or diagnose their own competencies, strengths and weaknesses in their competencies, thus providing them a better handle of their employability, as well as help them to increase effectiveness in the workplace. Since the assessment of employability skills is critical for graduate employability and employment, it is important that in cooperative education, appropriate mechanisms for assessing employability skills are developed.

LIMITATIONS

When the tracer study on the assessment of graduate employability was launched, all universities in Namibia were requested to participate. However the data used in this study was only limited to 196 graduates from one university in Namibia. The participants were also graduates from the following fields only: Business Studies, Economics and Management (76.11%), Information Technology and Computer Science (8.33%), Engineering (7.78%), Natural Sciences (3.33%), Architecture (2.78%) and Education and Social Science (1.67%). Therefore, the results cannot be generalised to Namibian graduates' attributes collectively.

IMPLICATIONS FOR FUTURE RESEARCH AND PRACTICE

There are important considerations for future research on the further development and validation of the survey. First, future studies should compare between other regions by using a standard instrument. Second, in future studies, SEM should be used as a method to examine cause and effect. Comparisons between different universities graduate attributes could also be made to identify possible gaps and will help ensure that graduates leave the university well prepared for a level equivalent of the standard of higher education and other HEIs. Furthermore, comparative studies on graduate competencies and attributes from the employers' perspectives should be conducted as well. It is necessary to discover how and to what extent HEIs can improve students' learning and create modern graduates in order to meet the labour market needs and reduce skill imbalance and mismatch in the global economy growth context and rapid changes in technology. Because technological change and economic development can cause increase or decrease in the demand for a worker in some business sector, these sectors require higher quality labour and high productivity.

Since the term competency itself has been used quite widely and different meanings as well as cannot be directly measured (Trinder, 2008), it is necessary to assess and establish standards of graduate competency, especially with the fundamental aspects of graduate competency, for each region or within the academic field. The benefits of graduate competency standards are that they can be the benchmark used to compare the differences between environment and geography or educational institution, which lead to improving the quality of students and graduates for competitive advantage in the globalized economy.

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Lifelong learning levels in co-op and non-co-op students: Findings from a preliminary study on Rangsit University in Thailand

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ABSTACT

The purposes of this quantitative research were to investigate the lifelong learning level of co-op and non-co-op students at the Rangsit University, a leading private university in Thailand, and to explore the relationship between aspects of lifelong learning. The instruments used were the self-rated questionnaires with five-point Likert scales (1-5). The preliminary findings show that the levels of lifelong learning have been well evaluated and there is a significant relationship between aspects of lifelong learning. The Rangsit University has been continuously attempting to embed lifelong learning skills into the learning and teaching system since 2006, to date, through courses such as RSU101 - Meritocracy and ETH101 - Ethics Morals Promotion and Development.

Lifelong learning skills are linked to career development and enhance an individual's opportunity to successfully compete in the global economy. Students therefore need to adopt aspects of lifelong learning and continually develop these skills. Higher education can support and promote lifelong learning into the culture of the institution for all staff and students across the learning and project activities; research; diversity of culture and environment; personal development programmes, and Cooperative & Work-Integrated Education (CWIE). Future studies may develop scoring rubrics to assess the skills of lifelong learning and compare characteristics of lifelong learning between developing and developed countries.

Keywords: Lifelong learning ,Workforce, Cooperative and Work-Integrated Education (CWIE), Employability, Co-op student

INTRODUCTION

Lifelong learning, as a public benefit for society at large and to the individual as well (Smethurst, 1995), has become of vital importance with the emergence of new technologies that change how we receive and gather knowledge, information, collaborate (Bhatia, 2015), work in the digital era, and adapt to live. It is a basic necessity for everyone (Hanemann, 2015) in both developing and developed countries, and its benefits accrue very widely (Smethurst, 1995). Lifelong learning is about the opportunity to acquire knowledge and skills that people need to fulfill their aspirations throughout all of life, however, not everyone can acquire the prerequisites to participate in lifelong learning (Valenzuela Persico, 2014). In order to increase a student's opportunities to learn, and enhance their knowledge, the attitudes and skills to meet evolving needs as well as those needed to be successful in the pluralistic and interdependent world in which these students will live and work as adults are required (Scott, 2001). Billett and Choy (2011) describe that cooperative and work-integrated education (CWIE) experiences is one of the most excellent ways to support those chances and lifelong learning in modern times.

Lifelong learning and self-regulation have been considered as one of the key ways to improve students and even growth in the workforce since a dynamic digital economy era and social development in contemporary globalization is based upon highly skilled workers and professionals (Zuparic, 2009), the business sector demands graduates' talent, advanced skills and job readiness. This research therefore begins by focusing on investigation of the lifelong learning skills of co-op and non-co-op students and then studies the relation of GPA, co-op studentship

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and age on lifelong learning skills. It is expected that the assessment of students' lifelong learning skills can assist HEIs and families to improve the quality of students. Most importantly, students could also employ the instrument in this study to assess or diagnose their own practices, strengths and weaknesses in their learning, so as to motivate themselves to use lifelong learning strategies in their life.

RESEARCH PURPOSES

The purposes of this study were to:

1. Investigate the lifelong learning level of co-op and non co-op students at Rangsit University in Thailand .
2. Explore the relationship between aspects of lifelong learning and investigate the association of GPA, co-op studentship and age on lifelong learning .

LIFELONG LEARNING

Because lifelong learning that is characterized by self-directed learning has been globally recognized as an essential element of education policy, it is necessary for human beings to improve their intellectual and human capital development for personal fulfillment, global citizenship, social cohesion and employability (European Communities, 2007). The study of Meerah et al. (2011) showed that there were significant differences in lifelong learning tendencies between male and female university students in Malaysia. Whilst Elaldi (2015) found no significant differences in terms of gender, but there were significant differences in terms of grade levels for students at Cumhuriyet University in Turkey. Furthermore, the study of Drewery, Pennaforte and Pretti (2016) showed that students in their first or second year do not significantly differ from students with three or more years of education, where the lifelong learning attributes of Drewery et al. (2016) were measured by love of learning, resilience, self-reflection and information seeking. Besides this, in their research it was also found that relative to non-co-op students, co-op students report having significantly lower levels of love of learning, reflection, and information seeking. Likewise, the investigation of Ling (2016) indicated that students who participate in cooperative internships will acquire different soft skills than students who participate in traditional internship programs.

In Thailand, according to the Office of the National Education Commission (ONEC), lifelong learning was first introduced in the National Education Act (NEA) of 1999 as a guiding principle of the education reform plan for the years of 1999-2008 (ONEC, 1999). It has since been considered as an integral part of Thai culture and education, and is one of the principles and ultimate goals of education in Thailand (ONEC, 2003). The Thai government is used as a tool to develop and increase human and intellectual capital. Recently, the 20-year Thai national educational plan (2017-2036) still continues to focus on lifelong learning opportunities for all (ONEC, 2017).

RESEARCH METHODS

Participants

The number of participants used in this analysis was 151 undergraduate students, comprised of 47 (31.1%) co-op students and 104 (68.87%) non co-op students. Regarding gender, 68 (45%) were male and 83 (55%) female. GPA ranged from 2.04 to 4.00 (M = 3.12, SD = .46).

Measures

In the study a lifelong learning questionnaire was used. The questionnaire was adopted and adapted from the basis of a literature review and the questionnaires of Meerah et al. (2011), Stewart (2007), the European Centre for the Development of Vocational Training (CEDEFOP) (2003), Manninen and Meriläinen (2011), and Concannon and Barrow (2009). The lifelong learning questionnaire is a self-reporting instrument, having 30 items, divided into seven aspects.

The first aspect consisted of five items to assess Goal Setting (Meerah et al., 2011), the second consisted of three items to assess Application of Knowledge and Skills (Meerah et al., 2011), the third consisted of three items to assess Self-Management and Evaluation (Stewart, 2007), the fourth consisted of three items to assess Adaptable Learning

Strategies (Meerah et al., 2011), the fifth consisted of eight items to assess Application of Social Skills (CEDEFOP, 2003), the sixth consisted of three items to assess Changes in the Educational Experiences (Manninen & Meriläinen, 2011), and the seventh consisted of five items to assess Self-Efficacy Skills (Concannon & Barrow, 2009). Each item was measured on a five-point Likert scale, ranging from 1 to 5, with "1" indicating "not at all true of me" and "5": "very true of me" responses.

Cronbach's alpha reliability was used as a measure of internal consistency. The Cronbach's alpha of the scales of lifelong learning ranged from .729 to .957, which exceed the guidelines of adequate reliability. Consequently, there was a high consistency among respondents who answered the questionnaire (see Table 1).

Procedure

The questionnaire was translated from English to Thai language and then it was administered to students at Rangsit University, Thailand by the researchers and colleagues during a regular class period in the classroom, where the lecturers agreed to participate in this study. The participants were informed that there were no right or wrong answers to any question, that their participation in this study was voluntary, and that their data and background were confidential, as well as that the responses would not affect their grade (McKinney, 2007, p. 164). However, there was no direct benefit to students for participating; the benefit would be for the institution to gain information for improving the lifelong learning skills of the students. The students might choose not to participate or skip any question if they felt uncomfortable with it at that time.

Statistical analysis

Quantitative data analysis was used in this study. Means (M) and standard deviations (SD) were computed and analyzed. An independent t-test was determined to analyze the mean differences in lifelong learning between co-op and non-co-op students. Whereas, the Pearson correlation coefficient ( ) was conducted to measure the strength and direction of a linear relationship between pairs of aspects of lifelong learning, multiple linear regression analysis was conducted as the last step to investigate the association/relation of GPA, co-op studentship and age on lifelong learning.

RESULTS

Descriptive Statistics

The descriptive statistics for seven aspects and 30 items of the 151 participants are displayed in Table 3. The mean scores of items for the Goal Setting aspect were mostly in the good range in four items (M = 3.75 to 3.90), except "I prefer to have others plan my learning" (M = 3.30, SD = 1.05). Meanwhile, the mean scores of items on the Application of Knowledge and Skills, Self-Management and Evaluation, Adaptable Learning Strategies, Changes in the Educational Experiences and Self-Efficacy Skills aspects ranged between 3.50 and 4.08, showing moderate to good levels. This indicated an overall positive response to the aspects. For Application of Social Skills, the mean scores of eight items were mostly in the good range (M = 3.58 to 3.92), except "I am able to get on with people from me" (M = 3.44, SD = 1.01) and "I am able to manage people" (M = 3.39, SD = 0.83), which were in the moderate range.

The standard deviation (SD) describes the set of the data's spread from the mean. A smaller standard deviation indicates that the data points tend to be very close to the mean of the group, whereas a larger one indicates the data are more spread out from its mean (Table 1).

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TABLE 1 : Descriptive statistics and Cronbach's alpha reliability of the questionnaire

Aspects	*M*	*SD*	Reliability (alpha)
a) Goal setting	3.72	0.69	.795
b) Application of knowledge and skills	3.60	0.74	.821
c) Self-management and evaluation	3.57	0.75	.862
d) Adaptable learning strategies	3.61	0.72	.729
e) Application of social skills	3.64	0.65	.895
f) Changes in the educational experiences	3.75	0.78	.886
g) Self-efficacy skills	4.10	0.69	.864
Lifelong Learning (Total)	3.73	0.58	.957

Testing the mean differences of lifelong learning between co-op and non co-op students

The independent t-test results indicated there was a significant difference between co-op and non-co-op students in lifelong learning, t(124.81) = 2.19, *p* = .03. The mean values indicated that co-op students participate in lifelong learning (M = 3.86, SD = .43) more than non-co-op students (M = 3.67, SD = .63), as shown in Table 2.

Considering each of the seven aspects of lifelong learning, the results showed that there was a statistically significant difference between the two groups in the Application of Social Skills aspect, t(122.36) = 2.99, *p* = .00. That indicates that co-op students could have more Application of Social Skills (M = 3.85, SD = .49) than non-co-op students (M = 3.55, SD = .69). Whereas the other six aspects, namely: Goal Setting, Application of Knowledge and Skills, Self-Management and Evaluation, Adaptable Learning Strategies, Changes in the Educational Experiences and Self-Efficacy Skills, did not appear to differ significantly between co-op students and non-co-op students. The values of M and SD and the results of an independent t-test are presented in Table 2.

TABLE 2 : Mean, SD for co-op and non co-op students and the results of an Independent t-test

Aspects	Co-op Students (N=47)		Non co-op Students (N=104)		Independent t-test
	M	*SD*	*M*	*SD*	
a) Goal setting	3.83	0.55	3.67	0.74	1.40
b) Application of knowledge and skills	3.72	0.65	3.55	0.77	1.30
c) Self-management and evaluation	3.69	0.60	3.52	0.81	1.31
d) Adaptable learning strategies	3.75	0.61	3.54	0.76	1.66
e) Application of social skills[1]	3.85	0.49	3.55	0.69	2.99**
f) Changes in the educational experiences[1]	3.90	0.60	3.69	0.85	1.76
g) Self-efficacy skills.	4.15	0.54	4.08	0.75	0.55
Lifelong Learning (Total)[1]	3.86	0.43	3.67	0.63	2.19*

Note * : p < .05, ** p < .01;   [1] = equal variances not assumed.

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Correlation coefficients between aspects of lifelong learning

The matrix of correlation coefficients for the seven aspects (subscale of lifelong learning) was designed for lifelong learning, It appeared that almost all of the correlation coefficients *r* were statistically significant at .01 level ($p < .01$) and positively related (*r* value greater than 0), which demonstrated that there was a real relationship in the population. The values of the correlation coefficients ranged from moderate (.520) to high (.741). The positive correlations indicated that when the value of one variable increases, the other increases as well. On the contrary, a significant negative correlation between the two aspects indicated that the variables tend to change in the opposite directions; that is to say that when one value decreases, the other tends to increase and vice versa. For example, if students have a high level of Self-Management and Evaluation, they will have a high level of Application of Social Skills ($r = .741$, p <.01) and share $(.741)2$, or about 55%, of variation in both aspects, while the unexplained variance (or unshared variation) is 45% (100-55). Moreover, the results showed that Application of Social Skills of students at Rangsit University had a high level and strong relationship with other aspects of lifelong learning.

Investigating the associated predictors on lifelong learning **:***Regression analysis*

The multiple linear regression model with all three predictors, including GPA, co-op studentship and age, produced $R^2 = .027$ (which is quite low), F(3,147) = 1.35, and *p* = 0.261. Based on the regression coefficient, only the co-op studentship had significant positive regression weights (unstandardized coefficient = 0.21, standardized coefficient = 0.16, p < .05). This means that co-op studentship had a contribution in lifelong learning and indicated that co-op students were expected to have higher levels of lifelong learning than co-op students, after controlling for the all other variables in the model, t(147) = 1.98, *p* < .05. In contrast, the GPA and age did not have significant weight on lifelong learning ($p > .05$).

The results could generate linear regression equations for the unstandardized value (raw score) and standardized value to describe the statistical relationship between predictor variables and the independent variable. The standardized regression coefficient (beta) was used to compare the predictors, or variables, when they were measured in different units of measurement. The resulting equations were as follows.

Unstandardized Equation ：

   Lifelong Learning = 4.02** + 0.01(GPA) + 0.21*(Co-op Studentship) - 0.02 (Age)

Standardized Equation ：

   ZLifelong Learning = 0.01(Z_{GPA}) + 0.16*($Z_{\text{Co-op Studentship}}$) - 0.05 ($Z_{Age}$)

   Where ：Z ＝standardized score

CONCLUSIONS AND DISCUSSION

The research findings revealed that the levels of lifelong learning were well evaluated. The study is explained by the fact that Rangsit University has been continuously attempting to embed lifelong learning skills into the learning and teaching system since 2006 to date, through courses such as RSU101 – Meritocracy, and ETH101 - Ethics and Morals Promotion and Development. This study also showed that co-op students have more lifelong learning skills than non-co-op students. The study suggests that students who have CWIE experiences can support their lifelong learning skills. This finding is related to the studies of Drewery, Pennaforte and Pretti (2016) and Ling (2016) that showed that co-op students will acquire different soft skills than non-co-op students.

Furthermore, the results also found that co-op students can implement Application of Social Skills more than non-co-op students, as social skills are behaviors that promote positive interaction with others and the environment and are needed for success in a student's life, society and career. Thus, all students need to learn and practice social skills (Lynch & Simpson, 2010) through the CWIE system. The findings of the Pearson's correlation and multiple linear regression analysis reported that a significant relationship between aspects of lifelong learning and co-op studentship could predict lifelong learning skills. This means that co-op students will acquire more lifelong learning skills than non-co-op students.

In summary, countries around the globe acknowledge that lifelong learning has one of the most crucial roles to play in addressing the economic, social and technological challenges of the era of globalization (Carlsen, 2012) and to support sustainable growth now and in the future. In addition, lifelong learning skills are linked to career development and enhancement of an individual's opportunities to successfully compete in the global economy. Students therefore need to adopt aspects of lifelong learning and continually develop these skills. Higher education can support and promote lifelong learning in the culture of the institutions for all staff and students throughout the learning and project activities, research, diversity of culture and environment, personal development programs, and CWIE.

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Reflection of the use of technology in the management of work-integrated learning at a South African University of Technology

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ABSTRACT

Educational and socio- economic forces have driven Higher Education Institutions (HEI) to adopt and incorporate technology in classrooms. We live in a time where knowledge is a critical resource for social and economic development therefore people need to be able to participate in a networked information based knowledge economy. Where in all aspects are potentially enhanced through the use of technology.

WIL Practitioners face several challenges in their roles within HEI's. Many of these arise from lack of technology for managing placement, information, monitoring and assessment of students. In the past two years UoT in South Africa made provisions for WIL practitioners to receive basic technology support which would assist them in mitigating the mentioned challenges. This was done with the intention of improving WIL management, promote reflective practice and service to students. Provided technology ranged from laptops, tablets, phones, and BLACKBOARD learner management system. Through qualitative method questionnaire was conducted among WIL practitioners to verify benefits and recommended technology enhancements for managing WIL. The results of the study showed most participants indicating provision of technology improved communication, student's reflections, assessment and all WIL management aspects in general. This paper presents the integration of technology into WIL. Currently, the role of educational technology in teaching & learning is of great importance because of the ultimately improving quality of university output to industry.

Keywords: Work-Integrated Learning, Reflection and Social Networks.

INTRODUCTION

Over the years, Higher Education Institutions (HEI) in South Africa have been engaged in transitional processes of integrating technology into Work-Integrated Learning (WIL) management and assessments , with a view to making WIL more responsive to the socio-economic development need of our industry and society. This transition is characterised by the actions set out in the 2009 Cape Peninsula University of Technology (CPUT) position paper and by challenges faced by the WIL Practitioners in their roles within HEIs.

In an attempt to implement this action, surveys were conducted with WIL Practitioners on the extent to which they use technology in their daily work activities and how it can be improved. The aim of the use of technology implementation was to ensure that the management of WIL is done efficiently and minimise the impact of employers' time students using to travel back and forth to the campus to submit their portfolios or to meet with their WIL Practitioners.

The purpose of this paper is to outline integration of technology into WIL. An attempt will be made to understand and interpret improved ways that seek to find a better fit between education and the world of work. This will be followed by feedback from the survey conducted in the past two years. The discussion will then focus on the reflections of the use of technology and how to structure WIL management.

The role of education technology in teaching and learning is of great importance because of the use of information and communication technologies. One of the strategies for promoting WIL is by increasing use of technology in classrooms as well as at the workplace. With the help of various applications for distance education, internet, WIL Practitioners and students see the advantage of educational technology. Use of technology to seeks to improve

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communication between the student and coordinators during the placement period. It also seeks to promote reflective practice in Work Place Learning (WPL) where the WIL Practitioner encourages students to reflect on their daily learning and activities and record their thoughts on platforms like Blackboard Learner System or drop box which are used for that particular Work Preparedness class. Blackboard Learning System is an e-learning tool commonly known and used by many universities for their education process. The main function of Blackboard Learning System is to accommodate the learning process between the WIL Practitioners and students that includes providing study material, discussion, posting the important announcement and even submitting the given tasks.

Structured reflection is one of the most crucial aspects in WIL management, it ensures that the WIL Practitioner responds to queries or challenges that the student encounters at the work place.

LITERATURE REVIEW

Work-Integrated Learning

WIL has been defined in a number of ways. The Council on Higher Education (CHE) (2011), describes WIL as an umbrella term to describe curricular, educational and assessment practices, across a range of academic disciplines that integrate formal learning and workplace concerns. The integration of theory and practice in student learning can occur through a range of WIL approaches, apart from formal or informal work placements.

According to Cooper, Orrell and Bowden (2010) WIL as being those parts of a course of study which involve an experience undertaken within a practice setting. Patrick, Peach and Pocknee (2008) define WIL as an "umbrella term for a range of approaches and strategies that integrate theory with the practice of work within a purposefully designed curriculum".

Even though WIL is defined in many ways, but they all have one thing in common theory meeting practise, where Work-Integrated Learning (WIL) presents students with the opportunity to integrate their academic theoretical knowledge with real-life work situations. Through WIL, students get to demonstrate their abilities to potential future employers. Students are presented with challenging tasks during their WIL period in order to enable them develop and cultivate their careers to their highest potential. The purpose of WIL is to improve employability and develop competence, i.e. the ability to apply knowledge and skills to the demands of the workplace

Work-Integrated Learning speaks directly to the vision of the White Paper on Post – School Education and Training, launched on 16 January 2014, which emphasizes the crucial role of workplace learning. In his address in 2014, the Minister of Higher Education and Training, Dr Blade Nzimande emphasised that the role players for Work-Integrated Learning such as the youth, Seta's, universities and TVET Colleges, should work closely together with the industry in the post-school system.

Student reflection and assessments in Work-Integrated Learning.

In the Work-Integrated Learning (WIL) curriculum, reflection on workplace activities is widely used to support student learning. Recent critiques have demonstrated the limitations of current approaches to support students' reflective learning of workplace practices. Sykes, C., & Dean, B. A. (2013). Reflection and Assessment in WIL is a well-known practice to use reflective assessment to demonstrate learning in WIL (Woodley & Beattie, 2010). Assessment strategies may include self and peer assessment, assignments and projects, memorandum reports, portfolios, dissertations and theses, journals, presentations, poster displays and learning contracts (Gray, 2001).

Reflection-based activities are recognised as a valuable WIL tool (Bates, 2004; Doel, 2009; Howard, 2009). Reflective assessment can transform tacit knowledge into explicit, assessable learning (Howard, 2009) and can enable students to make personal discoveries and learn from placement experience (Bates, 2004; Howard, 2009). While the benefits of reflection are widely recognised, implementing reflective techniques in assessment is not always successful.

Reflection is seen as the 'connective tissue' (Woodley & Beattie, 2010) between diverse sites of learning, thus integrating and opening up these disparate fields for learning opportunities. However, there are multiple issues to address when introducing reflective assessments. Some of these are the tensions when using higher education

assessment for workplace learning; the multiple stakeholders in WIL; the personal nature of reflection and construction of the reflective environment; and, finally assessment tools including decisions of structure and composition.

WIL activities involve at least three stakeholders: student, employer and academics. Stakeholder considerations, such as level of employer involvement and university staff availability, may impact upon assessment strategy (Patrick et al., 2008). With the Information management tools such as OLUMS (Intelligent Management and Tracking Systems) all three parties can reflect or assessed in one system, this can also be used as a logbook. Blackboard Learning System is also used as an assessment tool even though it has its challenges when students are trying to access it in the rural areas.

This daily reflection ensures that the WIL Practitioner responds to queries or challenges that the student encounters as soon as possible rather than wait for the submission of the logbook. Note that this does not replace the logbook, but rather complements it

Social networking sites for promoting teaching and learning

Social networking sites such as Facebook, twitter, WhatsApp and blogs and wiki spaces, Linkedin, sites are playing a huge role in today's society, it is not about just connecting people and linking information but they are becoming more dominant in education (Schwarts, 2009). Lectures are now exploring how these tools can be used in teaching and learning. SNSs are amongst the most visited sites on the Internet, with Generation-Y at the forefront of the popularity surge around the world.

With these Social networking sites internet has entered the new era of web 2.0 which supports social interaction and make it easy for individuals to exchange information and to reflect on their daily activities by sharing videos in YouTube, photos in Flickr, thoughts in Blogger, and expertise in Wikipedia).

Many educational researchers also believe that the web has huge potential to shape the way people learn (Barbour and Plough 2009; Drexler, Baralt, and Dawson 2008). It appears reasonable that lectures should make instructional use of the social nature of Web 2.0 in order to create best and natural environments for learning to take place.

In an online learning and teaching environment, students are able to communicate at their own pace and consider comments and responses, rather than being 'put on the spot' in the physical classroom, students feel more comfortable to express their selves on social networking blogs.

METHODOLOGY

The qualitative method took the form of questionnaire which were administered to 51 WIL Practitioners The purpose of this research was to find out to what extent are the WIL practitioners use technology in WIL, and which platforms are they using to manage and assess WIL in their daily work activities . On completion of the literature study, surveys were used to collect data from WIL Practitioners at tertiary institution, Western Province, South Africa.

Questionnaires were used to collect data. The questionnaire had four questions. Question A was to indicating the use of technology, Question B indicating the reasons of not using technology, Question C the purpose of using technology, and Question D to indicate which platforms used.. The surveys were piloted and corrected, after which they were distributed to and collected from the respondents, mostly by emails. Respondents were asked to reflect on their views by ticking on the appropriate answer.

Population and sample

The target population refers to 51 WIL Practitioners at university of technology, Western Province, South Africa. Out of the 51 WIL Practitioners 25 completed the questionnaire.

RESULTS AND DISCUSSIONS

The first questionnaire was to find out if WIL Practitioners are using technology in Teaching and Learning and which platforms do they use the most. Overall, the responses were favourable towards using technology with 25 WIL Practitioners (50%) describing platforms that they use. However, they stress the fact that they do not want to use their personal gadgets to communicate students as this will cost them too much.

After this questionnaire the institution identified a need of assisting WIL Practitioners by sourcing them with Samsung Galaxy tablets. In order to facilitate the practice and ensure that the WIL Practitioner responds to the reflection promptly, electronic notebooks (tablets) were issued to them in two groups. The first group received electronic notebook (tablets) in early in 2014 and was encouraged to implement. The second group received late in 2014. The electronic notebook (tablet) comes with data of 2 Gig per month. This data is the allocation to the WIL Practitioner per month. Where the data has been depleted the coordinator tops up at their expense. The electronic notebooks (tablets) also come with insurance.

A second questionnaire was conducted as the follow up to both groups. The first question concerns WIL Practitioners' perspective on using technology to support and improve communication with WIL students. WIL Practitioners responded that they are using technology to communicate with students and sharing information with students and employers and announcement of submission dates.

The second and third question asks about how they reflect with students and which platforms or social media they use. Majority of WIL Practitioners, represented by 24 (49%), points out that they their students mainly reflect daily by means of Facebook, WhatsApp ,emails and Blackboard. WIL Practitioners recall "Continuous evaluation by means of daily weekly work record on Blackboard Learning System" "Structured reflection is usually in the form of poster of presentation which students submit when I visit them at their workplace. During the WIL Period students blog on Facebook page by posting comments, ideas, general information, etc. regarding their work at a company which is easily accessible by majority of students. Students use their smart phones and laptops and stay in touch this way".

"WhatsApp is used to a large extent as most students have smart phones, it is my preferred contact with students as it is quick and convenient and you can have various groups of students".

90% of the time WIL Practitioners are always out of office lecturing Work-preparedness classes or visiting their students at workplaces. With the device that they have received assist and improve their communication with the students' country wide. They can contact students at any time or anywhere, they do not need to be in the office to contact their students. Students can also submit their assignment/projects on Blackboard Learning system.

The forth question were focused on the challenges of using the device. Challenges faced by 3% are limited knowledge about the device they end up spending too much time learning the device as this is resulting at not responding to students on time. Other challenge from the 5 % is most of their students are placed in rural areas and not all of them have access to WhatsApp, emails, Facebook and Blackboard Learning System therefore it make it difficult for students to reflect daily or to submit their projects on time. Other 5% points out that the device has limited space, they are unable to open large documents, video clips or presentations from the students.

