



WIL-AFRICA 2018 CONFERENCE

DATE: 18 – 20 JULY 2018 COASTLANDS UMHLANGA CONVENTION CENTRE

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CONFERENCE
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The 3rd WIL Africa Conference 2018: Review Process

A formal ‘Call for Papers’ was issued, inviting Work Integrated Learning (WIL) practitioners and anyone interested to submit a paper within categories specified by the Organizing Committee. Authors submitted their full length papers via email to the Technical Programme Committee (TPC) Chairperson.

Papers were assigned to the review panel in the field to judge on the possible acceptance of the submission based on the overall quality and relevance of the paper to WIL. The review process is based on the international de facto standard for blind paper reviews. The review process was undertaken by three experienced and knowledgeable researchers or WIL practitioners – both local and international.

The reviewers were asked to provide specific feedback, both positive and negative. Each of the three reviewers evaluated the following aspects:

- Originality
- Results and discussion
- Quality
- Methodology
- Research conclusion and contributions

Reviewers gave an overall rating, impression and detailed comments based on the five points above.

The reviewers submitted the paper reviews via email to the TPC Chairperson who then drew reports and aggregated the overall scores. The consolidated reports of each paper were forwarded to the author’s, with a request to submit a final revised version. Only those papers of high enough quality as recommended by the respective reviewers are included in the conference Proceedings

WIL-AFRICA 2018 TPC Chairpersons

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Strini Pillay
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Conference Papers

Feasibility Study of the Impact of the Employment Improvement Plan (EIP) Training into the New Curriculum at DUT

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Abstract: The Employment Improvement Plan (EIP) was originally designed to prepare students coming from institutions for the world of work. This five day training contains theoretical portions and mainly practicals done by students, such as, calculations, group work, discussions and practicals, to source out student potentials, in developing employability skills within them. Students are required to interact with lecturers, communicate with colleagues and involve themselves positively in these tasks. They are also requested to respect different opinions from other team members. The main objective of the program is that Students will acquire, “Employability Improvement (EI) skills”, which the students will be able to apply in their workplaces. However, due to time-tabling, time constraints in the teaching and learning program and an unconstructiveness amongst academics, this five day intensive program has now been condensed and is currently run over a two day period at DUT and most of the other participating institutions. In the three major units of this training program, namely, Implementation of Work, Improvement and Innovation, (the 3I's) are embedded some soft skills and human values which are a necessity for DUT's current graduates to enhance their potential to securing employment. During the implementation process the student is exposed, how to logically think and solve problems at a workplace, For the purpose of the EIP training the student will be exposed to the seven problem solving techniques. Improvement process is concentrated on improving productivity and efficiency at the workplace. Innovation is aimed at creating new fresh ideas for enhancement of services and / or products at a workplace. The purpose of the EIP training is to enhance the employability potential of the graduate by developing in the student employability skills necessary in the workplace. These skills are identified by a small survey made in this project, JICA, (2014). That survey collected opinions about what skills/competencies are critical in workplaces from over 60 South African managers, supervisors and WIL intern students in enterprises. The aim of this research is to capture the feasibility of the EIP training with students at DUT in line with the new curricula. Questionnaires, interviews and observation will be used as data collection using both the qualitative and quantitative methods to analyse the results of this research.

1. Introduction

In the 21st century with the fluctuating international global environment, the education sector in South Africa is changing enthusiastically, experiencing many changes and restructurings. The main goal of these changes is to make South African population productive and efficient. Therefore, technical and vocational education which has long flourished in South Africa, moulded objectives to equip students with the knowledge and basic skills in vocational and technical education. According to David Horth, 2014, “the ability of leadership is become a key component of an organization, management and administration of educational organizations and systems to application new innovation in teaching and learning’.

Hamzah, 2003, says “Leadership is influencing activities, directing ability, the ability to create, process, influencing, directing effort, power relationships, ability to convince, persuade art, the way a person has influence and get someone else to do something”.

DUT has to take responsibility and leadership in the restructuring process of its curricula, as DUT has dropped of the Work Integrated Learning component in the new degree programs in some of its faculties.

Assuming restructured based on two main essence affect and influence each other, which is easy to understand leadership is a form of network management activities affect the ability of other people's behaviour in certain situations that are willing to work together to achieve the goals set. This concept is consistent with the learning system that can affect TVET students to improving their understanding. This skill can help TVET student to enhancing the creativity and innovation of students from the context of the application of technological innovation in the production of active learning, especially in practice of hands on (Ramona & Gabriela, 2012). The unemployment rate in South Africa is one of the highest in the world. According to statistics South Africa, (2018) and the current unemployment rate in South Africa for the year 2017 stood at 27.7 percent, which is the highest in thirteen years. The number of unemployed South Africans rose by 92 thousand to 16.19 million, with the unemployment rate averaged 25.5 percent from 2000 until 2017.



Figure 1: South African Unemployment Rate for a four-year period

The statistics of unemployment is on a continuous rise with new school leavers and graduates entering the labour market. With this in mind the EIP training is well positioned and essential to prepare students for the world of work to be productive, efficient and an asset in the working environment.

1.1 What is Employment Improvement Plan, (EIP)?

EIP is a Japanese concept to prepare students for the work place. It incorporates the 3 i's (Implementation of Work, Improvement and Innovation).

1.2 Purpose and Rationale of EIP

- The sub-units in the EIP training are intended for any person who wants to enter any category of the industrial/business fields to seek a potential career, and who has little or no previous exposure to work ethics; or who may have been practicing within the field, but without formal recognition. In particular, the acquisition of knowledge of the sub-units will be useful for:

- University students in the workplace-based learning programme (includes Work integrated Learning (WIL) program, apprenticeship program and internship programme).
- University students in the carrier guidance program.
- Employability is designed to meet the needs of those learners who start his/her own career. The critical link between improving competitiveness and the standard of living is a mind-set in attitude for work. Understanding the necessary skills in the workplace, meaning of work, efficiency and productivity supports learners to be responsible, productive and efficient in organizations in society and in the country.
- These Units supports the notion that the reason of working is the essential and key business function, without which success of a business is not possible.

1.3 What is Employability?

According to Harvey, (2003), “Employability is not just about a job. Conversely, just because a student is on a vocational course does not mean that employability is automatic. Employability is more than about developing attributes, techniques or experience just to enable a student to get a job or to progress within a current career. It is about learning and the emphasis is less on ‘employ’ and more on ’ability’. In essence the emphasis is on developing critical, reflective abilities, with a view of empowering and enhancing the learner”.

“Employability” has many connotations and characterisations. Employability mechanisms may differ widely between sections in a work environment. Students come into industry with a clear set of definable abilities. This may be it in terms of things that a student knows how to do well or it may be that they have committed to memory during their scholastic career development pathways. In some other fields of their thinking habits, the ability to make critical problem solving decisions and implement the right strategy to solve problems, are more important than functional ability. In addition, no matter how closely universities and employers work with each other, there will always be tensions when it comes to competencies, skills and attitudes towards work issues. Employers tend to want things to be done their way, whilst universities

on the other hand expect students to develop to their full potential in critical thinking. University Work Integrated Learning (WIL) program leaders should always be mindful to changes taking place in the fields of their students hope to seek work in. The need to respond and communicate with each other, as often employers need university's help as researchers to shape and understand developments. Making sure that DUT students know how to do what will be expected of them – for example, having the ability to use key skills or analytical tools – is a must if university programmes are to claim relevance to students later job success. When employers talk about employability beyond issues of competency in the field, they usually point towards "soft skills" that they expect students will gain as part of the process of further or higher education.

As Lowden et al. (2011) report: ...there is a broad understanding of what qualities, characteristics, skills and knowledge constitute employability both in general, and specifically for graduates. Employers expect graduates to have technical and discipline competences from their degrees but require graduates also to demonstrate a range of broader skills and attributes that include team-working, communication, leadership, critical thinking, problem solving and managerial abilities.

1.3.1 Enhancing Employability in the Workplace

In the new competitive global markets work based skills program/training has become increasingly important to retain employees and for employees remain in employment. Even though vocational and technical skills are essential in the workplace, on the other hand employers are looking for applicants with more hands on skills training prior to employment. Employers are looking for employees who can commence work immediately with very little supervision to no supervision at all. They prefer employees to continue learning and adapt to the working environment indoctrinating; (creativity, communication, leadership, team work/building, critical logical/thinking, problem identification/solving, self-management) and keeping abreast with new technology. These basic core skills for employability are important to both the employers and the student by enhancing student's ability to secure a job, retain employment and migrate adaptably in the labour market/force as well as engage in lifelong learning.

Employability entails much more than the ability to get an employment. Employability is having the capacity to network and market oneself, navigate through a career and remain employable throughout life. Employability in the workplace requires the students' ability to communicate and ask questions, gain new skills, identify and evaluate problems, understand team work and work in teams, and the courage to be innovative.

1.3.2 Seven (7) Basic Core Skills for Employability Improvement Program

EIP basic employability skills build upon the current basic skills and strengthens the skills that have developed through basic education, such as reading and writing, the technical skills needed to perform specific duties, and professional/personal attributes such as nonviolence, right conduct, truth, love and peace. These core work skills are often not certified nor formally recognized in society in general, however, these hidden inherent skills add value to one's character in life.

These core work or work preparedness skills are important to students embarking on their first job as employees or as employers. For job-seekers, the simple answer is that employers are seeking recruits that are job ready, not just those with the technical skills but with hands on skills. Employees with work skills knowledge will be able to respond quickly, reducing the time taken for a product to be theorised, mass-produced, circulated and traded. Workers will be able to learn more quickly and perform more effectively, allowing for more innovative workplaces where employees can offer innovative ideas in the performance of their duties. Educators and employers are the key instruments who have to work together in defining and delivering work based skills. Listed below are some employer frustrations that need to be addressed during employment skills development programs.

Industry feels that there are many entry level work opportunities for Graduates which are not explored by students because there is a disconnect between employers and institutions, as there is a lack of match between employer expectations and graduate skills to the overall state of the economy and the tough global economic outlook. Graduates have no understanding of the skills required in the world of work and have no time to up skill them. Employers and graduates believe that these skills should be embedded in DUT's curricula. Students present themselves at interviews with poor

communications skills, lack interview and presentation skills. Students demand high salaries and yet no experience (Expectations VS Reality), they lack of understanding / lack of self-leadership, critical thinking and people's skills. Students come to work to waste their time, they also lack enthusiasm and energy to be productive in the workplace. These new recruits are complainers to perform their daily duties, who come with a mind-set of self-entitlement (I have arrived syndrome). They possess good qualifications but lack soft skills and work preparedness.

2. EIP for Employment/Industry Perspective

Employers are partly to blame for the lack of implementing Employability Improvement Program in their workplaces. Some employers have cut back their internal training due to financial constraints and expect that new trainees/employees will be trained at universities in organisation-specific work processes. At advisory board meetings DUT staff members engage directly with major employers, and gently point out to employer representatives that university programmes can only provide some of what a new employee needs to know: companies still need to consider how workers will be taught certain parts of on the job training. Some employers have misconceptions about what students do at university, and would benefit from more information about what student course covers. They may assume that graduates from elite traditional institutions are always better candidates, for example, are unaware that some less well-known UoT's are actually more closely aligned to the job market and change courses quicker to meet industry demands. Some employers also need help to recruit a more diverse workforce, and will welcome advice and assistance from UoT's with experience in this area.

2.1 Profile of Japanese International Corporation Agency (JICA) South Africa Office

JICA South Africa Office is located in Pretoria, the administrative capital of South Africa. This location allows for easy access to national government departments, the Embassy of Japan, and other international development partners.

Ever since its establishment in 1997, JICA South Africa Office has grown in size and scope. As of September 2009, the staff complement in South Africa includes 11 Japanese staff, 11 national staff, five Japanese experts, and 10 Japanese volunteers.

Besides South Africa, JICA South Africa Office serves Botswana, Namibia, and Zimbabwe. In addition, JICA South Africa Office also renders a supporting role to Angola, Lesotho, and Swaziland. Some of these countries have either JICA or JOCV offices, but the bulk of ODA activities fall under the jurisdiction of JICA South Africa Office.

According to JICA's news (2017), after the global economic crisis of 2008, the Republic of South Africa saw a drop in economic growth to negative 1.7 percent, but saw a recovery to positive 2.8 percent in 2010, when the World Cup of soccer was held there. In 2011, the economic recession in the US and Europe, both primary export destinations for the Republic of South Africa, as well as the effects of a high rand (the currency) caused the export industry to decline. JICA's support to South Africa is primarily focused on:

- 1) Promotion of Human Capacity Development and Infrastructure Development
- 2) Promotion of Participation of vulnerable groups in Social and Economic Activities
- 3) Promotion of Regional Development in Southern Africa.

JICA Map of projects in South Africa (JICA News 2016)

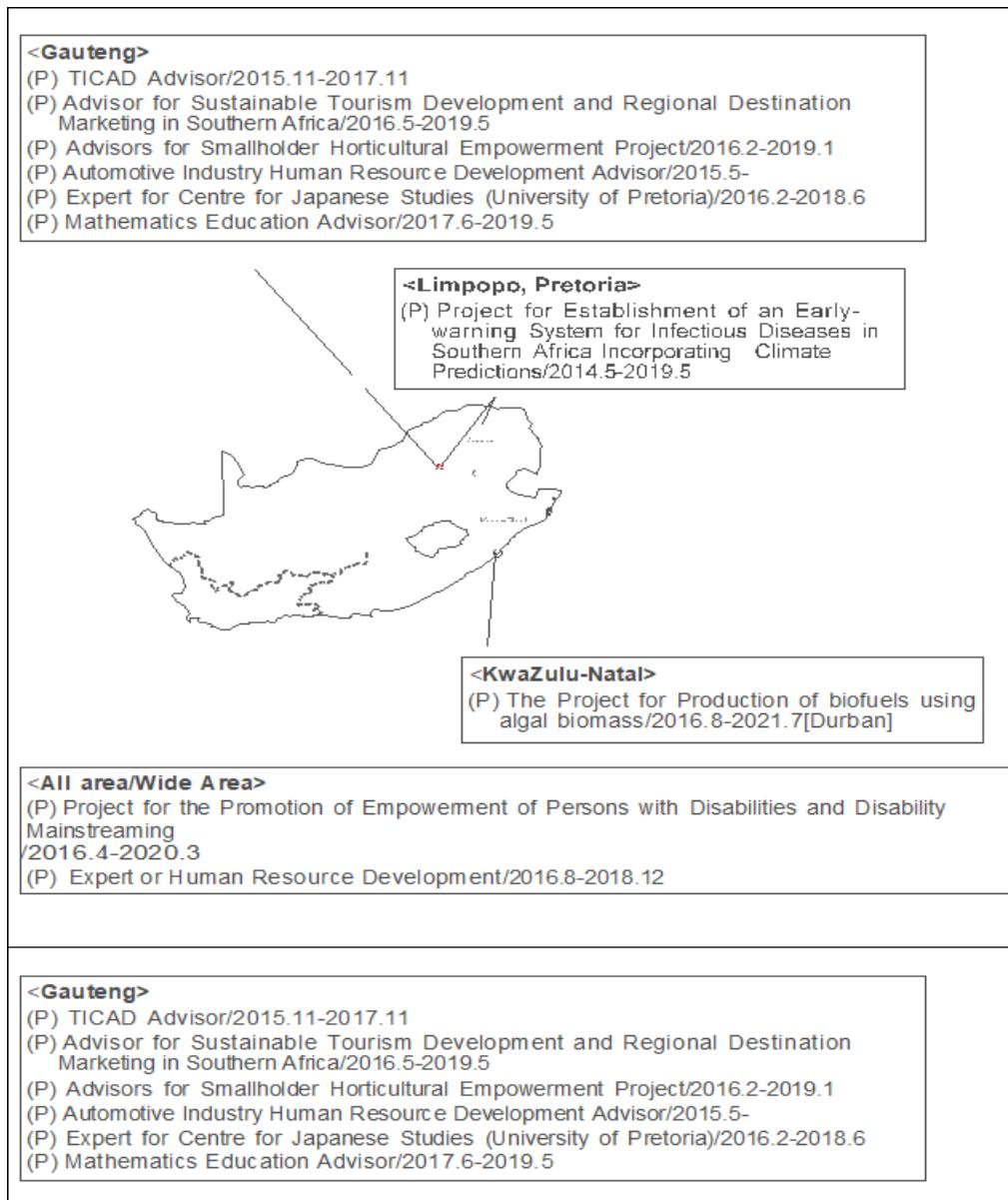


Figure 2:JICA Map of projects in South Africa: (P) Technical Cooperation (D) Development

**(D) Development Study /Technical Cooperation for Development Planning
(L) Loan (G) Grant Aid**

According to Mabaleng Brigette Kgaphola (2016), “Employability or soft skills are the foundation of career building and are often referred to by companies as ‘lacking’ among graduates in South Africa”.

From 18 – 20 May 2016 the two day training program kicked off at Durban University of Technology, Steve Biko campus, catering sixteen Staff members from different campuses. The sole purpose of the training course is to expose and introduce them to the world of work before they can train DUT students.

Mr Iida from the department of Education and Training, (DHET) and representative from JICA expert from Tokyo Japan, delivered the challenging and practical orientated training at DUT in March 2016.

On 12 February 2017, Mr Hideyuki Ezaki, a JICA Expert from Tokyo Japan, delivered enjoyable, eye-opening hands-on exercises with unique agendas which included the following units called '3i' – implementation, improvement and innovation.

All units are filled with vital skills that the future Engineers and the IT Specialists would require. Mr Ezaki works as a business trainer for productivity in various countries in Africa, Central America and Japan.

The training assists staff to acquire necessary soft skills and insights – namely 'Employability Improvement (EI) skills' - to be more competitive in their professions while the know-how and the preparation process are transferred to staff members/lecturers at DUT.

Thereafter, many student joint trainings with JICA representatives and DUT took place at DUT. To date 628 students and 32 staff have gone through the EIP training.

2.2 Challenges in DUT

The challenges that DUT faces is many fold. Firstly, this program has to be acknowledged and accepted by all academics. According to DUT academics they have a full lecturing load and have no time for additional teaching time on their time tables. However, a few have gone the extra mile in attending the EIP training and implementing it in their departments with little or no assistance from other staff.

Venue allocation is a major problem due to block bookings. EIP training ideally requires an open plan seating and working environment. Cooperative Education Department does not have sufficient space to train EIP students due to class sizes. Class groups vary from 40 to 100 students at a time, whereas for the EIP training the best

number would be 30 students due to the monitoring and imparting of new innovation in the training process through the practicals. This will allow three Team work groups to accommodate 10 students per team broken down as follows: (1) supervisor, (2) parts coordinators and (7) operators. This will help to streamline, quality, cost and delivery of work done during training. However, due to time-tabling and work load issues it is not possible to have an ideally five day training program. The maximum training time that was allocated is two days with a great deal of difficulty and negotiations with departmental officials.. In this two day training the course content had to be rationalised to accomplish the main points of the training.

Secondly, DUT's curriculum development section needs to engage with Cooperative Education Department and look at a way forward in accommodation EIP into DUT's Corner Stone, General Education, or, in its Work Preparedness modules. Engineering and Applied Sciences have now dropped off WIL from their degree programs, hence it now becomes imperative to introduce the EIP Training into its programs to the benefit of all students so that they will be able to secure employment more easily with this hands-on-training. Again in other faculties WIL is being introduced and the time spent at the workplace is also increasing also demands the EIP Training for their students in readiness for the workplace.