Overall, 35% have no challenges as they stated the benefits of using technology enhanced communication, immediate and easy contact with the students and speedily and prompt responses to all student queries and problems. WIL Practitioners are able to be in contact with students' afterhours and over the weekends and holidays which suitable for students as most of them do not have access to social media during the working hours.

Students have indicated that it is also cheaper way to contact WIL Practitioner as making a call to ask a question is expensive for them. With social networking sites playing an increasingly important role in today's society, WIL Practitioners are exploring how they can be used as a teaching and learning tool.

CONCLUSION

Technology has become an increasingly predominant part of day to day life for the modern student. A growing influx of mobile phones, electronic notebooks, personal computers and other assorted digital toys have shaped the lives of many students. It is important for WIL Practitioners to possess the expertise to use technology in a meaningful way during work –preparedness classes and placement. Web-based teaching and learning has made learning content much more freely and promptly available to students and WIL Practitioners who can upload and download course notes, readings and debriefing with a single mouse click.

Student and employer engagement during WIL is the most crucial aspect, reflection and debriefing in the workplace by all parties is required to improve WIL. It is also important for students as WIL is their first experience in the workplace, sometimes a student place outside away from home may be overwhelmed or frustrated by the fact that they are out there in the world of work. Structure daily reflection will help students to overcome the fear of loneliness.

The use of social media allows WIL Practitioners to stay in touch with students at times that are convenient for all of them. It is therefore important for HEI to increase us of technology in teaching and learning by providing more devices to WIL practitioners.

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The challenges of understanding work skills through pre- and post-perceptions of work-integrated learning students in Mexico

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ABSTRACT

Student perceptions represent a powerful source of feedback for educators and future employability. Applied to Work-Integrated Learning (WIL) they are thoughts, beliefs, and feelings about persons, situations, and events which record student engagement with a placement. A study was conducted at the Universidad de Guadalajara in the Faculty of Management using a random sample of 48 students in Business and Management studies to find out whether there are differences in perceived levels of autonomy in work skills at the beginning (pre) and completion (post) of their placement. This study replicates the research done in Australia using an established WIL framework, the Work Skills Development framework (WSD) and compares the results for similarities and differences. Student perceptions are documented through a set of survey questions that identify Levels of Autonomy, for work skills, from highly structured direction and guidance from the supervisor to working within self-determined guidelines. The WSD provides educators with a lens through which to interpret and articulate the level of autonomy in work skills from a learning and assessment point of view. The study is a preliminary investigation using basic descriptive statistics to specifically compare the pre and post placement performance of the Mexican students, and more generally to compare with the Australian study. This study benefits WIL in that it presents a methodology to identify perceived levels of autonomy of work skills through time and strengths and weaknesses in WIL.

Keywords: Work-Integrated Learning, Autonomy, Work Skills, Perception, Mexico.

"To change ourselves effectively, we first had to change our perceptions."
— Stephen R. Covey (2013)

In a work environment, interaction between oneself and work leads to perceptions. Personal beliefs, attitudes, motives, interests, experiences and expectations can influence perceptions. Changing negative perceptions through reflection, motivation, self-awareness and practice is a challenge, yet a necessary pre-requisite for job satisfaction. Current literature on perception and the work environment focus mainly on job satisfaction (Bojadjiev et al., 2015; Wright & Davis, 2003). Perry & Wise (1990), Kim (2002), Buelens & Van den Broeck (2007) found that the level of autonomy and output of an employee is greatly influenced by their motivation to work. In addition personal characteristics (DeHart-Davis, 2007), personal relationships (Sreedevi, 2015), work preferences (Bright, 2005), impact of perception (Scott & Pandey, 2005), socio-economic status (Goss, 1999) also determine levels of autonomy and job satisfaction of an employee.

BACKGROUND TO STUDY

Universidad de Guadalajara at Centro Universitario de Ciencias Económico Administrativas (CUCEA) located in Guadajara Jalisco México is the second oldest and largest public university in Mexico. As of 2013 undergraduate business students at CUCEA must complete a mandatory WIL subject called "Practicas Profesionales" (Professional Practices) in their area of specialization as part of their degree. This WIL experience counts as 8 credits**,** the

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equivalent of one course in the degree. The placement is either a research project or a job assigned with an employer paid or unpaid. The course is available to students in all different disciplines after they complete 70% of their degree. Students work a range of hours between 240 and 300 with an employer depending on the program. They are prepared for this course through reflective writing, journal entries and team work. In addition students are assigned a mentor/professor who will evaluate the student's performance and maintain communication throughout the placement.

OBJECTIVES

The aim of this study is firstly, to apply the Work Skills Development framework [WSD] (Bandaranaike & Willison, 2009/2017) to the CUCEA students in Mexico to find out whether there are differences in their perceived levels of autonomy in work skills at the beginning (pre) and completion (post) of their placement. These results will then be compared with a similar study done in Australia (Bandaranaike & Willison, 2010) to examine similarities and differences. Secondly, the data from Mexico are analysed further to account for variations within the group in their levels of autonomy across work skills to monitor progress over time.

METHODOLOGY

Forty-eight CUCEA Students from Marketing, HR, Management, Finance Management and Systems, Accounting, Economy, and International Business were selected randomly on campus. All selected students were expected to complete the WIL component and the Work Skills Development framework (WSD) survey which was translated from the original English language to Spanish.

The objectives of the survey were defined and individual questions explained in the context of the discipline. Each student completed the interview individually in Spanish. These responses were then translated to English for analysis.

The WSD makes explicit six facets of **work skills** based on analysis of graduates attributes and employability factors (Bandaranaike & Willison, 2010). Table 1 defines and provides descriptors of the six work skills used in this study and abbreviated as – *Initiative, Technology, Learning, Self-Management, Problem Solving and Communication*. Students were briefed in detail what skills constituted each of the broadly defined work skills identified here with one word, for convenience in analysis.

TABLE 1: Facets of Work Skill Requirements (after WSD)

Work Skill Taxonomy	Skill Interpretation	Action Verb	Work Skill - Examples
Initiative	Student is goal oriented and motivated to establish role and adapt	Inquire Focus Locate	Enthusiastic Querying
Technology	Student applies technology & resources to find and generate information/data	Select Manage Innovate	Identifying Translating
Learning	Student establishes lifelong learning skills in reflecting & evaluating personal & interpersonal relationships	Interpret Reflect Change	Projecting Understanding
Self-Management	Student organises & manages self while being perceptive to managing the needs of others	Plan Choose Judge	Organising Evaluating
Problem Solving	Student critically analyses and synthesises information/data to initiate change & create solutions	Define Test Reason	Distinguishing Investigating
Communication	Student shows sensitivity in interpersonal communication and demonstrates professional conduct and collaboration in team work	Listen Network Negotiate	Interpreting Consulting

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Table 2 gives the generic 'Autonomy' statement for each of the Levels ranked from 1 to 5. Table 2 column 3 provides a specific application to one of the Work Skills, Problem Solving.

Bloom et al., (1956) used similar levels of progression to classify educational goals and identify thought processes at six different levels of cognitive ability. These were from the simple recall of knowledge to the higher level ability of analysis, synthesis and evaluation. Others like Dreyfus (1985) and Daley (1999) indicated that professionals progress through a developmental continuum in which they shift from novice to experts.

TABLE 2: Level of Student Autonomy and application to Problem Solving

Level of Student Autonomy	WSD Cell Description	Applied to - PROBLEM SOLVING
Level 1 Prescribed Direction	Student requires a high degree of structure and guidance	Student applies a simple structure to understand problems & contribute towards solutions
Level 2 Bounded Direction	Student works within boundaries set by & limited direction from the supervisor	Student applies a structured format to interpret, evaluate, analyse & synthesise data/knowledge to initiate innovative solutions
Level 3 Scaffolded Direction	Student works independently and within provided guidelines	Student interprets information independently to analyse & synthesise data/knowledge to initiate innovative solutions
Level 4 Self- Initiated Direction	Student develops own abilities & works innovatively with limited guidance	Student applies critical thinking & works collaboratively to analyse, synthesise and produce innovative & creative solutions
Level 5 Open Direction	Student works within self-determined guidelines to advance understanding within the context.	Student communicates with a high degree of inter-personal sensitivity in asserting own values and respecting those of others in collaborative team work.

The WSD parallels this in a student's progression through five Levels of Autonomy. The shift from highly guided direction where expectations are explained and modelled [Level 1], to high levels of student determination [Level 5] illustrated in Table 2. In the WSD the developmental continuum is applicable to all skill facets and therefore the achieved Level of Autonomy may vary between one facets and another for the same student thus giving the student a more comprehensive assessment of his/her individual work skills. Also the student is able to assess the change or the degree of movement before and after the placement for each of the work facets. The interpretation of each autonomy level for one of the work skills [Problem Solving] is illustrated in Table 2.

Students engage in reflective practice to identify their status on a scale (via five statements) to locate their Level of Autonomy before [Pre] and after [Post] the placement (Table 3).

TABLE 3: Pre and Post Levels of Autonomy [based on WSD]

Work Skill	Assigned Levels of Autonomy
Initiative	Required high degree of guidance to adapt to Role
	Was able to identify Role with some degree of guidance
	Adapted to Role independently, with no guidance
	Adapted to role easily and fulfilled requirements
	Identified future goals & projects while fulfilling original requirements
Technology	Used basic technology with high degree of guidance to find & generate information
	Used technology with some degree of guidance to find & generate information
	Used technology independently to find & generate a range of information
	Showed complete understanding and mastery in choice of technology right from the beginning
	Showed a high degree of sensitivity in the application of media & technology to generate information
Learning	Evaluates information at a minimum level in understanding his role
	Evaluates information with some degree of guidance to generate knowledge
	Critically evaluates information to match theoretical & practical knowledge
	Critically evaluates information & fills gaps to generate knowledge
	Critically evaluates & uses knowledge to generate lifelong learning skills
Self-Management	Used simple reflective practices to organise information and establish role
	Used existing structures of reflective practices to master methods and practices
	Used own reflective practices to evaluate and monitor performance
	Used reflective practices to deliver clear projects and goals
	Used reflective practice to articulate vision, goals & innovative strategies
Problem Solving	Applied a simple structure to understand existing solutions
	Applied a structured format to synthesise & analyse existing data & knowledge
	Worked independently to synthesise & analyse a range of resources
	Applied critical thinking and worked collaboratively to produce innovative solutions
	Applied sophisticated critical thinking and analysis to initiate change & extrapolate outcomes
Communication	Required highly structured guidelines to communicate information
	Required some degree of guidance to understand role and communicate with others
	Demonstrated confidence and assertiveness in communicating information
	Communicated independently showing high degree of understanding of workplace culture & professional ethics
	In communicating information, student negotiates & asserts his own values while respecting the contribution of others

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Firstly, the average pre and post Levels of Autonomy between Mexico (N=48) and Australia (N=27) for all students are compared. Secondly, variations in Pre and Post Levels of Autonomy among individual students in Mexico are analysed.

Group Perceived Changes

A study in an Australian university, using the same survey format examined the pre and post perceptions in Levels of Autonomy of 27 multidisciplinary students (Bandaranaike & Willison, 2010). These Pre and Post placement trends in Levels of Autonomy across the six work skills are compared in Table 4. The values are calculated to two decimal places since the differences are very small, there being only five Levels of Autonomy [1-5].

TABLE 4: A comparison of Mexican and Australian WIL student Perceptions in Work Skills

	Initiative		Technology		Learning		Self-Management		Problem Solving		Communication	
Country	MEX	AUS	MEX	AUS	MEX	AUS	MEX	AUS	MEX	AUS	MEX	AUS
Pre placement	2.25	2.09	2.37	2.59	2.41	2.27	2.25	2.23	2.18	2.27	2.62	2.61
Post Placement	3.66	3.68	3.75.	3.73	3.97	3.82	3.68	3.59	3.89	3.45	4.29	3.95
CHANGE [d]	1.41	1.59	1.38	1.14	1.56	1.55	1.43	1.36	1.71	1.18	1.67	1.34

Overall trends in student Levels of Autonomy across work skills between the two countries showed remarkable similarities. In both Mexico and Australia, there is a definite improvement between Pre and Post Levels of Autonomy across all work skills, with Pre placement autonomy ranging from 2.18 to 2.62 for Mexico and, 2.09 to 2.61 in Australia. Also, the highest level of perceived autonomy in Post placement for both countries (2.62 Mexico, 2.61 Australia) was in *Communication*. Once again, for both countries, the least change between Pre and Post placement was in *Technology* (1.38 Mexico, 1.14 Australia). However the maximum difference (change) between Pre and Post placement differed between the two countries with Mexico displaying maximum change in *Problem Solving* (1.71), and Australia in *Initiative* (1.59). Analysing change between Pre and Post placement is significant since it indicates to educators and students where change is maximised and hence a definite improvement in a particular work skill, and if change is minimal then it is time to look for reasons why the change is minimal. These perceptions are important to improve WIL delivery.

In Pre placement most students in the current study (Mexico) expressed anxiety in settling into their role, with typical comments such as: "My boss wanted me to complete tasks fast but I did not have training…"; "It was difficult to complete school and job, I did not eat so I needed to find time to eat".

This could have an impact on their initiative to fully understand the placement or it may inhibit the individual's progress. Students responding to a question – "Was there any time during your placement you felt less motivated than usual…?" said *"Yes, sometimes due to my inexperience"; " It was unpaid and lots of work"* or the lack of motivation to fully engage in the placement due to external factors such as not receiving remuneration. This is reflected in the Pre Placement *Initiative* Level in Mexico as 2.25 and 2.09 in Australia. Therefore, typically educators must be aware of the difficulties of settling into a placement and the reasons for low initiatives to engage in a placement.

In the Mexican study although the Pre Placement autonomy was lowest in *Problem Solving* (2.18), yet the largest Pre and Post Placement difference or improvement in autonomy (1.71, Table 4] was also in *Problem solving*. This suggests that students have very little understanding in *Problem Solving* when they first enter a placement but when

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they complete their placement their understanding has greatly improved, as illustrated in: "it was early in my placement I didn't know how to apply the job the process … I found it hard"; "I had a couple of panic attacks specially early during my placement much better at the end."

Students were asked to rate themselves on a scale of 5 (5 being Very Good] in select communication skills. 53.2 % of the students in the current study stated they were Very Good in -'*Listening and understanding*', and 49% said they were Very Good in '*Speaking clearly and directly*' thus indicating a high autonomy in aspects of *Communication*. Typical quotes from the current study to illustrate the Pre and Post engagement in Communication skills were: "I didn't know how to deal with a strict boss … (so) I put a lot of effort"; "I made a few mistakes with customers … I recognize my mistakes and listen to my supervisor"; "My boss wanted me to complete tasks fast but I did not have training … I spoke with him and I got more training."

Individual Perceived Changes

Differences in Pre and Post work skills autonomy was also summarised for each individual student to examine the variation across work skills (Fig. 1). Most people will argue it is the student's responsibility to engage themselves in the placement, yet many external factors could impact on the successful undertaking of a placement.

Fig. 1: Differences in Levels of Perceived Autonomy by Work Skill, Mexico
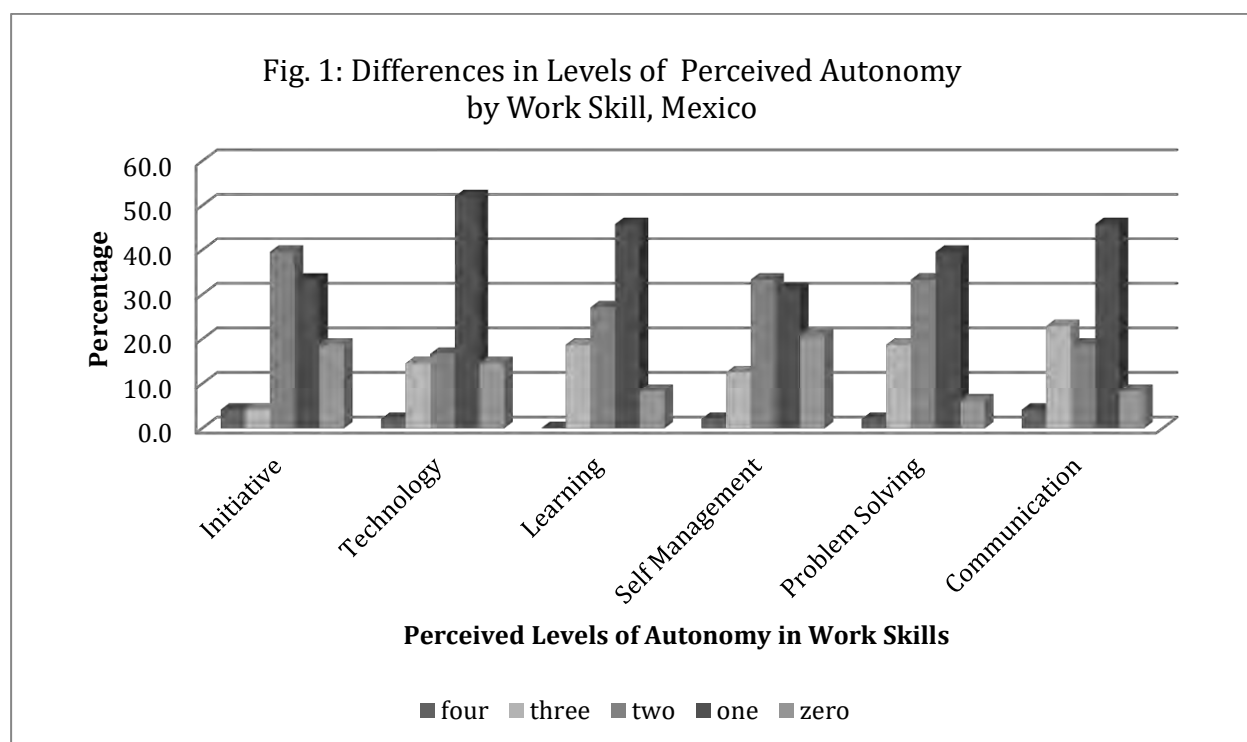
The shifting patterns in the degree of change using Levels of Autonomy and measuring change as 'four', 'three', 'two', 'one' level or no change –zero, is illustrated in Fig.1. Maximum change between Pre and Post autonomy was 'one' level (e.g. Pre 2 to Post 3) across most of the work skills – *Technology (52.1%), Learning (45.8%), Problem Solving(39.6%) and Communication(45.8%)*. In the work skills, *Initiative (39.6%)* and *Self-Management* (33.3%) – the mode was 'two' levels (e.g. Pre 2 Post 4).

Even though small in number (4.2%), a perceived change in autonomy of 'four' levels was observed in both *Initiative* and *Communication*. This was the maximum change possible between Pre and Post where the Pre autonomy was 'one' and Post autonomy 'five'. These students were typically highly motivated. For example when student 34 initially took on the placement she says "she was keen to "*apply her knowledge*" in the placement, but in undertaking her role she said "*I did not know what to do*" and yet with time she admits "*I did not have big problems*" which shows the gradual transition this student had from level 'one' to 'five'.

In contrast students who perceived they had absolutely no change ('zero') in their Pre and Post levels of autonomy said it was so in *Self- management* (20.8%), *Initiative* (18.8%) and *Technology* (14.6%). This could refer to a student's Pre placement autonomy of 'five' remaining at 'five' in Post placement, or a Pre autonomy of 'one' remaining at 'one' at Post placement etc.

Typically a student (ID 29) who's level of Pre and Post autonomy in Initiative remained at 'two' said "… it was difficult to commute because of transportation problems". Others said "… I did not learn anything"; "… it wasn't a relevant job in my field".

<div align="center">DISCUSSION</div>

University courses in general emphasise the importance of learning outcomes. While graduate attributes and learning outcomes are set, the perceptions of students are not well known (Akcam et al., 2015). In this context, the current study introduces the methodology to test student perceptions as they progress through their WIL assignment.

The success of a placement from the point of a student should be to familiarise self with work skills, access proper guidance and locate employability pathways. While a particular placement may not always be suitable for an individual student, it is important to analyse the reason for the noncompliance and then address the issue. For example the WSD survey asked– 'After completing the placement whether they were motivated to work within the same organisation or somewhere else?'(*Q.12).* Fifty six percent of the Mexican students responded in the negative referring to the placement as *"boring", "too much work", "not sufficiently engaging", "no guidance", and "conflict with others"*. The issue here is that once the WIL course is completed and students assessed, how much follow up is there with the educator? Since a follow up is often not convenient (because of large class size, non-availability of staff time etc.) assessing Pre and Post autonomy during the placement is a far better and a practical approach. This analysis and data could also have a positive impact on the Companies that hire WIL students on a regular basis.

Fourteen students (29%) mentioned that the commute and long hours at the placement caused them time management difficulties taking into account they also completed schoolwork. The university could arrange for better commute logistics along with the Companies for WIL students in Guadalajara. The city has seven adjacent municipalities making it the second most populous metropolitan area in the country of Mexico. In spite of that, students (N=2) expressed: "Commute *was long, my placement location was far, I needed a Uber every day*". It is clear that those external factors did not inhibit the student's placement progress and instead, encouraged him and helped him develop skills like *"so I learned to drive"*.

Perceived Levels of Autonomy provide information on why students undertake a placement. WSD Survey question 8 asked – 'What motivated you to take on the placement?' Two-thirds of the students (65%) responded "*to receive experience"; "learn from others"; and "apply knowledge"* indicating they were initially motivated to take on the placement. In contrast a fifth (21%) responded they took on the placement because it was "*mandatory to complete the course"* However, after the placement, 14.5% of the students mentioned their placement was not in their area of interest and 56% said they would not work in the same area or the same company of their placement. The outcomes of this study can help improve the allocation of student placements.

When asked 'What other Challenges they (students) confront in a placement?' (*Q.7*), a substantial 83% referred to difficulties in adjusting to the placement because of commuting problems, time management, adjusting to technology and to other individuals in the work place. Some of these challenges may be visible in the work place and others not so easily, but they will all impact on student's level of autonomy. For example when student 23 initially took on the placement she said she was keen to "*apply her knowledge*" in the placement and at the end she admits "*I like the job but only men will have an opportunity here"*. This statement clearly illustrates the cultural challenges faced by women in Mexico and the possible negative effect on their level of autonomy particularly in *Initiative* and *Learning*.

In some other instances, students found the workplace challenging because they lacked appropriate resources and support from the workplace. Students (N= 31) mentioned "*I did not get support to complete courses and do practice, I*

found challenging to combine placement and school. Therefore I found a weekend placement". Four students mentioned that they are less motivated during the placement because they lacked experience in the field. This poses the issue whether the university adequately supports the student with the desired resources.

In response to the survey question, 'Are there times when a student may feel "less motivated than usual" during their placement' (Q.11)? Thirty eight percent stated their placements were "*not related to their field / job" or* said they were "*asked to do irrelevant tasks" or "tasks not assigned to original job"*.

While the current study summarises some important challenges in understanding work skills in terms of Pre and Post Levels of Autonomy, the research can be extended by applying quantitative analysis to examine variance in perceptions of autonomy. For example Koth et al., (2008) successfully applied multivariate analysis in hierarchical linear modelling to identify individual level factors (e.g. gender issues) that may account for the variance in perception.

In summary, this study has highlighted the value of using student perceptions to understand the attitudes, behaviours and relationships with work skills within a WIL environment. These perception can also be used to highlight the strengths and weaknesses of individual students as well as the delivery of WIL courses.

CONCLUSION

The challenge of applying Pre and Post perceptions in levels of autonomy in a WIL environment triggers reflective practice in a student. From the educator's point of view it provides feedback on the strengths and limitations of students and the impacts on WIL teaching and learning. Therefore, the WSD framework and methodology provided in this study can be used across disciplines and at an international level to improve WIL pedagogy.

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Making meaningful contributions to community development through service-learning and work-integrated learning

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ABSTRACT

The last decade has given rise to many challenges in Education in South Africa. School learners who exit the school system and fail to achieve a university or college pass cannot gain access to higher education. They also struggle to enter the highly competitive job market which favours candidates who possess work experience, skills and qualifications. To address this challenge, institutions like government, community organizations and universities engage in diverse projects. By pooling their skills and resources, these institutions make a significant impact. The Education White Paper 3: A programme for the transformation of higher education (Department of Education, 1997) has called upon higher education institutions in South Africa to become engaged institutions. One of the three pillars, Community Engagement, creates opportunities for universities to contribute to social change and development. Universities who heed this call make relevant contributions to the community through service-Learning projects, and other modalities of Work-Integrated Learning (WIL). Service-Learning projects act as a powerful tool that benefits both the university and the community. This paper presents an integrated project model called the 2nd Chance Matric Rewrite project which uses various forms of Work-Integrated Learning to provide support to matriculants to achieve a university or college pass. The project provides multiple learning opportunities for students while providing a service to learners. A systems approach model is applied to understand the interconnectedness between the various modalities of WIL. Using the Participatory Action Research (PAR) approach, the project is critically examined.

Keywords: Service-Learning, Community Engagement, Work-Integrated Learning, systems approach, Participatory Action Research, higher education

INTRODUCTION

Universities internationally have become more engaged and responsive to the needs of society who holds them accountable for being responsive institutions, working with their governments to increase public participation and democracy to achieve transformation (Hartley, Saltmarsh & Clayton, 2010).With the onset of democracy, South Africa (SA) embarked on a challenging journey to transform its policy landscape and social institutions. In 1994 interrelated policies were introduced to address inequality (Patel, 2004), service delivery, transformation and redress. However, the education sector in SA still encounters many challenges. The Education White Paper 3: A programme for the transformation of higher education (Department of Education, 1997) has called upon Higher Education Institutions (HEI's) in SA to become engaged institutions. This legislation was a catalyst for universities to transform in relation to critical priorities for community engagement (Council on Higher Education, 2004). Kharam (2004) states there exists "a new governmentality: From transformation to implementation". With Community Engagement (CE) now being one of the three pillars of higher education, opportunities exist for universities to translate policies into implementation projects. One organization or institution cannot solve social problems but joint efforts are needed to explore and develop the impact of policies (Martin et al., 2005).

The link between curriculum and societal imperatives pose new ways of thinking for universities. This has led to the conceptualization of Service-Learning (SL) initiatives like the Second Chance Matric Rewrite project (2nd Chance) at Cape Peninsula University of Technology to address a critical need in the community. SL is uniquely embodied in developmental and transformatory discourses of universities (JET/CHESP, 2006). SL students develop

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civic consciousness and a sense of enhanced caring for others, especially in a society that is fragmented and alienated (Perold, 1998). The Joint Education Trust (2000) describes SL as a well-structured pedagogical tool that includes reflection on service and prioritises community development through linking applied knowledge, skills and beneficial multi-stakeholder partnerships. Collaborative projects like the 2nd Chance project become effective change catalysts and sites of knowledge production and exchange. The Joint Education Trust/JET Education Service (2005) explains that experiential learning includes aspects of community engagement and some emphasise community service (i.e. volunteerism; community outreach) while others emphasise student learning (i.e. internships; co-operative education). The main focus of this paper is SL which favours both community service and student learning equally.

Many factors contribute to the poor performance of learners in the final National Senior Certificate (NSC) examination. Amongst others, these are socio-economic problems, illness, or lack of appropriate learning interventions. When learners exit the school system and fail to achieve a university or college pass, they cannot gain access to higher education. The highly competitive South African job market favours candidates who possess work experience, skills and qualifications. In response, institutions like government, community organizations and universities engage in diverse projects like 2nd Chance, which integrates various forms of Work-Integrated Learning to provide support to matriculants to achieve a university or college pass.

One organization or institution cannot solve social problems but "rather synergistic efforts are required to increase the potential impact of policies" (Martin, Smith & Phillips, 2005). The Cape Peninsula University of Technology (CPUT) 2nd Chance Matric Rewrite Project in the Western Cape is sponsored by National Youth Development Agency (NYDA), Education Training and Development Practices Sector Education Training Authority (ETDP SETA) in and Chemical Industries and Education Training Authority (CHIETA). Fourie (2003) observes that little evidence exists to determine the effectiveness of the Service-Learning partnership. Stanton and Erasmus (2013) later argue that triad (government, community and higher education) partnerships promote a democratic participatory and inclusive approach to achieve developmental and transformatory goals in SA. Pitso (2014) appeals to HEI's to be cognisant of how they engage with institutions by promoting knowledge sharing and exchange in collaborative government partnerships with the third sector. The project provides tuition in Mathematics, Life Sciences, Physical Science, Accounting and English First Additional Language to learners who had failed their NSC examinations or want to improve their Matric results so as to gain access to tertiary education institutions.