Finally, discussions have commenced with the Special Adviser to the DVC Academic (Teaching and Learning) to introduce EIP into the curriculum. Discussion have also taken place with the Director of Student Counselling Services (Pietermaritzburg Campus) to offer students with no WIL exposure to do EIP training.

Despite the challenges noted it is encouraging and pleasing to note the positive approach from these offices and the WIL coordinators. Due to staff constraints this is taking longer to implement at the moment.

3.1 Partnerships with Industry

From the responses received during Advisory board meetings it is encouraging to note the positive unanimous support and acceptance for this training to be implemented within the departments. They recommended that when the EIP course is offered to

staff they would like to participate in the training as they see the benefits of this type of training. With this in mind DUT can use the EIP training to lever more active participations, engagements and contributions from industry partners into DUT. Industry partnerships are important in the transfer of knowledge to students through hands on practice.

3.2 Current Implications Employers

Employers are partly to blame for the lack of implementing Employability Improvement Plan in their workplaces. Some employers have cut back their internal training due to financial constraints and expect that new trainees/employees will be trained at universities in organisation-specific work processes. At advisory board meetings DUT staff members engage directly with major employers, and gently point out to employer representatives that university programmes can only provide some of what a new employee needs to know: companies still need to consider how workers will be taught certain parts of on the job training. Some employers have misconceptions about what students do at university, and would benefit from more information about what student course covers. They may assume that graduates from elite traditional institutions are always better candidates, for example, and be unaware that some less well-known UoT's are actually more closely aligned to the job market and change courses quicker to meet industry demands. Some employers also need help to recruit a more diverse workforce, and will welcome advice and assistance from UoT's with experience in this area.

Table 1: *Review of analysis/responses of pilot study on EIP Training at DUT*

1. What is your view on workplace (EIP) learning preparation?
Understanding of work environment, behaviour, etiquette, soft skills awareness needed in the workplace, prepared for challenges, better productive employees, prepared for the workplace, good attitude, improved skills, opportunity to improve, personal improvement, great training and course material, teamwork, change in behavioural patterns, problem solving and professionalism.

2. In your view, what is employability?
What employee can offer to employer, team work, prepared with employability skills, time-management, responsibility and accountability to be able to produce what is expected of you in the workplace, having the necessary skills, professionalism towards work, ability to be employed, being prepared for the workplace, trained, innovative, SWOT and removal of MUDAS, knowledge brought into company to improve company, having the appropriate skills, training and qualifications, proper time-management and critical thinkers .
3. What skills do you think are important for the workplace?
Soft skills, time-management, team work, work ethics, good communication and listening skills, productivity, innovation, problem solving, planning, creativity, professionalism, accountability and responsibility, respect, punctuality, writing, obedience to orders, Interview skills. QCD, PDCA
4. Have you been employed before? If yes, what did you learn about workplace behaviour from your workplace exposure?
Employed: Yes = 10 = 50 % Not much, but this EIP training exposed us to: Workplace etiquette, respect for colleagues, competence, team and supervisory techniques, Creativity, communication, planning, productivity, good attitude, do not be personal at the workplace, time – management, problem solving, analyse situations, Employed: No = 10 = 50% This Training was informative, innovative and very practical in approach.
5. What are your expectations of the employability improvement workshop?
Get the gist of the requirements of a work environment, communication, manners, work behaviour, improve time-management, need for respect, improved behaviour and interview skills, improved efficiency, Team building, imparted facts of the work place and human values, opportunities to improve within an organisation, expectations were met., changes in workplace behaviour, to be aware of SWOT analysis, planning and discharge for work, benefits for life, to work together, improve skills, prepare for work place and knowledge of the workplace.

In this training there was an even spread of employed and unemployed students, which gave a fairly good feedback for analysis. From the above analysis it is evident that the skills outlined and taught during the EIP training at DUT is suitable and acceptable by students. There has been acceptance that there is a need for this training at DUT, however, the challenge lies in convincing middle and top management of the potentials that this program carries along with it. The expectation of the students of EIP training is as follows:

- They want to get to know the working environment,

- Preparations for the workplace and interview skills,
- Communication, work ethics and work behavioural patterns to commence working,
- Enhancement into soft skills, enlightenment in team building and opportunities to impart improvements to colleagues at the workplace.

According to the employed students they have not learnt much about the work place behaviours from the workplace exposure, however, they have learnt from this program: Workplace etiquette, respect for colleagues, competence, team and supervisory techniques, Creativity, communication, planning, productivity, good attitude, do not be personal at the workplace, time – management, problem solving, analyse situations. Training was informative, innovative and very practical in approach.

3 Recommendations

From this paper the following personal at DUT and other interested readers can gain insight into the Employability Skills at the Workplace:

- Decision makers at institutions who can recirculate from greater knowledge of the changing demands of the labour market and university-to-work changes.
- education and training institutions which are often responsible for delivering these skills;
- Employers and employer organizations in order to facilitate recognition of core work skills acquired through a curriculum.
- Students who need to understand both the demand for these skills and the benefits of attaining these skills for lifelong learning.

There has to be a buy-in from top, middle management and lecturers of the importance of preparing students for the workplace, as UoT's were traditionally preparing students for the workplace with hands-on-skills. To supplement the new degree programs that have no work experience in the curricula, the EIP Training add value to student work preparedness.

DUT has to structure and coordinate a well-planned Indaba with industry partners to encourage support and the flow of structured information to and fro between DUT

and Industry. DUT has to break down the ‘silo’ effect within DUT structures and between DUT and industry. DUT needs to create a sharing atmosphere within DUT and abroad.

4 Conclusion

It will be encouraging if DUT implements the writers’ recommendations to improve the quality of DUT’s graduate who will be better prepared for the work place.

Currently, students that have been through the EIP training, concur with their employers that they have benefitted and are better prepared for the workplace. The exposure attained in this training complements the theoretical knowledge imparted during their learning period at DUT.

The EIP program is a way forward to be implemented at UoT’s for all students which gives students foresight, theoretical and practical exposure of what is required of them in industry.

Building relationships with industry will enhance the teaching and learning at DUT. It is important for Management to be proactive in monitoring and participating with our Industrial partners in a professional and regular basis. It must be noted if this process is well organised the number of Industrial partners may require many engagements or sectioned into faculties or clustered into disciplines. Nonetheless, what must be prevented is silo industry participation occasionally, in remote departments. There should be joint industrial indabas professionally organised to meet the outcome of the indaba whereby, all DUT staff can participate, interact and exchange new ideas.

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The Relationship Between Personality Type and Learning Style of WIL Students at a Comprehensive University

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Abstract: . The role of personality and learning style of students is an area that attracts research due to the high value and central role of academic excellence in the community. An investigation was done on the pioneering cohort of WIL students at a comprehensive university through an online personality test and a learning style instrument to determine if there is a correlation between the personality and learning styles of the 35 students studying towards a Diploma in Retail Business Management. The data identified an Extravert, iNtuitive, Feeling, Judging(ENFJ) personality type for the group and the group's learning style is Active, sensing, visual sequential (ASVS). The data indicated a relation between the Extrovert Personality type and the Active Learning style; the Feeling Personality type and the Visual Learning style and the Judging Personality type and the Sequential Learning style. Knowledge about learnlearning styles and personality types is a new fundamental tool at the service of universities. Universities may utilize these tools to provide thoughtful and deeper insights into students than have been previously utilized which will result in the best possible dividends for the university, students and the industry.

1. Introduction

Institutions of higher education are always searching for ways to make their educational initiatives more effective (Sims and Sims, 1995). With concerns for students' learnlearning, they further indicated that universities are also under pressure to contribute more suitable and effective teaching methods and services. University educators need to find ways to understand their students and help them achieve their educational goals.

The idea of matching learn learning styles to personality profiles is not new (Keirsey & Bates, 1984; Myers, 1993; Wicklein & Rojewski, 1995). Numerous studies have found that learn learning styles and personality types were correlated with students' academic achievement (Borg & Shapiro, 1996; Horton & Oakland, 1997; Sternberg, 1997; Luk, 1998; Fouzder & Markwick, 2000; Taylor, 2001; Ziegert, 2000).

Kluckhohn and Murray (1967, p. 53) concluded that every person, in certain ways, is like no other person, is like some other persons, and is like all other persons. These differences and similarities may be tied to learnlearning experiences. While individuals learn all the time, they do not all learn in the same way (Kolb, 1976). Kolb (1984),

who developed Kolb's Learning Style Inventory (LSI), declared that individuals develop a preferred style of learning because of a personally unique set of experiences. Learning style affects not only how one processes materials as one studies, but also how one absorbs the information during an educational experience (Carrier, Newell, & Lange, 1982). The theories of learning styles deal with how individuals prefer to learn. A learning style is the way each person begins to concentrate on, process, internalize, and retain new and difficult academic information (Dunn & Dunn, 1993, 1998).

Aiken (1996, p. 3) defined personality as a person's private, central, and inner core. Included within this private core are an individual's motivations, attitudes, interests, beliefs, fantasies, cognitive styles, and other mental processes. No two people are exactly alike; everyone is unique (Aiken, 1996, p. 3). One of most important personality theories is Psychological Type developed by Carl G. Jung (1875-1961) to explain some of the apparently random differences in people's behavior. According to Myers and McCaulley (1985), an understanding of personality type could help individuals relate learning activities to learning style. A way to determine learning style and personality is to administer known learning style and personality profile instruments and to match the results with known results from existing information.

The surveyed university started its academic activities at the beginning of 2014 as a Comprehensive University. The academic focus is a mix of general formative academic programs and technology focused professional programs with a balance towards undergraduate levels of study. In deciding on the academic programs and qualifications to be implemented, the University needs to ensure that the unique features of the Northern Cape are applied in the academic programs, therefore developing high-level of intellectual capacity in areas of most need in the region, and for the country as a whole. Within the competitive environment of higher education, the emphasis has shifted to a more focused approach, with the aim to differentiate the university from other higher education institutions through WIL as an example. The integration of theory and practice through WIL has an underlying intention and is by implication an active process of student involvement by applying theoretical concepts in the practical

work situation. Work Integrated Learning (WIL) is, therefore, a required component in some of the courses in the university including Retail Business Management.

This course was developed and implemented together with others through the assistance of a university of technology as well as another university.

The introduction of this course led to the development of a good relationship with the local business sector and as a result, the school within which the course if offered was able to establish and formalize key industry partnerships to assist in the delivery of an impactful WIL programme. The WIL component is a three-month employment opportunity for the students that could increase the employability of students as well as create a competitive advantage for the university. The enhancement of student's employability is an essential aspect of WIL. Fleming, Martin, Hughes, and Zinn (2009:189) agree with this statement, stating that the overall aims of cooperative education, practicum, or work integrated learning (WIL) experiences is to prepare students for the workplace by developing both generic and specific competencies that will enhance employability.

Aten (2006) in her answer to the following question on retail management, "What practice-relevant knowledge can be developed in a university setting?" indicated that the ability to learn and to convert changing and often conflicting experiences of reality have to be developed. She continued her answer by stating management education cannot stop with instructing general theories. Students of management need real-life experience from which to enhance their skills in developing their theories and negotiating reality. De la Harpe, Radloff and Wyber (2000) suggested that there is concern worldwide that existing undergraduate programmes are not producing graduates with the kind of life-long learning skills and professional skills, which they need to be successful in their careers.

The demand for work-ready graduates, who are familiar with organizational practices in the industry is increasing, and so is the necessity for more significant work integrated learning (WIL) a growing concern for the higher education sector.

As students have different personality types, learning styles, and academic performance, these constructs play a significant role in creating graduates who will become great leaders for the country thus responsible for the country's economic and social development. The demand for continuous employability has also led to a renewed

interest in the impact of the relationship between the dispositional and psychological attributes of students, like their learning styles, personality types, academic performance and employability attributes. In this study, an investigation was done using a personality test and a learning style instrument to determine if there is a correlation between the personality and learning style of students.

1. Literature Review

Personality type and learning style will be the two main constructs used in this study. A brief description of each will follow:

1.1 Personality

According to the Oxford Dictionary, personality is considered to be a consistent trait of an individual's distinctive character qualities (Oxford Dictionary, 2014) and has been proposed to depict consistent emotional and motivational differences between individuals (Costa & McCrae, 1992). Understanding personality is a key to unlocking general human qualities, for example, leadership, motivation, and empathy, whether the purpose is self-development, helping others, or any other field relating to people and how they behave. Hofstee (1994) defined personality as organized patterns of thoughts, feelings, and behaviors. It is consistency in a person's way of being, his particular way of perceiving, thinking, acting and reacting as a person. Aiken (1996) stated that personality is a person's private, central, and inner core. Included within this single core are an individual's motivations, attitudes, interests, beliefs, fantasies, cognitive styles, and other mental processes. Therefore, no two people are exactly alike; everyone is unique.

1.1.1 Personality Theory of Carl Jung

One of most fundamental personality theories is the psychological type developed by Carl G. Jung (1875-1961) to explain some of the apparently random differences in people's behavior. According to Carl G. Jung's theory of psychological types [Jung, 1971], people can be characterized by:

- their preference of general attitude: Extraverted (E) vs. Introverted (I),

- their preference of one of the two functions of perception: Sensing (S) vs. Intuition (N),
- and their preference of one of the two functions of judging: Thinking (T) vs. Feeling (F).

The three areas of preferences introduced by Jung are dichotomies (i.e., bipolar dimensions where each pole represents a different preference). Jung also proposed that in a person one of the four functions above is dominant – either as a function of perception or as a function of judging. Isabel Briggs Myers, a researcher, and practitioner of Jung's theory proposed to see the judging-perceiving relationship as a fourth dichotomy influencing personality type (Briggs Myers, 1980).

1.1.2 Personality Instrument - Jung Typology Test

Carl G. Jung (1875-1961) explained some of the apparently random differences in individual's behavior. The Humanmetrics Jung Typology Test™ (JTT™) and The Jung Typology Profiler for Workplace™ (JTPW™) instruments determine the expressiveness of each of the four personality type dimensions (Extraversion vs. Introversion, Sensing vs. Intuition, Thinking vs. Feeling, and Judging vs. Perceiving)

Upon completion of the Jung Typology personality assessment questionnaire the person will obtain a 4-letter type formula along with the strengths of preferences and the description of his/her personality type, communication and learning style. The person will be able to discover careers and occupations most suitable for his/her personality type, along with examples of educational institutions where a relevant degree or training can be obtained.

1.2 Learning

Research on learning has resulted in the development of many learning styles theories and models (Bacon, 2004;) These theories and models have led to the creation of some learning style instruments which are believed to assist students in identifying how best they can learn, and also assist lecturers in using the learning styles as the basis of their instruction (Genovese, 2004).

1.2.1 Learning style theory -Felder-Silverman's Learning Style Model

Students have different preferences for receiving and processing information, using several learning styles. Keefe (1979) says that styles are ‘characteristic cognitive, affective and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment. Rosenberg (2013) wrote: ‘Style can be defined as patterns of behavior and the approaches we regularly use with the aim of reaching particular goals.’

Apart from widely known learning style models such as Kolb, Dunn and Dunn, or Gregorg, Felder-Silverman (1988) Learning Style Model gained popularity in recent years. This model explains the learning preferences of the students through focusing on different aspects of a learning process, which were referred as perceiving and understanding the information. ILS of Felder-Soloman (2004) is based on the learning style model of Felder-Silverman so that it determines the learning preferences of students in a very comprehensive way. ILS is also one of the most preferred learning style indexes by the adaptive educational hypermedia system developers (Akbulut & Cardak, 2012).

The researchers in the present study employed the model by Felder and Silverman’s (1988) to discover the participants’ learning style. The reason for this choice was purely that this model has a wide-ranging system of learning styles which help educators be more aware of the needs of the students and adjust their instruction accordingly. The model, although it has its unique combination according to (Felder and Spurlin, 2005) is parallel with the other learning styles.

Felder and Silverman’s (1988) learning styles classification includes four dimensions on information: perceiving, participating, processing and understanding. These four dimensions classify the learners into sensible, sensitive, dynamic, insightful, visual, vocal, chronological and holistic. Sensible learners depend on concrete materials they learn best with details while sensitive learners are those that do not care about details as they learn best with the use of Abstract: learning materials. They understand better through theories and fundamental meaning of things. Dynamic learners are actively performing with available learning material. They learn best as they try things out by

themselves. On the other hand insightful learners are often reflective of the materials on hand. Visual learners are those who learn by remembering every details of what they see they and learn best through images and illustrations while verbal learners are more for the spoken materials and textual representations. Sequential learners are those who follow a step by step process. They have linear learning progress and follows pattern in solving a problem. Holistic learners employ holistic judgment practice and learn comprehensively in no time.

Indiscriminate absorption of varied learning resources even without prior consideration of their connectivity unexpectedly allows them to recognize the whole work.

1.2.2 Learning Style Instrument- The Index of Learning Styles

The ILS is an on-line instrument used to assess preferences on four dimensions (active/reflective, sensing/intuitive, visual/verbal, and sequential/global) of a learning style model formulated by Richard M. Felder and Linda K. Silverman. The instrument was developed by Richard M. Felder and Barbara A. Solomon of North Carolina State University. The ILS may be used at no cost for non-commercial purposes by individuals who wish to determine their own learning style profile and by educators who wish to use it for teaching, advising, or research.

ILS of Felder and Solomon (2004) is designed to assess the preferences of the learners for each of four dimensions of Felder-Silverman Learning Style Model (Felder and Solomon, 2004; Litzinger, Lee, Wise, and Felder, 2005). It is defined as an online questionnaire and two important issues related to the index are highlighted:

- Firstly ILS results provide the preferences of the learners,
- Secondly ILS results “provide an indication of possible strengths and possible tendencies or habits that might lead to difficulty in academic settings” (Felder and Solomon, 2004).

These two inventories – The Jung Typology Test and The Index of Learning Styles Questionnaire-were chosen based on the information provided by The Myers & Briggs Foundation and Solomon and Felder (1993) that there appears to be a logical one-to-one correspondence between the items in each. It was hypothesized that a giv-

en preference in one's personality type would predict a particular preference in one's learning style.

2.3 Relation Between Personality and Learning style

The literature concerning the relationship between personality type and learning style contains conflicting results. Yanardöner, Kızıltepe, Seggie & Akmehmet-Şekerler (2014). indicated that the most frequently occurring learning style was 'assimilator', and the most frequently occurring personality trait was 'agreeableness' Finally, there was no significant relationship between the students' learning styles and their personality traits. Threeton and Walter (2004) revealed a statistically significant relationship between the Realistic personality type and the Accommodating learning style. K Nami , H Ghalavandi, AR Hosseinpoor (2014) investigated the relationship between personality traits and and Kolb learning style that among Bandar Abbas University of Medical Sciences was conducted. The results showed that there were significant relationships among the components of personality traits and their learning style. But there was no significant relationship between neuroticism and dutifulness. In addition, there is the significant negative correlation between extraversion and converging learning style. And the desire for new experiences has a significant positive relationship with converging learning style. There is the significant negative correlation between agreement and divergent learning style. And the desire for new experiences has a significant positive relationship with converging learning style.