Service-Learning projects, are dependent on successful partnerships, it is important to explore relevant theories for its sustainability (Nduna, 2007; Fourie, 2003). This study uses the participatory action research (PAR) approach which encourages increased dialogue and collaboration among participants and further values the "inside knowledge" that participants contribute to the decision-making process (Babbie & Mouton, 2001). This is relevant as participation and collaboration forms part of the philosophy underpinning Service-Learning practices. When academic knowledge is merged "into a common field of knowledge [then] the acquisition of a much more profound understanding of the situation" prevails (Babbie & Mouton, 2004). It is the belief that through dialogue and 'talking together' participants would develop a shared understanding of their practices. Systems thinking (Hendry & Seidl, 2002; Luhmann, 1995) promotes the argument that we live in an interconnected system. This theory serves as a conceptual and theoretical underpinning for the critical analysis of the qualitative data in relation to the interconnectedness between various project activities and interactions between 2nd Chance project staff, students and learners.

The 2nd Chance project provides multiple experiential learning opportunities for CPUT students whilst providing a service to school learners. SL projects create an environment for students to work cohesively in partnership with university staff and communities to positively change society. Previous research on Service-Learning partnerships, highlights student experiences of their learning activities (Nduna, 2007; Eyler, Giles, Stenson & Gray, 2001; Eyler & Giles, 1999 & 2001; Bransford & Schwartz, 2000; Astin, Vogelgesand, Ikeda, & Yee, 2000; Strange, 2000; Boss, 1994; Conrad & Hedin, 1991; Osborne, Hammerich & Hensley, 1998). Opportunities were created for students and learners in the 2nd Chance project to reflect on their learning and for project staff to reflect on their practice.

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METHODOLOGY

This study explores the value of dialogue, reflection and collaboration by evaluating two components a) the 2nd Chance organogram and b) the Post Graduate Certificate Education (PGCE) learner mentor pilot project. Multiple qualitative data collection methods were used to explore and experiment with various methods of creating dialogical spaces for engagement between project participants. Denzin and Lincoln (1994) offer a generic definition of qualitative research as using diverse methods to understand, interpret and analyse the data including the perceptions of others. Data was generated and collected from staff meetings, questionnaires, reports and workshops and through interacting directly with participants, allowing for a depth and richness to the data. Thematic analysis was used to identify common and recurrent themes in the responses gained from the participants.

The participants of the study were project management, education and administrative staff, student mentors and learners and was specifically confined to the SL 2nd Chance project. Project staff were appointed on a part-time basis during the period from 2015 to 2016 and comprised of: university lecturers with a Doctorate of Technology in Education, full time staff studying at undergraduate and post graduate doctoral level, senior education students from CPUT, final year education student who graduated as a qualified teacher in 2016, and a Technical and Vocational Education and Training (TVET) college student completing a compulsory WIL component of the curriculum in 2015 to graduate in 2016. Informed consent was confirmed by all participants and no objections were communicated to the researchers. Data generated from the various methods and participants were used to evaluate the integrated project staffing model and the piloting of a learner mentor project.

The 2nd Chance staff organogram (in Figure 1) shows the linkages and lines of reporting between staff, project stakeholders, staff and participants. The organogram was conceptualised and developed by the project manager so that project staff could understand their lines of communication within the project and externally to the sponsors. This detailed organogram was used to generate dialogue between the project staff in meetings and workshops.
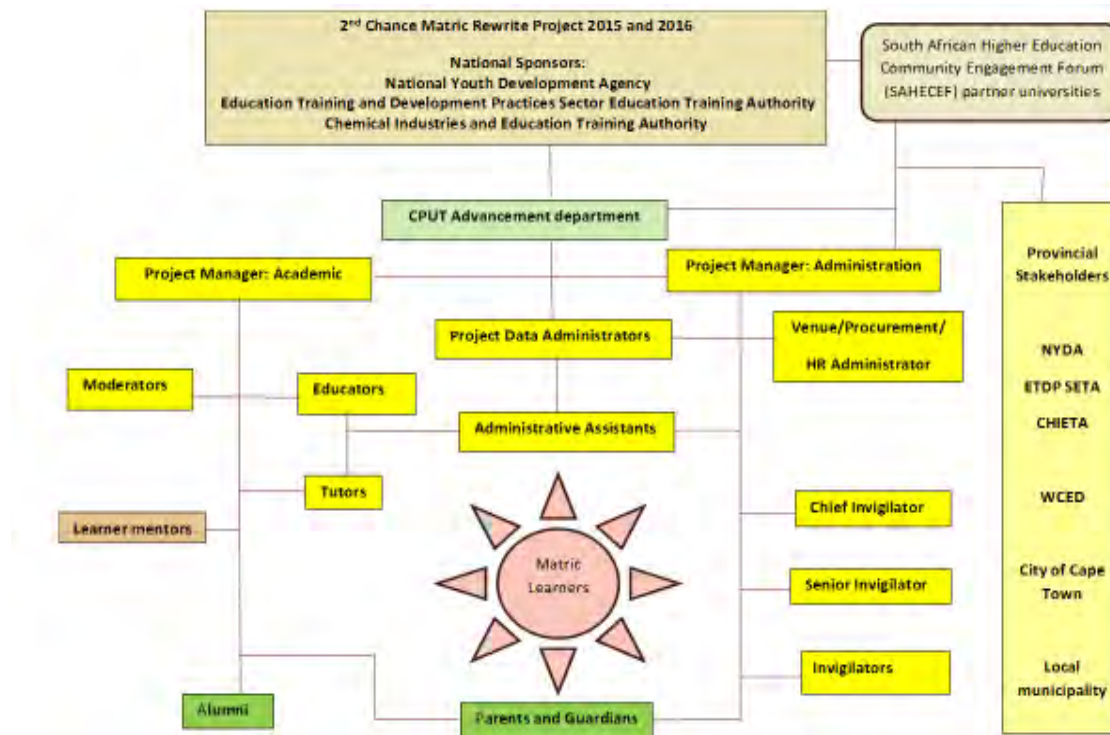
FIGURE 1: 2nd Chance staff organogram

CPUT's PGCE students acted as mentors to the 2nd Chance learners (mentees) in 2016 as part of a credit-bearing SL pilot project. The PGCE lecturer inducted the students, provided project guidelines and expectations to ensure that the learning outcomes of students were met. Mentors were tasked to use social media to motivate learners to attend classes until the completion of the project and some mentors assisted learners with academic work, career guidance and studying techniques. One hundred and sixteen mentors were allocated to 523 learners with the mentor/mentee

allocation being a minimum of 4 learners per mentor. Mentors submitted a portfolio of evidence which was used to assess the effectiveness of the students' intervention and activities in relation to the learners. In addition, mentors completed an evaluation form to reflect on how their mentees responded to their support. The evaluation form was structured to reflect the attitude of the learners towards both the mentors and the intervention. The mentees were also given an opportunity to provide feedback on the mentoring experience by completing a questionnaire which was distributed to the 2nd Chance learners by the project team at tuition sessions. A mid-year reflection of semester one was conducted with student mentors to devise future strategies for implementation in the second semester. Mentors expressed their challenges and asked questions of clarity using a formative reflection methodology.

RESULTS AND DISCUSSION

The results focus on: the evaluation of the 2nd Chance staff organogram and an analysis of the PGCE mentorship project. Using the PAR approach participants generated the data through reflections, discussions, meetings and workshops. Critical areas for improvement were identified through the interpretation of feedback gained from discussions, meetings and workshops with staff. The existing staffing organogram was developed to clarify clear roles and responsibilities with specific lines of reporting. By adopting the systems approach, the staff organogram (Figure 1) was discussed in with staff to improve the quality of operations and service.

The feedback from staff was that they were unable to assist in other areas when needed as they were unfamiliar with the roles and responsibilities of other staff. Staff admitted that were working in silos and could not visualize the integration between the various project activities and how they all related to the project outputs and deliverables. This led to feelings of exclusion, disempowerment which resulted in conflict between staff. The large disparity between highly qualified staff and those who were students shifted the power relations between staff. When it came to tasks which required some background in education, those with the educational qualifications in education excelled. However, with administrative tasks, staff with expertise and skills in this area were at an advantage. Managers and project coordinators also had conflicting ideas of management styles with some using the democratic approach and some preferring the autocratic style. This left staff confused and conflicted.

The comprehensive and detailed staff organogram (Figure 1) was discussed with staff. Through reflection and discussion staff agreed a different approach was needed. Two workshops were held with staff at the end of the 2016 project phase where core team values and work ethics were discussed and formulated. The staff proposed a cluster model to replace the traditional hierarchical organogram. They acknowledged the need for a democratic leadership style. Management undertook to assist staff to achieve the outputs for their respective and individual portfolios. As service-learning calls for an inclusive democratic approach staff agreed to adapt to a more democratic style of working together. Staff identified three primary clusters (Figure 1) for their teams which were: a) Human Resources, procurement and project logistics; b) Data and information management, stakeholder management and project reporting and c) Educational management, tuition scheduling and assessments. Staff reflected on their current roles and responsibilities, paying particular attention to individual strengths and expertise. They shared their constraints and limitations and expressed developmental goals regarding their own studies and research. Portfolio teams were formed to manage each critical cluster and ways of working with each other, not just in their cluster but also across the clusters.

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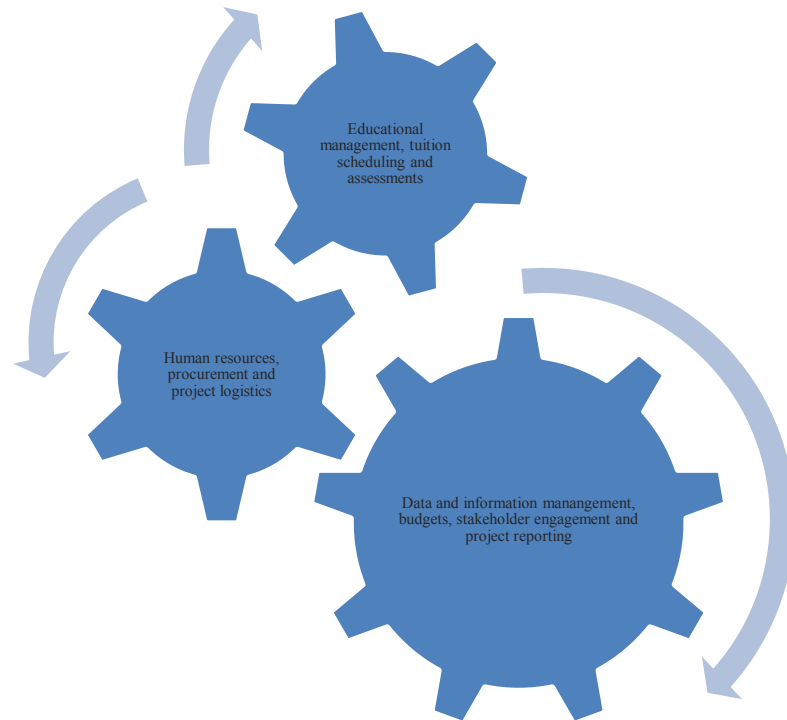
FIGURE 2: New proposed 2nd Chance staff cluster model

The new cluster model (figure 2) generated excitement and a sense of purpose amongst project team members. Staff recognised that they had contributed to the development of their own project model for current and future projects which gave them a sense of accomplishment, ownership and accountability. The dialogue generated between staff enhanced the working environment and increased the productivity. Although simplistic in structure, the new model gave staff a clear indication of their focus areas and an awareness that all clusters were integrated and dependant on each other to meet the project goals and deliverables. Staff acknowledged that they needed to be empathetic and to support each other by sharing administrative, technical and research skills. This was specifically relevant for staff members who were studying, those who were engaged in research and those with full time employment. It was important to consider an integrated approach so that project activities did not operate as silos and that connections between activities were interconnected. Although the staff cluster model was clear to the project staff, it is recommended that the original staff organogram (figure 1) not be discarded but rather explained with reference to lines of responsibility, levels and communications.

The project team introduced multiple learning and intervention strategies to assist 2nd Chance educators and to provide additional support for learners. One example was the introduction of senior students as tutors. For the purposes of this paper only one intervention, the PGCE mentorship project with Post Graduate Certificate in Education (PGCE) students acting as mentors, will be discussed. Many mentors went beyond the expectations of their lecturer and offered their free time for additional meetings with their mentees. One challenge expressed by mentors was the difficultly in arranging meetings with their mentees. Learners attended class at Bellville campus and mentors attended at Mowbray campus, which is 18km apart. In response, the project team transported mentors from the Mowbray to Bellville campus to enable them to conduct one-on-one consultations with their mentees. Venues for meetings with learners were also arranged by the project team on request from the Mentors to have some private space with their Mentees. It is proposed that more contact time be arranged so that learners can engage with their mentors face to face, instead of just through social media. This would build up trust and improve the quality of the communication between mentor and mentor. They will become more acquainted with the different challenges that they face in their different contexts.

The most significant challenge highlighted by the mentors was time to communicate and support learners. The issue of time is significant as mentors felt that the project took time away from their studies. Issues raised around

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time in relation to the learners include: a) cancellation by learners of pre-determined meetings, b) learners not attending mentoring sessions and meetings and c) lack of interest and attention shown by learners. Mentors regarded these issues as a challenge because their time was not being considered by mentees and that they lacked commitment. The mentor's role included having to be someone that learners could look up to and depend on for support however; they were often left feeling useless. The challenges experienced by the mentors in relation to time can be resolved by the lecturer who should allocate the required time for the project in their time-tables.

A further challenge was the lack of compatibility between mentors with their mentees. Compatibility was raised as a diversity issue with mentees indicating that mentors did not understand their circumstances. Mentors felt they were not given a fair chance by mentees to show their support for the learners. Mentors reported that the lack of a support structure at home was regarded as a challenge in aiding the mentees to achieve their full potential. The issue of compatibility between learners and mentors needs to be addressed thoroughly in the SL induction programme. As future staff, educators, students should be familiarised with issues of diversity and tolerance as they would have to interact with teachers, learners and parents from diverse backgrounds in their future teaching profession. Mentors also need to understand that SL should not be viewed as an extra-curricular activity but integrated into the curriculum. This should be clarified and emphasized in the student induction programme.

Forty-nine learners responded to the mentee questionnaire. The feedback from learners was arranged thematically according to the service or support provided by the mentor. The common themes identified were: a) academic support, b) motivation and understanding, c) Career guidance and d) some general comments. Only two learners acknowledged mentors for providing them with academic guidance and support. Five learners used the opportunity to send personal thank you messages to their mentors, the project team and sponsors. Three learners reported that they received some career guidance from their mentors. Mentee feedback revealed that 23 learners were motivated by their mentors and appreciated their mentor's understanding of the challenges that they face. Comments from learners like: "I would like to thank all of you for giving me this opportunity as it will change my life for the better and also will give something to live for thanks to my mentor" and "I learnt to believe that I am capable of making my dream come true", brought to the fore the value of the mentorship project. Learners appreciated their mentors for assisting them. Mentors should be made aware of the socio-economic challenges which 2nd Chance learners face so that they could develop a sense of empathy for their learners.

The responses from the learners indicate that the mentors supported them on many different levels. Although the main objective of the mentorship project was to motivate learners to study hard and to attend all their classes, it is notable that most of the comments centred on highlighting the positive attributes of their mentors and how these impacted on them, as depicted by the following quotes: "She has a great attitude towards me", "She always has positive energy and motivation", Such a great listener who understands and is able to help out even in personal stuff", "He taught me a lot and I appreciate that he showed me true leadership skills", and "... is a caring person who is there every second". One mentee viewed their mentor as their role model and said: "She is a good example and a good mentor". The mentee feedback indicates that mentors showed great care and made time to listen to their learners. Mentors gave helpful guidance with mentees future goals and careers. Some mentors provided academic support and assisted learners with study skills and strategies and some also looked at stress management. The commitment which the mentors displayed towards their mentees was encouraging. Mentee responses indicate that those learners who used mentorship services offered by their allocated mentors benefited from the support provided.

Interventions like the mentorship project gave students an experiential learning opportunity to engage with learners not just on a content and curriculum level but also in terms of providing learners with motivation and support to continue their studies to achieve their goals. Continuous dialogue with mentees, learners and project staff enabled challenges to be addressed as it arose.

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CONCLUSION

Service-Learning as a form of WIL acts as a powerful pedagogical tool that benefits both the university, and government goals and the community. Universities can make relevant contributions to the community through SL projects, and other modalities of WIL as depicted in the 2nd Chance project. Managing a SL education intervention project in a university setting can be a daunting task especially when it is done on a part-time basis with multiple and diverse participants and partners. The project provides a unique opportunity to develop staff and experiential learning opportunities for students. Using PAR methodology, the Project team strives to improve their practice through engaging in continuous dialogue. This ensures that challenges encountered could be addressed immediately. The clear clarification and understanding of project staff roles and responsibilities, and an appreciation of the strengths of individual team members, elevated the commitment of the staff to their duties. Based on the feedback from learners and their mentors, the SL mentoring project has made a positive contribution to maintaining the learner's motivation levels and their ability to remain focussed on their goals. Should this project be repeated, the SL lecturer has committed to ensure that mentors are allocated a dedicated time slot for consultations with their learners at the tuition centre and that induction includes aspects of diversity.

The 2nd Chance project has been identified by the university as a project that adds value to 2nd Chance learners, students and learners and therefore should continue. A future broader study should be done with a larger sample of learners to ensure rich qualitative data. The ideas for improvement should be further considered and implemented so that the project can be a blueprint for future university community engagement projects. Future research using the systems approach method can explore a detailed integrated project model outlining the university – schools initiatives at CPUT across faculties and departments. The model could also map the learning interventions and support provided by the university to school learners through the diverse modalities of WIL including Service-Learning.

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Work-integrated learning for the digital economy: A systematic literature review

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ABSTRACT

This paper presents the results of research related to the Work-Integrated Learning (WIL) model. The objectives were to explore WIL models, categorize them, explore their characteristics and the techniques associated with them. Our focus is models linked to the IT industry or IT department in non-IT industries. A systematic literature review (SLR) was applied as our methodology. We collected data reported from 2006 to 2016 from eight databases. There were 24 articles which matched our search criteria. We found that the WIL models reported on can be separated into four groups namely: 1) the collaboration model, 2) curriculum design, 3) practice methods and 4) teaching approaches. The two key features are activities created by universities and activities offered by industry. The model techniques are knowledge, methods and tools for acquiring research problems and developing solutions. We found that the models offered are very broad, while prospective careers and the needs of the digital workforce need to be narrowed down. We suggest future trends in WIL models in the digital economy.

Keywords: Work-integrated learning; digital economy; curriculum; IT industry; SLR

INTRODUCTION

The digital economy refers to the economy using information and communication technology (ICT) to help improve productivity in all organizational perspectives (Atkinson & McKay, 2007). The application of ICT has transformed very quickly within a relatively short period. The growth of technology and the change of human behavior in technology consumption have affected business management and computers and technology play a significant role in the business-driven economy (Spremic, Zmirak, & Kraljevic, 2008). The use of technology in its various forms is widely prevalent and becomes effectiveness, easy to use and cheaper (Malecki & Moriset, 2007). In particular, human behavior in the consumption of technology is driving organizations and businesses to adapt themselves in order to survive in the digital era.

In business view, entrepreneurial has to hire qualified workers who meet the requirement (Das & Subudhi, 2003). Firms expect the workforce, and especially those engaged in IT/digital work to work in a dynamic environment, constantly developing their understanding of the technology and trends in customer behavior.

Universities play an important role in developing quality workers and have a responsibility for producing suitably-qualified graduates to enter the labor market. Entering the digital economy forces universities to adapt their curricula and teaching approaches. But many studies have noted that teaching theory alone is not sufficient to enable students to go on to work in the IT industry (Macklin, 2008; Sivananda, Sathyanarayana, & Pati, 2009; Fan, Liu, Su, Yu, & Li, 2011). Therefore, to produce graduates who have work-ready skills, universities need to change, and integrate their traditional approaches.

According to Kolb's experiential learning model, learning is caused by the accumulation of experience, both theoretical and practical (Kolb, 1984). The IT/digital industry is composed of firms in which graduates have to apply their skills and what they have learned about their jobs. The industry needs graduates who have a deep understanding of the technology and can integrate that knowledge with business skills relevant to the job (Brookshire, Yin, Hunt, & Crews, 2007). Hence, information technology competencies have been defined, for instance by the Employment and Training Administration of the U.S. Department of Labor (2016). Workers in the IT industry need personal effectiveness, academic knowledge, workplace skills, and industry-wide and industry-

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sector technical skills. Moreover, they must acquire job-specific skills and management ability. There is a therefore a need for a form of cooperative study which enables students to learn job-related experience.

WIL is a study program based on collaborations between universities and industry (WACE, History of WACE, 2013). WIL is adopted and applied as a model or framework followed within the academic curriculum. The goal of such programs is for the student to achieve the maximum benefit from course of study (Eames & Cates, 2011). There is evidence from many studies of the benefits of WIL from the perspective of the university, the employer and the student (Raymond, McNabb, & Matthaei, 1993; Staehr, Martin, & Chan, 2014). The positive results of WIL lead us to conduct this Systematic literature review (SLR) and to investigate whether there is a credible model for preparing students to work in the digital economy. The objective of this paper is therefore to explore WIL models related to the IT/digital industry. The four objectives of this study are:

OJ 1: To investigate WIL models associated with the information technology sector.
OJ 2: To identify and categorize those WIL models.
OJ 3: To describe the characteristics of those WIL models.
OJ 4: To describe the techniques or knowledge that are applied in those WIL models.

METHODOLOGY

SLR is a method which reviews the published works related to a research question or an area of interest (Petticrew & Roberts, 2005). The objectives of SLR are to identify, evaluate and reach conclusions regarding quality research within the problematic issues of interest. In this study we adapted the SLR procedures proposed by Kitchenham (2004).

Research Questions

Population, Intervention, Comparison, Outcome, and Context (PICOC) criteria are used in this SLR (Petticrew & Roberts, 2005). The PICOC framework helps researchers to identify specific target issues which they need to address. However, this SLR does involve the comparison phase. Table 1 presents a summary of the PICOC criteria (with comparison omitted).

TABLE 1**:** Summary of PICOC

Population	WIL as applied in universities
Intervention	WIL curriculums that are utilized
Outcome	WIL model, type, characteristic, technique or knowledge description
Context	University programs related to IT industries and IT departments in other sectors

This SLR seeks to answer four questions derived from the objectives mentioned above, namely:

RQ 1: Which WIL models relate to the IT sector?
RQ 2: What are the categories of those WIL models?
RQ 3: What are the characteristics of those WIL models?
RQ 4: Which techniques or knowledge are applied in those WIL models?

Searching for and identifying relevant research

The searching process is important in SLR. The method of searching by keyword is employed and commences by first deriving the keywords from the PICOC criteria, as well as deriving synonyms to extend the search to related findings. The search is then constructed by concatenating all the terms with the Boolean operators, "OR" and "AND".

The final search statements arrived at in this study were then used to search in two primary online resources being online databases and a search engine. The online databases used were ACM Digital Library, IEEE Xplore, ISI Web

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of Science, Emerald Insight, Science Direct, Springer, Taylor and Francis Online. The online search engine used was Google Scholar.

Inclusion and exclusion criteria

Certain inclusion and exclusion criteria were used in this SLR. We focused on peer-reviewed articles and papers published during the period 2006-2016. The inclusion criteria were that the research was published in a journal or conference proceedings and presents practice or training approaches related to ICT students. The exclusion criteria were that the report of the research presents only the advantages or limitations but does not offer guidelines or any new ideas. Non-English research reports or reports where only the only an abstract was published were alsoexcluded.

DATA SYNTHESIS AND RESULTS

We found 24 articles which fell within the inclusion criteria and were not excluded by the exclusion criteria. The results are shown in Table 2. We carefully read and synthesized the content of their findings in order to answer the research questions.

TABLE 2: Summary of SLR study

No.	Model	Published year	WIL category
01	Synergia (Pimentel, Paula Filho, Pádua, & Machado, 2006)	2006	Collaboration model
02	Generic graduate attributes (Al-Mahmood & Gruba, 2007)	2007	Teaching approach
03	OEIS (Brookshire, Yin, Hunt, & Crews, 2007)	2007	Curriculum design
04	Computing Curriculum (Nikolov & Ilieva, 2007)	2007	Curriculum design
05	Problem-based learning (PBL) approach to teaching and reinforcing ICT skills (Macklin, 2008)	2008	Practice method
06	Industry-Academia Collaboration via Internships model (Sivananda, Sathyanarayana, & Pati, 2009)	2009	Collaboration model
07	Triple-I curriculum model (Chang, Dell, & Lane, 2009)	2009	Practice method
08	Cooperative Education Learning Framework (Janchai, Derrouiche, & Chakpitak, 2009)	2009	Practice method
09	Work-Ready Learning Activities (WRLA) (Sixsmith & Litchfield, 2010)	2010	Practice method
10	Industry–university collaboration for game development (Mikami, et al., 2010)	2010	Collaboration model
11	2C+E model (Fan, Liu, Su, Yu, & Li, 2011)	2011	Practice method
12	Model-Driven Engineering (MDE) (Cabot & Tisi , 2011)	2011	Curriculum design
13	Cross-cultural project approach (Welch, Vo-Tran, Pittayachawan, & Reynolds, 2012)	2012	Practice method
14	Learning Objectives and Models of WIL (Pilgrim & Koppi, 2012)	2012	Collaboration model
15	Competency-based curriculum (Motta, Barroero, & Pignatelli, 2012)	2012	Curriculum design
16	Gradually Industrialization approach (LIU, MA, & Li, 2012)	2012	Curriculum design
17	Education mode (Liang, Huang, & Yang, 2013)	2013	Collaboration model
18	Multiple WIL model (Staehr, Martin, & Chan, 2014)	2014	Collaboration model
19	CDIO-based hands-on inquiry based learning curriculum (Zhang, Zhang, Ai, & Li, 2014)	2014	Practice method
20	Agile-driven internship framework (Vakaloudis & Anagnostopoulos, 2015)	2015	Practice method
21	WIL innovation ecosystems (Rampersad, 2015)	2015	Collaboration model
22	PiE (de Beer & Angelov, 2015)	2015	Practice method
23	Educational IS expert in practice (Pitner & Ministr, 2015)	2015	Curriculum design
24	MSwDEV and MEP (Carnegie, Andreae, Watterson, & Bubendorfer, 2016)	2016	Curriculum design

Research Question 1: Which WIL models relate to the IT sector?

There were 24 models which were relevant to our study questions. The details in Table 2 show the model name, year of design publication and the category of WIL. All the papers are related to IT industry or IT in non-IT industries. Most of the articles come from IT related faculties at universities or institutions. Only one of the papers included was published by a private company (Sivananda, Sathyanarayana, & Pati, 2009). It is significant that most

of the models the focus on cooperation between academic institutions and firms. The co-operations involve activities both inside and outside the university/institution. However, overall the aims of the models are aimed at increasing students' employability and closing the gap between industry demands and current student abilities.

Research Question 2: What are the categories of those WIL models?

The WIL models were classified based on their primary activity into four groups namely: collaboration models, curriculum design, practice methods and teaching approaches. There were seven studies relating to collaboration models, seven relating to curriculum design, nine relating to practice methods and only one relating to teaching approaches.

The studies relating to collaboration models that were retrieved relate to how to fulfill industry requirements and how to produce the right balance in gains to the participants, i.e., benefit equality. The studies of curriculum design models related to course arrangement. the objectives focusing not only on the knowledge that students will gain but also on the skills they will get during their lessons. The studies examining practice methods were more concerned with student activities. This type of model seeks to enhance student abilities in both knowledge and working skills. The models results are generally presented as guidelines, frameworks, structure processes, etc. The one study dealing with teaching approaches (Al-Mahmood & Gruba, 2007) examined how to teach and increase the practical skills related to the subject or within the curriculum. The objective of this study was to help instructors to plan their teaching approach and maximize student outcomes.

Research Question 3: What are the characteristics of those WIL models?

The published papers which were grouped as collaboration models can be divided into two aspects. The first are activities that have been created by the university, for example, classroom teaching by invited guest lecturers, practical training by the establishment of an internship program, events or field visits. The second are activities offered by industry such as offering positions for interns, IT projects and case studies linked to student projects, research for business, shared experience programs, support or funding for events, and experts acting as consultants or project team coordinators. Some universities invest in the idea of laboratory settings with the aim of joining collaborations with industry.

Since the focus of curriculum design models, is to enhance students' skills not only from the perspective of their core knowledge and expertise in the area of IS/IT but also their graduate skill or employability skill, curriculum design models start by integrating industry requirements with international education, the enterprise culture, and current trends in technology. Curricula seek to balance technical and business requirements with the aim of students graduating with work-ready skills. One interesting idea mentioned in this category is asking academics and practitioners to cooperate in designing the curriculum, resulting in courses being redesigned based on ideas derived from industry practitioners. One study balances the syllabus group of the subject by percentage; thus each group still have a relationship in term of teaching and knowledge association (Nikolov & Ilieva, 2007).

Models falling under the heading of practice methods have similar objectives to those under the heading of curriculum design models but focus more on practice to fulfill student needs. Twenty-first-century skills including ICT competencies, core knowledge skills, and attitudes are among the skills mentioned. Among the approaches recommended under this model are group working, event enrolment and case study simulation. Working in inter-professional teams can lead allows the student to observe experts and the way they learn. Working in cross-disciplinary teams on a project also encourages students to be pro-active. Shared project and work collaboration between faculties and industry can give students the broader view.

The one study classified as falling within the teaching approach model (Al-Mahmood & Gruba, 2007) focused on different ways of fitting graduate skills to subjects within a course or curriculum. Each method considered was noted to have different characteristics and advantages.

Research Question 4: Which techniques or knowledge are applied in those WIL models?

Most of the techniques and methodologies implemented in the articles traced were aimed at dealing with an existing problem and developing a solution to it. Many methods were used to encourage students to learn, to guide the university in planning strategy, to encourage instructors to better understand their teaching role, and to improve relations with industry. The techniques comprised both the agile and scrum methodologies, the CDIO method, communities of practice, cross-cultural workshops, experience learning, expert sharing, the hands-on technique, the learning in action theory, model-driven teaching, multi-functional project teams, outcome-based teaching and learning, problem-based learning, project management software, project-based teaching, reflective practice, literature reviews, existing model reviews, surveys, expert discussion, gap analysis, in-depth interviews, and situation observation.

The areas of knowledge that were noted to be important related to essential skills, industry demands and also strategies to combine existing situations with new perspectives. Also highlighted were twenty-first-century skills, employability skills, graduate skills, and ICT skills, studies of industry demand and markets, the concept of the relationship between knowledge and graduate attributes, university experience, win-win strategies, and work-ready skills.

The WIL model in the digital economy and future trends

The design of existing WIL models is quite well suited for application in the IT industry; nevertheless, these frameworks do not take account of new economic perspectives as would be expected. Atkinson and McKay (2007) in discussing the digital economy, note that IT helps employee to work more productivity. In contrast a digital worker in his/her must work will be assumed to be capable of solving problems as well as being very familiar with the hardware, software, applications and telecommunications in the current dynamic environment.

The primary objective of WIL in the digital economy whilst focusing on graduates' qualifications must also take into account job-specific requirements and working competency. Universities must be constantly aware of the characteristics required by the digital workforce and the nature of the on-going digital environment, and particularly which digital skills are required by which business or industry sectors. Academics have to keep in mind that in the IT industry, technology develops exponentially and becomes obsolete more quickly. Therefore, for universities, co-operation with industry is crucial in order to remain abreast of technology and to be capable of designing curricula for sustainable learning.

According to Moore (1993) the future trend in WIL is the ecosystem (Moore, 1993) and the concept of the productive work-integrated learning environment. Other important areas include emerging technologies such as social media and the use of the smartphone as a learning tool, the participation of community and government organizations in WIL promotion, international sharing in innovation practice and knowledge resources being extended to ecosystems. In addition, local and national government policies towards the digital economy in each city or country need to be considered when building and deploying new ecosystems.

CONCLUSION AND FUTURE WORK

This research presents an SLR of WIL models related to IT industries and IT departments in other sectors. The study focused on establishing whether there are existing models that equip graduates to work, their adoption, and the techniques included. We found 24 articles which met the study criteria which fell into four categories, collaboration models, curriculum design, practice methods and teaching approaches. The models focus on gaining the greatest benefits for all stakeholders. The two main aspects identified were the activities created by universities and activities offered by industry. The techniques identified in the models are the methods and tools appropriate for acquiring research problems and for developing models. Overall models were found not to link to the new economic era and it is suggested that new models and ideas need to be developed which are appropriate in the digital economy.

The main limitation on the results of this SLR is the restriction of the search criteria and it is possible that the outcome may not cover all existing models. Further, judgments relating to the category of WIL into which each study fell were made by the researcher and it is possible that some studies could be placed in more than one category. However, it is not felt that this detracts substantially from the contribution of this study to the field.

Future research based on the results of this SLR should focus on WIL creative ecosystem, particularly in specific industry contexts.

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Making social mobility a reality? Graduate perspectives on student placements

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ABSTRACT

This study investigated the perspectives of recent computing graduates, who had expressed interest in taking a work placement while they were studying, in order to gather their narratives of the placement process and beginning graduate employment. Participants had all registered for a student placement, before graduating from one of 12 Scottish universities between 2000 and 2016. Their perspectives were gathered via online questionnaires and semi-structured interviews. These also gathered demographic information, potentially revealing the influence of students' backgrounds on their take-up and completion of placements and their early career paths. The survey data showed that those who had completed a work placement were, on average, earning more and were more likely to be in employment. By a very small margin, the majority of students who had undertaken a placement self-identified as middle class. From their perspectives as graduates, interviewees felt that doing a placement had been essential in gaining their graduate jobs and establishing the skills and experience to begin to perform those roles. Reasons for not taking a placement included: unsuccessful applications, the time needed by the applications process, and a preference to focus on university study. This study provides valuable information to university staff, students, and employers when considering the promotion and implementation of work placements to diverse students.

Keywords: graduate employment, work placement, employability, graduate outcomes, work experience

INTRODUCTION

Placements, co-operative education, and internships, where students use and extend the knowledge and skills gained at university in the workplace, are not a new feature of higher education but extend back over the last century (Ramirez et al, 2016). Employment experience, such as work placement, is consistently associated with improved employment prospects (for example, Shadbolt, 2016). From employers' perspectives, placements bring new skills into their organisations and provide good quality and good value workers, often later recruited to permanent positions (Smith, Smith, & Caddell, 2015). From students' perspectives, placements provide valuable real-life learning experiences, improve their employment prospects, and inform their career plans (Smith et al., 2015; BIS Research, 2016). Indeed, the "majority of those who had not undertaken any form of work experience later rued this decision", due to appreciating placement with hindsight as a lost opportunity to enhance employment prospects, develop industry contacts and enhance study-based skills and knowledge (BIS Research, 2016, p. 8). Likewise, Wilton (2012) found that graduates who had completed placement unanimously felt that it had "given them a labour market advantage" (p.616) and cited experience and new contacts as providing that advantage. There are also wider benefits of work experience, including the development of skills and confidence. In a study looking back over 60 years, Linn's (2015) participants recognised learning impacts of co-operative education: developing specific skills and wider understandings related to their work and study, for example through practical and physical (embodied) activities. On reflection, people also valued the life experiences of meeting and working with diverse people. These are compelling reasons for gaining work experience while studying, but not all students have access to work experience through their courses. Some aspire to gain a placement but are unsuccessful, while some simply do not recognise the potential benefits and fail to pursue the placement

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opportunity. Further, students' backgrounds and orientations may contribute to the decision making process around taking a placement in ways that are not currently clearly understood, but merit further investigation.

This paper examines the experiences of recent computing graduates across Scotland. Participants include graduates who had completed a placement, alongside those who expressed interest but had not necessarily completed one. The over-arching aim of the study is to investigate experiences of placement amongst graduates, including their perspectives on the role played by placement in the process of obtaining a graduate job and their subsequent career development, examining the contribution of placement to these life stages. The study also sets out to examine how students' backgrounds relate to their approach towards placement and their subsequent career paths.

TRANSITIONS INTO EMPLOYMENT FOR COMPUTING GRADUATES

While the literature around placement emphasises a wide range of benefits accruing to graduates, placement is also at the heart of an instrumental debate in the UK about the need for universities to produce *work-ready* graduates who can easily navigate the transition into employment. UK government research describes computer science graduates as "relatively slow to move into work" (BIS, 2016, p. 62). In the UK, 10.3% of CS graduates are unemployed 6 months after graduation, compared to the overall average of 6.1% (HESA, 2016). HESA's (2015) longitudinal survey found 4.9% of CS graduates from 2010-11 unemployed 40 months later. An improvement, but still the highest rate across the disciplines surveyed. In the process of securing graduate roles, computing graduates are required to demonstrate a wide range of skills, knowledge and aptitudes (Fincher & Finlay, 2016). Shadbolt (2016) describes confusion of job roles and associated skills (2016, p.57). There are regular capacity and demand fluctuations in the sector, with international companies expanding and contracting their global workforce according to demand and the cost of labour. While the likelihood of gaining stable employment in IT may at times be uncertain, there is some evidence to suggest that it also offers relatively good prospects for upward social mobility: Marks and Baldry suggest that software work "offers open-access socio-economic mobility to those with the necessary talents without the significant value baggage which might be associated with the traditional professions" (2009, p.60). If the question of social mobility is relevant in the context of computing as a discipline, then access to placement becomes a key concern when we consider how important placement can be for graduate employment.

Targeting resources, such as placement tutors and curriculum development, in order to increase access to work placements in computing is a worthwhile activity for universities—if there is equality of opportunity. The challenge for universities is to consider how resources can be directed to promote inclusivity, especially if universities seek to improve social mobility. Greater awareness of how students approach opportunities for work experience should feed into the design of meaningful employability activities. Initiatives to widen access to university need to influence work experience processes, otherwise work placements could simply be additional, inaccessible moves in the game of graduate employment.

CAPITAL, FIELD AND 'HAVING A FEEL FOR THE GAME'

With an increased emphasis on work experience for graduate employment, concerns about access to placement opportunities arise. Both transitions from university into graduate employment and gaining work experience have been found to be easier for people with access to certain social and financial resources (Bathmaker, Ingram, & Waller, 2013). Bathmaker et al. (2013) use Bourdieu's concept of *capital*, describing both social and material resources, to explore the impact of students' socioeconomic backgrounds on their experiences of university, including employability activities such as placements and voluntary work. This is framed in terms of students' use of resources to increase their employability, such as family contacts who may help to set up placements. In Bourdieu's terms, these resources are *capital*, because they help the students to claim their position in the social order; i.e. they function as a social relation of power (Navarro, 2006). Burke's (2015) overview of the contemporary graduate labour market emphasises the increase in graduate numbers, seemingly unmatched by demand, describing this as "a context of graduate inflation characterised by degree devaluation" (p.64). Graduates need to

further distinguish themselves to get good graduate jobs and middle-class graduates are likely to have advantages here, for example: access to financial resources so that they do not need to take the first job they are offered and networks providing helpful connections to employers. Burke identifies these using Bourdieu's concepts of economic, social, and cultural capitals which enable students and graduates to *play the game*: "in an increasingly destructured graduate labour market where education is not enough, graduates must employ particular strategies in order to play the game and successfully enter the graduate workforce; the ability to do this appears to be significantly classed" (Burke, 2015, p.64). In the UK, the Social Mobility Commission identify "cultural interests" (2016, p.1) as both related to class and influential to potential employers finding cultural characteristics, as well as educational background (specific schools and universities), influencing careers. Their research participants describe how this extends to specific behaviours, speech patterns and dress codes: symbols of identity (Stryker & Serpe, 1982). Brown, Hesketh and Williams (2004) use the term "cloning" to describe the tendency of organisations' recruitment processes to favour "their own image given the emphasis on 'social fit' and the need to recruit 'safe bets'" (p.11). *Cultural fit* was also observed as a key component of recruitment decision-making amongst employers in Smith and Smith's (2016) study of tech sector employers. Many large employers even revert to high-school qualifications as a discriminator, relegating degree-level study in their decision making process (Morley, 2007). In the past, work experience has been seen as a way of overcoming the disadvantages of high-school qualifications or of challenging employer beliefs about the inherent value of degrees from some universities over others (for example, University Alliance, 2014). This study set out to explore whether work experience offered the advantages to graduates of a more efficient route to a graduate job and/or better pay; and whether work experience itself has now become a capital that some social classes are less able to acquire.

METHODOLOGY

Two complementary methods, a questionnaire and semi-structured interviews, were conducted in parallel. Computing graduates who had previously registered for placements through e-Placement Scotland and Careerwise were invited to complete an online questionnaire. The questionnaire asked respondents about their experiences of placements (and related work-based learning, including volunteering), their early careers (the process of getting a graduate job) and their current status. The questionnaire also asked about respondents' secondary schools, whether their parents had been to university, and how they would describe their social class, to allow an estimation of social class. Respondents were also invited to take part in semi-structured interviews. These focused on participants' career narratives, including experiences of placements and related activities, getting jobs after graduation, and working. Interviewees were also encouraged to talk about soft skills, perceived work cultures, and networking. The interviews included the same demographic questions as the survey, so that the two data sets could be aligned.

RESULTS

The respondent sample (n=98) consists of 91 participants with an undergraduate degree and 7 with a Masters degree (MSc). There were 23 female participants, 74 male and 1 preferred not to answer. The results are presented according to access to student work placement, access to graduate work and salary levels.

Access to placement

Participants were asked about accessing work placements and their responses are summarised in Table 1. The main reasons for a lack of engagement are similar to those published elsewhere (for example, Ramirez et al., 2016).

TABLE 1: Access to placement

Access to placement	Did not apply	Was not successful	Reasons
Placement (n=53)			
No Placement (n=45)	21		Lack of knowledge of placement (4), not aware of benefits (4), wanted to focus on degree(5), visa constraints (2)
		24	No offer (4), unsuitable due to travel/family commitments (2), visa constraints (1)

Statistical analysis[2] of our sample shows no significant difference in social class between participants who had completed a placement or not. Those with economic capital mentioned summer schools and volunteering as alternatives to work placement. One third (n=33) arranged their placement themselves. Of those, 22 self-reported as middle class. Self-reporting of class was used following validation via a combination of secondary schools and whether their parents had attended university. Of the six people who did not do a placement but did relevant voluntary work, four identified themselves as working class, while only two identified themselves as middle class. Many of those who did not apply show a lack of understanding of *the game*, for example: "I didn't think I had to. I was naive and thought after graduation that I could just walk into a job." One respondent summarises how a lack of access was experienced: "Unaware of the opportunity. Unaware of the benefits a placement could have had. No information about doing a placement or internship."

Access to graduate jobs

Further reflecting an understanding of *the game*, many participants cited work placement as an important factor in them securing their first graduate job. When asked if they felt work placement had been a factor, the following is typical: "Yes, I would not have been able to get an offer or interviews without my placements." One student succinctly expressed a *rule* for getting ahead: "Basically this put me ahead of other people without any work experience.… It gave me lots of stories and examples from real life that helped me on every single interview." Examining patterns of employment in the context of social class (Table 2) reveals a different and interesting picture. Here, there is a clear relationship between social class and employment – to the benefit of those members of the sample identifying as *working class*. Statistical analysis[3] confirms the significance of the relationship between the two.

TABLE 2: Social Background and Employment

Class	Employed	Unemployed	In Full-time Education	No response
Middle	42 (84%)	6 (12%)	2 (4%)	0
Working	34 (92%)	1 (3%)	2 (5%)	0
Prefer not to say	4 (36%)	1 (9%)	0	6 (54%)

Participants were asked if they were in a graduate or non-graduate role. However, this variable was ruled out as having been misunderstood, since the majority of those in non-graduate roles had salaries and job titles suggestive of graduate roles.

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[2] Kruskal-Wallis H test showed that there was no statistically significant difference in class for whether participants completed a placement or not, $\chi2(2) = 2.041$, $p = 0.360$.

[3] Kruskal-Wallis H test showed that there was a statistically significant difference in class for whether participants were employed or not at time of the survey, $\chi2(2) = 13.015$, $p = 0.001$.

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Examining the relationship between having completed a placement and being in employment also reveals a relationship in the data (shown in Table 3), with statistical significance[4] for the association between undertaking placement and being in employment, as widely reported elsewhere.

TABLE 3: Placement and Employment

Completed Placement	Employed	Unemployed	In Full-time Education	Prefer not to say
Placement	48 (88%)	2 (4%)	4 (7%)	0
No Placement	32 (72%)	6 (14%)	0	6 (14%)

Salaries on graduation

A differential in graduate salary based on work placement was also uncovered. Here the data refers specifically to the period 2010-2016 for which sufficient data was available for analysis.
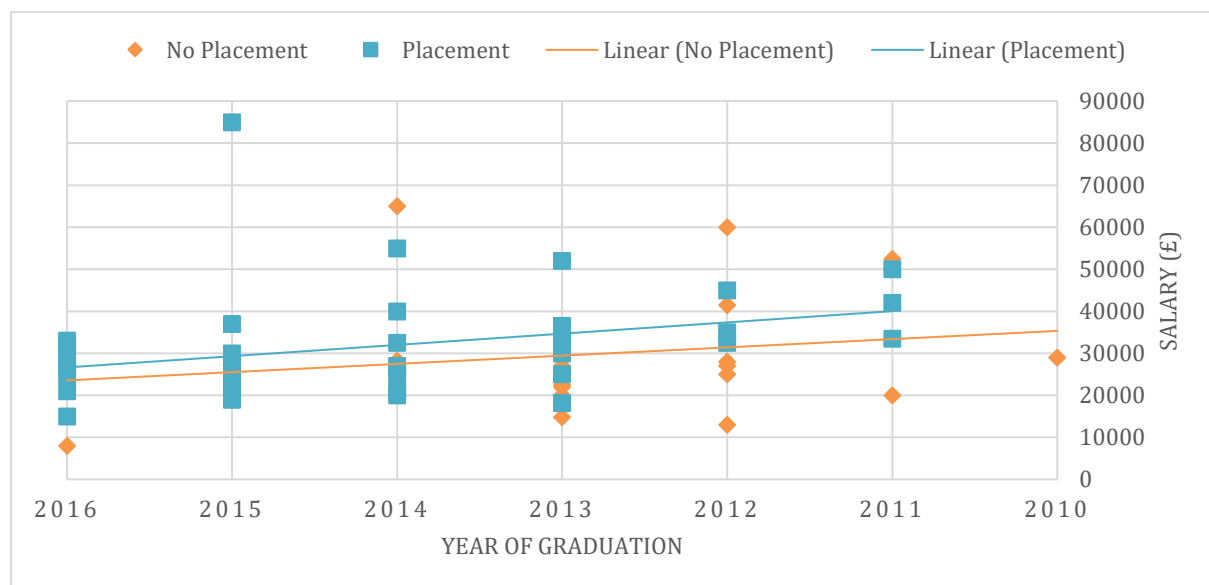
FIGURE 1: Salary plotted against year of graduation – placement and no placement

Figure 1 establishes the differential in salary performance between those who had undertaken placement and those who had not, with better performance for placement. Salary performance was also explored according to class. As shown in Figure 2, middle class respondents report stronger salary performance compared with working class. This outcome tempers and contextualises the previous findings related to employment; while working class respondents are more likely to be in employment than middle class, in employment the middle class respondents report higher levels of remuneration.

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[4] Kruskal-Wallis H test showed that was a statistically significant difference in those who had completed placements and those who had not for whether participants' were employed or not at time of the survey, $\chi2(2) = 14.183$, $p = 0.003$.

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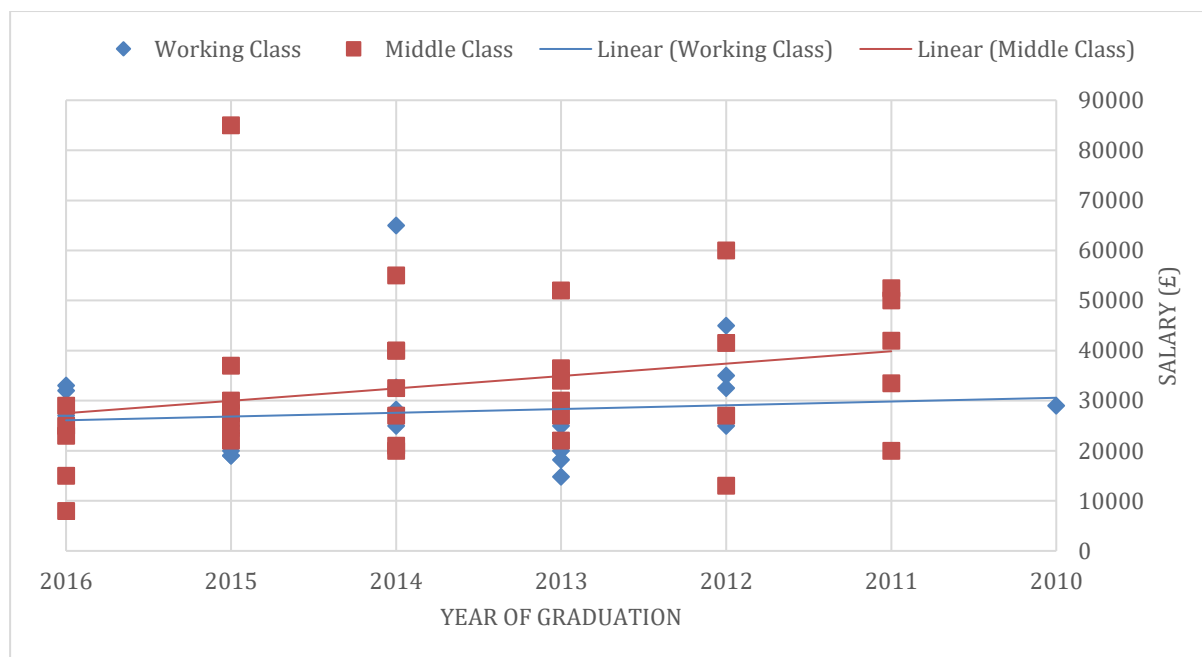
FIGURE 2: Salary plotted against year of graduation – middle and working class

DISCUSSION

Consideration of Bourdieu's concepts of the game and capital frame the discussion of the results.

Social, cultural and economic capital determining access to work placement

In spite of activity at each university promoting work placements, not all study participants recognised the benefits. The textual comments received from those who had not achieved a placement indicate a lack of social resources that might otherwise have encouraged them to pursue placement with more vigour. These comments clearly indicate lack of awareness of *the game*, and a lack of understanding of the part that a placement might play in career development following their studies. In Bathmaker et al.'s (2013) study, middle-class families with relevant social networks helped their children to get good placements and sometimes paid their travel and maintenance; whereas working class students could not leave their paid part-time jobs to take on unpaid placements. This phenomenon was also observed by Smith et al. (2015), with two-thirds of their student participants expressing doubt about whether they could have taken up their placements if these had not been paid positions.

The capital of work culture: work placement used to secure graduate work

Graduates in this study with work placement experience are more likely to find work, as has been found elsewhere (for example, Shadbolt, 2016). There is evidence of students using work experience narratives to create a picture of both technical competence and having a good attitude to work. Overall, participants felt that work placements are being considered by employers as an indicator of merit. However, recent work suggests that meritocracy is the "ideology used to justify the dominant position of the 'elites'" (Abrahams, 2016). The theory is that *merit*, as recognised by recruiters, is based on determination to find work, graduating from an *elite* university and having relevant work experience. This approach does not recognise that social class and connections provide rules for selecting a university, a course, and finding a work placement or alternative. This is in contrast to university entrance whereby many universities have policies designed to widen participation that take account of social context. As a means of overcoming prejudices amongst recruiters, Cai (2013) proposes universities work to overcome employers' beliefs in a hierarchy of institutions and challenge the use of poorly understood educational credentials as a proxy for graduates' ability. This would be a significant start – but just that.

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Economic capital: work placement, graduate jobs and salaries

Work experience was found to increase access to economic capital in the form of higher graduate salaries. Wilton (2012) also found "notably higher earnings for work placement graduates" (p.616), although he reported variation according to course studied. Using Bourdieu's concept of capital, an association between being middle class and being in employment could be expected in this study, but was not found. One interpretation of the higher percentage of unemployed middle class graduates could be the success of working class students in achieving and completing placements, which supports the thesis that placement plays a significant role in navigating the graduate employment transition, downplaying the effects of class. An alternative interpretation is that access to parental/ family economic capital reduces the imperative for employment. There was considerable confusion about the nature of work in terms of whether the participants deemed their job to be graduate-level or not. Many with professional job titles reported not being in graduate-level employment.

Limitations and contextualisation

At time of writing, ten respondents have been interviewed. The content of these interviews cautions against taking a simple causal view between participants' background, their impetus and ability to access placements, and success in their future careers. Six interviewees came to study in Scotland from outside the UK; all of these had studied at university in their home country and five had completed degrees. One of the UK students had studied at college and university before moving to specialise and study in Scotland. EU students emphasised their prior experience as a factor in applying for work placement.

CONCLUSION

This research aimed to gather graduate perspectives on getting placements; the role of placements in finding work and their working life since graduation; and, with the benefit of some years' reflection, the impact of placement. The study found that work experience enhanced access to graduate roles and a tentative link was found between work placement and graduate salary. For the participants in this study, those self-reporting as working class were no less likely to complete a work placement. In our sample those self-reporting as working class were more likely to be in work, however for those in work middle class graduates were earning higher salaries. A wider study might reveal whether those with more capitals are winning the game.

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Challenges of the New Work Order: A work skills development approach

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ABSTRACT

Acquiring an undergraduate degree from a Higher Education Institution (HEI) is seen as an important step in establishing a career in many fields. However, in Australia, it has been found that much of the career advice being offered to young people is rapidly becoming outdated (Foundation for Young Australians, 2016). There is a gap between the skillsets required by young Australians entering the workforce and the skillsets required by employers (Foundation for Young Australians, 2016). A more dynamic and flexible approach to careers and associated work skills is required in the emerging work order. Future jobs are more likely to be considered in clustered areas of expertise rather than specialised occupations, reflecting the trend for both vertical and horizontal movement in career paths. Because of this, portable and flexible work skills need to be developed. Enterprising skills, such as creativity and critical thinking, are increasingly prioritised by employers regardless of cluster (Foundation for Young Australians, 2016), hence, development of these skills is required across disciplines in undergraduate programs. This presents a challenge for HEIs, who are under increasing pressure from their stakeholders to produce work ready graduates. This paper demonstrates how the Work Skills Development Framework can guide curriculum in HEIs to encourage cluster aligned competencies in graduates.

Keywords: New Work Mindset; Work Skills Development Framework; employability; Higher Education; curriculum; assessment

INTRODUCTION

Educators in Higher Education Institutions (HEIs) are increasingly being encouraged to build links with industry. The requirements of industry and increasing marketization of higher education have historically contributed to curriculum development in HEIs (Fitch, 2014) (Plewa, Galán-Muros, & Davey, 2015). However, the face of work is changing, and the ability for HEIs to keep up with the pace of change has been challenged. The Foundation for Young Australians has recently called on Australia's Prime Minister, Malcolm Turnbull, to provide an "Enterprise Education Strategy" for Australia, a strategy that improves school, skill, employment and earning outcomes in young people (Foundation for Young Australian, 2016). This is following findings from The New Work Order series of reports from the Foundation for Young Australians (FYA) revealed that young people are largely underprepared for the jobs of the future (Foundation for Young Australians, 2016). This has increased pressure on Australian HEIs to provide graduates with relevant skills for a reflexive, fast paced, innovation oriented workforce.

Today's HEIs are tasked with developing employable graduates ready to "fit" modern global workplaces (Crayford, Fearon, McLaughlin, & van Vuuren, 2012; Davey, Baaken, Galán-Muros, & Meerman, 2011; Franz, 2008; Gibb, Haskins, & Robertson, 2012). Political and economic agendas require that knowledge and skills learned at university must be visibly useful in industry. Graduates are now required to transition from higher education into a globally competitive and economically challenged industry more efficiently and effectively than ever before (Crebert, Bates, Bell, Patrick, & Cragnolini, 2004; Patrick & Crebert, 2004), and key stakeholders, such as employers and students, demand this as an outcome of undergraduate studies. However, both these groups have struggled to have their expectations met in terms of capacity and capabilities in the workplace (Crebert et al., 2004; Freudenberg, Brimble, & Cameron, 2009; Tran, 2015). These increasing pressures are being felt in Australia.