According to Jenna Melvin (2014) in Personality Type as an Indicator of Learning Style At University of Rochester in Center for Excellence in Teaching and Learning the following summary between personality and learning style:

Table 1: Personality and Learning Style

Personality	Learning style
<p>Extravert: *I like getting my energy from active involvement in events; *I often understand a problem better when I can talk out loud about it and hear what others have to say</p> <p>Introvert: *I take time to reflect so that I have a clear idea of what I'll be doing when I decide to act; *I often prefer doing things alone or with one or two people I feel comfortable with</p> <p>Sensing: *I notice facts and I remember details that are important to me; *I like to see the practical use of things and learn best when I see how to use what I'm learning.</p> <p>Intuitive: *I'm interested in new things and what might be possible; *I like to work with symbols or Abstract: theories</p> <p>Thinking: *I like to find the basic truth or principle to be applied; *I look for logical explanations</p> <p>Feeling: *I believe I can make the best decisions by weighing what people care about and the points-of-view of persons involved in a situation</p> <p>Judging: *I seem to prefer a planned or orderly way of life and like to have things settled and organized;</p> <p>Perceiving: *I seem to prefer a flexible and spontaneous way of life, and I like to understand and adapt to the world rather than organize it</p>	<p>Active: *Active learners tend to retain and understand information best by doing something active with it--discussing or applying it or explaining it to others</p> <p>Reflective: *Reflective learners prefer to think about it quietly first; *Prefer working alone</p> <p>Sensing: *Sensing learners tend to like learning facts and be patient with details; *Sensors tend to be more practical and careful</p> <p>Intuitive: *Intuitive learners often prefer discovering possibilities and relationships; *Often more comfortable with Abstract: ions and mathematical formulations</p> <p>Verbal: *Verbal learners get more out of words—written and spoken explanations</p> <p>Visual: *Visual learners remember best what they see--pictures, diagrams, flow charts, time lines, films, and demonstrations</p> <p>Sequential: *Sequential learners tend to follow logical stepwise paths in finding solutions</p> <p>Global: *Global learners tend to learn in large jumps, absorbing material almost randomly without seeing connections, and then suddenly "getting it."</p>
(Information taken from MBTI ba-	(Information is taken from Learning

sics - The Myers & Briggs Foundation)	styles and strategies (Solomon & Felder)
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2. Methodology

3.1 Data gathering instruments

This study was quantitative in nature; utilizing two online questionnaires to determine the relationship between personalities and learning styles of students to determine how these would impact their participation in the WIL programme.

Both surveys were completed and scored online on the websites where they are available. Links to the surveys were distributed to students via email. Results were obtained by participants and submitted to the study.

As the inventories were used without emendation, the reliability and validity provided by the authors for their inventories were accepted as published.

Participants were informed of the study and what this it hoped to achieve and were also assured of anonymity and confidentiality. Collecting of data was anonymous and confidential, and no link to the names or identity to the findings is possible. After completion of the questionnaire, each student's name was decoded for the study and confidentiality was maintained throughout the process. The data received from the students via email were entered into a Excel spreadsheet to be able to determine the personality types and learning styles for the group of WIL students.

3.2 The survey instruments

The surveys

- The Jung Typology Test was used to determine participants' personality types (Human Metrics, 2013). The inventory consists of 72 general statements to which participants will answer (online) "yes" or "no" based on whether or not they felt the statement reflected their personality. Personality types given by this test identify one's preferences for each of the four dichotomies.

- The Index of Learning Styles Questionnaire from North Carolina State University was used to determine participants' preferred learning styles (Solomon & Felder). <https://www.engr.ncsu.edu/learningstyles/ilsweb.html>

The questionnaire consists of 44 questions, each with two possible answers. Participants selected the answer that they felt best reflected their learning style. Learning style preferences are displayed along four scales, one for each of the pairs of learning styles mentioned previously. Scales ranged from 1- 11. As with the personality type results, both the learning style preferences and the degree to which participants preferred each were recorded.

The four scales described in the study of learning styles are Active vs. Reflective learning, Sensing vs. Intuitive learning, Visual vs. Verbal learning, and Sequential vs. Global learning.

These two inventories were chosen because based on the information provided by The Myers & Briggs Foundation and Solomon and Felder, there appears to be a logical one-to-one correspondence between the items in each. The four differences represented in the analysis of personality types are Extraversion vs. Introversion, Sensing vs. Intuition, Thinking vs. Feeling, and Judging vs. Perceiving (Retrieved from <https://www.coursehero.com/file/p5d65ie/intuition-thinking-vs-feeling-and-judging>).

The four scales described in the study of learning styles are Active vs. Reflective learning, Sensing vs. Intuitive learning, Visual vs. Verbal learning, and Sequential vs. Global learning.

3.3 Population

The target population for this study was the pioneering students who enrolled for the Diploma in Retail Business Management at the university in 2014. According to the University's records of registered students, there were 40 registered students for the 2014/2015 academic year.

The demographic characteristics (gender, age, home language, race, and province) of the 32 students who completed their third year in 2016:

Table 2: Demographics of the Population

Sex	Age	Home Language	Race	Province
11 male	18-20yrs [23]	Setswana [17]	Black [29]	Northern Cape [28]
24 female	21-25yrs [9]	Afrikaans [8]	Coloured [6]	North West [3]
	26-30yrs [2]	English [0]	White [0]	Eastern Cape [0]
	31-33yrs [0]	Others [10]		Other [4]
	34 and above [1]			

The demographic information of the students shows that in the Diploma: Retail Business Management program more than half (50%) of the students were female and the rest male. The 18-20 years age group were in the majority and mainly represented the students who had matriculated the previous year (2013). The majority of the students.' home language (17) is Setswana, and their race is Black (29). The majority (28) of the students are residents of the Northern Cape.

3. Findings

The data identified an Extravert, iNtuitive, Feeling, Judging(ENFJ) personality type for the group.

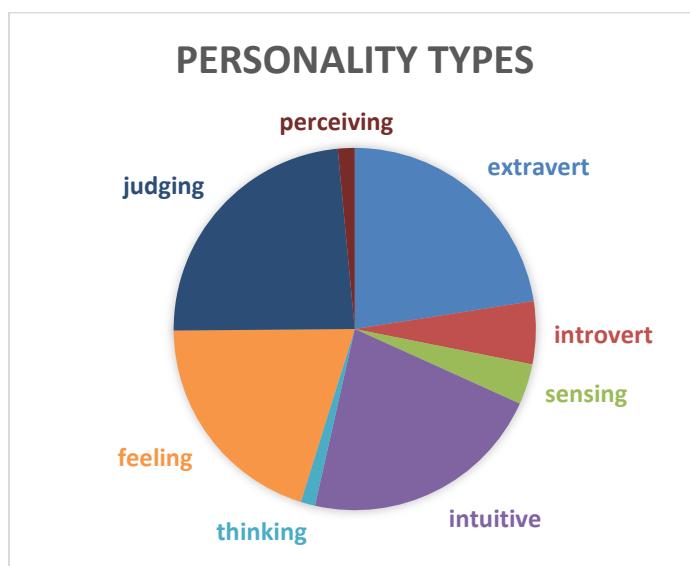


Figure 2: Personality Types

- Extraverts like getting their energy from active involvement in events. They often understand a problem better when they can talk out loud about it and hear what others have to say.
- Intuitives are interested in new things and what might be possible. They like to work with symbols or Abstract: theories.
- Feeling believe they can make the best decisions by weighing what people care about and the points-of-view of persons involved in a situation. J

- Judging seem to prefer a planned or orderly way of life and like to have things settled and organized. They seem to prefer a flexible and spontaneous way of life, and they like to understand and adapt to the world rather than organize it.

4.1 Personality of ENFJ's

ENFJs are the compassionate 'pedagogues' of civilization. They have tremendous charisma by which many are drawn into their nurturant guidance and/or grand schemes. Many ENFJs have tremendous power to manipulate others with their remarkable interpersonal skills and unique salesmanship. But it's usually not meant as manipulation -ENFJs generally believe in their dreams, and see themselves as helpers and enablers, which they usually are. ENFJs are global learners. They see the big picture. The ENFJs focus is extensive. Some can rearrange an amazing number of responsibilities or projects simultaneously. Many ENFJs have tremendous entrepreneurial ability.

ENFJs are organized in the arena of interpersonal affairs. Their offices may or may not be cluttered, but their conclusions (reached through feelings) about people and motives are drawn much more quickly and are more tough.

ENFJs know and appreciate people. They are apt to neglect themselves and their own needs for the needs of others. They have thinner psychological boundaries than most, and are at risk of being hurt or even abused by less sensitive people. ENFJs often take on more of the burdens of others than they can bear. Their trademark is: "The first shall be last". This refers to the open-door policy of ENFJs. For example: An ENFJ colleague always welcomes others into his/her office regardless of his/her own circumstances. If another person comes to the door, he/she allows them to interrupt the conversation with their need. While discussing that need, the phone rings and he/she stops to answer it. Others drop in with a 'quick question.'

Learning styles of ENFJ's

An ENFJ's interest in a subject is driven by the answer to the question, "Is this helpful to people?" The more they see a topic to be advantageous to others, the greater their interest in the topic and the greater their desire to actively engage in it and apply what

they learn. Their interest in studying the material is motivated by their desire to find solutions to people-related issues. ENFJs easily and quickly pick up new material, especially when it is delivered on a theoretical basis. Concrete information is also well received by individuals of this type. ENFJs are capable of grasping material lacking strong logical connection. For example, learning the rules of the road is no more difficult for them than grasping some theory. As a rule, they develop a great depth and breadth of understanding of new material. Learned material is better retained when a significant portion of it is devoted to highlighting the topic's connection and relevance to people.

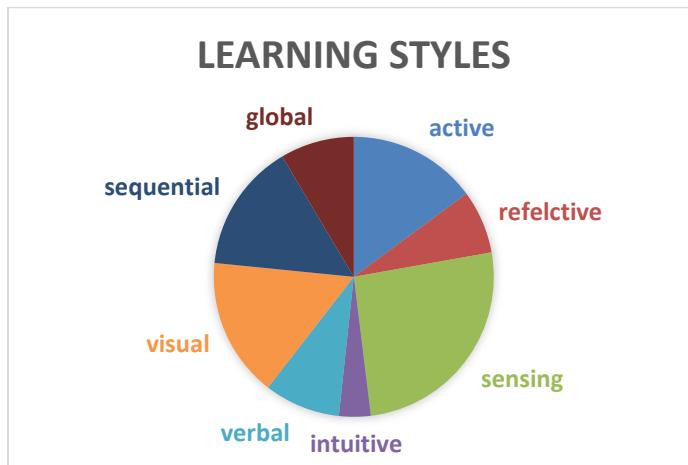
ENFJs are capable of independently learning expansive and complex material. They are good at both retention of information on a logical basis and mechanical memorization, although the latter is less effective. ENFJs are able to precisely recall learned information, whether or not it is all conceptually related. ENFJs can benefit from studying both independently and in a group setting.

ENFJs are able to actively apply acquired knowledge and skills to their work. They can apply it to concrete tasks or creatively develop it in a given direction. Working with material they have learned, understood, and internalized brings them great enjoyment.

ENFJs are able to remain very stable when experiencing a high level of learning related stress. They prefer to evenly distribute their efforts in learning new material, although they are capable of learning through short periods of overexertion.

The data identified the following regarding learning styles of this group: The group's learning style is Active, sensing, visual sequential.

Chart 2 : Learning Styles



- Active students tend to retain and understand information best by doing something active with it--discussing or applying it or explaining it to others.
- Sensing students tend to like learning facts and be patient with details. They tend to be more practical and careful.
- Visual students remember best what they see--pictures, diagrams, flow charts, time lines, films, and demonstrations.
- Sequential students tend to follow logical stepwise paths in finding solutions.

ENFJs often find themselves in occupations that require good interpersonal skills to establish productive collaboration as well as to establish or maintain effective work process. ENFJs one of the most “universal” personality types and they build successful careers in a broad range of organizations and occupations. There are many ENFJs found among mid- and high-rank management roles. Sales, various social services, counseling, teaching, healthcare, community care as well as legal and paralegal services are just some of the examples of favourable occupations for ENFJs.

4. CONCLUSION

In conclusion, the data indicated that there was a clear relationship as stipulated in the table below between:

Table 3: Personality Relationship

Personality	Learning style
Extrovert	Active
Introvert	Reflective
Sensing	Sensing
Intuitive	Intuitive
Thinking	Verbal
Feeling	Visual
Judging	Sequential
Perceiving	Global

- the Extrovert Personality type and the Active Learning style

Extroverts and Active students prefer being actively involved to understand a problem by discussing or applying it or explaining it to others.

- the Feeling Personality type and the Visual Learning style

Feeling and Visual students care about the points-of-view of persons involved in a situation and remember best what they see--pictures, diagrams, flow charts, time lines, films, and demonstrations.

- the Judging Personality type and the Sequential Learning style

Judging and Sequential students prefer to follow logical stepwise paths in finding solutions

Knowledge about learning styles and personality types is a new fundamental tool at the service of universities. Universities may utilize these tools to provide thoughtful and deeper insights into students than have been previously utilized. Which will result in the best possible dividends for the university, students and the industry.

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How to Improve on the Placement and Assessment of WIL Students Within the Environmental Science Programme

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Abstract: . Work Integrated Learning (WIL) Programme is internationally recognised as a major platform in developing graduates with employability skills that prepares them for the work environment. In Tshwane University of Technology: Environmental Sciences Programme, WIL students are developed through two of the following programmes: work-directed theoretical learning (WDTL) and project-based learning (PBL) or work-directed theoretical learning and workplace-based learning (WPBL). This paper investigates on how to improve the placement and assessment of WIL students within the programme of Environmental Sciences. In addition, it addresses the benefits and challenges of Work Integrated Learning based on data gathered for the past three years (March 2015 to March 2018). The findings of this study will be useful in improving the shortcomings associated with the effective running of the WIL programme.

Keywords: *Work-Integrated Learning, benefits, challenges, placement, assessment*

1 Introduction

Work integrated learning (WIL) is a programme that facilitates the placement of students within an organisation in order to integrate academic learning with its application in the workplace (Jackson, 2015, p.350; Trede, 2014, p.159; Smith, 2012, p.247). In particular, the WIL programme is important for the development of professional competence through attributes and employability skills that prepares students to be ready for the work environment (McNamara, 2013, p.183). In order to attain this, the university plays a critical role in preparing the students for the world of work and liaising with industry to ensure that we have employable graduates. Thus, the university has to prepare the students for their future work roles (Trede, 2014, p.159).

Over the past three years (March 2015 to March 2018), the placement of work integrated learning students at the Tshwane University of Technology within the Department of Environmental, Water & Earth Sciences: Environmental Sciences Programme has been a great success. About 90 % of the students in search of WIL got placed each year. However, 10 % of the students which were not placed each year led to the accumulation of more students in 2018, which resulted in a large number of still students not placed. This has become a challenge because the placement of students that have completed their theoretical learning over the past years (2015 and 2016) was decreasing in number. In addition, the assessment of students that are placed must be improved to avoid being biased. To address this, two platforms in which WIL will be conducted are discussed and some new assessment criteria in order to eliminate biasness. This paper investigates on how to improve on the placement and assessment of WIL students within the programme of Environmental Sciences. The review of this three years' data (March 2015 to March 2018) is crucial in order to enable us to establish the conditions under which WIL efforts are effective and the basic elements that make WIL work (Johnson & Johnson, 1999, p.67).

2. Benefits of Work Integrated Learning

Employability skills are the skills required to gain employment and progress within the work environment and as a result, to contribute towards the work conducted (Smith, 2012, p.247; Bridgstock, 2009, p.33). The benefits of having WIL for any programme is the production of graduates that are employable as a result of their competence in their disciplinary fields within a rapidly changing work environment. In addition, WIL gives the university an opportunity to keep track of the trending changes within industry and to pro-actively adapt to the work environment changes (Bridgstock, 2009, p.31-32). Through WIL, a relationship between the university and community-industry is established and strengthened (Smith, 2012, p.248; Bridgstock, 2009, p.32). Not only that, but there is an opportunity to ensure that graduates have the ability to obtain and maintain work. The student's personal benefits from WIL

include the improvement of generic skills (written & verbal communication), working in teams and with technology (Bridgstock, 2009, p.33).

A number of students enrol for a course either because of an interest in a particular subject or it was the programme that was available and their grades were good enough to enrol for that particular programme. In most cases, students have unclear views about their future careers however, this uncertainty becomes eliminated by the exposure to the work environment or through community based projects, as a result of the student's participation in a WIL programme (Fern, Campbell & Zegwaard, 2014, p.3). A detailed description of WIL benefits is discussed, with reference to career & academic benefits as well as personal and employer benefits.

4.2 Career and Academic Benefits

Because WIL is about students obtaining work experience prior to their graduation, in most cases this gives WIL students an advantage over graduates without work-experience in obtaining or maintaining work. This occurs as a result of relationships established and in some cases maintained during WIL search or project based learning (PBL)/work-place based learning (WPBL) (Fern, Campbell & Zegwaard, 2014, p.3). Work-directed theoretical learning (WDTL) stimulates the students' thinking, increases their research abilities and develops their time management skills. Fern, Campbell & Zegwaard (2014) pointed out that "some WIL coordinators have shared how after the completion of project based learning or work-place based learning, the student's enthusiasm about their discipline has increased" (Fern, Campbell & Zegwaard, 2014, p.3-4).

4.3 Personal and Employer Benefits

According to Trede (2014), "workplaces shape professional identity, which is done early for WIL students through WIL programme rather than after they are graduates. Professional identity takes into account workplace cultures and professionalism, that gets stimulated and initiated during WIL and also raise awareness of practices that are not beneficial" (Trede, 2014, p.159-160;164). As noted by Fern, Campbell & Zegwaard (2014), "students placed for WIL develop interpersonal communication skills, improve in their adaptability to change and the ability to make decisions gets enhanced. In addition, the students' ability to work within teams, achieve common goals, and develop organisational skills are well developed before the student becomes qualified in their discipline" (Fern, Campbell & Zegwaard, 2014, p.4). All skills developed, increases the students' chances of getting permanent employment or maintaining their position given for a period longer than the WIL duration, when compared to the student who has not participated in a WIL programme. WIL employers also benefit from WIL programme. Employers have to keep up with the trends within their discipline, specifically research projects on their subjects of interest. In order to do so, the introduction of WIL students to their companies gives them a platform of fresh and different ideas which are necessary for growth and improvements,

and ideas that will allow companies to remain strongly competitive to their competitors (Fern, Campbell & Zegwaard, 2014, p.4-5).

4.4 Challenges of Work Integrated Learning

Failure to place the total number of students searching for WIL each year means students not placed will add to the number of WIL search students each year. For the past three years (March 2015 to March 2018), the number of students not placed was relatively low. However, problems arise when this number accumulates each year, resulting in a large number of students in search of WIL at the end of each year. Another major challenge experienced is in relation to the student's assessment at the end or completion of the WIL programme. McNamara, (2013) noted that "the assessment of student's professional competence in the work-place is unfair or problematic. The assessment of professional competency is assessed by the academic supervisors and heavily dependent upon the industry supervisor, which may be unreliable" (McNamara, 2013, p.183). In this paper, we will consider one incident where the student's assessment by the industry supervisor became problematic, according to the author's experience after coordinating a WIL programme for three years.