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This paper considers how HEIs can respond to the findings of The New Work Mindset through mapping the knowledge, skills and abilities required for Young Australians against the Workskills Development Framework (Bandaranaike & Willison, 2010). This framework is useful for guiding both curriculum development and assessment in Work-Integrated Learning curriculum in HEIs in Australia. Through this discussion, a way forward is suggested for preparing graduates for the world of work.

LITERATURE REVIEW

Preparing Students for Employment

Work-Integrated Learning (WIL) has been a common response to increasing work readiness in students, predominantly because curriculum driven supervised work experience has been touted "a magic ingredient improving employment rates of graduates"(Kettis, Ring, Gustavsson, & Wallman, 2013). Hence, Universities are increasingly utilising WIL curriculum to develop students with comprehensive workforce capabilities (Abeysekera, 2006; Choy and Delahaye, 2011; Smith and Worsfold, 2015). However, it has been recognised that WIL should be utilised as a complimentary pedagogy, supported by more traditional, classroom based learning, emphasising development of skills and knowledge sets required by the workforce (Jackson, 2015). It is widely reported that students experience positive learning outcomes in WIL broadly (Jackson & Wilton, 2016; Wingrove & Turner, 2015; Woolley, 2015), and that placements are important for developing career management competencies in students (Jackson & Wilson, 2016). Increasing the effectiveness of undergraduate course that prepare students for WIL placements should be emphasised as necessary support structures for students (Jackson, 2015) including learning design and processes that support generic skills such as teamwork (Howard, Johnston, & Agllias, 2015). Increasing the complexity of the requirement for pre-placement support, is the nexus between work and employment, and the roles of students, mentors and educators in providing WIL placements. A primary challenge in delivering employment enabling WIL is transcending the 'vendor' relationship that traditionally has existed between higher education, students and industry, and developing a new space where the tacit knowledge of employees in partner organisations can be more strongly utilised to develop graduate outcomes further (Abeysekera, 2006; Choy & Delahaye, 2011; Helyer & Corkill, 2015). Listening to industry, and monitoring changes in the employment landscape is critical in ensuring that HEIs are focussed on developing suitable knowledge, skills, attributes and attitudes. The challenges of this are unsurprising given the time and commitment required to establish and maintain industry partners (Bates, 2011; Brown, 2010; Gamble, Patrick, & Peach, 2010) and the tensions and dilemmas that exist between industry and Higher Education (Singh & Harreveld, 2014). However, while authentic work place learning has been thought to develop team skills (Smith & Worsfold, 2014) and problem solving skills (Yap, 2012) in particular, graduate transition into employment remains an issue.

Graduate Attributes: Knowledge, Skills and Abilities

There are many terms used to describe aspects of student development related to employability. Australian universities have responded to the policy push for increased employability in their graduates (Kalfa, 2015) by emphasising specific attributes required by graduates to gain employment (Barrie, 2012; Kalfa, 2015). These are widely known as graduate attributes, defined as the knowledge, skills and abilities that are acquired by students outside their disciplines and required for the world of work (Barrie, 2012). The literature refers to these attributes in a number of ways, including but not limited to, graduate competencies or qualities (Faulkner, Mahfuzul Aziz, Waye, & Smith, 2013), generic skills (Crebert et al., 2004) and generic attributes (Candy, 2000). For this paper, the term 'graduate attributes' has been used. Bowden, Hart, King, Trigwell and Watts (Bowden, Hart, King, Trigwell, & Watts, 2000) describe graduate attributes as "the qualities, skills and understandings a university community agrees its students would desirably develop during their time at the institution and, consequently, shape the contribution they are able to make to their profession and as a citizen" (p.2).

However, mutual understanding around how these attributes are to be fostered, developed and harnessed to secure employment of their choice appears to be lacking (Barrie, 2012; Yorke, 2006). Freudenberg, Brimble and Cameron (2009) note that a key outcome of WIL is enabling professional awareness to reduce the risks of falling into an

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'uncongenial calling' (p.264). This awareness is critical in assisting students to identify appropriate career opportunities and in guiding them to develop applicable skills.

There are many graduate attributes that are required, in addition to discipline knowledge, to be ready for the workforce. These are predominantly known as 'soft skills' that enable graduates to apply their knowledge and work at their optimum and are a primary concern of industry ((Rampersad & Patel, 2014; Yorke, 2006). This link between generic, or 'soft' skills and employment is critical for universities, however, it has been noted that these lists of attributes, skills, qualities and attitudes, will remain just lists unless they can be moved from the page to the person (Pellegrino & Hilton, 2012).

Learning is an important responsibility of the student, however the responsibility of how students are taught, and how well they are taught, lies firmly with the educator (Christensen & Eyring, 2011). However, understanding exactly how students can bridge the gap between work and employment is "crucial for the credibility of universities" (Ferns & Moore, 2012). While placements have been recognised as a method of developing graduate attributes, re-visioning classroom based assessments may also provide a pathway to employability.

The New Work Mindset Job clusters

The Foundation for Young Australians (FYA) found that "when a person trains or works in one job, they acquire skills for 13 other jobs" (Foundation for Young Australians, 2016). Skills can be broken down into two categories: technical skills and enterprise skills. Technical skills are considered by employers and employees as specialised skills required to do a specific job (FYA, 2016), however it has been found that many technical skills are shared across occupations. These are core technical skills, and are necessary for employability in a particular job cluster. Enterprise skills "are transferable skills that enable young people to engage with a complex working world" (FYA, 2016, p8), including communication skills, digital literacy, writing, training others, and problem solving. Enterprise skills identified by the FYA share great similarities with what HEIs refer to as graduate attributes. These skills have been identified to be "a powerful predictor of long term success" (FYA, 2016, p8). The enterprise and technical skills identified in job advertisements were used to determine each cluster. The job clusters are identified in the table 1 with corresponding explanations.

TABLE 1: Job clusters with explanations

The Generators	Jobs in this cluster require skills with a high level of interpersonal interaction in retail, sales, hospitality and entertainment.
The Artisans	Jobs in this cluster require skills in manual tasks related to construction, production, maintenance or technical customer service
The Designers	Jobs in this cluster require deploying skills and knowledge of science, mathematics and design to construct or engineer products or buildings.
The Technologists	Jobs in this cluster require skilled understanding and manipulation of digital technology.
The Carers	Jobs in this cluster seek to improve the mental or physical health or well-being of others, including medical care and health support services
The Informers	Jobs in this cluster involve professionals providing information, education or business services
The Coordinators	Jobs in this cluster involve repetitive administrative and behind-the-scenes process or service tasks.

Source: Adapted from Foundation for Young Australians, 2016

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These clusters provide information critical to guiding students in their career development choices. Linking curriculum and assessment to the skills required in each cluster would improve the likelihood of meeting industry demand for employable graduates in Australia.

THE WORK SKILLS DEVELOPMENT FRAMEWORK

The Work Skills Development Framework (WSD) is an innovative tool utilised to guide assessment of placement activities within WIL programs. It was developed from WIL based research literature, institutional reports, and interviews with potential employers and past graduates and aims to determine best fit employability outcomes for students undertaking WIL placements (Bandaranaike & Willison, 2015). Harnessing the requirement for students to be employable, largely through the development of graduate attributes, it utilises Bloom's taxonomy (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) to frame achievement of work skills in a sequential manner. The sequence is mapped through six distinct facets of Work Skills: initiative and enterprise; technology and resource use; learning and reflecting; planning and management; problem solving and critical thinking; communication and teamwork (Bandaranaike & Willison, 2010). The framework enables students to be monitored both qualitatively and quantitatively throughout their placements, and provides a continuum of development for effective mapping of student progress (Bandaranaike & Willison, 2010).

The WSD provides an important opportunity for young Australians seeking employment during or post university studies. Because of the framework's reflexive and adaptive nature, educators focussed on enhancing employability throughout their curriculums, have the opportunity to tailor their assessments to capture key skills in job clusters relevant to their disciplines.

NEW WORK MINDSET SKILLS DEVELOPMENT: IN THE CLASSROOM AND ON PLACEMENT

While the WSD has been developed with the assessment of WIL placements in mind, the job cluster perspective provides an opportunity to map both enterprising and technical skills to a new WSD framework suited to both classroom and industry based learning. The benefits of doing this are three-fold. Firstly, classroom learning and/or assessment can be designed through the six facets of work skills, which enables the capture of multiple skills sets for assessment according to their category. Secondly, the skills that the student excels in can then be linked to the job clusters in which the student is best suited. This adds another dimension to the best fit nature of the WSD and also provides a more directional outcome for students in terms of career planning. Thirdly, the requirement for these skills to be demonstrated in the workplace can be alleviated, particularly for enterprising skills that can be attributed through assessments such as group work and reflection. This can free up placement assessment to focus on technical skills, with a secondary aim of enhancing pre-established enterprising skills. This adaptation of the framework is referred to as the New Work Skills Development (NWSD) framework.

Benefits of the New Work Skill Development Framework

1   Classroom based assessment

The WSD enables the capture of enterprise skills through the six facets of work skills. Enterprise skills can be developed and captured specifically through classroom based learning

2   Best fit career development

Through effective assessment practice, students will be able to identify their strengths and weaknesses in enterprise skills, and map these to relevant job clusters

3   Tailored, technical placements

With enterprise skills being targeted in the classroom, the placement can be designed to emphasise technical skill development, and further develop a tailored enterprise skills focus

THE NWSD FRAMEWORK IN PRACTICE

An example of how the NWSD Framework may help frame the learning of enterprise skills in the classroom is outlined below in the context of an Organisational Behaviour undergraduate class. This hypothetical case study has been developed based on one author's experience of using classroom based activities, in alignment with formal assessment, to foster the development of a skill useful to the work and life situation of the student.

The following table demonstrates how the Enterprise skills as identified in the Foundation for Young Australians report, can be mapped against work skill development facets from the work skill development framework.

Enterprise skills	Facet of work skill development			
Communication	Communication and teamwork			
Digital literacy	Technology and resource use	Learning and reflecting	Planning and management	Problem solving and critical thinking
Financial literacy				
Creativity and innovation	Initiative and enterprise			
Global citizenship				
Enthusiasm for ongoing learning				

This table provides a clear alignment between enterprise skills and work skill facets. By focussing on one enterprise skill (communication) as an example, the following table outlines how a classroom activity can be utilised to develop both the enterprise skill and a number of work skill facets. While only one classroom based activity is outlined here, it is suggested that classroom based activities can be utilised throughout the semester to explicitly foster the enterprise skill/skills being targeted.

Fostering enterprise skills in the classroom (Organisational Behaviour)			
Communication	Classroom activity	Creative communication*	Communication and teamwork Problem solving and critical thinking
	Assessment - Essay	Communication in diverse workplaces – conflict and cohesion	Learning and reflecting Technology and resource use
	Assessment - Report	Resolving conflict – case study analysis	Learning and reflecting Problem solving and critical thinking Technology and resource use

In a simplified extrapolation, the following table outlines how the enterprise skill communication can be fostered further in a WIL placement scenario.

Fostering enterprise skills on placement (Organisational Behaviour internship)			
Communication	Observe	Observe how communication occurs in a staff meeting	Learning and reflecting Communication and teamwork
	Experience	Contribute to a workplace meeting aligned with a placement project, respond to questions or contribute if required	Learning and reflecting Communication and teamwork
	Practice	Report on project outcomes / progress at a meeting	Learning and reflecting Problem solving and critical thinking Technology and resource use Planning and management Initiative and enterprise

The possibilities for preparing students for the workforce through this framework are far-reaching. Pre-placement, classroom based learning becomes an important consideration in early development for work readiness. Opportunities to acquire work skills in the classroom become clearer through the NWSD framework. Following classroom based development, the potential for enhancement of these skills during placement is significant. Developing curriculum and assessment through the NWSD framework may also provide an opportunity to frame the student's career direction pre-placement, or even prior to selecting a major or specialisation. Classroom based assessment designed to develop a range of work skills required for the New Work Mindset could be utilised to help students understand their strengths, and map this early to their chosen job cluster. By understanding which skills they need to develop to unlock more opportunities within their cluster, then actively seeking opportunities in their classes to develop these skills, an opportunity for each student to increase their employability arises. Using the NWSD framework, each student can potentially build a skill profile that can be used to guide their career strategies. Another advantage of this approach could include specific tailoring of placements to back fill critical skills that are missing from the students skill set, potentially increasing the benefit of placements and optimising the link between placement and employability. Using the information that is available through the New Work Mindset report could potentially guide a tiered work skills development strategy to enhance employability across disciplines in Higher Education.

CONCLUSION

The Foundation for Young Australians highlights the importance of young people obtaining career advice relevant to the new state of the workforce in Australia. They recommend that young people making choices about their career should "reflect on the job clusters that best match their interests and strengths, by using the jobs and skills most commonly request(ed) in a job cluster" and to "test their fit within a job cluster by gaining critical early-career experience in jobs that employers offer more frequently to young people" (FYA, 2016, p8). HEIs can assist their students to do this by utilising the NWSD to guide their curriculum and assessment strategies. A tiered, early intervention approach to employability can be facilitated through hand in glove classroom and placement work skills development strategies. Skills based curriculum and assessment strategies developed through the NWSD framework provide a targeted strategy to prepare higher education students for the New Work Mindset.

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Workplace development to cooperative education partnership: Key success factors of cooperative education management at Walailak University in the case study of Somboon Advance Technology Public Company Limited

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ABSTRACT

Walailak University engages in cooperative education in order to improve the quality of students since in the academic year of 1998. Every student is required to undertake cooperative education at least one time (4 months) or one semester as a part of the requirements to graduate. In the academic year of 2015, there were a total of 1,486 students in the cooperative education program: 1,462 of which worked in Thailand and the remaining 24 students worked abroad. There were a total of 733 companies in the country and 15 companies abroad. According to Office of the Higher Education Commission (2015), there are 116 universities in Thailand that incorporate the cooperative education system, which is considered to be both the opportunity and obstacle to maintain university engagement in succession. One example of the university engagement was when the university cooperated with Somboon Advance Technology Public Company Limited. The shared vision is to co-ordinately create the society for education with the belief that "In order to create highly qualified graduates, cooperation between the organizations is necessary". Consequently, this would shape college students to become highly qualified graduates who are "career ready". Likewise, such cooperation will enable unity of the two worlds: the world of education and the world of career. The company has accepted cooperative students to work from the academic year of 2007 to 2016 (10 years) with the total amount of 21 students. In 2017, both parties have cooperatively conducted a research study with the objective to examine the satisfaction of students who had worked at the company by using three sets of questionnaires. The first set is primarily for cooperative students, the second set is for dual system students in the special royal project, and the third set is for officers in Public Service Executive Development Program, who came to study about the private sector. The results of the analysis found that (1) Cooperative students were satisfied with: the working process prior to sending the students to work with the average of 4.48 (high), the process during the working operation with the average of 4.69 (very high), and the process after work with the average of 4.35 (high). The two most satisfactory aspects with the average of 4.75 (very high) are: "The effectiveness of the company in informing the students who passed the selection process to prepare themselves prior to work" and "The orientation, training, and support provided by the company were appropriate and sufficient"; (2) The dual system students in the special royal project were satisfied with: the working process prior to sending the students to work with the average of 4.35 (high), the process during the working operation with the average of 4.59 (very high), and the process after the working operation with the average of 4.46 (high). The two most satisfactory aspects with the average of 4.70 (high) are: "The company assigned students to present the result of the operation to their respective trainers, as well as to the executives of the company during the last week of the operation" and "The special dual system project has played a significant role in enabling students to find their hidden strengths and passion, building their confidence at work, and appreciating their own self while adding values to the organization and society"; and (3) Officers in Public Service Executive Development Program were satisfied with: the working process prior to sending the students to work with the average of 4.54 (very high), the process during the working operation with

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the average of 4.71 (very high), and the process after the working operation with the average of 4.74 (very high). The officers rated the overall satisfaction by giving full five points for the four aspects as follows: 1) The company organized the orientation and the meeting with the executives in order to gain insight to the company's policy, products, and regulations; 2) The company provided trainers or advisors to give advices regarding the working operation, follow up with the lesson plans, and solve problems; 3) The company arranged for the results of the operation to be presented in the last week of the operation; and 4) The company informed the students of their own strengths and weaknesses for future self-improvement. Subsequently, the company has utilized the results obtained from the research in improving the effectiveness of the working process. Indeed, cooperative education is the mechanism of coordination that provides benefits to all relevant organizations, both at present and in the future.

Keyword: Cooperative Education , Work –Integrated Learning ,Walailak University, University Engagement

INTRODUCTION

Walailak University had designed the education system from the very beginning in order to be a university that supports the cooperative education system, in accordance with Professor Wichit Srisa-an's vision, who is the founder rector of Walailak University and the father of Thailand's cooperative education. In addition, he is also the first initiator who applies the cooperative education system in Thailand. Such initiative has further led to an establishment of the university's policy, whereby cooperative education has become a requirement in all university programs, except for programs with compulsory professional practices as specified in the professions federation. Moreover, the education system has been arranged into a trimester in order to support the cooperative education throughout the year in succession. The primary objectives are for the graduates to "understand themselves, people, and the work itself, as well as possess qualities that are needed by the corporation and the society", according to the resolution of Professor Wichit Srisa-an (Tipawan Sutin 2013:124). As of presence, Walailak University provides three different types of cooperative education programs, consisting of a one-time cooperative education (four months), a two-time cooperative education (eight months), and a three-time cooperative education (12 months). Programs that require more than one time of cooperative education are organized in such a way that a semester is alternated between an academic coursework and an equal amount of time working. Walailak University dispatched the first generation of the cooperative education students in 2001 with a total of 495 students from 16 different programs to 296 companies. As of the Academic Year 2015, there are 1,486 cooperative education students; 1,462 of which are working in the country (733 local firms) and the other 24 students are working abroad (15 international firms). Regarding the importance of the cooperative education, which provides benefits to all stakeholders, including institutions, professors, students, and companies, the availability of well-educated workforce has increased and the university has delivered high quality graduates that correspond to the need of the companies. Subsequently, the Office of the Higher Education Commission (OHEC) had stipulated a plan that aims to promote the implementation of cooperative education in the institutions, issue no. 1 (2008-2012). According to the data obtained from OHEC (2015), there are 116 institutions that have implemented the cooperative education system. As a means of standardizing the cooperative education system across all institutions in Thailand, the OHEC, along with Thai Association for Cooperative Education and associated institutional education network across all regions, have established the standard and the guarantee of quality for the cooperative education in 2009. Ever since then, the stated standard has been used to provide a direction for operating the cooperative education. In 2015, the OHEC had stipulated a second plan, issue no. 2 (2013-2015) with the main objectives for the universities to produce graduates with an even higher competency to become high quality citizens in correspondence to the demand of the labor market, as well as increase the capabilities to be able to compete internationally and consequently become the main force to drive the society and the nation in the most sustainable way. Professor Wichit Srisa-an (Wichit Srisa-AN:2014) describes cooperative education as "an education system that provides a systematic alternation between academic coursework at the university and real-life work experience at the company through collaboration between companies and all related parties that integrate education and work together –the alleged Cooperative and Work-Integrated Education (CWIE). Likewise, it is considered as one way of engagement between the university and the company, operating under the standards of Thai Cooperative Education."

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Walailak University established the center for Cooperative Education and Career Development as the central unit of the university in order to study and develop the cooperative education system in modernity. Additionally, the establishment of the center aims to increase the efficiency of the information system in terms of supporting the operations and allocating cooperative education jobs through coordination of both domestic and international companies. Moreover, the center also assists students in necessary areas through pre-cooperative education that enables them to be prepared for the practical work experience. Likewise, an annual report regarding the operations is also delivered to the committee of the center for Cooperative Education and Career Development, which comprises of the rector as the president, the vice rector of academic and foreign affairs, professor representatives, and professionals from the government and private sectors. The purpose is to develop the cooperative education system and career to be more advanced and sustainable. Consequently, the cooperative education will be a mechanism for collaboration that brings successes to all related parties.

Through an experience of over 15 years in Cooperative education management, the key success factors to cooperative education arise from the understanding and coordinating of the companies on the foundation of a solid relationship between the parties, particularly of the high-level management of the company. If the executives understand and provide some support, such as allocating resources for students during their work experience and internally coordinating within the organization to support the student practices, subsequently leading to a successful work experience. Correspondingly, the university has stipulated a strategy that requires a meeting with new companies every year in order to provide knowledge and understanding of the cooperative education, as well as to ensure that the operations are in line with the standard of Thai Cooperative Education. The meeting consists of three phases that include:

- Prior to the practical work experience: The cooperative education staff, the head of cooperative education, and professors will meet with the company for a collaborative negotiation and to explain about the roles and responsibilities of each party. If necessary, the higher-level management team, such as the Director of the center for Cooperative Education and Career Development, the Dean Vice-Rector, and the Rector will meet with the company to express the determination of the university in developing the collaboration with the company regarding the cooperative education.
- During the work experience: Professors from the same faculty of The student , along with the cooperative education staff will visit the company at least one time in order to examine the student practices and their progress, as well as provide advices and solutions to the problems that have arisen at work in the aspects of academic, working process, and adaptation to the workplace.
- Upon completion of the work experience: If the company requires the students to present their practices to the department and the university to the session, professors from the same faculty of Student and the cooperative education staff will attend the session. Feedbacks from the company and the students will be taken into consideration for development of the cooperative education program in the future.

Somboon Group and its subsidiaries have accepted cooperative education students from various universities since 2002. They have collaboratively accepted a total of 21 students from Walailak University, from the academic year of 2007 to the present year 2016 (10 years). As a result of consistent coordination and strong relationship between the company and the university, a joint meeting was scheduled at the end of 2016. The meeting has the primary objectives to co-ordinately conduct a research in order to evaluate the processes of the cooperative education implemented by the company and other projects of the company. The data obtained from the research will be used to demonstrate the success from collaboration between the two parties. In the 20th World Conference on Cooperative Education that was held in 2017 in Thailand

(Piyawat Boonlong: 2558), it was explained that expansion of the academic collaboration between the university and the company with an already-existing collaboration could be easily achieved due to the original capital, research data, and regional situations. Such factors would enable the university to respond to the company's demand efficaciously and provide high-quality graduates –"the future workforce" –to the company to gain the highest possible benefits.

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Somboon Group was established on September 14, 1995 as a manufacturer of automobile parts. It has been operated for over 50 years with approximately 3,000 employees. Its six subsidiaries comprise of: 1) Somboon Advance Technology Public Company Limited: SAT; 2) Somboon Malleable Iron Industrial Company Limited: SBM; 3) Bangkok Spring Industrial Company Limited: BSK; 4) International Casting Product Company Limited: ICP; 5) Somboon Foreign Technology Company Limited: SFT; and 6) SBG International Japan Co., Ltd: SIJ.

The company's vision is "to become a fast-growing company in the automotive industry in Asia with expertise in designing and manufacturing products with responsibilities to the stakeholders and society in every aspect through an emphasis on the educational development". Its business philosophy is "Three Somboon for Stability", which consists of:

- "Somboon People" refers to development of employees to have good morality and strong skillset as well as improvement of the employees' competencies to become professionals in the field and prepared for the industry expansion. In addition, the employees are trained to have responsibilities towards the society, appreciate their own values, while adding values to the organization and the society.
- "Somboon Business" refers to the development and management of the business . According to governance practices. The value added to the business is achieved through innovation and building confidence amongst the stakeholders. The company aims to have a strong performance that takes into consideration the impact from the business processes, with the intention to develop products that are environmentally friendly and safe to the consumers. Likewise, the company also promotes business management under the concept of self-sufficient economy
- "Somboon Community" refers to promoting happiness amongst the community and society with the emphasis on providing educational opportunity for the society to achieve sustainable growth.

In addition to the collaboration with Walailak University in terms of accepting cooperative education students, the company also promotes and supports cooperative education programs in various universities, comprising of 16 public universities and 3 private universities. In the academic year of 2015, the company has accepted a total of 99 students, 71 of which are cooperative education students and the other 18 students are interns. Additionally, the company has continuously organized a variety of projects for educational development in order to create good people for the society. For instance: 1) School Project in the factory (White Elephant), which aims to develop employees who are in the vocational level of education by providing them with opportunities for continuing education in a two-year higher vocational program; 2) General Internship Project, in which the company accepts students who are interested in the internship program that lasts for approximately 1-2 months; 3) New Generation of Government Officials' Project, which supports the Public Service Executive Development Program in the Office of the Public Sector Division (OPDC) by giving opportunities for the government officials to gain practical work experience directly from the company's executives as a means of acquiring knowledge and understanding of the business operations in the private sector; 4) Technician Development Project, in which the company provides opportunities for vocational students to study in the higher-vocational education in the field of factory's maintenance and manufacturing; and 5) Special Bilateral Project (His Majesty King Bhumibol Adulyadej's last initiative project) with General Surayud Chulanont as the president of the project through the collaboration between the Federation of Thai Industries. This project primarily focuses on accepting students with issues regarding violence and drug addicts to acquire the work experience and establishing disciplines for these students in terms of behavioral adjustment, enabling them to become individuals with good career in the future.

LITERATURE REVIEW

Cooperative Education Philosophy and Conceptual and Integrated Education Management

Education management in the form of cooperative education pursues the Experientialism philosophy of John Dewey, who is one of the world's most famous philosophers. He believes that experience is the core of learning. He asserts that people learn by doing and that a mere learning from the theory is simply not enough. In other words, learning requires practice as well. Furthermore, Kolb (1984) has emphasized the idea of learning from

experience by stating that "knowledge results from the combination of grasping the experience and transforming it." Thus, knowing only the theory is not sufficient for learning; a practice must be integrated. Nowadays, this theory has been applied to several learning managements, which include: cooperative education, internship collaborative education, work-education experience, work-based learning, project-based learning, and service learning. However, these types of learning management have been allegedly referred to as the "work-based education", which means an education system that focuses on the work or career as a foundation. Upon completion of the student practices, the institutions should arrange a "reflection period" for self-development of the students and provision of advices or recommendations for the development of the cooperative education system within the institution.

Professor Dr. Wichit Srisa-an (2014) further explained the components of the cooperative education, which are as follow:

1. The cooperative education allows students to gain practical work experiences (in accordance with their major). The students are required to work at the company for a period of between four and six months (according to ASEM's standard). Meanwhile, the company is required to offer jobs to the institutions in advance.

2. The cooperative education is a part of a general program in the direct cooperative education. In other words, it is considered as a core course for the professions or as a selective course in general education. The practice of cooperative education is a crucial part of the program, in order to demonstrate the academic standard and set up the criteria for the student's assessment, such as pass or not pass.

3. The cooperative education is a joint responsibility between the university and the company in accordance with the standard of the cooperative education. This education management is considered as an educational engagement between the university and the company, which is called "University-Workplace Engagement".

The Engagement between the University and Society

Professor Dr. Wichit Srisa-an (2015) stated that university is a multi-affair organization with a mission in a wide spectrum of aspects, including teaching, research, social academic services, culture preservation, and the transform and transfer of technological development – all of which are specified in the Establishment Act. In general, the university usually emphasizes on teaching and research as its main mission without neglecting other missions.

"Social academic service" is considered as the supplementary mission, in addition to teaching and research. In the United States of America, it is often referred to as a "Community Service". The alternative names for social academic services include "Social Service" and "University Service Responsibility" or USR. Likewise, the "Cooperate Service Responsibility" or CSR has increased its popularity amongst the private sector that focuses on providing a range of services for the society as a part of social development.

The Knowledge Network Institute of Thailand has organized the executives and college professors in Thailand to attend the Engagement Australia (2012)'s annual meeting. The meeting has delivered a profound result in which it has extended the idea of "Academic Service" to a greater extent, making it a part of engagement. In addition, "Engagement Thailand" was also established as a result of the coalition of universities in Thailand, with the primary objectives to create a solid and sustainable system for university's engagement in the aspect of social services, as well as develop the system for quality academic services and increase recognition of Thai universities in social services amongst the international education. The practice is based on four principals, comprising of:

1. Partnership
2. Mutual Benefits
3. Knowledge Sharing and Scholarship
4. Measurable Social Impact

Nongyao Premkamolnetr (2015) explained that the social academic services in the United Kingdom has established NCCPE to be the central organization in promoting and encouraging social works to the universities. University of Bristol and University of West were selected as the operators of NCCPE since 2008. Their responsibilities cover the

entire academic exchange activities. Their goal is to co-ordinately provide benefits to the society, which include collecting all of the social work documentations, arranging forums that encourage universities to exchange their good practices on a personal level, such as professors, researchers, students, and training regarding the public engagement, social work evaluation and self-evaluation, as well as holding social projects contest and annual academic conferences.