4.5 WIL Placement and Assessment

The Environmental Sciences Programme is a three and a half years course that consists of three years of theory and six months of WIL programme. Unfortunately, not all students complete their theory subjects on record time, which means some students complete at the end of first semester and others at the end of the year, if not twelve months later. For this reason and because the placement of students occurs at random times, WIL search students are placed from January to November in our university. Often, not all WIL search students get placed at the end of each semester, which means the number of students that need placement at the beginning of a new semester would increase. The increase in this number is often low however, accumulates at the beginning of each new semester. From this, a challenge is often experienced in placing students that have completed in previous years because they need to keep up with the trends in university curriculum and the work environment. In addition, the placement of students often relies on the ability of industry to accommodate WIL students in their organisation. This means, the number of students placed each semester fluctuates.

Students that get placed for a WIL programme are supervised by an industry and academic supervisor. An industry or workplace supervisor is responsible for delegating work to the student that will provide learning opportunities, supervising and assessing the student's performance. An academic supervisor is responsible for the assessment of the student's monthly reports as signed by the mentor and submitted by

the student. Communication between the student and an academic supervisor is limited to e-mails, telephone communication, visits to the institution upon request and a visit to the student's work-place at the end of the WIL programme. The student's first assessment is conducted by the industry supervisor based on the WIL duration, and the assessment done during a WIL visit is the second assessment as conducted by the academic supervisor (McNamara, 2013, p.186). The form of assessment conducted by the industry and academic supervisor are outlined in annexures (annexure 1 and annexure 2).

Recently, one industry supervisor asked to re-evaluate a student after the student had submitted her logbook. This was because of the disputes that aroused between the student and industry supervisor, over the student's interest to further her studies full time and the supervisor's interest to maintain the student because the supervisor saw the student as an investment to the company. The supervisor was given the opportunity to re-evaluate the student however comparisons were made between the first and second evaluation, to minimise the opportunity of being biased. Other scenarios include some students that reported how fearful they were that their supervisor will be biased when being evaluated because of the comments that were made during the course of their WIL Programme. This is usually common where a number of students were placed in one organisation over time, that the students are now compared to their successors, which becomes challenging as well because students are not assessed according to their unique set of skills but against some benchmark.

5. Findings

To improve the placement of WIL search students, all students that are ready for WIL undergo workdirected theoretical learning (WDTL). Work-directed theoretical learning involves the training of students with regard to the purpose of WIL, relevant stakeholders' roles and expectations as well as the action learning cycle, which includes learning about reflection practices. The main aim of WDTL is to improve the employability of WIL students by taking into account the introduction of WIL, discussion of subjects such as the purpose, outcomes and procedures associated with WIL and the discussion of the roles and responsibilities of individuals concerned (TUT staff, students, organisations). In addition, work-directed theoretical learning also takes into account action learning in the form of motivational talks, employability improvement training, curriculum vitae workshop and a recycling project. The major aim of action learning is to engage students in activities that requires them to conduct, record and report observations, participate in problem-solving activities, designing action plans to resolve case studies and implementing good reflection procedures when writing and reporting on personal reflection.

Currently, work-directed theoretical learning is not fully functional because there are no time slots located for WIL on the student's timetable, which means activities conducted must be done so when the students have free periods. This is often chal-

lenging because the time slots available do not offer enough time for training coordinators to facilitate their training. Thus far, only the following were previously conducted motivational talks, CV workshop and employability improvement training. Motivational talks are conducted by TUT alumni in the Environmental Science Programme, who are currently business men and women, and individuals that have become successful in their careers. Employability improvement training is a two days' course that involves theoretical and practical activities which help prepare the student in terms of how the work environment should be perceived. A curriculum vitae workshop is crucial in preparing students on how to apply for WIL opportunities using various platforms, how students should prepare and conduct themselves before and during an interview, how to have their CVs ready and appealing to the reader and how to present oneself as an employable graduate. Lastly, the recycling project which will be introduced in April 2018, aims at promoting environmental and waste management practices through a poverty alleviation socio economic reality. The recycling project is facilitated by a TUT alumni, who after training will be able to converse with the students on what to expect when getting to the work environment.

Participation in a work-directed theoretical learning will be followed by the enrolment in projectbased learning or workplace-based learning. A PBL involves learning through projects, under the supervision of a university lecturer and a workplace or community supervisor. Projects conducted are relevant to the student's discipline and occupational futures (Smith, 2012, p.247). Currently, the university-industry-community collaborative outreach and research projects are in the pipeline with the City of Tshwane, TUT Green Arcadia and the Green Youth Network in order to improve on the placement of WIL search students. Projects involved include participation in Environmental Sciences projects from various sections of the organisation or different organisations. For example, these can be small or major projects that run throughout the year for a minimum of one week. Participation in these projects will lead to the accumulation of hours necessary to successfully complete the WIL Programme. WIL project based learning often is on voluntary basis, which means students have no funding for the duration of WIL. An attempt to rectify this considered the use of SETA. Thus far, an application for funding of the WIL project based learning has been sent to Energy and Water Sector Education and Training Authority (EWSETA). This means if projects are established, funding opportunities may be explored to enable the maintenance of students during the course of such projects and the success running and completion of the projects concerned.

A work-place directed learning means students are placed in work environments for the purposes of learning and where the focus is on productive knowledge and skills rather than reproductive knowledge. As a result, the students will be actively involved and will have concrete experiences. The student will have to be aware of particular components of the experience through reflective observation, pausing to consider what has just taken place. The student will have to use inductive reasoning by analysing observations, explaining them, and integrating them into logically sound theories, and then putting this knowledge into practice. Both project based learning and workdirected learning incorporate the most important ideas and concepts in the curriculum, such as air, ecology, geology & soils, people & the economy and water.

Students participating in project based learning or work-directed learning are expected to have the development of applied competencies, producing and communicating information, specifically conducting stakeholder participation, problem-solving, collection of baseline environmental data and managing this data and reflection.

The assessment of a student for a project based learning or work-directed learning will include for instance, the identification of a problem within a community-industry project or the environmental work place using analytical skills such as document analysis, observations and interviews. The root causes of the problem in a community-industry project or the environmental work place must be correctly described and information on the root causes be collected and analysed in a report in such a manner that the student's ability to collect information and present it accurately, comes to the fore. Workable recommendations on solutions to a problem experienced in the community-industry project or the environmental work place must be investigated and reported on in a presentation to supervisors/stakeholders/mentors. In addition, the assessment will include the baseline environmental data that has been obtained through the correct sampling and monitoring methods, such as: stack emissions data; water quality data; waste statistics; and vegetation description data; global positioning systems data that is either stored on an electronic database or on hard copy records, using the correct procedures. After each project, a report must be compiled in a relevant and appropriate manner for the community-industry project or for the environmental workplace. Through this, the students are able to capture their learning experience in a thoughtful manner, displaying awareness of stumbling blocks, triumphs and plans for improvement, in a brief WIL reflection essay. To improve on the assessment of WIL, an assignment, interview and a report (and reflection) will be included.

6. Conclusions

Work integrated learning is vital for the development of students for the working environment. Work integrated learning is about the practical placement of students within an organisation in order to integrate academic learning with its application in the workplace. The preparation of students for work integrated learning can be effective if WIL is considered as a subject rather than only as a practical placement of the student to a work environment. This means a timeslot on the student's timetable must be allocated in order for students to fully participate in work-directed theoretical learning. The benefits of students participating in a WIL programme include career, academic and personal benefits. In addition, the university and employers concerned also benefit by establishing and maintaining relationships that enable them to keep track of the changes that occur within industry and academics. Unfortunately, challenges have been experienced with the placement and assessment of WIL students. To address this, students will enrol in project based learning (PBL) or work-place based learning (WPBL) and the assessment of WIL will include an assignment, interview and a report (and reflection). Based on the introduction of project based learning and new assessment forms, the WIL challenges experienced shall be addressed.

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Annexure 1
Industry Supervisor's Assessment of student

No.	Assessment	Rating	Comment
1.	Interest in work	4. Very enthusiastic. 3. Satisfactory amount of enthusiasm for job. 2. Interest spasmodic - occasionally enthusiastic. 1. Little enthusiasm for job.	
2.	Initiative	4. Self-starter. Ask for new jobs. Looks for work to do. 3. Acts voluntarily in most matters 2. Relies on supervision. Must be told what to do frequently. 1. Always waits to be told what to do next.	
3.	Organisation and planning	4. Does an outstanding job of planning and organising his/her work. 3. Usually organises work adequately. 2. Does normal amount of planning and organising. 1. Unable to organise and plan work effectively.	
4.	Ability to learn	4. Brilliant 3. Quick 2. Average 1. Slow	

5.	Quality of work	4. Usually thorough. Good work. Few errors.	
		3. Work usually needs review. Has normal amount of errors.	
		2. More than average amount of errors for a trainee.	
		1. Work usually done on careless manner.	
6.	Judgement	4. Uses good common sense. Usually makes excellent decisions.	
		3. Judgement usually good in routine situations.	
		2. Judgement often not reliable.	
		1. Poor judgements. Jumps to conclusions without sufficient knowledge.	
7.	Dependability	4. Can always be depended upon in any situation.	
		3. Can be depended upon in routine situations.	
		2. Somewhat unreliable. Needs above average checking.	
		1. Unreliable.	
8.	Attitude to-wards work	4. Motivated. Eager to learn. Positive.	
		3. Usually motivated and willing to learn.	
		2. Lacks motivation occasionally. Accepts tasks without challenge.	
		1. Not motivated. Do not want new challenges.	

9.	Acceptance of suggestions and criticism	4. Expresses appreciation and takes prompt action on suggestions and criticism by supervisor.	
		3. Accepts suggestions and criticism by supervisor in satisfactory manner.	
		2. Reluctantly accepts suggestions and criticism by supervisor.	
		1. Resents suggestions and criticism by supervisor.	
10.	Communication skills - written and oral expression	4. Good.	
		3. Satisfactory.	
		2. Needs improvement.	
		1. Unsatisfactory.	

Annexure 2

Academic Supervisor's Assessment of student

No.	Assessment	Rating	Comment
1.	PowerPoint Presentation	Has the student compiled a PowerPoint presentation of 15- 20 minutes' length? (5 marks)	
2.	Evidence of work conducted	Does this presentation include photos and visual aids? [5 marks]	

3.	Confidence and Audibility	Is the student confident and audible while presenting? [5 marks]	
4.	Environmental Topic	The student must indicate which of the activities in which fields (as per logbook) (“environmental topic”) he/she was exposed to. [5 marks]	
5.	Discussion of Environmental Topic	The student must briefly describe what he/she did in each “environmental topic” exposed to, and demonstrate that he understood clearly what had to be done in each environmental topic. [6 x 5 marks] [30 marks]	

Simulation for WIL preparation: Virtual reality for improving skills needed for WIL

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Abstract: Employers in Namibia have raised concerns on the lack of soft skills and attitudes amongst student' interns. Cognisant of the raised concerns and students challenges in finding WIL placements, this study focused on the perception of students from Namibia who attended a business simulation seminar and have gone through the Work Integrated Learning (WIL) programme on the use of simulations as a possible work-based learning approach to prepare students for WIL placement. The study found that the simulation seminar has, to a large extent, imparted the work readiness skills in the students compared to classroom theory. Out of 126 respondents, 92% recommend the use of simulation for WIL preparation stating that it facilitates increased knowledge and understanding of the subject matter and gives students a hands-on-approach of the work environment. A conceptual framework on the use of simulations for WIL preparedness to equip students with necessary competencies needed for WIL is also proposed.

Keywords Simulation; WIL Preparedness; Employability Skills; Higher Education Institutions; Students; Work readiness skills

1. Introduction

Organisations both in the public and private sectors in Namibia have an active role to play in work integrated learning (WIL) initiatives led by tertiary institutions. Employers from these sectors have raised concerns on the lack of soft skills amongst student' interns, stating that the skills that industry require from them are missing, and some students even lack the attitude that enable them to get placed in the industry. It is against this background that students have and still experience challenges in finding WIL placements which results in delays to obtain their qualifications. This therefore

challenges tertiary institutions to examine existing methods and think about innovative ways that can be used to prepare students for their WIL placements.

The Namibia University of Science and Technology (NUST) has integrated WIL as a compulsory component in its academic programmes in efforts to enhance graduate employability. Each department with the WIL component, in collaboration with the Cooperative Education Unit (CEU) at NUST offer a Pre-WIL readiness preparation course through scheduled workshops, arranged with departmental WIL Coordinators, before the students are placed into industry. The course consists of different units varying from: introduction to WIL, WIL assessment, cover letter and Curriculum Vitae writing, interview preparation, workplace etiquette, soft skills, business and organisation ethics, time management, presentation skills, team dynamics, conflict management, emotional and social competence, entrepreneurial leadership competences and personal branding. The course session runs for 4 to 8 hours and it is more theoretical based with few practical activities. The workshops is considered to be good at measuring skills competency but does not give opportunity for the application of skills.

Although several approaches to WIL preparedness programmes have been explored in literature, few studies have looked at simulations as a potential method of preparing students for WIL. This study therefore focuses on the use of simulations as a work-based learning approach in education pedagogy, specifically in preparing students for WIL. According to Dwesini (2014), the purpose of a WIL preparedness programme is to prepare and educate students about workplace expectations. A simulation is defined as “an act of imitating the behaviour of a physical or Abstract: system such as an event, situation or process that does or could exist” (Youngkyun as cited in Damassa & Sitko, 2010, p. 2). According to Lee (2010); and Angelides and Paul (1999), simulations depict real life situations, where participants role play, make decisions and receive feedback on their actions upon which participants could observe the results, reflect on their previous decisions and further improve their future decisions.

Given the competitive nature of the job market in Namibia, employers are looking for student interns with a competitive edge that distinguishes them from other students in the same field of studies. Hence, the recommendation to implement the simu-

lation programme into the pre-WIL readiness course at NUST is based on the premise that educational technology (such as simulations) that drives knowledge and skills acquisition creates a learning environment that provides an opportunity for students to apply theoretical knowledge into practice in a controlled environment. This is supported by Spowart (2011) who stated that employers are expecting higher education institutions to produce interns and graduates that not only have theoretical understanding of their field, but the practical skills and knowledge to think independently and adapt to new and challenging situations.

Schulz (2008) has cautioned higher education institutions on the danger of sending students in the industry for WIL who are academically proficient but lack soft skills. He further stated that employers are looking for student interns or graduates who are quick starters and unprepared students will have a slim chance of being considered for placement. It is therefore important for academics to understand that, although there is a degree of learning that takes place in the workplace, the student should have some basic skills and readiness to work as workplaces prioritise productivity and profits. Students will therefore not magically acquire soft skills when they enter the work place. Some soft skills for work readiness need to be highlighted in the classroom and curricula.

In a study on students' preparedness for WIL, Mickan (1995) found that preparation for placement requires more than preparatory reading. Mickan emphasises that knowledge needs to be applied alongside skills in the form of practice prior to WIL experience. This is supported by Dwesini (2014) who argued that, students' preparation process prior to undertaking the WIL programme can assist students to progress towards the skills, knowledge and attitudes needed for work industry. Similarly, Strachan (2016) argued that embedding employability skills into the course structure enables students to be aware of their importance to industry. Hence, for the WIL programme to be successful, education institutions at large have an obligation to prepare students for WIL and make sure that industry partners receive students who know what to do and what is expected of them in the workplace. This study, therefore, aims to explore students' perception on the use of the simulation practice as a WIL preparedness programme at the Namibia University of Science and Technology (NUST).

2. Business Simulation at NUST

At NUST, students in various fields of study such as Engineering and Finance get an opportunity to go through a module called Innovation, Creativity and Entrepreneurship (ICE). This module is taught using the traditional method of teaching in which students interact with the educator face-to-face in a 16 hours Business Simulation Seminar. Business simulation at NUST aims towards achieving the best way of effective learning to the students doing ICE and to help develop soft skills that are needed in the labour market. The business simulation programme allows students to experience how it feels to run a business and have independent platforms where they can think and apply their business steering skills to successfully run their simulated businesses according to the strategy of their choice.

The simulation practice is also incorporated to aid the development of students' understanding of business decision making putting emphasis on running a business entity. In the simulation seminar, students are required to work in teams of three or four in a virtual company which develops, produces and sells surfing boards. In a 16 hours timeframe, students go through 6 rounds, in which each team must strategize and make decisions based on changing market scenarios that mimic real life companies.

3. Theoretical Framework

Experiential Learning Theory as proposed by Kolb is used as theoretical framework in this study. Experiential learning involves learning from experience and takes a more holistic approach and emphasizes how experiences, including cognitions, environmental factors, and emotions, influence the learning process. Kolb (1984) defines learning in this theory as "the process whereby knowledge is created through the transformation of experience. It sets out four distinct learning styles, which are based on a four-stage learning cycle: (1) having a concrete experience followed by (2) observation of and reflection on that experience which leads to (3) the formation of Abstract: concepts (analysis) and generalizations (conclusions) which are then (4) used to test hypothesis in future situations, resulting in new experiences.

According to Thatcher (1990), simulation games recreate Kolb's learning model where a business game generates series of micro-experience followed by instant feedback and reflection. Experiential Learning Theory promotes a student-centred approach to learning as it allows students to practice what they are studying in the classroom. This brings about the application of high order thinking skills and provides students with the opportunity to be actively engaged in the process of learning.

3.1 Students' Preparedness for WIL Placement Through Simulation at NUST

Despite a growing body of literature on the readiness of graduates when joining the work place after the completion of their studies, there is minimal research on the preparedness of students for WIL especially on the use of simulations. According to Sundler et al. (2015), pedagogies in use within universities are rarely underpinned by evidence of their efficacy and more knowledge on simulations and their impact on learning is required. This is because evidence in favour of this pedagogical approach remains weak.

Many colleges and universities around the globe have moved towards the use of innovative teaching techniques to improve student learning. One of the most commonly used techniques has been active learning, which has been defined as "anything that involves students in doing things and thinking about the things they are doing" (Bonwell & Eison, 1991, p.2). According to Billett (2011), providing theoretical experiences does not guarantee the kinds of learning required to secure smooth transitions to practice in the job market. Therefore, students need to be engaged, prepared and provided with experiences in practical setting to assist them to develop the required knowledge for engagement in professional practice.

The incorporation of active learning activities such as simulations in the classroom gives the students an opportunity to practice fundamental skills of their study disciplines and allows students to apply key concepts and knowledge gained through readings and lectures, to realistic problems while maintaining academic relevance (Silva, 2012; Strachan, 2016). This is in line with Gilgeus and D'Cruz (1996) who stated that simulations can be used as a teaching tool to contextualize what is learned through lectures to deepen students understanding while giving them an opportunity to learn

about the quality of their decisions and the impacts of their decisions to the organisation they are working for. In addition, simulation will also give them an opportunity to explore problems that they are likely to encounter in the world of practice.

According to Clayton and Gizelis (2005), simulation-based teaching relates to a specific skills set that is not generally well cultivated through traditional methods. Hence, many professions such as business, law, social work, planning, politics and health care can use some form of simulation to develop, practice and test student's ability to apply, communicate, argue and negotiate with others in a manner that applies theoretical ideas in a practical sense. Lee (2010) described the use of simulation games based on Kolb's Experiential Learning Cycle (Kolb, 1984) that from the user's point of view, simulations mimic real life situation, where participants operate in a risk-free and less expensive environment to put theory into practice, role-play, make decisions and receive feedback on the results of their actions, upon which, they have the opportunity to reflect on their previous decisions, and further improve their future decisions.