Prasart Suebka (2016) stated that the university that provides social services will have a clear process, from designing teaching courses and researches to having a systematic academic service support, which unifies all those related and society in the most efficient way.

Lindie Clark (2016) stated that the Macquarie University is one of the top ten universities in Australia, with about 40,000 students. The University has a policy, which states the graduation requirements in which all students in the bachelor degree are required to complete a work experience through the PACE Program and receive credits from the practice. This is to prepare them for work, create the motivation and make them become an active citizenship. Macquarie University aimed to be a leading university in service and engagement "We will expand PACE as a signature program that distinguishes this University".

In summary, the engagement between the University and the society has become a binder in the form of profound increment academic cooperation between institutions with social sectors or business firms. This also allows institutions to manage cooperative education into other academic cooperation in terms of creating a strong partnership and a sustainable future together.

METHODOLOGY

The objective of this research is to investigate the process of cooperative education management of the company, as well as student's managements in other company's projects. The total 3 projects are as follows; 1) The cooperative education project 2) Multilateral special project (His Majesty Bhumibol Adulyadej's last royal initiative project) 3) Public Service Executive Development Program. This will be examined by obtaining the satisfaction level towards the company's performance during 3 periods; prior delivering the students, during the practice and after the practice. These data can be used to improve jobs and inform the executives and other related personnel. The evaluation criteria can be assessed as following:

- 4.50 – 5.00   means highest satisfaction
- 3.50 – 4.49   means high satisfaction
- 2.50 – 3.49   means moderate satisfaction
- 1.50 – 2.49   means low satisfaction
- 0.50 – 1.49   means lowest satisfaction

RESULTS AND DISCUSSION

Group 1: Cooperative education students with a total of 12 students (By random sampling)

For general information, the respondents are four males (33.33%) and eight females (66.67%). Out of the twelve respondents, eight are from the faculty of Business Administration (66.67%), two are from the faculty of Engineering (16.67%), one is from the faculty of Science (8.33%), and one is from the faculty of Humanities and Social Sciences (8.33%).

There are two cooperative education students (16.67%) in the first semester from July – October, five cooperative education students (41.67%) in the second semester from November – February, two cooperative education students (25%) in the third semester from March – June, and two students (16.67%) from other periods. The study found that the cooperative education students are satisfied with the process of delivering students which is at the average of 4.48 (High), during the practice is at the average of 4.69 (Highest) and after the practice is at the average of 4.35 (High). There are two points where the students are the most satisfied at the average of 4.75(The most) which are "the student who are selected to the job and have received a prior notice from the business firm to be prepared

for work more efficiently and "the business firm arranged the orientation, coaching and supporting the practice properly and adequately.

Moreover, there are recommendations from the students which are 1) the business firm should explain in details about the scope of work 2) the accommodation information during the practice 3) the evaluation criteria and the student's evaluation staff 4) the suggestion about the prospect career and the opportunity to work with the firm 5) If the firm is organized such as open house, the students are willing to share the information and 6) The firm should arrange the cooperative education constantly because it is a useful activity. They are impressed by the supervisor who takes care of the students as one of the employee from the beginning and useful counseling for prospect career.

Group 2 Multilateral special project students Total of 10 (His Majesty King Bhumibol Adulyadej's last initiative project)

General information of the respondents, there are 10 males (100%), 4 of welder major (40%) , 2 of motor major (20%) 2 of mechanical major (20%) 1 of mold mechanical factory major (10%) and 1 of electricians major (10%).

All of the students in this project are in 9 months period (100%). The study found that the student at the Multilateral special project are satisfied with the prior delivering process at the average of 4.35 (High), during the practice is at the average of 4.59 (Highest) and after the practice is at the average of 4.46 (High). There are two points where the students are the most satisfied at the average of 4.70 (Highest) which are "The firm is organized the presentation toward supervisor and the company's executives at the last week of the practice" and "the Multilateral special project is crucial for self-discovered for the professions and see values to be able to be perfect man toward themselves, organization and society. Moreover, there are recommendations from the students which are 1) the practice at the company can gain new knowledge and the right practices. 2) The students are pleased with the good supervisor and 3) all students passed the endurance training at military camps before coming to work at the company.

Group 3 Government officials in the Public Service Executive Development Program (PSED) total of 7

The participants comprise of six males (85.71%) and one female (14.29%). Out of these seven participants, two are from the Revenue Department (28.57%), three are from the Office the Public Sector Department Commission (42.85%), one is from the Office of the National Economics and Social Development Board (14.29%), and the other one is from the Ministry of Digital Economy and Society (14.29%). All of the seven participants (100%) have graduated with a master degree and have participated in the practical work experience for a total period of three months. The results obtained from the study indicate that the students are satisfied with: the processes prior to the practice at the average of 4.54 (Highest), the processes during the work experience at the average of 4.71 (Highest), and the processes after the work experience at the average of 4.74 (Highest). In addition, the results show that these students have given a full five-point score to the four aspects as follow: 1) The company organized the orientation and the meeting with the executives in order to gain insight to the company's policy, background, products, and regulations; 2) The company provided trainers or advisors to give advices regarding the working operation, follow up with the lesson plans, and solve problems; 3) The company arranged for the results of the operation to be presented in the last week of the operation; and 4) The company informed the students of their own strengths and weaknesses for future self-improvement. Feedbacks or suggestions proposed by the students include: 1) The students should be able to understand the business nature of Somboon Group, analyze the difference between the private and public sectors, and apply the strengths of the private sector to the public sector; 2) The students would like to know whether the projects that they have organized have been implemented by the company in the real practice or not and to what extent; 3) There should be a consistent communication between the parties; 4) The students should be given opportunities to follow up with the executive in order to gain an insight to the executives' perspectives; 5) The students should receive training similar to that of new employees in order to understand and study about the human resource management of the private sector; 6) The company should collect various data for the next generation of students to study; 7) The students are impressed with the fact that the company has organized students to work as a team in order to strengthen their skills and knowledge throughout the entire period of three months, as well as the company's attendance and training; 8) The students are proud to be working with an

organization that provides values and operates the business with transparency and good governance, as well as becoming a part of developing the CG system and anti-corruption procedures of the company; 9) The students are proud to become a member of Somboon family that provides knowledge, understanding, exchange of perspectives, training, and insight to the working nature of the private and public sectors; and 10) The students would like the company to maintain this high standard of coaching or mentoring for students in the next generation.

TABLE 1 Satisfaction of the respondents

Respondent Satisfaction Survey	Working Process			Satisfaction Rate	
	Before	During	After	Total Mean	Criteria
Group 1: Cooperative Education Students	$\bar{x}$ =4.48 (High)	$\bar{x}$ =4.69 (Highest)	$\bar{x}$ =4.35 (High)	$\bar{x}$ =4.50	Highest
:Group 2 Students in Special Bilateral Project	$\bar{x}$ =4.35 (High)	$\bar{x}$ =4.59 (Highest)	$\bar{x}$ =4.46 (High)	$\bar{x}$ =4.46	High
:Group 3 Government officials in the PSED	$\bar{x}$ =4.54 (Highest)	$\bar{x}$ =4.74 (Highest)	$\bar{x}$ =4.85 (Highest)	$\bar{x}$ =4.71	Highest

From the data obtained by the satisfaction survey, it was observed that:
- Respondents from all of the three groups are satisfied with the working process during their practices at the company to the highest extent.
- The overall satisfaction indicates that government officials in the Public Service Executive Development Program (PSED) have the highest satisfaction rate, while students in the special bilateral projects have a high satisfaction rate.
- Government Officials in the Public Service Executive Development Program (PSED) have the highest satisfaction rate for all three phases of the work experience.

DISCUSSION

Regarding the process of the student practices, it is evident that cooperative students and government officials in the Public Service Executive Development Program (PSED) have chosen the companies themselves and have the intention to acquire knowledge and experience through the practice. The average satisfaction rate for these two groups prior to the practice is at the highest level. The satisfaction rate during the working process remains at the highest level due to the attendance and concern provided by the executive, trainers, and employees, which further lead to the highest overall satisfaction rate. On the contrary, students in the special bilateral projects might not initially have the intention to attend the program. Indeed, their attendances are mainly from the process of socialization that coordinates with the company. Accordingly, it is anticipated that their satisfaction rate prior to the practice is at the high level. Nonetheless, once they are in the company's responsibility, their satisfaction rate has increased to the highest level and later decreased to the high level upon completion of their practice. As a consequence, such observation reflects the fact that the company has the best practice, as apparent in its ability to increase the satisfaction rate of the respondents.

The company has to identify and extract these strengths in order to maintain the standards in a sustainable way. The satisfaction of students in the cooperative education, special bilateral project, and the Public Service Executive Development Program (PSED) substantiate the fact that the processes prior to, during, and after the student practice play an important role in enabling the participants to: know themselves, realize their skills and capabilities, know other people, adapt themselves and build a strong network of people with similar professions, know about the work itself and the real-life working environment, strengthen their problem-solving skills at work, and develop

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themselves to possess qualities that are demanded by the labor market and he society according to the philosophy of the cooperative education.

RECOMMENDATIONS FOR FUTURE RESEARCH

1. To conduct a study that oversees the working process during the cooperative education practice in order to identify the strengths of the process to be a case study for the next generation in terms of management of knowledge within the organization, as well as transfer of academic knowledge.

2. To establish a systematic follow-up process for students who work at the company and set up the database for the project or practical implementation of the project by the company as a means to provide directions for students in the next generation. Accordingly, this would reflect the sustainability and the benefits obtained from the student practice in various projects.

3. To establish a curriculum that aims to coordinate with regional institutions to provide opportunities for employees or individuals who are interested in self-development and career advancement.

4. To establish a cooperative education program for professors that enable them to gain real-life work experiences and jointly organize various projects with cooperative education students in the future in order to provide values and efficiency to the organization.

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Intended learning and action: Bridging the gap within honours talent development

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ABSTRACT

A principal aim of higher education is to best prepare learners for the workplace developing their capacities. To do this, competency frameworks have been adopted. Honours programmes (HP's) are talent programmes especially for higher education. On the rise in Europe, HP's prepare talented students for the demands in the workplace. In a constructivist paradigm, prevalent in HP's, students are responsible for creating their own learning, based on competency frameworks. However, literature expresses the need for understanding how students construe their own learning, as there is often lack between intended learning and learning in action and because competencies recorded in official documents do not always have the same meaning in practice. By conducting a qualitative content analysis, we aimed to gain insight into honours students' perceptions of their learning journey in relation to the talent competency framework. For this we used the profile of Highly Talented International Business Professionals (HTIBP) talent competency framework, established in an earlier study. Four domains of the HTIBP were referred to by students: Achieving Results, Effective Communication in Different Settings, Innovation, and Broadening Perspectives, however, they were not all described in the same way. Besides, four clusters derived from honours students' description of their learning journey do not recur in the HTIBP profile, but relate to the pedagogy used in the HP: Experiencing freedom, Personal Development, Community and Courage. While competency frameworks provide direction, they are not always construed the same way by students. Our results show that students add new meaning to the existing competencies according to their own interpretations and experiences.

INTRODUCTION

A principal aim of higher education is to develop learners' capacities and to best prepare them for the workplace and, in order to do this, competency frameworks have been adopted (Vereniging Hogescholen, 2011; Voorhees, 2001). Competencies inform the curriculum and are unpacked by educators into concrete actions (Allen, Ramaekers, & Van der Velden, 2005), specific learning outcomes (Pepper, 2011) and assessments.

Following the constructivist vision on learning, students should play an important role in directing their own learning (Applefield, Huber, & Moallem, 2000; Bruner, 1990). Although competency-based curriculum design, learning outcomes and assessment tools have been described extensively in literature, little research is conducted on how curricula are construed by students in the learning practice. Even though competencies are often described in great detail in official documents, that does not mean that they have the same meaning in practice (Renting et al., 2015). Insight in the interpretations of students of the competencies will help shape curricula. It will also help educators to guide students in choosing their projects, and improve the match between intended learning and action learning. Therefore, in this study, we concentrate on how *students* talk about the competence model of their educational programme.

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Competency Based Education

Competencies are described as a range of knowledge, skills and abilities necessary to be successful. In various professions, the demand for knowledge as well as skills and abilities has grown and this is also the case, for example, in international business (IB). Since McClelland's appeal to test for competencies rather than intelligence (McLelland, 1973), research on competencies for successful international management and leadership skills has grown exponentially leading to a myriad of competency models. In competency-based education such models are used for curriculum design and assessments, from which teachers and learners can work (Voorhees, 2001). To meet the demand of professionals, competency-based education became popular (Allen et al., 2005; Boyatzis 2008, Chyung, Stepich, & Cox, 2006) and knows several approaches, influenced by learning theories.

Learning Theories

The approach to competency based education has been influenced by different learning theories: behaviourist-; cognitivist-, and constructivist learning theories (Ertmer & Newby, 2013).

In a behaviourist and cognitivist approach to competency based education, educators shape the curriculum (Ertmer & Newby, 2013). This, however, is challenging for a number of reasons. Specifying competencies to be acquired by students does not automatically result in the design of effective learning activities (Biemans, Nieuwenhuis, Poell, Mulder, & Wesselink, 2004). Previous literature describes that competencies are often not made specific enough (Allen et al., 2005; Biemans et al., 2004), are poorly defined and therefore leave room for ambiguity (Lans, Hulsink, Baert, & Mulder, 2008; Wesselink, Biemans, Mulder, & van den Elsen, 2007). Besides, alignment of intended learning outcomes, defined by educators and measured by tasks and assessments on the one hand, and learning in action and experienced learning on the other, is known to be lacking (Biemans et al., 2004; Fullan & Langworthy, 2014; Mulder, 2003; Mulder, 2012).

In a constructivist paradigm, the *learners* construe their own learning (Richardson, 2003). They construct their own understanding and knowledge by experiencing things and using this experience to construe new meaning (Applefield et al., 2000; Bruner, 1990; Fullan & Langworthy, 2014). Students are responsible for their own learning, and the teacher is a facilitator of this processes. However, in order to comprehend how students create their own learning, it is important to understand their interpretations of the competency framework, from which their learning has been derived and shaped. Students' conceptions and interpretations of competencies may differ, based on personal beliefs, experience or knowledge (Renting et al., 2015). Understanding how students talk about the competency framework for their educational programme, i.e. how they have unpacked them into learning outcomes and tasks so as to shape their own learning, will provide insight into the oftentimes described lack of alignment between intended learning and learning in action (Biggs, 2012).

This constructivist paradigm is particularly embraced in talent programmes. Talent programmes, here referred to as honours programmes (HP's), are defined as "educational offers for talented students in higher education" and are designed for talented students who want to do more than the regular programme offers (Wolfensberger, 2015). HP's have become popular to be responsive to the increasing demand for talent and talented individuals in the workplace (Wolfensberger, 2015). Honours education is designed for talented students who are typically curious and motivated (Scager et al., 2012), and who prefer autonomy, independence and less structure (Marra & Palmer, 2004; Wolfensberger, 2012). They do not feel challenged by pre-structured courses (Reis & Renzulli, 2010) and are therefore able and motivated to receive more autonomy, playing an important role in directing their own learning, following a constructivist stance. As the constructivist stance is typically used in HP's, it is in this setting that we wish to research how students construe their own learning.

Therefore we have formulated the following research question: how are the learning outcomes of honours programmes of IB Studies construed by students?

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MATERIALS AND METHOD

Context of the study

The research has been conducted at the HP, part of the undergraduate programme in the field of IB. The IB honours talent programme is an enhanced educational programme of 30 credits on top of the four year undergraduate programme. The HP commences in the first semester of year two of the IB programme through to year four and is intended for talented and motivated students.

The honours curriculum is informed by the talent profile, called the HTIBP, Highly Talented International Business Professionals Profile (Appendix 1). The HTIBP profile has been established empirically with professionals in the field of international business and describes five domains (Achieving Results, Communicating, Innovating, Seeing patterns and interrelationships in a global context and Self-reflecting) and 16 categorised items that distinguish talent (van Heugten et al., 2016).

The pedagogy used in HP's is based on three key components: (1) creating community, (2) enhancing academic competence and (3) offering freedom (Wolfensberger, 2012). In 'creating community', honours students are encouraged to interact, provide feedback and show commitment to learning through knowledge sharing, creating a sense of connectedness. For the component 'enhancing academic competence', honours students undertake challenging academic tasks, embrace multiple perspectives, challenge status quo on varied academic and social issues offered during courses, and apply this knowledge to (business) projects. The third honours pedagogy component 'offering freedom', provides honours students with a degree of freedom to make informed choices on areas they wish to explore, and are given room to construe their own learning in those areas. They operate in an environment which facilitates sharing views and being open to different other approaches to a problem.

To facilitate learning in the HP, there are five main areas students focus upon during their three-year HP: (1) Advanced Business Content, (2) Seminars, (3) Community, (4) Interdisciplinary and (5) Mentoring (Appendix 2). In year 3, all honours students spend one year abroad to complete a study abroad as well as a placement.

Advanced Business Content is student-designed and allows honours students to explore areas relevant to IB. They either join a complex real-life project offered, or find their own complex project and formulate their own contract with agreements on process and assessment. The mentor facilitates this, and an external expert is the project leader.

The four Seminar-based thematic blocks focus on current issues and innovation in the selected topic area of Explore, Vision, Risk and Personal Leadership. The module is self-managed. Students are challenged to select a relevant topic, conduct research, analyse, write, debate, and ultimately present their findings both written (or other pre-approved medium) and orally. Teachers only operate as facilitators and resource persons. Involvement of professionals from the field is encouraged, as are practical assignments, and workshops.

For the area Community, the group of IB Honours students, as a whole, identify, plan and execute their own community initiatives and reflect upon those experiences. Students strive for a lasting effect and positive publicity for their initiatives.

The Interdisciplinary area requires students to take Interdisciplinary workshops, with a large variety of themes and approaches, offered at other HP's throughout the educational institution or at other educational institutions. Students are assigned a Mentor for the duration of the HP, who is the facilitator of the students' learning process.

Participants and Procedure

In the final year of the HP, students hold a capstone defence explaining their learning journey throughout the HP in relation to the HTIBP profile, summating how they construed their learning during the entire HP, rendering this information very suited for analysis.

The defences consisted of a 10-15 minute presentation followed by questions asked by a panel of honours mentors and lecturers, during which the student had to justify, elaborate on, or further analyse their work. Using maximum variation sample, 22 HP capstone defences, held between 2013 and 2016, were selected for analysis. A subset of

these capstones was purposefully selected, based on how extensive the honours students fulfilled the capstone assignment. In addition, audibility of the recording was also used as a selection criteria, leaving 18 capstone video's totalling 498 minutes, most suited for analysis. The videotaped defences, including the question and answer sessions, were transcribed verbatim. The completed transcripts were compared to the recordings to ensure accuracy. In addition, the transcripts were anonymised so as to avoid identification of students, mentors or lecturers.

Data Analysis

Within a constructivist research paradigm, a qualitative content analysis approach has been employed to analyse the textual data with the purpose of capturing the views, motivations, and experiences of participants; and explaining the meaning they make of those experiences (Hennink, Hutter, & Bailey, 2010; Miles & Huberman, 1994).

The capstone defence transcripts were coded, as described by Hennink et al. (2010), using software for qualitative data analysis, ATLAS.ti. We have chosen for an open coding approach, not limiting our analysis to codes related to the HTIBP profile but to include all aspects of the students' learning journey. In the open-coding stage, two independent researchers coded individually to ensure inter-rater reliability, coding the selection of text as topical markers (Hennink et al., 2011, p.217). After analysing 10 video transcripts, saturation of data, using an iterative process as described by Hennink et al. (2010) was identified. Two additional transcripts were coded, and saturation was confirmed when no new codes were selected. Therefore the remaining transcripts were not included.

In the next stage, all codes were compared and grouped into clusters, in a consensus meeting between the researchers. Hennink et al. (2011), describes these clusters as what a group of codes collectively reveals. While not limiting analysis to the HTIBP profile, and remaining objective in the coding stages, both researchers have been actively involved in the creation of the HTIBP. To avoid bias, the clusters and their underlying codes, were also critically considered by a further three independent researchers, without awareness of the contents of the HTIBP. After a consensus with those three independent researchers, the clusters were finalized. In the next stage, the findings were then compared to the HTIBP framework to identify how students themselves have construed the HTIBP in their own honours learning journey.

RESULTS

On the basis of the textual analysis of the transcribed capstone video recordings eight clusters reveal how students of an HP in IB, construe their learning outcomes. (Table 1).

Achieving results:

This cluster entails codes describing managing to achieve something through projects abroad or by using an opportunity. Furthermore, many codes were generated from sections in which students describe how to achieve results, for example by taking small steps, or by setting realistic goals and by persevering. Also by being realistic, having fun and concentrating on the process. The journey, leading to results is described frequently. Below are some example quotes. Student names have been replaced by Participant (P), plus a random number.

> "... we had to adapt and to think about okay if we take more realistic goals we can still do something, and even if we didn't take big steps like we wanted to we made small steps, and these small steps also helped." (P1)

> "….people should not be striving to be a good communicator and achieve results but they should be striving to have fun and do what they enjoy and by doing that, achieving these things." (P2)

> "I would really like to achieve and nearly take responsibility for everything but before I do something I have to show, okay but this is what you can expect from me and this you can't. And that is what I am trying" (P3).

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TABLE 1. Summary of eight clusters, describing how Honours students construe their learning outcomes

Cluster name	Description
Achieving results	how to achieve results, and the journey to achieving results
Personal development	personal awareness, growth, development, insights, reflection and self-discovery
Courage	not being afraid of the unknown and daring
Community	sharing and feeling of belonging to members of the same community and external community with the sense of contributing to society
Effective communication in different settings	asking questions and listening. Cultural contexts in which to apply language.
Innovation	creativity, inventiveness and solving problems in this manner
Broadening perspective	possessing the desire and ability to gain contextual intelligence
Experiencing freedom	having choices and freedom to explore own learning

Broadening Perspective

Here codes that show learning to see multiple perspectives, viewpoints and becoming aware of the world around you are included.

"….. I mean the honours program taught to look in more different directions, and I think before I was really focused on this one thing and didn't really thought about other opportunities and so I think in a sense that thinking about alternatives definitely the program has benefited in that change and differences in that change." (P4).

"So honours allowed me to broaden my mind, and explore the areas where I was blind. This required an open mentality to further develop my personality." (P5)

"The conclusion was that we perceive risk to our own limited frame of references ad if we manage to expand our frame, we are able to estimate the risk more precisely." (P1)

Community

This cluster is derived from students' comments related to: internal- and external community, whereby internal community includes comments about the honours group themselves, and how having a sense of belonging and having peer feedback has helped their learning. Also getting ideas, sharing and learning from the group as well as feeling understood contributed to learning. External community comments relate to doing something for other people, bringing something back to the community, and learning to network and to working with external stakeholders to achieve a common goal. Some of the students' comments in regards to their learning journey were:

"Honours is a community and until you meet people like these that are extremely passionate people about different things and different ways of thinking and I mean you've combined the really unique personalities" (P2)

"That was my motivation to join the group, because it's the true capacity to unlock one's real potential with the help of someone else". (P6)

"It really had a change but it was also spending it with such people really showed me that everybody is capable of doing something let's say that's not simply for themselves. It really is optimistic or I don't know, a little bit, yeah really unselfish activities." (P7)

Courage

Here students spoke about to how to handle new unknown situations, how to cope with hesitation, fear and how to pluck up the courage to do something new or different or even challenging themselves by doing something they dislike. These are some things students said when describing their learning:

" I don't know where my aspirations will drive but I am certain that I want to explore the life to its fullest. I want to inspire people to overcome their fears while being an example and facing mine." (P6)

"And in the honours programme especially, where everyone is very talented I had to sometimes balance myself, to be not like me all the time, to not always say "yes" and to negotiate and that was a big part of saying no that helped me to grow." (P8)

"I also was afraid and mostly social fears and I knew that there were a lot of things that I had to do and I had to jump off my tower in order to get there and I used the honours way to get off my tower and feel all these things." (P3)

Effective Communication in Different Settings

Here various aspects of communication were mentioned by students such as using communication in different cultures and contexts but also learning to listen, ask deeper questions. The aspect of listening recurs in students' learning descriptions as shown by the following quotes:

"....so I think based on the leadership course, what I learned, what I can also use later is listen to people, and accepting different ideas, opinions that would have been helpful to me before this course, and I try to combine all the ideas." (P9)

".....like listening to others is also a kind of an art but sometimes you cannot always just bring up your own ideas…." (P8)

Experiencing freedom

The importance here for students lies in dealing with having choices and enjoying having these choices.

"what I really liked about honours in the beginning was that you were not per se doing this. I really liked that you had to find something you enjoy and then you had to back it up SO well that your mentor was gonna say: "Hey, I'm giving you permission to look into it". (P2)

.."for example with the ConTribute Kenya[5] things. Every time when we had a new idea we just went to the mentor's office and discussed with her why we want do it, and everything was possible." (P1)

Innovation

Learning described by students in relation to having new inventive ideas, and making something from scrap, but also learning to spot opportunities and to be creative, think out of the box.

"Eh, I think what honours did not teach me is how to not play by the rules. Honours actually taught me how to think outside of the box so.." (P2)

"So this year taught me to be your own maker and not to follow predetermined trails because sometimes your life is in a shaker which makes you vulnerable to other people's take." (P5)

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[5] ConTribute Kenya is a foundation with a wide range of sustainable projects that provide measurable help for communities in and around Mombasa.

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"I have like a lot of creativity, like creative ideas but to bring it down to one point, bring it all together to one clear red line that's the most challenging part and that was revealed in the explore seminar. So I really had to put all my creativity, my creative ideas into one project and that was hard for me and that was challenging." (P6)

Personal Development

This grouping of codes includes all aspects within personal development, such as personal growth, the discovery of personal identity, and self-awareness, self-knowledge and insight. These personal development aspects, in turn, are often addressed in the context of their learning experiences, journey, and explorations which through reflection led to such awareness. Gaining personal insight is also described in relation to discovering personal strengths and weaknesses thereby realising that the mindset can be different or change. Some example quotes to illustrate are:

"I really learned to listen to myself, to listen to my body whatever my body is telling me, and I really learned to reflect on me, my actions, my strengths, my weaknesses." (P9)

"….in order to succeed in a business world you have to be aware about your personality. And not only business world but also in the private life." (P6)

"..but I never took the time because I was always then doing things according to what I was supposed to do to really set aside and say: why do I do it?". (P7)

"… and gain that confidence and courage that the ideas are good, they are brilliant and so this is something that I have learned from the community which I would describe as the learning effect or the learning outcome to develop proactivity." (P. 10)

When comparing the eight clusters to domains of the HTIBP profile, there is an overlap between the clusters described above and the HTIBP domains: Achieving results, Innovating, Communicating and Seeing patterns and interrelationships in a global context.

Also, four clusters derived from honours students description of their learning journey above, do not recur in the HTIBP profile. These clusters are Experiencing freedom, Personal Development, Community and Courage.

The HTIBP domain Self-reflecting is included and implied in the cluster Personal Development, as students mentioned that through self-reflection, personal development was achieved.

DISCUSSION AND CONCLUSION

In a constructivist paradigm, prevalent in HP's, students are responsible for creating their own learning, based on learning outcomes. However, literature expresses the need for understanding how students construe their own learning as there is often lack of alignment between intended learning and learning in action (Biggs, 2012) and because competencies recorded in official documents do not always have the same meaning in practice (Renting et al., 2015). By conducting a qualitative content analysis, we gained insight into IB honours students' own interpretation of competency frameworks in their learning practice. For this we used the HTIBP framework, established in an earlier study (van Heugten et al., 2016).