In the context of employability skills, simulation gives students an opportunity to practice fundamental skills of their study disciplines, encourage decision making and team-working, and enhance the student learning experience (Clarke, 2009; Richmond, Richards & Britt, 2015). Therefore, simulations can be designed to replicate actual economic market and business-related problems which can develop student's problem-solving and analytical thinking skills (Clarke, 2009).

3.2 Simulation for WIL Preparation: A Conceptual Framework

Employers rely on Higher Education Institutions (HEIs) to produce graduates who do not only have theoretical understanding of their field, but the practical skills and knowledge to think independently and ability to adapt to a new and challenging situation (Spowart 2011). Furthermore, employers also value soft skills such as communication, teamwork, interpersonal skills and the ability to problem solve (Gamble, Patrick & Peach, 2010; Spowart, 2011), yet research suggests that these attributes have rarely been emphasized or deliberately fostered in higher education settings (Rainsbury, Hodges, Burchell & Lay, 2002). Hence questions that arise maybe:

WIL placements vs graduate employability: what is the main focus of HEIs regarding employability? (Should the main focus be on graduate employability skills to be enhanced by WIL, or on getting students ready for WIL placement?).

How can HEIs impart soft skills through academic curricula?

Should soft skills or graduate attributes be imparted throughout the curriculum from first year or only during WIL? (What is the starting point of learning soft skills?)

Are WIL students accepted in industry on the basis of their knowledge, skills or attitudes or what are the industry requirements for WIL placements?

At what level of preparedness are the students when they go for WIL?

Are the universities doing enough to prepare them for WIL?

To shed light on some of these burning questions, and to assist in analysing the students' perceptions on simulation and WIL, a conceptual framework on the use of simulations for WIL preparedness has been developed to prepare under-graduate students readying themselves for WIL. Simulations for WIL can be designed with an employability focus that aims to develop career skills to obtain a job placement in industry and provide students with knowledge, skills and understanding that will enable them to adapt to the workplace, work effectively and learn from their WIL experience.

3.3 Framework Process

During the simulation exercise, students are presented with business/organisational scenarios that may be present in a real-life company. Each team analyses the given information and brainstorm on a strategic approach of how to solve the given scenario. During the implementation of strategies, each team member takes up an organisational role overseeing different business functions such as operations, human resources, management, finance, marketing, research and development. This enables the transfer of knowledge to real business situations and helps students to understand and experience management concepts and the interrelations among the various functions of business.

Each team then decides on a strategic approach, plan for the period and implement their decisions based on change in market situations in a competitive environment.

The decisions from each team are collected to generate results and report on their operation. The feedback session allows for each team to actively engage in situations where they observe the consequences of their decisions and actions. Learning occurs through dialogue among participants as they share experiences, observations, feelings, and thoughts and collectively arrive at conclusions about what has been learned and strategize on how to improve as they proceed to the next round.

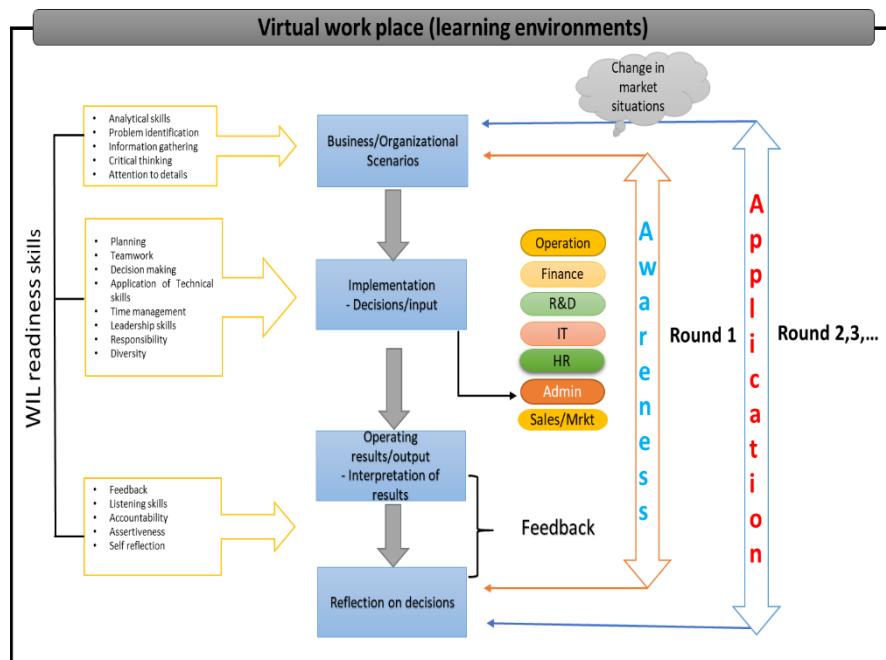


Figure 1: Framework for the simulation exercise for WIL preparedness

The focus of the simulation exercise in the proposed framework (fig. 1) is to equip students with necessary competencies to demonstrate the desired performance and behaviour during WIL. The framework depicts the alignment between learning phase (developing of knowledge, skills and attitude for a specific role), and the application phase (application of theoretical knowledge, skills and attitude in the work place environment through demonstration) of workplace performance.

In the first round of the model, the facilitator introduces the students to the business/organisational process and the application of business steering instruments. The facilitator makes them aware of the skills needed in the job market, where and how to apply them within the organisation. The students are guided through the first round

(awareness stage). After the awareness stage, the facilitator backs down and give a chance to the students to apply their skills and knowledge. This is done to help students to assume responsibility for their own learning as they reflect on their experience, draw conclusions and identify applications. With this simulation model, students get a chance to practice and sharpen their skills before entering the real world.

However, for the model to work and objectives to be met, students need to go through many rounds (at least 3 or more). Simulation is successful when it is done in stages because one round will not be enough for students to apply what they have been taught. This is supported by Kolb's Experiential Learning Theory that states that the optimal learning would pass through a cycle of the Concrete Experience, Reflective Observation, Abstract: Conceptualization, and Active Experimentation. Kolb views learning as an integrated process with each stage being mutually supportive of each other and believes that effective learning only occurs when a learner can execute all four stages of the model. For this model to be effective, it must be rigorously applied, both in design and delivery stages.

4. Methodology

This study used NUST students who attended a business simulation seminar and have done their WIL in different organisations between 2016 and 2017 as participants. These participants were chosen because they can provide views and perception, based on their experience, on the possibility of using simulation to prepare students for WIL placement. A mixed method approach was used in developing the questionnaire which comprised closed ended question related to generic skills learned in the everyday class and during simulation session and open-ended questions which required participants to give their views on the use of the simulation practice to prepare students for WIL and the world of work. The questionnaire was sent to 180 students from different faculties: Computing and Informatics, Human Sciences, Management Sciences, Natural Resources and Spatial Sciences. Out of 180 invitations to participate, 126 students responded to the questionnaire. The themes from the questionnaire items were identified and used to present and analyse the findings.

5. Findings and Discussion

Soft skills enhanced in classrooms vs simulation seminar

The students were asked to rate the extent to which different skills were enhanced during the simulation seminar and in their classroom/lectures. The skills and percentages as provided by the students are as follows:

Work readiness skills	Great extent		Somewhat		Very little		Not at all	
	<i>Lec-tures</i>	<i>simulation</i>	<i>Lec-tures</i>	<i>simula-tion</i>	<i>Lec-tures</i>	<i>simula-tion</i>	<i>Lec-tures</i>	<i>simula-tion</i>
Decision making	68%	92%	25%	8%	7%	0%	0%	0%
Time management	61%	87%	32%	11%	7%	0%	0%	0%
Attitude towards work	66%	83%	27%	17%	7%	0%	0%	0%
Problem solving	47%	80%	43%	17%	3%	3%	7%	0%
Communication	50%	60%	33%	40%	14%	0%	2%	0%
Team work	75%	81%	17%	19%	0%	0%	7%	0%
Flexibility	30%	56%	54%	42%	2%	2%	7%	0%
Entrepreneurial acumen	57%	85%	31%	15%	12%	0%	0%	0%
Diversity	44%	52%	48%	41%	9%	4%	0%	0%
Assertiveness	33%	60%	56%	38%	3%	2%	7%	0%
Professionalism	49%	54%	46%	46%	5%	0%	0%	0%
Presentation skills	57%	67%	36%	33%	7%	0%	0%	0%
Critical thinking	29%	91%	57%	7%	14%	2%	0%	0%
Attention to details	25%	79%	60%	21%	4%	0%	0%	0%

Table 1: Extent to which work readiness skills were enhance during the simulation seminar and classroom/lectures.

There is a significant difference on the extent to which the students' skills where enhanced during the simulation seminar compared to everyday class lectures. From the study, it is evident in ($p > 0.05$) that the simulation seminar has imparted work readiness skills to a great extent more than everyday class lectures. This also responds the underlying assumption that soft skills are only to be learned in the work-

place. The study found that the starting point of imparting soft skills into students is the university classroom where the students should be made aware of these skills, then the university labs where students apply this into practice through simulations. The university environment has been highlighted in research to be important in imparting soft skills needed by the labour market (Pereira & Costa, 2017; Robles, 2012; Callier, Singiser & Vanderford, 2014). The students were further asked on the extent to which they have engaged with business simulation activities compared to day-to-day class lectures. Out of 126 respondents, 88% rated their engagement in simulations to a great extent, whilst the remaining 12% responded with to somewhat extent. The findings imply that students are engaging more with the simulation than with traditional lectures for soft skills development and enhancement. This adds weight to the argument that experiential learning methods engage students more than normal lecture-based teaching methods in terms of imparting soft skills (Wurdinger & Rudolf, 2009; Perrin, 2014). Providing theoretical experiences does not guarantee the kind of learning required to secure smooth transitions of theory into practice in the job market. The implementation of simulation activities into the WIL readiness programme, could be part of NUST efforts to develop WIL readiness programmes that focus more on practical studies than theory as this is one of the key success factors for graduates when they enter the market.

5.1 Application of Soft Skills Acquired from Simulation in the Workplace

The students were further asked to rate the extent to which their participation in the business simulation seminar enabled them to demonstrate different skills during WIL and in their current work places. The skills and percentages as provided by the students are as follows:

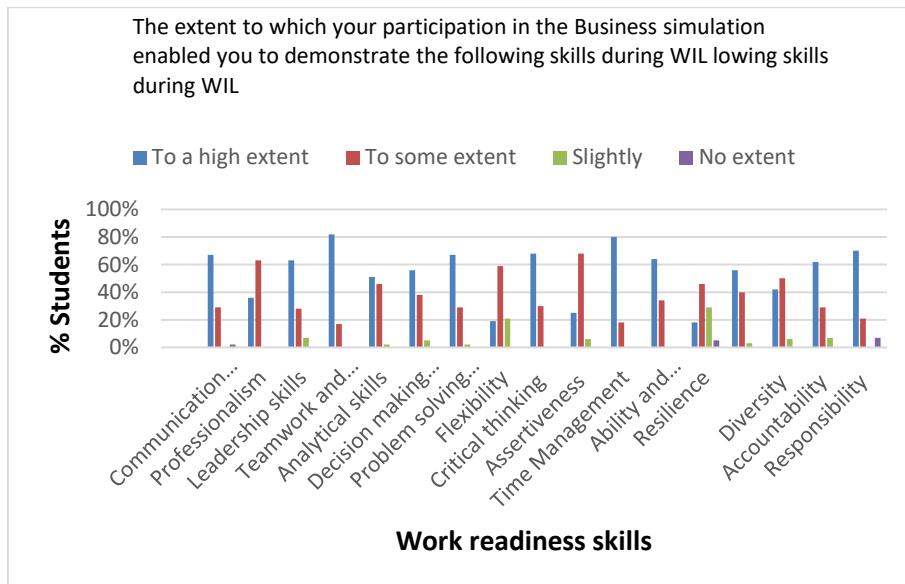


Figure 2: The extent to which students' participation in the business simulation seminar enabled them to demonstrate different skills during WIL and work places

Although the simulation seminar attended was not for WIL preparation, different skills including: teamwork, time management, responsibility, critical thinking, problem solving, communication, ability and willingness to learn, leadership, accountability, decision making and attention to detail stood out as acquired during the practice. These skills have been highlighted in research to be vital in WIL and are exactly what industry require from students and graduates (Roos, Lennox & Botha-Ravyse, 2016; Taylor, 2016; Jayaram & Engmann, 2017). Students feel that attending simulation helped them demonstrate these skills during their WIL and in their current work places. Some students state:

It showed the importance of time management, which is very crucial in the work place as everything needs to be done in its schedule time period to avoid errors, delays and wasting of resources in the organisation.

I have proven that I can adapt at handling multiple tasks on a daily basis competently and at delivering quality work under tight deadlines.

Attending simulation helped improve my communication skills. During WIL, I was able to express myself in a large number of people and felt more confident when giving presentations and addressing issues.

However, the development and enhancement of some skills such as professionalism, flexibility, diversity, resilience and assertiveness was rated as developed to some extent. This might be because of the participants' attitudes toward the simulation. Some students just attended the simulation seminar because they needed to get marks while some got carried away and were focused more on winning during exercises in the simulation than on learning from it. The findings also show that a combination of different skills such as time management, critical thinking, communication, problem solving, and professionalism, attitude towards work, teamwork and diversity were of great importance during their WIL hence one cannot look at each in isolation. Therefore, it is worth noting that when deciding on a simulation exercises for WIL preparation, considerations should be made on simulations that cover other interpersonal skills such as emotional intelligence, negotiation skills and conflict resolution. Having good interpersonal skills is important in helping students to develop other important life skills. More students commented:

Simulation has improved my decision-making ability, leadership skills and I discovered the benefit of good time management skill which is the ability to make better decisions, when you feel pressed for time and have to make a decision you are more likely to jump to conclusions without considering every option. It showed the importance of time management, as everything needs to be done in its scheduled time period to avoid errors, delays and wasting of resources in the organisation.

Attending the simulation has helped me deal with different people of different personality, attitudes and behaviour, and showed me that we as human beings have to adopt and learn to deal or work with different people not only the one we know or those one of the same tribe or culture as us rather everyone matters.

I have learned that team work increase success in problem solving as it is easier to arrive to solutions more efficiently and effectively compare to when working alone.

5.2 Simulation for WIL Preparation

Out of all the respondents, only 59 (47%) respondents have attended WIL preparation workshop. More than half of the respondents, 67 (53%) did not attend the workshops. Although these workshops are organized for all students who have to be placed in industry for WIL, they are not compulsory. As a result, very few students attend the pre-WIL readiness preparation course. However, with the implementation of simulation, the course could be made compulsory and assessed. This will contribute to students yearly credits and also increase students' attendance.

Although not all respondents attended the WIL preparation workshops, 116 (92%) of the respondents indicated that they will recommend the use of simulation for WIL preparation, as it gives students a hands-on-approach of the work environment and facilitates increased knowledge and understanding of the subject matter. The respondents also stated that, simulation will give students an opportunity to practice fundamental skills and apply theoretical knowledge into practice and develop career skills to obtain job placement and be ready for the market. They further suggested WIL workshop to add more practical aspects on how to apply different skills in the work place as this will acquaint students with the reality on the ground. This suggestion is in line with the work of Mickan (1995); Dwesini (2014) and Strachan (2016) who reported that preparation for WIL placement requires an incorporation of active learning activities and practical application of knowledge alongside skills to assist students in developing the required skill, knowledge and attitudes and be aware of their importance to work industry.

However, 6% of the participants did not recommend simulation for WIL preparation workshops. According to them, simulation does reflect the complexity of the real-life situation and that not all skills required in the industry can be prepared from simulation since different workplaces have different expectations from students. This might be because the simulation attended was tailored to instil entrepreneurial acumen and not for a specific programme of study. The above opinions collaborate with Strachan (2016) who stated that simulations cannot completely replicate the real-world business scenarios on a day to day basis. Therefore, for simulation to be implemented (integrated) into WIL preparedness programme; participants recommend on using

different simulations tailor made for different faculties as employability skills differs according to the area of study.

Further students' comments reflected the benefits of making simulation part of the WIL preparedness programme and are summarised as:

- Simulation will help students to see business as a total entity, not as a static stack of functional areas.
- It gives a technical-know-how of the roles played by all components of an organisation/business entity such as Administration, Marketing, HR, Finance and Operations.
- It builds an understanding of how to approach customers and work with people of different cultural backgrounds.
- It teaches the importance of professionalism and time management skills in the corporate world.
- It puts students in a realistic scenario that they will encounter in their working life and let them see the effect of their decision-making immediately.

5.3 Limitaions and Implications

While simulations offer different benefits to WIL placement preparedness, their limitations cannot be ignored. The simulation used for this research was not for WIL preparation programme but for a different course entirely hence it could not test its effectiveness and impacts on WIL preparedness. The instrument focused on perceived preparedness rather than actual performance. Further investigation regarding the influence of this simulated learning activity on actual student performance on WIL placement is required. Given that students who participated came from different faculties, their views might differ depending on their study discipline.

6. Conclusion

This article highlights students' perception on the use of simulation practice to prepare students for WIL and the world of work. It is clear from the findings that simulations have an undeniably important place in educational teaching practices and can certainly be extended to WIL preparation. The use of simulations as learning tool can

be used for the application of theoretical knowledge before WIL commencement and to create experiential learning opportunities to help students develop employability skills that can be transferred into a ‘real’ working environment. The proposed simulation framework can be used to create the alignment between learning phase and application phase as it aims to equip students with necessary competencies to demonstrate the desired performance and behaviour during WIL. The framework can also be applied to different simulation programmes depending on the students’ fields of study. Simulations for WIL can be designed with an employability focus that aims to develop career skills to obtain a job placement in industry and provide students with knowledge, skills and understanding that will enable them to adapt to the workplace, work effectively and learn from their WIL experience. The responsibility therefore lies with HEIs and educators to develop educational technology that drive knowledge and skills acquisition and create a learning environment that allows students to practice realistic scenarios related to students’ programmes of studies in a controlled environment.

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Implementing Quality, Compliant Work Integrated Learning (WIL) Strategies Within the Accredited the Accredited Learning Context

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Abstract: Offering Work Integrated Learning (WIL) in the accredited learning context happens in both the further education and training and higher education fields. There is a need for educational institutions to ensure quality assurance compliance in the implementation of WIL, to ensure that quality assurance audits, validation of assessment results, and awarding of credits are meaningful. Research on quality assurance and WIL is limited and this paper hopes to understand how quality assurance, WIL, and gainful employment are interlinked in compliance based accredited learning. WIL is considered tedious and challenging for national educational institutions to apply as they source various opportunities for learners to be placed. There are growing discrepancies between graduate attributes and the skills required within the workforce, where under-skilled graduates are not able to meet employer demands. WIL aims to address these concerns by incorporating theory and reality into education to produce work-ready graduates. Truman et al. (2017) offers insight and recommends that tertiary institutions should utilise a sound model when introducing WIL into the educational process. With this knowledge, by utilising the Model for Workplace Readiness, this paper focuses on the implementation of education strategies that are both of high quality and compliant within an environment that is accredited for the purposes of WIL. Challenges related to WIL have resulted in a smaller number of placements, however through meaningful engagement with all stakeholders, and ensuring a model which includes workplace-based coaching and learner support, the partnership between the educational institution, the workplace and the learner is created.

1. Introduction

Work Integrated Learning (WIL) has partnered with quality assurance in order to ensure efficacy of the programme, and compliance to national standards which ensure

the delivery of quality based learning. As le Grange notes, “Quality assurance is cyclical and allows or creates the opportunity for continuous review and can be a full 360-degree opportunity for all role players in the system” (2014a, pg.27).

Although WIL is a component of occupational learning, in South Africa providers linked to quality assurance bodies like Sector Education and Training Authorities have continued to fulfil this role. This is in spite of the fact that a new body, the Quality Council for Trades and Occupations, has had limited engagement with the workplace and not introduced roles like those of the workplace coaches (evidence collection facilitators), (le Grange, 2014b).

Investment in the workplace component of learning is required by all stakeholders and addressing the challenges in creating relationships and ensuring workplace based learner support and guidance are critical to ensure success. A success that can be further cemented through external quality assurance audits.

This paper hopes to document a process which includes a model of learner engagement, workplace engagement, and quality assurance engagement – the three key determinants of a successful quality assurance focused WIL implementation.

2. Literature Review

Work-integrated learning (WIL) has been identified as an integral component of learning that enables students to develop skills and competencies under supervision that will allow for them to be competitive within the workforce (Bosco & Ferns, 2014). This literature review aims to identify WIL theory, concept and framework; how WIL is implemented within the South African context; and the positive and negative impacts of WIL within education.

3. WIL Theory, Concept and Framework

Brink (2015, p. 2) explains that WIL is a process that implements engagement of the curriculum with industry, where the integration of knowledge is accomplished through interacting in authentic situations that are similar and reflective of those found in the workforce. Additionally, WIL focuses on including a host employer organisation and structured training into the academic realm in order to develop compe-

tence, skills, and knowledge through mentoring that is incorporated within curriculum (Brink, 2015; Smith, 2011). Thus, WIL is a partnership between three stakeholders, namely the student, the host employer, and the institution (Dwesini, 2017; Truman et al., 2017) where an individual learns through actively working (Sewell, 2015). WIL takes into account the needs of society, both present and future, engaging with the community in order to partner with industry and create employable graduates (Smith, 2011).

a. WIL in South Africa

Truman et al. (2017) states that there are policies in place within South Africa, such as the White Paper for Post School Education and Training, that encourages universities to build ties with industry in order to allow for opportunities for placement after graduation. Moreover, Truman et al. (2017) indicates that The National Development Plan guides tertiary institutions to develop student skills in line with what is expected within the workforce. However, in reality the organisations are unfunded in many regards, and as such the benefits of WIL affect only a small portion of students.

In South Africa WIL is seen in some curricula at university level. For example, Sewell (2015) explains that certain institutions allow student teachers to actively teach within their first year. However, there is a criticism that there is limited exposure due to the lack of engagement (Barends et al., 2017). Additionally, the students are not able to engage in a meaningful manner because there is no expectation for critical reflection, no evaluation that enables growth and learning, and students are not exposed to relevant situations (Sewell, 2015).

Dwesini (2017) reports on students from a South African University who completed a WIL programme in 2015. These students obtained feedback from criteria within the relevant responsibilities they had and reported frequently on self-confidence, communication skills, teamwork, professionalism, time management, organisational skills, and computer skills. However, there were some participants who felt that some skills were not developed because they were not exposed relevant situations. For example, students who were not exposed to teamwork within their placements were not

able to engage within a team environment because the placement did not focus on this specific skill-set (Dwesini, 2017).

b. Implementation of WIL

Implementing WIL needs to begin at the foundation of the degree. MacDonald et al. (2014) indicates that the professional degree should be designed to incorporate WIL into its programme. Forbes (2006) supports this statement and proposes that curricula need to be designed to incorporate components essential in WIL.

Additionally, Rook (2017) indicates that the implementation of WIL within education is taxing on resources. As such, to be able to identify and source the necessary requirements for WIL, implementation must be considered an essential part of the process. WIL extends past the university, and places an onus on government, industry, and other stakeholder. The commitment from these stakeholders is necessary for WIL to be successful and as such, implementation is dependent on the integration of theory and application (Freudenberg et al., 2011).

c. WIL and Positive and Negative Impact

The positive implications of WIL do not only benefit the student. Truman et al. (2017) indicates that when students are placed they bring with them new ideas and innovations. WIL allows for students to learn and develop within an environment which offers exposure to industry, and moves against learning within a vacuum using theory alone. A positive impact of this approach is that it enables students to link theoretical knowledge and practical application in a controlled environment, under supervision, where they are able to develop other abilities beyond the expectations of the university or organisation (MacDonald et al., 2014).

However, negative impacts include greater expectations being placed on external and internal persons, such as the university and company. Roles would need to be clearly defined, expectations would need to be realistic, and employers would need to understand that the student is within a learning environment, and are not there to per-

form to the company's standard (Truman et al., 2017). Additionally, Reddan et al. (2017) states that there is limited information on the effectiveness of WIL in practice and MacDonald et al. (2014) indicate that self-reporting from participants is not a valid or reliable indicator of WIL success. However, effective supervision and appropriate methods to gather valid and reliable data may be developed and implemented.

4. Research Methodology

The initial phase of the research included a literature survey to consider current practice used both nationally and internationally using work integrated learning models and examples of practice. Findings from this were then considered for selection of the most appropriate opportunity to evaluate a quality assurance focused workplace based learning model.

Following this, qualitative research was conducted using small focus groups (internal stakeholders and the project management team of a large national private educational institution), this qualitative research focuses on current, future and perceived settings; outlining an interest in meaning, perspective and understanding; focusing on process; and combining inductive analysis with grounded theory.

The standard methods of qualitative research were applied, Including: observation, interviews, sampling, written material, dealing with issues related to validity, ethics and assessment or evaluation which included industry experts where the project was initiated. Due to the nature of the research problem and key outcomes indicated, a limited range of expert participants were able to provide the bulk of relevant high level inputs.

A range of inputs was solicited from key experts as indicated above. All participants were voluntary, and were advised both in writing and verbally that their informed consent to participate would be required and that each participant was free to withdraw.

Confidentiality and anonymity have been offered to all participants and maintained through the use of a coded database. However, due to the nature and purpose of this research, as well as the methodology, most participants did not exercise this option.

The findings were then documented according to the model used by the organisation:

- learner engagement,
- workplace engagement, and
- quality assurance engagement

4.1 Case Study - Findings

The Retail Readiness Programme (RRP) developed for one of the largest retailers in South Africa, followed a methodology which linked facilitation with coaching and learner support in the workplace, to encourage the embedding of knowledge and evaluating it with practical outcomes as demonstrated by the learners.

The model which considers the change from ‘retail employment’, an act, to entrepreneurial retail readiness a provision of skills to note that the retail industry is entrepreneurial and skills and retail readiness provide opportunities for potential staff to understand the skill requirements of the retail sector. More importantly, it is to understand and explore opportunities of entrepreneurship in the retail sector beyond the entry level position offered. This directly shares the understanding of retail leadership, the values and requirements thereof, through to the completion of a skills programme on starting your own business, the role of what a business must meet in terms of success planning, and the key requirements needed to ensure sustainability of the business.

This 8-week learning programme, linked to learning outcomes, has resulted in learners having the opportunity to understand the requirements of the retail sector. The methodology of the programme was developed based on adult learning needs in the workplace and research (Kenner & Weinerman, 2011) has been done on the efficacy of it through ongoing evaluation of its effectiveness in a longevity study of the programme which is summarised here.

The model focuses on learner employability into the sector ensures the transition from large turnover of staff, which plagues the sector to one where there is retention of new employees, through data available which considers ‘how many days do they stay employed’ contrasting direct employment versus the retail readiness programme. Furthermore, as a result of movement in and towards the workplace, there is an economic benefit of the unemployed that then become potential new buyers through low income access. For those, that wish to start and create their own success, the retail

readiness of their own company is understood as a basis of working for others to ensure the stakeholder participation is the benchmark for succession planning.

This research considers both the data from stores linked to employability of learners and feedback provided from store managers about their feelings on hiring learners from the retail readiness programme.

4.2 Learner Engagement Model - WIL

In order to understand the model, it has been documented through a visual process (Moldenhauer, Londt & Fernandez, 2017):

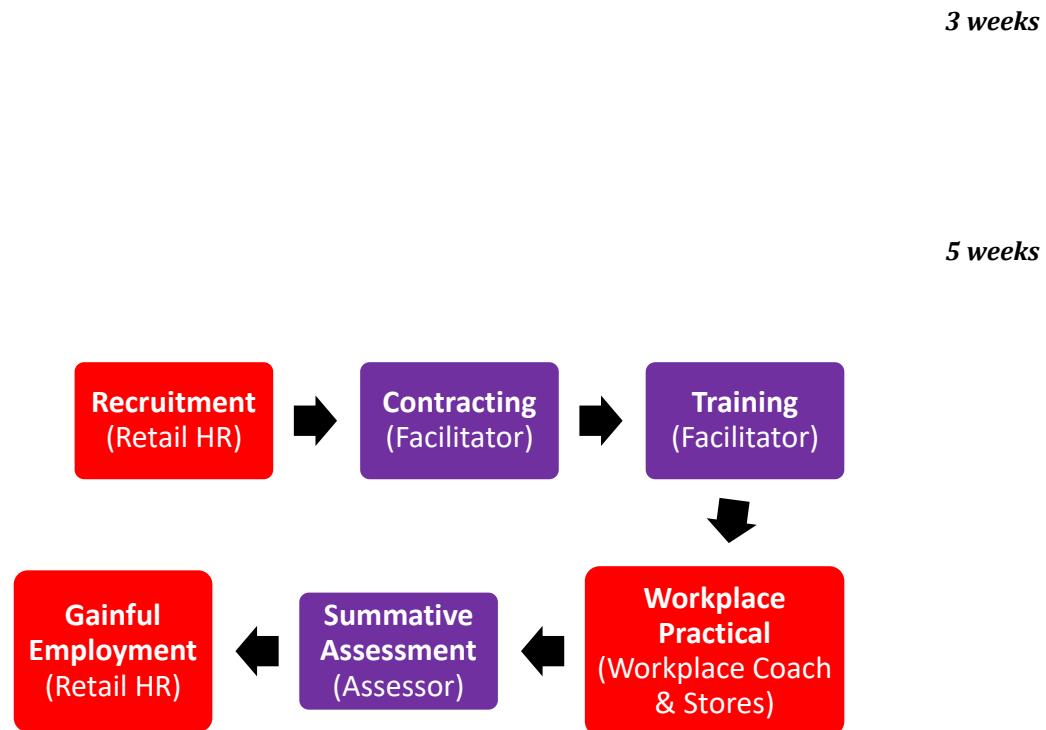


Figure 3: WIL Learner Engagement Model

Recruitment - A formal recruitment process is undertaken, where the retail human resources engage with potential staff members, explain the formal recruitment process, conduct the recruitment process and help to share an understanding of what the requirements are to be considered employable within the sector. It is important to note that recruitment is offered as part of the learning programme and is not a guaranteed thereafter, as part of the programme is what provides the formal offer of work, if the learner demonstrates readiness as well as desire to want to be employed.

Contracting – Learners undergo formal contracting of learning, this is a requirement for the formal awarding of credits to learners as per South Africa's records for the National Learners Records Database, as well as the explanation of the formal requirements that are followed in work integrated learning programmes. Learners exiting schools, or learners who have not been able to find gainful employment have not necessarily had the opportunity to understand what the legal requirements are, as well as the process that is followed on credit bearing learning.

Training – Learners undergo a formal training programme, which is specifically linked to two unit standards registered with the South African Qualifications Authority:

Registered Skills Programme: Operating a small business in a retail environment
Unit Standard 258155 Explain The Factors That Impact On The Bottom Line Of A Wholesale And Retail Unit (10 Credits = 100 notional Hours).

Unit Standard 243809 Run a smal small business (12 credits = 120 notional hours).

The training intervention takes place over a three-week period.

Practical - (experiential and work integrated learning) - Learners are placed in various sites across South Africa and into various departments over a five-week period. During this time, they are allocated a coach who helps them to focus and understand the workplace as well as complete evidence for their summative assessment which is due at the end the five weeks.

Summative – Learners are assessed through their submission of a portfolio of evidence, during which they have had to consider a business plan which is viable should they wish to pursue their own new venture.

Opportunity for gainful employment – the opportunity for gainful employment is applied for, should learners want to be considered, but they have also developed a business plan/case for consideration, if they would rather wish to pursue it. The gainful employment process is entrepreneurship which is two-fold - opportunity to start and understand their own business, and the opportunity to pursue gainful employment within the retail sector.

Three phases have been implemented, one which was a pilot phase, Phase 1, in which the organization was able to evaluate the efficacy thereof and have the opportunity to review the staff members that were offered gainful employment.

Phase 1 -

PHASE I – CONSOLIDATED UPDATE PER MILESTONE



Figure 4: Developing Gainful Employment Opportunity Phase I

Phase 1 included 5 initiations of the project. Recruitment based numbers reflect the ranking of the retail sector noting that candidates who went through the formal application, selection and confirmation of partaking in this opportunity for gainful employment were 7420 in total, but of which only 5817 arrived in the classroom on the first day. 1603 or 21,6% of recruited learners did not report on day 1 of training, and therefore other opportunities or choices were part of the decision process of learners. The numbers reflected in the timelines that learners were formally enrolled with the Sector Education Training Authority is smaller in percentage (determined based on

number of learners reporting for day 01) 464 learners or 0,06 %. The number of learners that successfully completed the learning programme was 72,43% enrolled with the Sector Education Training Authority. Finally, those that were gainfully employed were 66,3%.

Phase 2 has been ongoing work which has resulted in a drop-in employment based costs. Data showing gainful employment from Phase 1 helped to initiate it.

Phase 2 -

PHASE II – CONSOLIDATED UPDATE PER MILESTONE



Figure 5: Developing Gainful Employment Opportunity Phase II

Phase 2 included 6 initiations of the project. Recruitment based numbers still reflect the ranking of the retail sector noting that candidates who went through the formal application, selection and confirmation of partaking in this opportunity for gainful employment were 8605 in total, of which only 6734 arrived in the classroom on the first day. 246 or 21,74% (similar to Phase 1) of recruited learners did not report on day 1 of training, and therefore other opportunities or choices were part of the decision process of learners. The numbers reflected in the timelines that learners were formally enrolled with the Sector Education Training Authority is smaller in percentage (determined based on number of learners reporting for day 01) 246 or 0,02%.

This shows a significant decrease in numbers proportionally. The number of learners that successfully completed the learning programme were 96,64% enrolled with the Sector Education Training Authority, which also reflects an increase in number of learners 78,48% who successfully completed the programme. Finally, those that were gainfully employed were 73,13%. The success of gainful employment reflects the confidence in the learner exiting from the programme, and demonstrating successful retail readiness.

Client Engagement Model - WIL

In order to determine the efficacy of the Retail Readiness Programme from a store perspective, Retail Store Managers who participated in the research are noted as respondents. Managers from 39 stores linked to the RRP completed a survey on the efficacy of the Retail Readiness Programme from an evaluation of the learners' role as effective employees. 85% of respondents felt that the learners added value to their store, with 10% feeling that they provided basic services and only 5% that there was limited value. Respondents also had the opportunity to select that no value was provided to the store but none selected this option.

Linking the learning programme which trains retail readiness from a responsibility and customer service engagement perspective, 97% of respondents felt that the RRP was in line with store requirements in dealing with customers and staff and only 3% felt that it wasn't. This notes that learners complete in-store training through the coaching programme which helps to evaluate the effectiveness of retail readiness over the 5 weeks of the in-store phase of the learning programme.

In addition to this, the level of commitment to dealing with store goals was evaluated and 72% of respondents noted that the learners from the RRP committed to make a difference, 21% of respondents felt there was a basic commitment to their store, 8% noted a limited commitment to the store and although there was an option for no commitment, no respondents selected this. This reflects the learning programme coaching which evaluates commitment to a project (in this case a store) and the efficacy thereof.

In findings about the impact of an RRP learner to a store in terms of attitude, specifically a positive one and meaningful difference to the store 100% (all respondents) agreed that the behaviour of learners matched this. This reflects that in addition to efficacy of store based processes, attitudes are noted as part of the programme and positive ones at that. This is also reflected in the employability of RRP learners. 97% of respondents would use RRP learners to fulfil vacancies, only 3% said they would not. This indicates that the efficacy of the programme, its values, its delivery of understanding store based systems, best practice, and standard operating procedures are in line with the actual stores and that the learning programme meets requirements.

Quality Assurance Model - WIL

South Africa is fortunate to have a regulatory framework in place to appraise occupational learning against 8 core criteria. All educational institutions are accredited against these criteria and all learner achievements evaluated against the performance thereof. This is due to the skills development platform in South Africa that is linked to monies collected from business in the form of a Skills Development Levy.

The South African Qualifications Authority's (SAQA) 8 core-criteria remain the core of quality assurance practice in the regulated Education Training Quality Assurance (ETQA), scope of work. Included in this process is the three phases in programme approval and implementation for an educational institution (SAQA, 2001a):

Learning Programme Approval

Monitoring

External Moderation

Part of the success of work integrated learning is the process by which the three components of quality assurance move from the design of the learning programme (programme approval), to the implementation of the project (monitoring) to the final upload and evaluation of the internal assessment and moderation process (external moderation) (SAQA, 2001b).

Although WIL is not specifically named as such in the documents produced by SAQA, there is reference to assessment of learners which includes practical and workplace based criteria. Therefore, the following is part of the process that was fol-

lowed by the educational institution as part of its three WIL criteria for successful implementation.

a. Learning Programme Approval

In order to be able to run the Retail Readiness Programme learning material, which included content, formative and summative assessments, assessment guides, facilitator guides and alignment matrices were submitted to the relevant Sector Education Training Authority (SETA) for evaluation. This included an approval of the learning programme which met the 8 core criteria which included, approval of the learning programme and the associated and skilled facilitators, assessors and moderators. This process of ensuring quality by an independent body helps to ensure the quality of learning is evaluated and documented accordingly. A learning programme approval document was generated after the approval was granted.

b. Monitoring

Monitoring is noted as a process of the ETQA, which form part of the SETA's (SAQA, 2001b). Included in the monitoring process, is the evaluation of the implementation of learning of an educational provider against the 8-core criteria. Due to funding challenges, this is not always possible by an ETQA, but the educational institution evaluated requested monitoring to ensure compliance and for purpose of ensuring that the 8-core criteria were met. Visits from ETQA's took place where applicable to ensure compliance and this process was educational institution implemented and not required by the ETQA. Monitoring activity was documented in a report and compliance to implementation of learning noted, including the appropriate WIL model and focus on learner support and guidance.

c. External Moderation

External Moderation was conducted by the ETQA on Blocks 1 and 2 of the programme and assessment results and practice were upheld and the upload of learners' assessment records onto the National Learners Record Database was endorsed.

d. Other

In addition to the various components of quality assurance, focus on the data and the recording of data is critical in the quality assurance process. Challenges of data were noted by the educational institution and audits of data were conducted at various parts of the projects to ensure that any discrepancies noted were managed accordingly and

corrected. In order to do this a third-party data source was used to capture and manage the learner management system. Records were produced and manually audited to ensure efficacy.

5. Recommendations

The evaluation of process which includes the success of the programme based on learner achievements is not sufficient as it does not consider the model used, nor does it focus on the engagement between the various roleplayers that partake in the process.

The following recommendations form the basis of the evaluation of the educational provider's model and implementation:

Ensure quality assurance considers both the theoretical and practical component of learning, specifically the work integrated learning component.