The qualitative content analysis shows that four clusters, derived from the textual analysis, also occur in the HTIBP framework domains: Achieving Results, Effective Communication in Different Settings, Innovation, and Broadening Perspectives. Four clusters derived from honours students' description of their learning journey, however, do not recur in the HTIBP profile, but relate more to the pedagogy used in the HP: Personal Development, Courage, Community and Experiencing freedom.

While four clusters students describe come back in the HTIBP domains, some differences in the interpretation of these clusters are seen. The way students construe the HTIBP domain Achieving results, for example, shows emphasis is often placed on the journey leading to results, rather than the results themselves. In the HTIBP, the description pertains to taking responsibility for achieving results, perseverance in complex environments and

showing entrepreneurship (Appendix 1). In addition, how students construe the HTIBP domain Seeing Patterns and interrelationships in a global context reveals that becoming aware of the world around you and that doing something meaningful for the community is imperative in this context. This is not described in the HTIBP domain, where cultural adaptability, patience and control as well as the ability to combine expertise from different specialties are described behaviours. Students have added new meaning to the existing competencies from the HTIBP framework, according to their own interpretations and experiences.

Besides this, new clusters were derived indicating that intended competency frameworks are not always fully representative of how students construe learning. The outcomes described by the learners went beyond the intended learning derived from the HTIBP competency profile. These new clusters can be recognised in the pedagogy and goals of HP's, namely, experiencing freedom and courage, creating community and personal development. In HP's such characteristics are fostered by pedagogy designed to evoke excellence, typically used in HP's (Wolfensberger 2012). Wolfensberger (2012) describes 'offering freedom' as one of three key components of honours pedagogy, along with 'enhancing academic performance' and 'creating community'.

In HP's, teacher behavior is typically conducive to these key components. Honours teachers offer freedom allowing students to follow their personal and academic interests. In HP's teachers coach and facilitate students, instead of supervising their entire learning experience. They allow for self-regulation and room for experimentation, encouraging initiative and questions (Wolfensberger 2012). This is inextricably linked with much individual contact and feedback between learner and facilitator, which is possible as HP's typically have small groups, allowing for much interpersonal contact.

Enhancing academic performance refers to offering challenging learning tasks, by promoting activities that stimulate critical, in-depth and independent thinking. This relates to the cluster 'courage' described by honours students. Honours assignments commonly require that students challenge themselves to achieve their goals. Besides, HP's are often offered as extra courses next to the regular programme. It requires courage to enroll HP's according to students' perception. They needed courage to overcome their fears of doing something different or even something they disliked.

With respect to community, teachers in HP's typically show connectedness and interest in the students and are available for them, which enhances a sense of belonging and community for students. Participating in a learning community is positively related to higher order thinking and problem solving (Zhao & Kuh, 2004). In addition, teachers in HP's create a positive inspiring environment where interaction, feedback and peer feedback, mutual interest and engagement further enhance this sense of community within honours students (Wolfensberger, 2012).

The term community is also construed by students in the sense of external community. Lee, Olszewski-Kubilius, Donahue, & Weimholt (2008) state that academically gifted students have a highly developed sense of social justice, fairness, moral judgment, concern for others, and interest in global issues. This, in combination with enhancing community through pedagogy may contribute to the newly construed cluster Community, that did not occur in the competency framework HTIBP.

Honours students typically want to gain a deep self-understanding. Sternberg (2000) refers to this in relation to giftedness. In this context, he describes 'Wisdom' as tacit knowledge about oneself and others and that balancing this for the benefit of the external environment is key.

It seems that honours pedagogies and honours teacher behaviours, allowing self-regulated learning, self-reflection, offering challenging learning tasks, enhancing a sense of community and fostering much interpersonal contact, coupled with gifted students' natural desire for freedom in choosing which topics to study , and for understanding oneself, others and global issues, have inspired the clusters freedom, courage, community, as well as personal development, where self-insight and self-development are key.

In international business, self-managed learning is required from talent in the professional field (Garavan, Carbery, & Rock, 2012). Self-regulation, the ability to seek out what is needed in a specific context is essential for life-long learning, adaptability and proactivity, much sought after employability skills. This self-motivated pursuit of

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knowledge perhaps better bridges the gap between higher education and professional life (Banis-Den Hertog, 2016).

Our results show in fact that competency frameworks provide direction but are not totally representative of learning in action. Honours students use different words in how they construe their learning outcomes, and that, in fact, more learning occurs than is offered in competency frameworks. Also emphasis on the learning process is often placed. When regarding the distinct characteristics of high-ability students, of preferring complexity, challenge and autonomy (Freyman, 2005; Marra & Palmer, 2004), it may not be surprising to see learning in action to not fit seamlessly to frameworks. Also, the role of the teacher, who acts as a facilitator, appears to play a role in how students construe such frameworks. Borko (2004) contends that teachers play an important role in the learning of students. According to Gordon (2009), besides being facilitators for students' own learning in the acquisition of 21st century competencies, teachers need to possess these themselves. Wolfensberger (2015) states that teacher education for educating talent is slowly upcoming, and according to Reis & Renzulli (2010), teachers, educating talent, express a need for training.

It is becoming increasingly important to educate talent, who possess, besides the 21st century skills offered in IB education, described by competency frameworks and learning outcomes, also levels of adaptability, and we need to educate learners who themselves seek out areas and the necessary help to improve, and become self-regulated learners, essential to life-long learning (Zimmerman, 2002).

LIMITATIONS OF THE RESEARCH

The student body of HP's in IB has a high degree of cultural diversity. It would have been interesting to investigate if cultural background affected how the competency framework were construed. However, since we used maximum variation sample, this was impossible due to the small number of students per cultural group.

PRACTICAL IMPLICATIONS

HP's typically allow freedom for talented students to self-manage their learning, following a constructivist stance. Our research shows that when allowing students to do this, learning in action is not always the same as intended learning. It is important to acknowledge that according to students' perceptions and experiences, competency frameworks will be differently interpreted and that students will develop different competencies depending on their needs and experiences. This calls for clarity and flexibility when working with competence frameworks.

Also, students use other words to describe the same clusters. If new students are presented with a competency framework, it is important that the language used is clear to them. Using the words of how senior students have construed their learning outcomes can help achieve better alignment.

In HP's , the balance between freedom and structure requires caution, since honours students have the need for freedom in shaping their learning journey, while the role of educators remains critical, coaching students to assure that their learning journey matches the intended learning.

FUTURE RESEARCH

It would be interesting to research if cultural background would affect how competency frameworks are construed. This can be achieved by expanding future research to include all HP's in IB within the Netherlands, thus increasing the number of students contained within each cultural group.

Besides, as there is demand from teachers to become facilitators for self-managed learning, and as teachers themselves also realise the importance of being trained to educated talent, this should receive attention.

As intended learning is not always the same as learning in action, assessment becomes complex. Assessment is often derived from learning outcomes, which are built around competency frameworks. If learning in action is not the same as intended learning, this calls for a different type of assessment. Self-reflection assessments seem to be a more appropriate method to evaluate learning in action.

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APPENDIX 1:

HTIBP profile describing the domains and items of highly talented international business professionals (van Heugten et al., 2016)

Domains	Items
Communicating	Using language effectively in different cultural and professional settings
	Continuing to ask questions to get a clear understanding of the situation
	Listening actively to identify a problem or an opportunity
Seeing patterns and interrelationships in a global context	Adapting one's professional approach to another culture
	Combining expertise from different specialties
	Showing patience and control in culturally diverse environments
Innovating	Coming up with creative ideas proactively
	Improving ideas from others
	Keeping up with the latest professional developments
	Showing inventive, new possibilities by thinking 'out of the box'
Achieving results	Showing perseverance in complex environments
	Taking responsibility for achieving goals
	Showing entrepreneurship
Self-reflecting	Showing independence in thinking of new possibilities
	Understanding one's strengths and weaknesses, and acting upon it
	Improving oneself beneficial to the organization

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Breakdown of the IB honours programme in years 2, 3 and 4.

EC's to be completed at student's discretion within the time period shown by shaded blocks

Mandatory completion of the project during the time period shown by shaded block

Year 2

Module	Period 1	Period 2	Period 3	Period 4	Credits
Seminar	2EC		2EC		4
Advanced Business					2 (by end of year 2)
Community	1EC		1EC		2
Mentoring	1EC		1EC		2
Interdisciplinary					2 (by end of year 2)
					12 total

Year 3

Module	Period 1	Period 2	Period 3	Period 4	Credits
Seminar					0
Advanced Business					2 (by end of year 3)
Community					1 (by end of year 3)
Mentoring	1EC		1EC		2
Interdisciplinary					1 (by end of year 3)
					6 total

Year 4

Module	Period 1	Period 2	Period 3	Period 4	Credits
Seminar	2EC				2
Advanced Business	2EC				2
Community	2EC				2
Mentoring	1EC		1EC		2
Interdisciplinary	2EC				2
Capstone Defence			2EC		2
					12 total

Evaluation of the cooperative education students' learning outcomes in the five domains of Thai qualifications framework for higher education

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ABSTRACT

The purpose of this study was to examine the learning outcomes evaluations of Suranaree University of Technology (SUT) cooperative education students by job supervisors and academic advisors from the 2011 to 2015 Academic Years. The assessment was done based on the 5 domains of the Thai Qualifications Framework for Higher Education (TQF: HEd) at level 2, Bachelor Degree. A total of 8,027 assessments by job supervisors and 8,041 by academic advisors were done. Secondary data was sourced from the database of the Center for Cooperative Education and Career Development. The study used descriptive statistics for data analysis and the results showed that the ranking of the TQF domains rated by job supervisors was as follows: Domain 1: ethical and moral development; Domain 4: interpersonal skills and responsibility; Domain 2: knowledge; Domain 5: analytical and communication skills; and Domain 3: Cognitive skills, in descending order. The ranking of TQF domains rated by the academic advisors was similar, which was different in alternating order of "Domain 5: analytical and communication skills" and "Domain 2: knowledge" only.

Keywords: cooperative education, evaluation, learning outcome, Thai Qualifications Framework for Higher Education (TQF: HEd), Suranaree University of Technology (SUT)

INTRODUCTION

The Suranaree University of Technology (SUT) which specializes in science and technology was established as a public autonomous university outside the civil service system under the supervision of the Royal Thai Government in the year 1990. The five missions of SUT as outlined by SUT (2016) are:

1) To produce and develop high-level scientific and technological personnel to meet the national needs for development.

2) To research for the creation and enhancement of knowledge, and to utilize the results for national development.

3) To adapt, transfer, and develop appropriate technology to increase Thailand's technological self-reliance.

4) To furnish academic services to the people, both public and private organizations.

5) To sustain the arts and culture on the national and regional levels, especially the arts and culture of the Northeast.

For the first mission, Professor Dr. Wichit Srisa-an, the founding rector of SUT, realized the importance of developing professional experiences for students to become well-rounded graduates and to meet the needs of the labor market. The concept of Cooperative Education (Co-op) in Thailand was first developed to support this mission. The SUT Curriculum Development Committee consisting of the Industrial Council of Thailand, the Chamber of Commerce of Thailand, representatives from prominent public organizations and SUT officers, have created opportunities for various stakeholders to promote the benefits of Co-op in Thailand. The committee disseminated the Co-op Curriculum to external organizations both private and public, and established a central unit responsible for coordinating workplaces, lecturers and students, which was named the "Cooperative Education and Career Development Project" and later renamed the "Center for Cooperative Education and Career Development (CCECD)". In 1994, SUT became a member of the World Association for Cooperative Education

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(WACE). The Office of the Higher Education Commission (OHEC) in Thailand applied a Thai Co-op model to 17 pilot institutions in 2002 and thereafter expanded into additional public and private universities (SUT, CCECD, 2017).

Co-op was included in the SUT curricula to integrate theory into the systematic practical experience in the workplace. For Co-op students, work should be related to their fields of study. The students must utilize theory studied at the university to make recommendations regarding the modification, enhancement, development, or the solution to problems which are potentially beneficial to the workplace. This process helps students gain professional experience and makes them more qualified to meet the needs of the workplace. Therefore, Co-op serves as a mechanism to achieve the objectives set by OHEC and the first mission of the university (SUT, CCECD, 2017).

The assessment of Co-op students' achievement is vital in measuring students' learning outcomes. There are various aspects of Co-op students' assessments. For instance, Zegwaard, Coll, and Hodges (2003) proposed three models for the assessment of work placements in the assessment framework of workplace learning, a case study for a Science and Technology context. Their first model was based on the employer's views of desirable competencies, the second one was based on the negotiation of placement objectives, and the last one consisted of a portfolio approach to assessment. However, they did not especially endorse any of the three models proposed but suggested that the model used should be appropriate for the educational context. Similarly, Hungerford et al. (2010) developed a framework or guiding tools to enable sustained improvement in the preparation for ongoing support during the assessment of Work-Integrated Learning (WIL) applicable in a wide range of context. Their framework is called "Tools of Trade", for the students in the faculty of Health at the University of Canberra. The tools consider mechanisms for industry and academics to prepare, inform, and educate the students prior their entry into the workplace, and enable job supervisors and academic advisors to provide feedback to students during and after their placement.

The research findings identified a number of inconsistencies in the WIL-related process: 1) deficit in the information provided 2) that bureaucratic processes which were deemed more important than learning. Interventions were also suggested which include the enhancement of communication between the stakeholders, leading to the development and cement of relationships between the academics, industry representatives, and students. Winchester-Seeto et al. (2010) devised "the strategy analysis tool" for assessment of student learning through participation (LTP). This tool is set out as six key aspects of learning in LTP; namely, 1) discipline-specific academic skills and theoretical knowledge; 2) professional skills and knowledge (hard skills and competencies); 3) professional skills and knowledge (the so-called soft skills); 4) graduate capabilities (graduate attributes and generic skills); 5) application of theory to practice; and 6) personal development and transformative learning. This tool is still being seen as one that adequately and accurately assesses student learning, although this still requires further research. Ram (2008) attempted to highlight some of the variations in assessments. Some of the factors that affect Co-op students' grades include; students' experience in assessing their own work, qualification and experience of workplace supervisors, qualification and experience of academic supervisors, and agreement between students, workplace supervisors, and academics supervisors. Hodges (2011) explained in the evaluation of Co-op students that the assessment could be classified according to the objective of the evaluation into "Summative Assessment" and "Formative Assessment". Summative assessment is the evaluation done after the students have completed their Co-op activities. This assessment focuses on the student learning outcomes or the successive performance. It is appropriate for the job or postgraduate applicants. On the other hand, formative assessment is mostly a pre-post evaluation which focuses on the improvement of the student abilities. In the case that the assessment is deployed efficiently, the results reflected the achievement of the students and the university curricula. Ferns and Zegwaard (2014) described the critical assessment issues in WIL and Co-op. Their work highlighted the need for balanced assessment approaches that reflect the highly variable experiences students encounter, and the need to keep validity and reliability paramount when constructing assessment structures. They claimed that traditional assessment methodologies were not designed to measure student proficiency in employability capabilities but rather focused on knowledge acquisition. The expected assessment must enable reflection on learning and generic

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capabilities. The article proposed that heightened accountability measures increased stakeholder demand for evidence of graduate capabilities and student feedback emphasizing the value of authentic and relevant experiences were aspects for the assessment methods and approaches. Finally, Hodges, Eames & Coll (2014) concluded that the "assessment that focusses on the individualized but the socio-culturally influenced process is likely to be a fair reflection of, and help facilitate, student learning in Co-op placements."

Through the discussion presented above, the need for a developed framework is confirmed. A framework would need to incorporate the employer, student and academic requirements and perspectives as needs for each stakeholder are different. The framework also needs to further accommodate for a variety of assessment models namely, summative and formative as well as the inclusion of student reflection. The assessment in WIL and Co-op needs balanced approaches and focus on the individualized.

The Thailand National Education Act B.E. 2542 (1999) outlined information and planning for the 21st Century education reform in Thailand that would lead to higher education development in the country. Thereafter, the Education Reform Act B.E. 2542 (1999), ensured quality assurance was considered an ultimate aim to standardize the quality of education in Thailand. This included the development of 3 key components namely: to develop the graduate qualification frameworks, to develop criteria for learning outcomes of graduates, and to develop the teaching and learning processes. These were gradually developed by OHEC through several planned meetings, brainstorming and public hearings among stakeholders. The development processes took into account how Higher Education Institutions (HEIs) would need to implement these strategies and standards by including various domains and descriptions of each domain in planning, execution, and assessment of curriculum and teaching and learning aspects. The Thai Qualifications Framework for Higher Education (TQF: HEd) was drafted jointly by local and international experts from 2003 to 2009. This framework consists of six levels of qualifications namely; Level 1: Advanced Diploma, Level 2: Bachelor, Level 3: Graduate Diploma, Level 4: Master, Level 5: Higher Graduate Diploma, and Level 6: Doctor. At each level of qualification, there are five domains of learning outcomes comprising: 1) ethical and moral development, 2) knowledge, 3) cognitive skills, 4) interpersonal skills and responsibility, and 5) analytical and communication skills (OHEC, 2006).

Learning outcomes for ethical and moral development are expected to apply at the levels described for all learners, although there are also some field specific items of knowledge that should be known by students in those fields such as codes of ethical practice for medical doctors, accountants, lawyers, and more. Learning outcomes in the domains of knowledge and cognitive skills are directly related to the field of study undertaken and details of the knowledge and skill appropriate to those fields should be specified in the program and course specifications.

Learning outcomes for interpersonal skills and responsibility are intended to apply to all students at the levels described, regardless of their field of study. Learning outcomes for analytical and communication skills are generic descriptions that should apply to all students regardless of their field of study. However, when the main focus of a student's field of study is in one of these areas, a much higher level of performance is expected. For example, a student undertaking major studies in IT would be expected to have the levels of expertise in IT described under the headings: Knowledge and Cognitive Skills rather than the more general expectation for everyone described under the heading of Analytical and Communication Skills. TQF has seven self-assessment documents; TQF1 to TQF7. Specifically, TQF 4 and TQF6 have implications for the planning, execution, and assessment of Co-op in Bachelor degree programs.

TQF 4

The TQF4, Field Experience Specification, includes information about the management of student activities including internships and collaborative education set out in the three major areas listed. The field experience specification consists of 7 sections: section 1 - general information, section 2 - aims and objectives, section 3 - development of students' learning outcomes, section 4 - course characteristics and implementation, section 5 - planning and preparation, section 6 - student assessment; and section 7 - field experiences evaluation and improvement.

Section 1 includes information about the course code and course title, number of credits or number of hours, program and type of courses, responsible faculty/advisor for field experience, semester/year of study that students will have to be trained from field experience according to the program education plan, and the deadline for conducting or improving field experience specification.

Section 2 comprises information about the aims of field experience and objectives of field experience development and improvement. Section 5 includes information about specifying the place for field experience, student preparation, advisors/supervisor preparation, field supervisor preparation, and risk management. In section 6, there is information about assessment criteria, student assessment procedure, the responsibility of field supervisors for student assessment, the responsibility of field experience faculty for student assessment, and summary of various assessment results. Section 7 includes information about the process of field experience evaluation involves the following persons (students, field supervisors or business owner, lecturer responsible for field experience, others, e.g., new graduates) and the process of revision of evaluation result and improvement plan.

TQF6

The TQF 6, Field Experience Report, refers to the report of students' internship, field trip or collaboration education whether they have achieved the objectives as specified in the field experience specification. If not, suggestions to improve the next internship, field trip, and collaboration education should be given. This report includes information about field experience from the beginning to the end as well as problems and facilities management, evaluation result analysis, student training, responsible lecturers, and field supervisors.

The field experience report consists of 6 sections: section 1 - general information, section 2 - implementation that differs from field experience plan, section 3 - result, section 4 - problems and management impact, section 5 - field experience evaluation, and section 6 - improvement plan.

Section 1 includes information about course title and code, program, responsible lecturer/ advisor for field experience, and semester/academic year of field experience. Section 2 includes information about student preparation (if any), advisor/supervisor preparation, field supervisor at workplace preparation (if any), and changes of field experience (if any). Section 3 includes information about the number of students who register/ join field experience, the number of students at the end of field experience, the number of students who withdraw, the variability of scores level (grade), and factors influenced field experience (If any).

Section 4 includes information about management problem from the institution and/or workplace/training place, impacts towards students' learning, and solutions to avoid problems and obstacles in the future (if any). Section 5 includes information about the results of field experience evaluation from students, and the result of field experience evaluation from the employer or field supervisor. Section 6 includes information about the improvement of recent field experience, the progression of field experience improvement from the previous evaluation, suggestion for the next semester/academic year, and suggestion of field experience lecturer to responsible program lecturer.

The conditions set for the objectives are the measurement of what should be achieved as well as the minimum number of hours are therefore governed by what is approved by the minister of education for the degree program concerned (OHEC, 2006). There are many research studies related to the TQF. For example, Chooseng et al. (2011) studied the characteristics of graduates of course in Fashion Clothing and Textile Design in Faculty of Home Economics of Technology in Rajamangala University of Technology, Phra Nakhon. Roobyai (2012) studied the graduate qualifications of Library and Information Sciences, Faculty of Humanities and Social Sciences. Whilst Kiatpao (2012) compared the expected learning outcomes and authentic learning outcomes of undergraduate students in the curriculum of Physical Education and Health Education. Anugtanatkul (2013) studied the qualification of Tourism and Hotel Graduates, Faculty of Liberal Arts, Rajamangala University of Technology Thanyaburi. Finally, Sirisomboon (2016) studied the characteristics of graduates in programs of Law, Accounting, Business English, and Business Information System, Southeast Bangkok College.

Through the studies presented above, all of them studied expected learning outcomes except Kiatpao (2012) who studied both the expected and authentic learning outcomes. Those are rated by 4 groups of population e.g. graduate users/agencies employing the graduates, teachers/ lecturers/administrators, students, and graduate students. A listing of available research is presented in the table below and shows the ranking of TQF domains.

TABLE 1: A listing of the ranking of TQF domains

Authors	Assessors	Ranking of TQF domains				
		Domain 1	Domain 2	Domain 3	Domain 4	Domain 5
Chooseng et al. (2011)	graduate users	1	4	3	2	5
	teachers	2	3	4	1	5
	students/graduate students	2	3	4	1	5
Roobyai (2012)	agencies employing the graduates	3	4	2	1	5
Kiatpao (2012)	students (expected learning outcomes)	1	3	5	2	4
	students (authentic learning outcomes)	2	3	4	1	5
Anugtanatkul (2013)	administrators/ lecturers	2	4	3	1	5
	graduate users (Co-op program)	1	4	5	2	3
	students	2	5	4	1	3
Sirisomboon (2016)	graduate users	1	3	4	2	5

Limited studies exist on aspects pertaining to the TQF. None could be found regarding the assessment of science and technology curriculum, and Co-op students in learning outcomes the five domains at a Bachelor's degree level registered on the TQF. To address the gap identified in the research scoping above, the present study considers the assessment of science and technology Co-op students' learning outcomes in the five domains of TQF.

METHODOLOGY

Population

The population for the study was 8,049 Co-op students from 2011 to 2015 academic years who were assessed by job supervisors and academic advisors. There was 8,027 complete assessment by job supervisors and 8,041 by academic advisors.

Instrument

The instruments used for data collection were the evaluation forms of job supervisor, and academic advisor, routinely used in the program to assess students' performance on placement. Since the establishment of the CCECD 21 years ago, the evaluation form used by the respective assessors have been refined in response to industry and the SUT feedback. This also includes placing in measures considering graduate attributes. The form's evaluation criteria were originally informed by the CCECD. One section of a job supervisor evaluation form was the evaluation of the Co-op student's performance. This section consists of twenty items that were grouped into four dimensions namely: work accomplishments, knowledge and abilities, responsibility, and personal characteristics. All items were measured using a 5-point Likert scale to describe student performance as observed on placement. A rating one reflects the lowest performance. A rating five indicates the highest performance. A rating of "-" indicates that job supervisors have no information/experience or exposure within their working environment to assess a skill.

For an academic advisor evaluation form, one section of this form was the evaluation of co-op students' quality. This section consists of twenty items that were grouped into 3 dimensions, including job responsibility, knowledge/ability,

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and personal quality. All items were measured using a 5-point Likert scale to describe students' quality as observed on placement. A rating one reflects the strongly disagree with the quality of students. A rating five indicates the very strongly agree with the quality of students. A rating of "-" indicates that academic advisors have no information/experience or exposure within their working environment to assess a skill.

The reliability of the above instruments was determined using Cronbach-Alpha analysis. The values of Cronbach-Alpha for the evaluation forms of job supervisor and academic advisor were .94 and .96, respectively.

In the 2013 academic year, SUT adjusted the evaluation to comply with the items stipulated in the TQF. This study reformed the evaluation form of job supervisors and academic advisors to the five domains of TQF, namely, Domain 1: Ethical and moral development, Domain 2: Knowledge, Domain 3: Cognitive skills, Domain 4: Interpersonal skills and responsibility, and Domain 5: Analytical and communication skills.

Data Collection

In this study, secondary data was sourced from CCECD accessing a database containing Co-op students learning outcome assessment results for the period 2011 to 2015. Thereafter, the researchers rearranged the data corresponding to the five domains of the TQF.

Data Analysis

The learning outcomes in each domain were analyzed with descriptive statistics, i.e. frequency, mean, and standard deviation. The evaluation rating criteria in each domain of TQF is presented in the table below

TABLE 2: The evaluation rating criteria of job supervisors and academic advisors

Rating description for Job Supervisors	Range of mean score	Rating Description for Academic Advisors
Highest Performance	4.51-5.00	very strongly agree
High Performance	3.51-4.50	strongly agree
Middle Performance	2.51-3.50	agree
Low Performance	1.51-2.50	slightly agree
Lowest Performance	1.00-1.50	strongly disagree

RESULTS

The research findings are presented in two sections; namely, job supervisors' evaluation, and academic advisors' evaluation.

Job Supervisors' Evaluation

From the overall 2011 to 2015 academic years, the learning outcomes evaluation of the Co-op students by job supervisors indicated that they accepted the Co-op students demonstrated a high level of performance skill (M=4.25; SD=0.49). Considering the differences in job supervisors' ratings of each domain of TQF, the results of this analysis showed that they had rated the Co-op students the highest performance of learning outcomes in Domain 1: Ethical and moral development, followed by a high performance of learning outcomes in Domain 4: Interpersonal skills and responsibility, Domain 2: Knowledge, Domain 5: Analytical and communication skills, and Domain 3: Cognitive skills, in descending order. The details results are presented in the table below.

TABLE 3: The Co-op students' learning outcomes evaluation by job supervisors, 5 Academic Years (2011 to 2015)

Domains	5 Academic Years (2011 to 2015)				
	N	M	SD	Meanings	Ranking
Domain 1: Ethical and moral development	8,023	4.59	.55	Highest Performance	1
Domain 4: Interpersonal skills and responsibility	8,027	4.36	.52	High Performance	2
Domain 2: Knowledge	8,026	4.12	.59	High Performance	3
Domain 5: Analytical and communication skills	8,027	4.11	.60	High Performance	4
Domain 3: Cognitive skills	8,027	4.05	.61	High Performance	5
Overall	**8,027**	**4.25**	**.49**	**High Performance**	

Notes: N=number of complete assessment population, M=mean, SD=standard deviation,

In each academic year, the learning outcomes evaluation of the Co-op students by job supervisors revealed that the Co-op students had rated the highest level of the Domain 1: Ethical and moral development. The following of the domain evaluation was not the same between the academic years 2011-2012, 2013 and 2014-2015.

In the 2011and 2012 academic years, the 2-5 rank order of the TQF domains was Domain 4: Interpersonal skills and responsibility, Domain 5: Analytical and communication skills, Domain 2: Knowledge, and Domain 3: Cognitive skills. While in the 2013 academic year, the 2 and 5 rank of TQF were the same as above, but the mean stayed quite equal between the 3 and 4 rank order of TQF. For the 2014 and 2015 academic years, the 2-5 rank order of the TQF domains was like the overall, namely, Domain 4: Interpersonal skills and responsibility, Domain 2: Knowledge, Domain 5: Analytical and communication skills, and Domain 3: Cognitive skills. The details results are presented in the table below.