Provide all roleplayers with the model to be used in learning to ensure sufficient understanding of the engagement on the project, as well as the requirements and roles and responsibilities of roleplayers.

Ensure that the work integrated learning component has sufficient learner support and guidance, that it is documented and forms part of the assessment process.

Provide quality assurance practices into work integrated learning implementation, which should include monitoring (internal and external) and ongoing evaluation of assessment practice through internal moderation.

Ensure engagement with all quality assurance stakeholders at the various ETQA's and organisations to ensure that quality assurance practice is correctly implemented, documented and evaluated accordingly.

6. Conclusion

From this research, the programme produces data that reflects the impact that workplace-based learning offers. One that takes learning theory and provides an application based programme between the workplace learning sector and the learner. This results in higher employment and encourages the learners to get the effective coaching and learner support in the workplace which does not have the time to pro-

vide on its own. This is encouraging as it supports the business and the employability of the learner at the end of the learning programme.

The programme is accredited and therefore encourages learners to participate, gain credits which are then uploaded onto the National Learners Records Database. This confirms that they understand business processes and needs and ensures opportunities but also encourages entrepreneurship, even if students are not starting their own business.

These findings have been shared academically in two conferences to date, in which the methodology has been published as best practice models for workplace readiness programmes (2017). This is supported by ongoing research of Phase 3 of the project which is ongoing and helps to continuously evaluate the efficacy of the programme.

Quality assurance and work integrated learning are interconnected. Without the delivery of quality learning, support and guidance and assessment, the overall programme is not successful. In addition to this, the relationships with the workplace and partners needs to be in place, and the various levels of quality shared through information sessions to ensure that the learners experience is authentic for the workplace, but also meets the quality criteria of the quality assurance bodies. Successful implementation of workplace-based learning ensures that all stakeholders see the value of the process and that the learners who exit are compliant with the needs of the workplace and the quality criteria of the quality assurance body.

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Dual System Apprenticeship for South Africa

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1. Introduction

Securing a first job can present real challenges for young people. Employers are reluctant to hire young people who have no work experience and whose ‘work-readiness’ is unknown. Employers ask whether these young people will fit into the work culture of the company, whether they are mature enough to take the job seriously, and whether they have the right technical and soft skills to do the job properly. It is difficult for employers to make these judgments in a short interview. Employers in South Africa have often indicated that the individuals have the trade specific skills but lack the soft skills.

The dual system of training is known for its efficiency when it comes to developing a highly competent workforce and considered a key factor in the typical strength of economies like Germany, Switzerland and others whose high tech industries and advanced infrastructure rely on comprehensively educated professionals. A dual edu-

cation system combines apprenticeships in a company and vocational education at a vocational school in one course.

The main characteristic of the dual system is cooperation between mainly small and medium sized companies, on the one hand, and publicly funded vocational schools, on the other. This cooperation is regulated by law. Trainees in the dual system typically spend part of each week at a vocational school and the other part at a company, or they may spend longer periods at each place before alternating. Dual system of training, enable employers to run an extended recruitment process, whilst training young people to carry out the specific activities that the enterprise needs. The 97th Session of the International Labour Conference, 2008, acknowledged the importance of apprenticeships as an ‘effective means of bridging school and the world of work for young people by making it possible for them to acquire work experience along with technical and professional training. This helps overcome their lack of work experience when trying to get a first job’.

At the same time, apprentices have an opportunity to make well-informed choices about their training and career options – and to show what they can do and what productivity potential they can offer.

The shared responsibility between government, employers and trade unions also helps in responding to emerging new challenges such as digital innovations like the Internet of Things which will have an increasing impact on manufacturing and the way work is organized

South Africa has set a target of qualifying 24 000 new artisans by 2020 (DHEC 2015). Technical Vocational Education and Training (TVET) colleges are viewed as key vehicles through which large numbers of artisans can be trained. However, employers do not have trust in the quality and capacity of public TVET colleges and have taken responsibility for training artisans through their own in-house training facilities and private training providers. The result is that TVET colleges have been side-lined in the supply chain for artisan development.

2. Dual System Pilot Project (DSPP) in South Africa

It is against this background, that the Department of Higher Education and Training (DHET), is currently implementing the DSPP project,in four public TVET colleges, in the country, namely Ekurhuleni East, Ekurhuleni West, Port Elizabeth and East Cape Midlands. The project is based on the newly registered QCTO occupational qualifications for electricians, which have not yet been piloted. It will thus provide not only company/sector-specific training, but qualify participating apprentices into fully-fledged, competent and confident artisans across sectors and based on the latest industry skills sets required. Translated from the QCTO qualification, the training is based on a newly designed syllabus (i.e. the National Occupational Curriculum Content for Artisan of the 21st century, in short NOCC-A21), developed together with industry, which defines practice-orientated learning/professional areas and learning/professional projects/situations. These are directly linked to real-life work tasks in the respective occupations.

Apprentices recruited went through a special pre-selection process and the pre-screened pool of candidates were then presented to host employers, who chose their candidates. Learning at TVET colleges combines practical training in workshops and laboratories with the underpinning theoretical knowledge of the trade, whereby there is greater emphasis on practical work assignments as opposed to frontloading of theoretical concepts. Apprentices will continuously rotate between public TVET colleges and companies throughout the training period of 3 years to ensure close links between TVET College and workplace-based learning.

Company mentors and TVET college lecturers will communicate regularly and continuously to ensure the smooth implementation of the pilot project and continuous adaptation of the programme as per the needs of the trial

2.1 Centres of Specialisation (CoS)

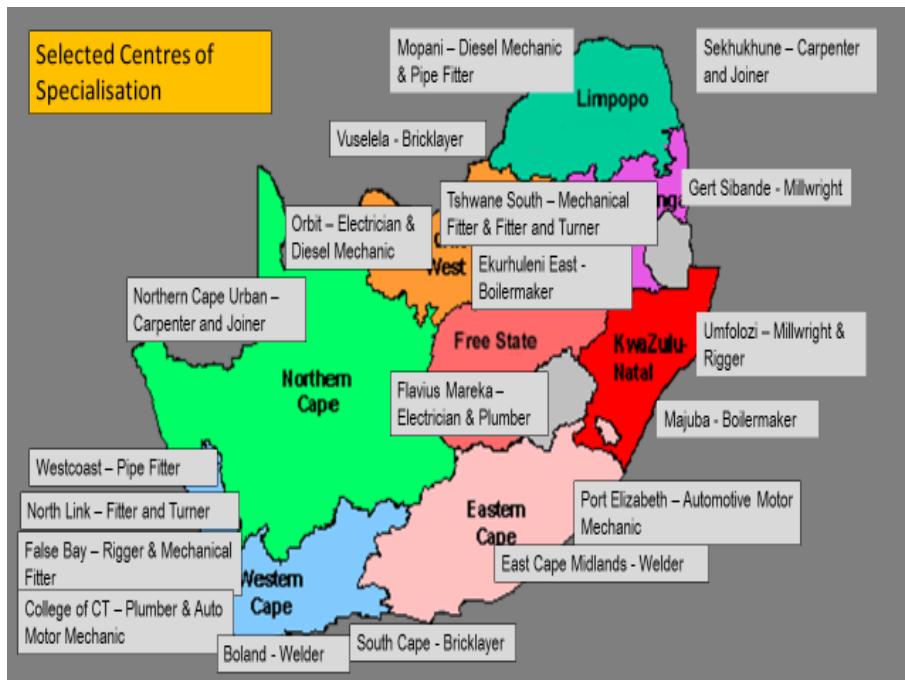
The Centres of Specialisation Programme is a Department of Higher Education and Training (DHET) initiative designed to meet two objectives simultaneously: firstly to address the demand for priority trades needed for the implementation of government's National Development Plan in general and its National Infrastructure Plan more particularly; and secondly to contribute towards the building of the capacity of its public

Technical and Vocational Education and Training (TVET) College system to deliver trade qualifications with employer partners.

The Programme aims to do this by focusing on the development of thirteen priority trades that have been identified as being in strong demand for the infrastructure programmes as well as for other strategic programmes such as the War on Leaks and the new ocean economy programme, Phakisa.

As for the DSPP, the development of the thirteen priority trades will be through the implementation of the new Quality Council for Trades and Occupation's (QCTO) trade qualifications. It is envisaged that this will be a quantum step up from the past in so far as they are national qualifications – no longer sector-specific as in the past – and will be delivered using the dual system approach using NOCC –A21 syllabus for each trade, whereby learners will move between a college and a workplace over the duration of their period of study and prior to taking their trade test. The learnings of the DSPP will feed into the CoS programme. Early research on the DSPP indicate that apprentices have both positive and negative experiences at their host employers. Positive experiences at the host employers were reported where apprentices were provided with relevant work experience, where they felt supported by their employers, and where they have good relationships with their artisans. Good relationships with artisans stemmed from feeling trusted, given authority to get on with their work and a patient artisan. Negative experience encountered by the apprentices include lack of feedback, not being provided with relevant on-the-job experience, discrimination, issues relating to safety, lack of employer support and conflict in the workplace

DHET asked the public TVET colleges to apply for becoming a CoS in a particular trade. This was followed by site visits to conduct a situational analysis of the colleges and a final shortlist of CoS were identified:



The NOCC –A21 syllabus for each trade is currently being developed (to be completed in June 2018) which will inform the learning material development and facilitator development process. Each campus will recruit 30 individuals (30 x 26 campuses – 780) in January 2019, to be trained in this programme, with funding provided by SETAs. A roadshow was conducted in March-April 2018 at each campus to sensitise the various stakeholders to the programme and also gauge the commitment of employers to the programme.

The success of the programme will depend on:

Strong links and participation between all parties involved, namely the college, the workplace, the artisan learner mentor and the funder. This may also include links to practical training centres for the learner's practical training component, where applicable.

Links to the workplace specifically in the implementation of the A21 value chain and dedicated attention by the artisan learner mentor in close collaboration with the artisan workplace mentors.

Active mentorship from artisan learner mentors throughout all phases

Efficient and effective management at a Centre of Specialisation level (TVET college campus level)

The learner will undergo **trade testing** at an accredited trade test centre after completion of required theory, practical and workplace training requirements as per requirements of the national Trade Regulations. The Centres of Specialisation may also be accredited trade test centres.

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The impact of the Work Integrated Learning Program on Student Learning: Case of a University of Technology in KwaZulu Natal

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Abstract: This paper investigates the impact of work integrated learning (WIL) on student learning amongst students studying at a University of Technology in KwaZulu Natal. Work-integrated learning is a methodology of curriculum design that integrates academic learning with industry-based experiential learning

that is structured, monitored and assessed to meet the outcomes of a learning programme. Depending on the academic requirements of their qualification, students spend six to twelve months in the workplace under the mentorship of a workplace supervisor. Of paramount importance in the investigation was the impact of WIL on student learning. In carrying out this investigation, we made use of the theory of learning framework proposed by Kolb (2013). Kolb's theory of learning states that learning is the process whereby knowledge is created through the transformation of experience and knowledge results from the combination of grasping experience and transforming it. This research study adopted a quantitative research approach. Questions were formulated from each of the four constructs, namely, Concrete Experience, Reflective Observation, Abstract: Conceptualisation and Active Experimentation in Kolb's theoretical framework. Data were analysed in statistical package for the social science (SPSS package). From the findings, it can be concluded that the students were exposed to all four constructs and they managed to get enough on the job experience. Furthermore, the students managed to see the direct link between classwork and their work experience. However, a significant percentage of the students expressed less confidence on tasks where they must work independently. These findings are of vital importance in the re-design of the curriculum and lecture delivery.

Keywords

1. Introduction and Brief Literature Review

The concept of work integrated learning (WIL) is gaining popularity amongst Universities of Technology (UoTs) in South Africa due to its numerous benefits to UoTs' stakeholders. The Council of Higher Education (2011, p4) defines work integrated learning (WIL) as "an umbrella term to describe curricular, pedagogic and assessment practices, across a range of academic disciplines that integrated formal learning and workplace concerns". In 2004 the phrase, work integrated learning started being used to replace terms such as action learning, apprenticeships, experiential learning, in-service training, vacation work and problem based learning (Govender and Taylor, 2013). WIL aligns academic programs offered in Universities of Technology and workplace practices for the mutual benefit of students and employers. Furthermore, work integrated learning is seen as means to develop the graduate expertise, knowledge and qualities that Universities of Technology want its graduates to possess after successfully completing their qualifications (Leong ,2013).

Work integrated learning was introduced as a way of improving the student's ability to apply knowledge and skills acquired in the classroom, thus, it provides students with the opportunity to learn by doing, understand their role in the workplace and apply their skills and knowledge as well as handle work responsibilities. Some of the direct outcomes of work integrated learning are discussed below and this is done in the context of Kolb's Learning cycle which purports that learning during experiential learning is separated into four stages, namely: concrete experience, reflective observation, Abstract: conceptualization and active experimentation.

Various works by different authors refer to a number of skills and attributes that employers require from new graduates. A survey of these different works show a common thread in so far as what employers require. An annual survey that is conducted by a co-operative education directorate at a UoT in KZN shows that employers require WIL students and graduates to have problem solving skills, ability to work in teams, ability to collaborate with others and willingness to learn. Likewise, although studies conducted by Cilliers (2000) as well as by De Lange (1998), cluster the skills, they show that employers are looking for skills that will enable students and new graduates to work with others, manage themselves, has a work-related disposition and attitude as well solve problems.

These are some of the skills that are expected to be derived from what Kolb terms concrete experience during work integrated learning. This is experience that is characterised through learning by doing or by practical experience. It requires a person to be involved in a new experience (Kolb, 2007). Kolb further suggests that for an experience to be concrete enough to be qualified for consideration, it has to involve both organisation and participation of a new experience.

Another consideration is given to areas like report writing as well as mentor availability and support. Most employers require students to have writing, reading and listening skills (CTP & SASCE, 2000). This is confirmed by the annual employer surveys of 2014 and 2015 at a university of technology in KZN. Both these annual surveys indicate that the employers value writing skills. Given that the employers value this skill, it is a requirement for students to submit a written report at the end of each placement. This is to ensure that the student develops and practice the writing skills (CTP & SASCE, 2000).

Also, CTP & SASCE (2000) highlights the value of a mentor in the experiential learning, listing the responsibilities of the mentor as orientation, guidance, and follow-up training and continuous development. These, when looked at in the context of Kolb's cycle, fall within the reflective observation. Reflective observation is reviewing the experience achieved by "watching others, developing observations about one's own experience and giving feedback to other participants" (Kolb, 2007:8). Ryan and Ryan (2013) acknowledge that reflection is complex, takes time to do well and is difficult to teach but these authors also concede that it also promotes lifelong learning and professional practice in higher education.

Ambrose *et al*: (2010) further suggest that Abstract: conceptualisation is the process of gaining knowledge which depends on one's experience in gaining that knowledge.

In addition Elijido-Ten (2014, p.216) states that "Work integrated learning programs enable a holistic adaptive learning to transpire by providing students the opportunity to go through the entire learning cycle of experiencing, that is, learning, thinking and acting".

Skills acquired during WIL will enhance active participation of students in tasks that may be assigned to them. Moreover, students participating in WIL are not only required to acquire knowledge, but they are expected to demonstrate an understanding and application of that knowledge. Knowledge transfer is more effective when it involves practical experience. In essence, practical experience gives students confidence hence aims at developing a competent graduate Queensland University of Technology (2011).

Learning experiences need to be integrated knowledge with the previous experience of the students through various teachings and practical experience encountered in the workplace settings (Yorke, 2011). Integration of knowledge with previous experience fall under the Abstract: conceptualization stage of learning: Abstract: conceptualization is about explaining what has been observed, presenting models, creating theories as well as giving facts (Kolb, 2007). Ambrose *et al*: (2010) further suggest that Abstract: conceptualisation is the process of gaining knowledge which depends on one's experience in gaining that knowledge. Presenting models, giving theories and facts are some of the activities that support Abstract: conceptualisation.

Thinking and understanding the meaning of experience also form part of Abstract: conceptualisation. Also stated by Moletsane and Moloi (2015) a reflective teaching and learning process improves learning outcomes and enhances student experience. Assessment by the supervisor, mentor and work integrated learning co-ordinators encourages students to appraise their work and articulate learning outcomes (Henderson and Trede, 2017). Furthermore learning experiences need to be integrated knowledge with the previous experience of the students through various teachings and practical experience encountered in the workplace settings (Yorke, 2011).

In order for learning to take place one needs to see how learning is useful to one's life (Kolb, 2007). As part of active experimentation students are required to try out what has been learned, as well as using theories to solve problems or make decisions (McLeod, 2010). Work integrated learning students relate to active experimentation by applying their experience on their daily life in order to see the results as well as use assumption for the future situations. There are a number of teaching activities that support active experimentation amongst those activities, learners consider how they are going to put what they have learnt into practice, taking what they have learnt and predict what will happen next or what actions should be taken, as well as placing into context the relevance of what they have learnt and its usefulness to their lives. There is evidence in literature that all the four stages of Kolb's theory of learning are vital in the learning process of students during their time in industry.

Employers have expectations of highly skilled graduates and have partnered with Universities of Technology in order to develop a competent workforce. On the other hand, Universities of Technology in South Africa are faced with the challenges of placement of students for work integrated learning and producing graduates who are ready for the world of work. According to the Council for Higher Education (2011) universities are in the business of offering education skills and knowledge that will enable students to engage meaningfully with the world of work.

Furthermore Universities of Technology have a duty to strengthen partnerships with companies in order to increase the workplace training opportunities. The White Paper (DHET, 2013) states that universities require close collaboration with companies and training providers in order to encourage growth in terms of workplace training. Universities of Technology seek to ensure the smooth running of work integrated

learning, in order to ensure that. It is this expectation that makes it important to conduct this study in order to ascertain the influence of work integrated learning on student learning.

2. Methodology

21. Population and Sample

The target population of this research encompasses students enrolled at a University of Technology in KwaZulu-Natal. Specifically those students registered for work integrated learning. About 1800 students annually register for work integrated learning. The period of work integrated learning can be a minimum of six months and maximum of maximum of twelve months. Some students are legible for work integrated learning in their second year of study whilst others are only legible for WIL in the third and final year of study. From this population, a total of 205 students from 5 departments responded.

Research design and theoretical framework

In this study, Kolb's theory on learning was used to determine the effectiveness of the WIL program in transferring skills to the students. The model states that learning is the process whereby knowledge is created through the transformation of experience. Kolb's learning theory also suggests that people do not necessarily learn from experience, or reflection, if they do not think critically about the experience as well as taking responsibility for their learning. The theory further states that knowledge results from the combination of grasping experience and transforming it (McLeod, 2010).

Kolb's theory on experiential learning (Figure1) therefore separates the process of learning during experiential learning into four stages, namely: concrete experience, reflective observation, Abstract: conceptualization and active experimentation. According to this model, for learning to take place during work integrated learning, students should be exposed to all four aspects of the learning cycle (Kolb, 2007:8).