Academic Advisors' Evaluation

From the overall 2011 to 2015 Academic Years, the learning outcomes evaluation of the co-op students by academic advisors indicated that they accepted the Co-op students on a level of strongly agree (M=4.39; SD=0.49). Turning to differences in academic advisors' ratings of each domain of TQF, the results of this analysis showed that they had rated the Co-op students on the level of very strongly agree in domain 1: Ethical and moral development, followed by a level of strongly agree in domain 4: Interpersonal skills and responsibility, Domain 5: Analytical and communication skills, Domain 2: Knowledge, and Domain 3 Cognitive skills. The details results are presented in the table below.

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TABLE 4: The Co-op students' learning outcomes evaluation by job supervisors, in each Academic Years from 2011 to 2015

Academic Years		Domain 1: Ethical and moral development	Domain 2: Knowledge	Domain 3: Cognitive skills	Domain 4: Interpersonal skills and responsibility	Domain 5: Analytical and communication skills	Overall
2011	N	1,567	1,569	1,569	1,569	1,569	1,569
	M	4.57	4.06	4.00	4.37	4.12	4.23
	SD	.55	.59	.62	.52	.60	.50
	Meanings	Highest Performance	High Performance	High Performance	High Performance	High Performance	High Performance
	Ranking	1	4	5	2	3	
2012	N	1,614	1,615	1,615	1,615	1,615	1,615
	M	4.54	4.09	4.03	4.35	4.11	4.23
	SD	.59	.61	.62	.54	.62	.51
	Meanings	Highest Performance	High Performance	High Performance	High Performance	High Performance	High Performance
	Ranking	1	4	5	2	3	
2013	N	1,580	1,580	1,581	1,581	1,581	1,581
	M	4.60	4.09	4.03	4.35	4.09	4.24
	SD	.53	.60	.61	.52	.62	.49
	Meanings	Highest Performance	High Performance	High Performance	High Performance	High Performance	High Performance
	Ranking	1	3	5	2	3	
2014	N	1,569	1,569	1,569	1,569	1,569	1,569
	M	4.60	4.16	4.09	4.36	4.12	4.27
	SD	.56	.58	.60	.51	.60	.49
	Meanings	Highest Performance	High Performance	High Performance	High Performance	High Performance	High Performance
	Ranking	1	3	5	2	4	
2015	N	1,693	1,693	1,693	1,693	1,693	1,693
	M	4.65	4.18	4.11	4.38	4.13	4.29
	SD	.51	.57	.59	.49	.58	.47
	Meanings	Highest Performance	High Performance	High Performance	High Performance	High Performance	High Performance
	Ranking	1	3	5	2	4	

Notes: N=number of complete assessment population, M=mean, SD=standard deviation

TABLE 5: The Co-op students' learning outcomes evaluation by academic advisors, 5 Academic Years (2011 to 2015)

Domains	5 Academic Years (2011 to 2015)				
	N	M	SD	Meanings	Ranking
Domain 1: Ethical and moral development	8,041	4.60	.47	very strongly agree	1
Domain 4: Interpersonal skills and responsibility	8,041	4.42	.53	strongly agree	2
Domain 5: Analytical and communication skills	8,007	4.27	.71	strongly agree	3
Domain 2: Knowledge	8,040	4.22	.61	strongly agree	4
Domain 3: Cognitive skills	8,039	4.14	.63	strongly agree	5
Overall	8,041	4.39	.49	strongly agree	

Notes: N=number of complete assessment population, M=mean, SD=standard deviation,

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In each academic year, the learning outcomes evaluation of the Co-op students by academic advisors revealed that Co-op students had rated on the level of very strongly agree in the Domain 1: Ethical and moral development like the overall. The following of the domain evaluation were the same rank order as the overall too, that is, the domain 4: Interpersonal skills and responsibility, Domain 5: Analytical and communication skills, Domain 2: Knowledge, and Domain 3: Cognitive skills. The details results are presented in the table below

TABLE 6: The Co-op students' learning outcomes evaluation by academic advisors, Academic Years 2011 to 2015

Academic Years		Domains					
		Domain 1: Ethical and moral development	Domain 2: Knowledge	Domain 3: Cognitive skills	Domain 4: Interpersonal skills and responsibility	Domain 5: Analytical and communication skills	Overall
2011	N	1,564	1,564	1,564	1,564	1,559	1,564
	M	4.58	4.21	4.13	4.40	4.25	4.37
	SD	.49	.59	.62	.52	.71	.49
	Meanings	Very Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
	Ranking	1	4	5	2	3	
2012	N	1,620	1,619	1,620	1,620	1,608	1,620
	M	4.60	4.22	4.13	4.41	4.25	4.38
	SD	.47	.63	.65	.55	.74	.51
	Meanings	Very Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
	Ranking	1	4	5	2	3	
2013	N	1,587	1,587	1,587	1,587	1,580	1,587
	M	4.60	4.21	4.15	4.41	4.24	4.39
	SD	.46	.60	.63	.52	.69	.49
	Meanings	Very Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
	Ranking	1	4	5	2	3	
2014	N	1,569	1,569	1,569	1,569	1,563	1,569
	M	4.61	4.22	4.14	4.43	4.30	4.40
	SD	.46	.61	.65	.52	.70	.49
	Meanings	Very Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
	Ranking	1	4	5	2	3	
2015	N	1,701	1,701	1,699	1,701	1,697	1,701
	M	4.62	4.25	4.16	4.45	4.31	4.41
	SD	.45	.60	.62	.52	.72	.48
	Meanings	Very Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree	Strongly Agree
	Ranking	1	4	5	2	3	

Notes: N=number of complete assessment population, M=mean, SD=standard deviation

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DISCUSSION

The results of this study indicated that the assessment of SUT Co-op students' learning outcomes in the five domains of TQF rated by job supervisors and academic advisors were a quite similar ranking. The ranking of SUT Co-op students' learning outcomes rated by job supervisors was as follows: Domain 1: Ethical and moral development; Domain 4: Interpersonal skills and responsibility; Domain 2: knowledge; Domain 5: Analytical and communication skills; and Domain 3: Cognitive skills, in descending order. The ranking of SUT Co-op students' learning outcomes in the five domains of TQF rated by the academic advisors was similar, which was different in alternating order of "Domain 5: Analytical and communication skills" and "Domain 2: Knowledge" only. For Domain 1, job supervisors evaluated the students for the highest performance level with the very strongly agreed acceptance by academic advisors. Whereas, Domain 2 to Domain 5, job supervisors assessed the students for high performance level and academic advisors strongly agreed with that.

Domain 1: Ethical and moral development

The assessment of this domain was the first ranking of both job supervisors and academic advisors. TQF considers this domain to be the most important topic in the assessment. Ethical and moral are bases for driving human and profession progress which leads to the sustainable development. SUT Co-op students were rated by the highest level of learning outcomes in Domain 1. That means the students consistently demonstrates habits of acting ethically and responsibly in personal and public life in ways of consistency in high moral standards, e.g. complies with rules and regulation, being on time, being respectful to job supervisors, good use of resources, being responsible to the assigned job, maximize job quality at the given time, etc. This implies that SUT policy and curricula provide ethical and moral development to students effectively. The findings seem to be consistent with other studies which presented the same ranking of learning outcomes. For example, Chooseng et al. (2011)'s findings showed the same ranking of the expected learning outcomes in Fashion Clothing and Textile Design program which was rated by graduate users. Kiatpao (2012) found that students in Physical Education and Health Education program rated the expected learning outcomes with the same ranking. Anugtanatkul (2013)'s results indicated the same ranking in Tourism and Hotel program rated by graduate users (Co-op program). Finally, Sirisomboon (2016)'s findings revealed the same ranking of the expected learning comes in programs of Law, Accounting, Business English, and Business Information System, which were also rated by graduate users.

Domain 4: Interpersonal skills and responsibility

The assessment of this domain was the second ranking of both job supervisors and academic advisors. The Co-op curriculum lets the students have a systematic practical experience in the workplace with colleagues. Thus the students need to learn how to produce the good relationship with people, to adapt in the social aspect, and to be teamwork. The students' assessment was rated in high performance level and academic advisors strongly agreed. It indicated that SUT Co-op students have an ability to work effectively in groups, exercise leadership, accept personal and social responsibility, and plan and take responsibility for their own learning. The findings of this domain concur with the same ranking of the studied presented above in the learning outcomes of domain 1, by Chooseng et al. (2011), Kiatpao (2012), Anugtanatkul (2013), and Sirisomboon (2016).

Domain 2: Knowledge, and Domain 5: Analytical and communication skills

The assessments of both domains were different in alternating between of the ranking of job supervisors and academic advisors. Job supervisors rated the 2nd domain in the third ranking and rated the 5th domains in the fourth ranking. Academic advisors rated domain 2 in the fourth ranking, and domains 5 in the third ranking. However, the data presented in Table 3 and Table 5 show that the mean values of the learning outcomes evaluation in both domains are not significantly different. Both domains may be considered to have the same ranking.

The 2nd domain, Knowledge, shows what the students get from SUT which enables the students to perform in the workplace. Job supervisors classified SUT Co-op students in high performance level but it was in 3rd rank whereas academic advisors strongly agreed in rank 4. It showed that SUT Co-op students had the ability to understand, recall and present information including knowledge of specific facts, knowledge of concepts, principles and

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theories and knowledge of procedures. The result of this domain from the job supervisors rating seem to be consistent with Chooseng et al. (2011)'s ranking rated by teachers and students/graduate students, as well as Kiatpao (2012) by students, and Sirisomboon (2016)'s whose was rated by graduate users. On the other hand, the ranking by academic advisors harmonized with Chooseng et al. (2011)'s ranking by graduate users, Roopyai (2012) by agencies employing the graduates, and Anugtanatkul (2013)'s ranking rated by administrators/lectures and graduate users (Co-op program).

In the 5th domain: Analytical and communication skills, this is very necessary for the 21st Century skill. The students are required to have a logical and analytical thinking, can give a speech, research, do a thesis, present a work and have a cooperate communication with a frontier technology. Here job supervisors rated the students in high performance level with rank 4 and academic advisors strongly agreed in rank 3 also. It shows that SUT Co-op students have an ability to use basic mathematical and statistical techniques, communicate effectively in oral and written form, and use information and communications technology. The result of this domain rated by job supervisors is only in agreement with the ranking of Kiatpao (2012) whereas the ranking by the academic advisors was consistent with Anugtanatkul (2013)'s ranking rated by graduate users (Co-op program) and students.

Domain 3: Cognitive skills

The assessment of this domain was in the lowest rank of both job supervisors and academic advisors' evaluation. Not only knowledge, the cognitive skill helps the students to apply theories and concepts to an unpredictable situation. The assessments showed that job supervisors rated SUT Co-op students for high performance level in rank 5 and academic advisors strongly agree in rank 5 also. The result of this domain showed that SUT Co-op students have the ability to apply knowledge and understanding of concepts, principles, theories, and procedures when asked to do so. They also analyze situations and apply a conceptual understanding of principles and theories in critical thinking and creative problem solving when faced with unanticipated new situations. The current findings of this domain corroborated the same ranking of learning outcomes of the previous findings. For instance, Kiatpao (2012) found the same ranking of the expected learning outcomes in a program of Physical Education and Health Education rated by students. Anugtanatkul (2013)'s results indicated the same ranking of the expected learning outcomes in a program of Tourism and Hotel rated by graduate users (Co-op program).

The evaluations of job supervisors and academic advisors indicated that SUT Co-op policy and curricula enriched the performance of the students, which benefited to all stakeholders.

LIMITATIONS AND FUTURE RESEARCH

When considering the generalizability of the present findings, potential limitations must be noted. In this study, the secondary data from the database of the SUT CCECD was the source. The set of questions in the questionnaire was not designed by the authors. There were some differences in assessment domains presented in the questionnaires for job supervisors and for academic advisors. For job supervisors, assessment issues were as follows: work achievement; knowledge and abilities; responsibility; and personality. Whereas, assessment issues for academic advisors were job responsibility, knowledge/ability, and personal quality. To make them comparable, the authors regrouped the questions corresponding to TQF domains as: 1) ethical and moral development, 2) knowledge, 3) cognitive skills, 4) interpersonal skills and responsibility, and 5) Analytical and communication skills. However, it was found that to make the assessment in line with the TQF domain definitions, some questions should be added and explored. Further research could reconsider the set of questions which fulfill the conditions.

The other research limitation was the analysis of the omitted data obtained from the other major stakeholder, Co-op students. Indeed, CCECD provided a database of student self-assessments but it was the assessments for professional development of scales -5 to 5 (-5 = very decreased, +5 = very increased) which was different from job supervisors and academic advisors assessments using 5 levels of Likert scales (1 - 5). At the time of this research, there was no appropriate criterion for finding the correlation between these two different levels scales, the authors, therefore neglected the student development assessments.

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However, this research was a pilot study of the learning outcomes based on TQF domains. There were also gaps and limitations in the analysis of the evaluation. CCECD of SUT should reconsider the assessment issues to fulfill the criterions of each domain of TQF. Also, the evaluations from students, the other important stakeholder, should be included in the research assessments. For future reference, the research should consider the correlation between the learning outcomes of Co-op students and of real life career success. That will be a very important feedback for the sustainable improvement and development of the SUT Co-op process.

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International students work-integrated learning: Lessons learnt from a university of technology in South Africa

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ABSTRACT

The successful transition into democracy for South Africa presented opportunities and triggered a reform of the country's education system. The transformation of the higher education sector saw the emergence of Universities of Technology (UoTs). With the legacy of strong industry partnerships at Technikons these UoTs were charged to embed WIL into their mission and curriculum by promoting industry exposure through placement and assessment at workplace sites. The concept as a critical phenomenon to redress imbalances of the past through enabling access to employment opportunities. A number of policy documents in Higher Education reflect their efforts in this regard. Several government policies for WIL have been provided for UoTs. However these have been identified to present challenges for international students. These policies sometimes do not consider the needs of international students. A qualitative approach was utilised for the study. The researcher organised a focus group as a means to collect the required data. The group aim was for the researcher to understand perceptions of international students from the SADC region about how WIL is managed in the UoT. The central database of the Centre for Community engagement and Work-Integrated Learning at an identified UoT provided the participants. A randomly selected department in the Faculty of Engineering provided 17 students where only 8 could participate on the discussions. Satisfaction, challenges, frustrations for each participant were documented. The documented information was analysed and discussed using a SWOT analysis model. The study highlighted needs for international students and recommended a WIL strategy should be developed in line with the spirit of the SADC protocol.

INTRODUCTION

The successful transition into democracy for South Africa presented opportunities and triggered a reform of the country's education system. The reform was documented by several researchers as having included developing legal and regulatory policy frameworks to facilitate change, including the establishment of organisations and institutions that created the conditions and structures for effective transformative actions (Clercq; 1997, Motala; 2001, Cloete; 2006). Sehoole (2013), in his book "Democratizing higher education policy: Constraints of reform in post-apartheid South Africa" advised that these initiatives were geared towards dismantling apartheid-created structures and procedures. The new higher education landscape increased student enrolments and ensured equity for university access.

The transformation of the higher education sector saw the emergence of Universities of Technologies (UoTs). According to Du Pre, *et al* (2004), UoTs were established to "offer technological career-directed education programmes, focusing on innovative problem solving research and engage with government, business and industry with communities as end users". Du Pre (2009) advises that the way UoTs met these demands was to direct the teaching and research programmes at meeting the needs of the society, but also to identify new possibilities for the knowledge society's development. The main focus was on creating a learning organisation through engagement with business and industry.

UoTs serve as a learning laboratory for experimenting with new approaches and practices for the design and delivery of learning and research initiatives. The focus of these institutions would was to deliver on-site education and research enriched by industrial and business experience (Reddy, 2006; 25-49). The notion was to deliver

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employees who are ready for the world of work, and the curricula and research programmes are theoretical and application-driven (Scott, 2006; 50-58).

UoTs have a strong legacy of industry partnerships which stems from their Technikon (a name given to technical colleges) background. Technikons focused on providing practical experience for students through Work-Integrated Learning (WIL), (Redy, 2006). UoTs are charged to embed Work-Integrated Learning (WIL) into their mission and curriculum by promoting industry exposure through placement and assessment at workplace sites.

The concept of WIL is defined differently by scholars, however the definition appropriate for this study is provided by Winberg, *et al* (2011) defining WIL as "an educational strategy that allows students to apply classroom knowledge in workplaces to develop employability skills".

Several scholars in the Southern African Development Community (SADC) region had shown interest in South African Education. The peaceful change into democracy was a strong indication that the country would emerge as an important regional hub for international students. The South African government understood the need to play a greater role towards the development of skills in the SADC region (Butcher, *et al* (2008). That is why it engaged in regional initiatives to promote integration in education. In 1997, the SADC member states had agreed to promote regional cooperation and integration in the education and formulated the SADC Protocol on Education and Training (Hahn, 2005).

The UoT sector in South Africa became appealing for thousands of international students mainly in the SADC region. Students came to South Africa to do courses with a WIL component that are not necessarily available in their own countries.

There are several environmental factors which play a role towards WIL implementation. These factors often have a direct or indirect influence towards perceptions. These include Political, Economic, Social and Technology (PEST) factors that may affect implementation of WIL. The implementation of the WIL program plays a role towards student perceptions.

POLITICAL FACTORS

The South African government plays a major role towards administration of Higher Education and Skills Development in the country (Kruss, *et al.* 2015) as the craft policies and legislative framework which has direct implications on the functions of UoTs. Some of these directives (which this research limits itself to) have direct impact on WIL. This literature study bases its discussions on them, they include: Higher Education Qualifications Sub Framework (HEQSF), the White Paper on Post School Education and Training and the National Skills Development Strategy III.

Higher Education Qualifications Sub Framework (HEQSF)

The South African Department of Education defines the HEQSF as a framework which provides a basis for standards development and quality assurance, mechanism for improving the coherence of the higher education system and indicates the articulation routes between qualifications (Scholtz, 2016). The Department of Education in South Africa further advises that this framework establishes common parameters and criteria for qualifications design and facilitates the comparability of qualifications across the system.

The HEQSF is important for the reason that; Assan (2014) it sets guidelines for Work-Integrated Learning. It states that institutions which offer WIL as a credit bearing subject have the responsibility to ensure qualifying students are placed for their WIL.

White Paper on Post School Education and Training

The White Paper on Post School Education and Training (2013) places emphasis on the importance of linking education and the workplace and of expanding access to training opportunities in workplaces. According to Nzimande (2014), the South African government has is a desire to make education in the country internationally competitive and relevant. Nkomo (2015) advises that South Africa needs a system that is aligned to the labour

market, where learners are able to get workplace experience in companies, which will enable them to apply what they learn in the classroom, prepare them for the world of work and ease their transition from university to work.

National Skills Development Strategy III (NSDSIII)

The NSDS first came into existence in 2005 and an updated version was published in 2011. NSDSIII provides the overarching strategic guide for skills development in South Africa and offers direction to sector skills planning and implementation. This is facilitated through Sector Education Training Authorities (SETAs). According to Lundall (2003) SETAs were established in the early 2000s' with the role of disbursing funds for skills development across sectors of economic activity in SA. Through discretionary grants, the SETAs provide funding for WIL to most education institutions, unfortunately this benefit does not apply to international students.

ECONOMIC FACTORS

Economic conditions in South Africa have a role to play towards WIL experience as Jackson, (2015) states all students directly or indirectly incur costs when they are placed for WIL. The costs range from: transport, accommodation, lunch, and other necessities. If financial provision from parents or the company (which is not obliged to pay in South Africa) is not sufficient for the student, this may negatively impact on their motivation and satisfaction. Economic conditions also have direct impact on WIL management for the academic institution. Costs associated with administration, monitoring, communication and relationship management with industry partners may be too high.

SOCIAL FACTORS

Social factors that may affect WIL experience for international students include; language of communication, ability to adapt to organisational culture and building relationships. The speed at which students can adopt these social skills and apply them in the organisation may ultimately determine their experience.

TECHNOLOGICAL FACTORS

Technological developments have become very central towards how WIL is managed. Over the years several institutions around the world have utilised technology to administer WIL. Several student management systems have been developed to assist with placement, monitoring and assessments. The introduction of technology into WIL has improved the quality of service for UoTs to both students and industry partners.

RESEARCH METHODOLOGY

The researcher followed a qualitative approach for this research study. According to Stewart and Shamdasani (2014) this approach has been identified to involve an in-depth exploration of issues in a less-structured format with a small number of respondents. The nature of a qualitative study is exploratory and open-ended.

Data collection

The researcher conducted a one hour fifty three minutes (1h: 53m) focus group discussion. Focus groups have several advantages which include; (1) They are useful for obtaining detailed information about personal and group feelings, perceptions and opinions, (2) they can save time and money compared to individual interviews, (3) they can provide a broader range of information, and (4) they offer the opportunity to seek clarification (Stewart & Shamdasani, 2014).

Participation and Sampling

The central database of the Centre for Community engagement and Work-Integrated Learning (CE&WIL) at an identified UoT registers all WIL students. Students register their biographical, academic, contact, and placement information. The database allows the user to retrieve students by; discipline, nationality, gender and ethnic group.

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A department with 17 international students from the SADC region (Zimbabwe, Namibia, Botswana, Lesotho and Swaziland) who recently completed their WIL was randomly selected from the Faculty of Engineering.

Procedure

The names and contact details for the 17 students were retrieved, however the status for 4 students in the database indicated they returned to their home country. For most courses, WIL is the last academic requirement for students to obtain their qualification. Once this requirement is met and the student is not continuing with post graduate studies, most of them return to their home countries and wait for graduation.

From the 13 remaining contacts, 1 number was inactive. The researcher successfully made contact with 12 students, they were all asked for permission to attend the focus group and were informed about the purpose of the research. 2 indicated they were not interested in taking part in the group. From the 10 confirmations only 8 students attended on the day which was set for group discussion.

The researcher prepared the following four questions (topics of discussion) for the session and students had to respond to each topic. Their responses were grouped per question.
1. Why did you decide to study in South Africa?
2. Do you think you were sufficiently prepared for Work-Integrated Learning?
3. What was most satisfying during Work-Integrated Learning?
4. What was most disappointing about your Work-Integrated Learning?
5. If you were to do you Work-Integrated Learning again what would you advise the institution to do to improve your experience?

FINDINGS

Why did you decide to study in South Africa?

The researcher asked the student to recall events that triggered them to come to South Africa.

Respondent	Answer
1	My elder brother studied in South Africa. He would come back and tell us stories about education here. I was impressed with what I heard. My parents also wanted me to study here.
2	South Africa is very close to home
3	I received a scholarship from the king to come and study here
4	I wanted to be independence, far away from my parents eyes
5	I knew many people from my school who were here in South Africa. I wanted to also come here when I was done.
6	South Africa is better than my country, it has better infrastructure, the reputation of the education is better than in my own country.
7	Our government gives scholarships for many students to come and study here. I was lucky to get one and I immediately decided to come
8	I was following my friends. I wanted to be with my friends in South Africa. This was better for me than coming alone.

The responses provided by students to this question indicate several factors which motivate student to come and study in South Africa. Family, friends, royal family and the government are identified as the major advocates. The proximity of South Africa to the SADC countries makes it a favourable destination to pursue higher education.

Do you think you were sufficiently prepared for Work-Integrated Learning?

The researcher asked the students give opinions on whether the institution prepares them enough for the world of work.

Respondent	Answer
1	We had co-op class every week for 3 months before we went for WIL. During this class we were all told about what to expect when we are on the job. This helped a lot as it opened our eyes.
2	The classes which were mentioned were also good for me
3	Our lecturers in all the subjects kept giving us advice about real work
4	When I started in my job I could understand what they were talking about in the work, this was the best part for me
5	The company which took me for training was impressed with me and that made me feel good
6	I went to do my training back home, the people in my company we impressed by what I could do
7	The company which I was placed didn't have some of the processing machines we used during our practical classes. I had to receive training before I was given projects.
8	My lecturer told me what I should look out for and the behaviour I should have at all times, this worked for me.

All students agreed the cooperative education classes which they had to attend played a major role in preparing them for the world of work. Besides these designated classes, their lecturers provided advice on a continuous basis to prepare them for the world of work.

What was most satisfying about your Work-Integrated Learning

The researcher asked the students to reflect on what made them feel good during WIL.

Respondent	Answer
1	Taking my knowledge and using it in the real world of work
2	The new knowledge and experience which I will use one day
3	I had a good supervisor on my job
4	Pay day was the best day
5	I built relationships with people in the company, we are still friends today. The company in which I was placed in specialises on extraction of gold. I was taught these skills and I see it as an opportunity to start something in my own country
6	The technology which was used was good.
7	Pay day was also good for me, although it was little money it was good money
8	I travelled to other branches of the company and this was the best for me

The most satisfying aspects which each students reflected on were; the opportunity to apply knowledge, receiving stipends, use of technology, building relationships and moving around into various functions of the company.

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What was most disappointing about your Work-Integrated Learning

Students were asked to share what caused most dissatisfaction before and during their WIL.

Respondent	Answer
1	My colleagues didn't speak the same language as me. They would often talk in their native language in my presence. Some even struggled to talk in English therefore it was difficult to understand each other.
2	The university didn't visit me frequently at work. I was told people are not working as there is fees must fall.
3	It took long for me to be placed.
4	Some South African students were getting paid from the government but we were not.
5	I wish I was placed sooner. I spent only 9 months in training.
6	I was disappointed with the fees protests, I had no contact with the university at all during that time.
7	I was placed just for 7 months
8	I had to wait longer before finding placement

Disappointments which each student reflected are; the long period it takes to get placed, limited visitations from the university, language barriers in the company and not qualifying to receive WIL funding from the government.

If you were to do you Work-Integrated Learning again what would you advise the institution to do to improve your experience?

The students were each asked to share ideas on how the university can improve WIL.

Respondent	Answer
1	Improve speed of placement for international students
2	Build relationships with companies in our own country
3	Communicate more with us when we are at work, we often feel forgotten
4	Provide same benefits as South African students
5	Place us on time
6	Make a plan for protests
7	The university must negotiate with the government to assist us to get placed early like South African students
8	I also want quicker placement for us

Main advices from the students are; the university should build more relationships with local and their host country businesses, the university should make more effort to ensure international students are placed on time; and lastly more effort should be invested on making communication when the students are out in industry.

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DISCUSSIONS

The researcher provides discussion of the findings using a situation analysis, also known as a SWOT analysis. SWOT analysis is used to assess factors which have a negative and positive impact on how WIL for international students. This is done with the intention of advising a strategy to combat weaknesses and threats. The data which emerged from this research is described in the table below.

TABLE 1: SWOT analysis

Strengths	Weaknesses
Proximity to the SADC region	Placement
Work Preparedness Classes	Limited communication with students
Opportunities	**Threats**
Use of Technology	Government Legislation
Partnerships through building relationships	PEST factors

Discussion of Strengths

- The identified UoT is situated in the SADC region; South Africa has the strongest economy and best performing universities in the region.
- Work preparedness classes serve as a benefit for students as they prepare them for the world of work. These classes are critical for the success of a WIL program.

Discussion of Weaknesses

- The placement of students is mainly due to government legislation. The UoT must be creative and find ideas such as sourcing placement opportunity in the home country of the student.
- Limited communication can be improved through investment towards technology for the WIL lecturers.

Discussion of Opportunities

- The UoT must invest more towards technology for effective communication with the students. Laptops, mobile phones, and all communication gadgets should be a standard requirement for WIL lecturer. The Centre for Community Engagement and Work-Integrated Learning must increase the number of vehicles to improve student visitations.
- The UoT should aim to extend its partnerships with companies in Zimbabwe, Namibia, Botswana, Lesotho and Swaziland. This is to ensure students from SADC countries find placement opportunities easier.

Discussion of Threats

- Government legislation is a major threat towards satisfaction of international students with WIL programs. The UoT needs to be creative and implement strategies that can overcome this hurdle.
- Political, Economic, Social and Technological factor were fully discussed in the literature review section of this study. The UoT must be mindful and monitor these environmental factors in order to create valuable WIL programs.

CONCLUSIONS

It is clear from this study that the needs of international students are not the same as local students. The UoTs should pay attention to these needs in order to improve WIL for international students from the SADC region. This will result to learner satisfaction.

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RECOMMENDATIONS

UoTs must develop a WIL strategy which addresses the needs of SADC WIL students. This strategy must form part of UoT policies and be marketed to national departments in the education sector which facilitate implementation of WIL in South Africa. This should be done in line with the spirit of the SADC protocol.

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