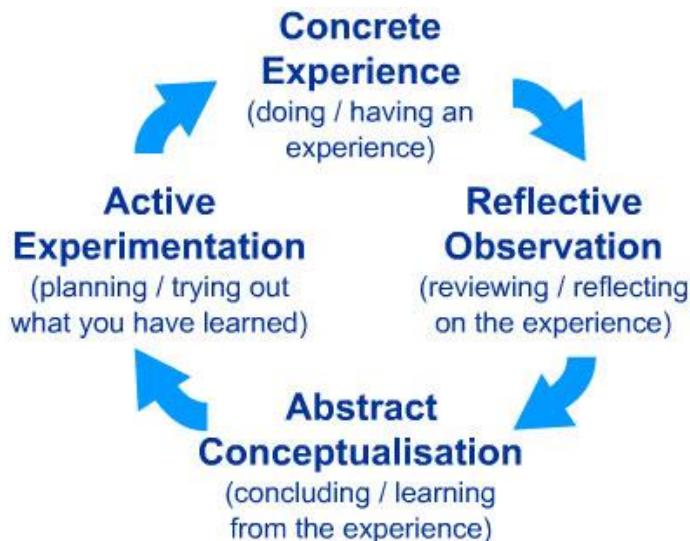


Figure 1: Kolb's Mode on experiential learning

A Quantitative research approach was used in the study. A questionnaire based on Kolb's theory on experiential learning was used to collect data and an analysis was done using SPSS package. The questions were grouped according to the theoretical framework adopted in this work,

3. Findings and Discussion

3.1 Demographic Information

A. Gender

A total of 62% of the responded were male students and 38% were female students. The population of MUT has more male students studying technical skills than female students. In addition, studies that shows there is a perception that male students prefer technical subjects than females (Wang et al: 2013). In a study by Hunt (2016), it was reported that female students do not prefer engineering related work because of the limited promotion opportunities. The total number of Information Technology students participated on this research was 76 with 51 those being male and only 25 being female.

B. Area of Specialization

Students were given an equal opportunity to participate in this research study, and of the total number of students who responded; 7% were studying towards Chemical

Engineering, 18% were studying towards Electrical Engineering, 18% were studying towards Mechanical Engineering, 54% were studying towards Information Technology and 3 % were studying towards Analytical Chemistry.

C. Level of Study

A total of 71.1% students partook in six months of work integrated learning, 24.6% have completed their first 6 months (practical 1) of a total of 12 months of WIL, 1.4 % completed their second 6 months (practical 2) and 2.8 % have completed their 6 months' of work integrated learning.

D. Media Preference

It is evident that the most effective media is the use of the Co-operative Education Office. This is supported by the results which show a mean of 4.15, standard deviation of .993. These results are due to the fact that, the main function for the Co-operative Education office is to source placement for WIL students. The use of the internet was the second most used media and the results were a mean of 3.89, standard deviation of 1.238 followed by WIL placement through lecturers with a mean of 3.79, standard deviation of 1.396 and lastly word of mouth, the results were a mean of 3.30, standard deviation of 1.238. Local newspaper, face book and employment agency were the least effective media preferred and used. Local newspaper results show a mean of 2.17, standard deviation of 1.086, Facebook, a mean of 2.70, standard deviation of 1.361 and employment agency a mean of 2.63, standard deviation of 1.124.

3.1 Concrete Experience

Students had a significant high participation in all concrete experience activities, except for interaction with clients. Figure 2 illustrates the students' various experience and exposure during the work integrated learning. The following subsections present results of the concrete experience activities that were investigated.

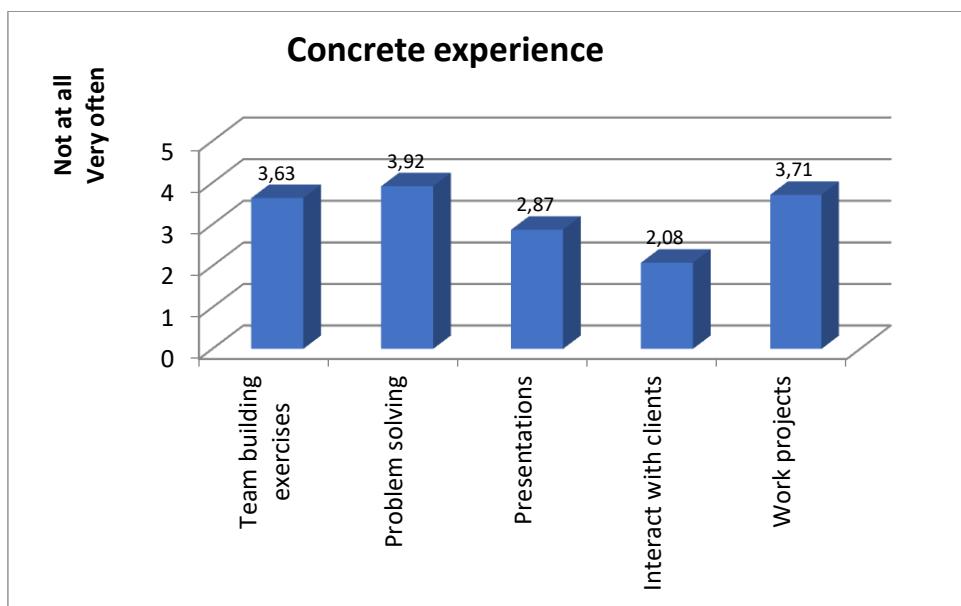


Figure 2: Results on concrete experience

a) Team Building Exercises

There was significant participation of the students in team building exercises amongst all the students. The results show a mean of 3.63, standard deviation of 1.350. This may be attributed to the fact that all the students interviewed do practical subjects hence they are bound to work as a team. This can further be supported by a high score of 3.71 on the students' involvement in work projects. Team work is vital in knowledge transfer and is it one of the skill required by students entering the workplace (Govender and Taylor, 2013).

b) Problem Solving Activities

Most students also reported being involved in problem solving activities. Problem solving recorded a mean value of 2.97. Again this may be attributed to the fact that all the respondents were studying towards diplomas that are technical. The same may not be the case if one considers arts or commercial students. In a case study conducted by Nofemela (2015) which included Analytical Chemistry and Chemical Engineer-

ing students, problem solving skills was listed as a critical skill hence it is important for graduates to have this skill.

Taking part in presentations

Students also reported being involved in presentations in their respective companies. A mean value of 2.87 was recorded. Making presentations enhances understanding of the concepts learnt in class or during practical experience. When comparing students from different programmes, there is a significant difference in participation across courses. Specifically, students studying electrical engineering (Mean of 3.76) do presentations significantly more often than students studying IT (Mean of 2.71) and Analytical chemistry (Mean of 1.60).

c) Interaction with clients

Most of the WIL students who participated in this study did not interact with clients regularly. A mean value of 2.08 shows a significant low participation. This may be attributed partly to the fact that most of the students studies technical subjects, they interact with machines and computer systems more than people. As a result, they only got exposure in technical aspects of their profession. This can be confirmed by a high mean score of 3.7 recorded for student involvement work projects.

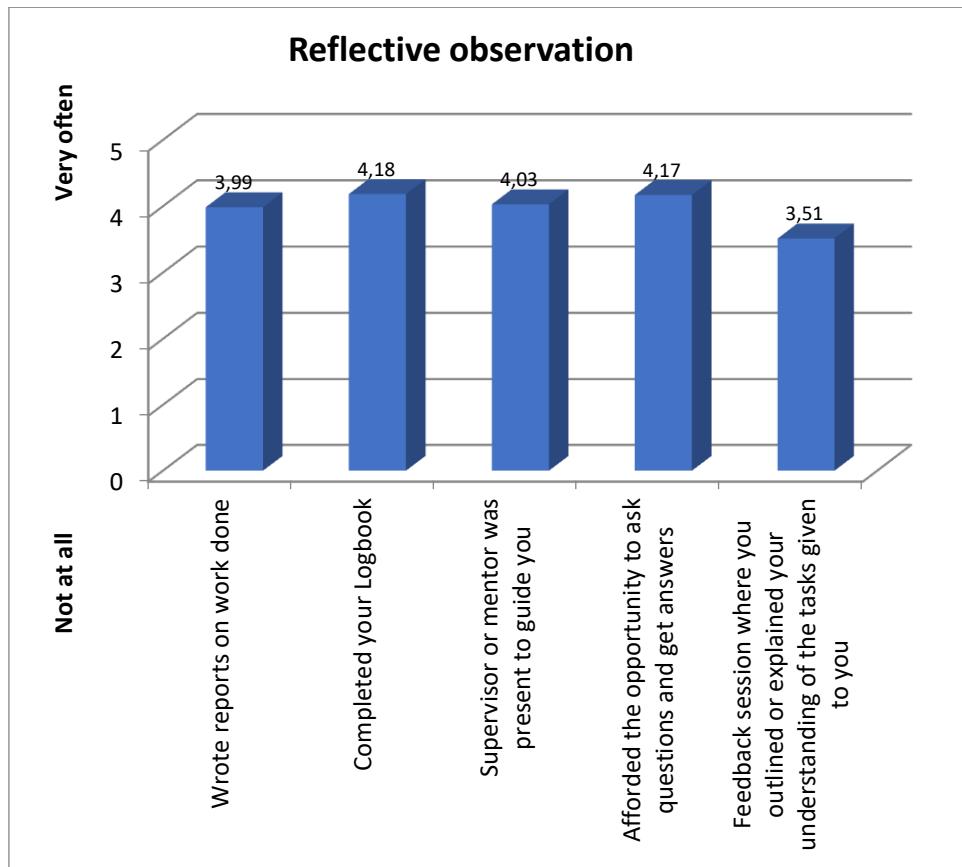
d) Involvement in work projects

Due to the practical nature of the study programs for students participated in this study, most students who underwent WIL reported that they were involved in real life projects. For instance Information Technology students were expected to attend to real life technical problems such as disruption in internet connection etc. This is confirmed by mean value of 3.92 which is significantly high work projects involvement.

3.2 Reflective Observation

Figure 3 indicates students' significant high involvement on all reflective observation activities. If mean is >2.5 there is a significant higher participation while a mean of <2.5 indicates low participation.

Figure 3: Results on reflective observation



b. Report Writing

Student involvement in report writing was significantly above the average of 2.5. The results show a mean of 3.99, standard deviation of 1.238 and t-test of 142 which equals to 14.307. This may be because of university requirement that all students on work integrated learning should submit reports.

c. Availability of Mentor

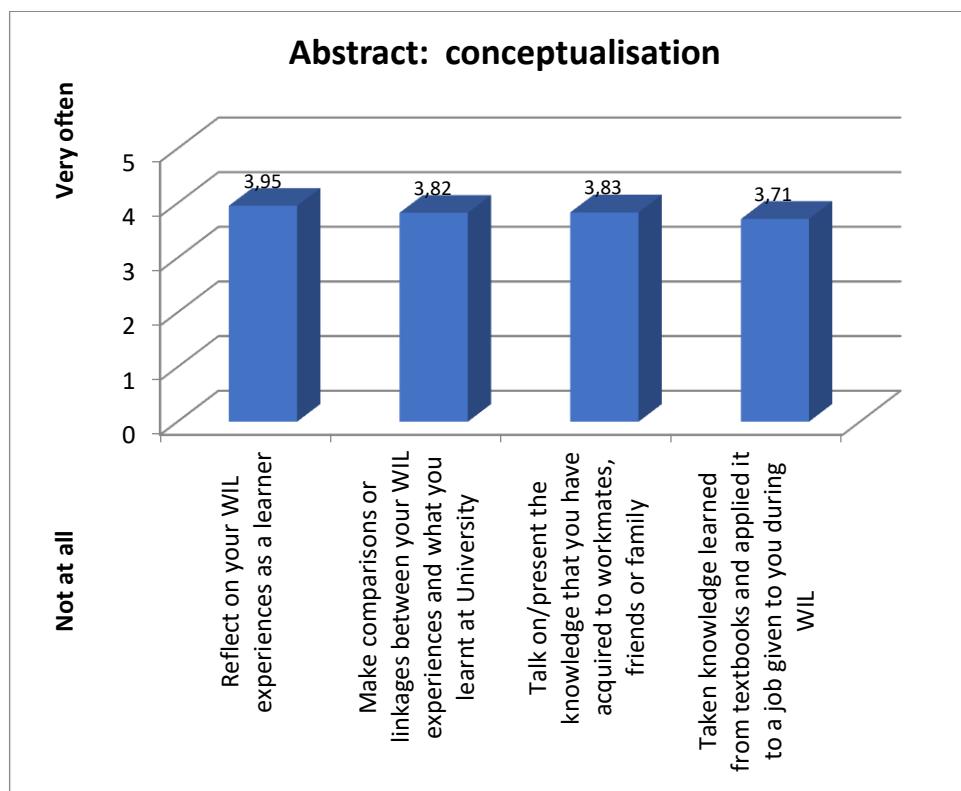
Availability of mentor or supervisor to students is very important throughout the work integrated learning training. The outcome of mentor or supervisor availability had a mean of 4.03 which is very high, standard deviation of 1.148. Ideally, this

score should be higher than the reported figures because prior to student placement, mentors must commit that they will always be available to assist students.

3.3 Abstract: Conceptualisation

The results of Abstract: conceptualisation on Figure 4 indicate students' significantly high participation in all activities. If the mean is >2.5 , it means that there is significantly higher participation, while a mean of <2.5 indicates low participation.

Figure 4: Results on Abstract: conceptualisation



d. Reflect on WIL experiences as a learner

Students reported to often reflect on their WIL experiences. Statistical results show a mean of 3.95, a standard deviation of 1.027. The high level of student' reflection on the WIL experience may be as results of students need to understand their training and acquiring skills to increase their chance of being employable in the future. Furthermore, students need to constantly assess their learning experience. Ja-

cobs (2015) suggests assessment as an important tool to encourage student reflection on experiences and knowledge gained at the workplace

e. Make Comparisons with Knowledge Gained in the University

There is evidence that students often make linkage between WIL experiences and what they have learnt at the University. The results indicate mean of 3.82, standard deviation of 1.054. Work integrated learning allows students the opportunity to test their theoretical knowledge taught in the classroom on real life work situations. For student to be able to successfully complete and pass their WIL training they need to learn new skills and acquire knowledge offered by the hosting companies or organisations. All Diploma programs periodically assess the relevancy of the curriculum in relation to industry expectations. This exercise result in the curriculum being aligned to industry hence students were able to make comparisons between their experiences and knowledge gained at the University.

f. Share Knowledge Acquired

The results show mean of 3.83, standard deviation of 1.017 indicate the high level of participation in knowledge sharing. Students often share their acquired knowledge with classmates, workmates, friends and family. Theoretical knowledge acquired during classroom lessons plus WIL experience often becomes knowledge that one use on daily basis whether it is at work or at home.

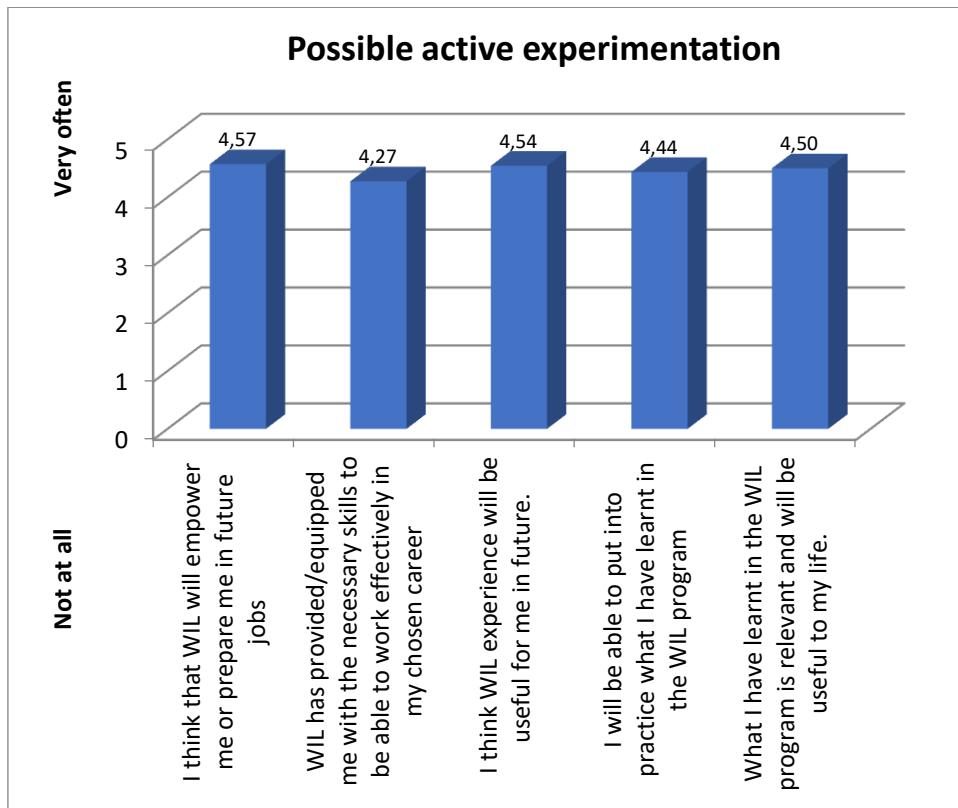
g. Use Textbook Knowledge in Tasks During WIL

The level of high participation is further evidence by the results which indicate mean of 3.71, standard deviation of 1.235 and t-test of 141 which equals to 11.685. All students participated in the research study are required to have hands on experience of the knowledge they acquired during their studies. An example of Electrical Engineering students may learn about wiring from their textbook and they are then required to do a project that involve wiring which allows them to transfer their knowledge in order to gain new skill of wiring.

3.4 Active Experimentation

The results of active experimentation in Figure 5 indicate that students perceive WIL as useful; hence they envisage themselves applying the knowledge acquired during WIL. All activities shows a mean which is greater than 2.5 therefore there is a high involvement on active experimentation. Questions on active experimentation were on the perceptions of students, on what will happen in the future.

Figure 5: Results on active experimentation



a. WIL Empowers for Future Jobs

The results indicate that students believe WIL training will prepare them for the future. This is supported by the mean score of 4.57, standard deviation of .794 and t-test of 141 which equals to 31.090. In most cases companies who train students for their WIL period will offer students employment after they have completed their studying. Hence the response of the students participated in this research study. This

is further stated by Brydson (2013) that due to WIL in Jamaica, the University of Technology students are the most preferred candidates for employment. This view is also supported by Bates and Bates (2013) who stated that employers use WIL placement as the ideal platform to recruit graduates.

b. WIL Provided Necessary Skills

Students identify WIL training as necessary in order to gain skills to be able to work in their chosen career. This is indicated by results which shows mean of 4.27, standard deviation of .969 and t-test of 141 which equals to 21.833. For most companies or organisations when recruiting from the University of Technology, they prefer to hire students who already have hands on experience which they acquired during the work integrated learning training. An example of electrical engineering students will undergo twelve months WIL training and after completion, companies will employ them as Engineers in Training which could take another two years. This shows how important it is to have necessary skills in order to progress on their chosen careers.

c. Will be Able to Replicate What I have Done During WIL

Respondents believe that they will be able to practice skills acquired during WIL on tasks that may be assigned to them. This is evidence by results which indicate mean of 4.44, standard deviation of .879 and t-test of 141 which equals to 26.256. Students participating in WIL are not only required to acquire knowledge but they are expected to demonstrate understand and application of that knowledge. Knowledge transfer is more effective when it involves practical experience.

d. Relevancy of WIL Experience

There is evidence that students participated in this research study believe that WIL program is relevant and will be useful to their lives. This is shown through the results which indicate mean of 4.50 standard deviation of .873 and t-test of 141 which equals to 27.295. Today's industry values skills developed through practical experience. This is stated by Usher (2011) that WIL opportunities have value and create benefit for students including employment readiness and job-related skills. In addition, Jack-

son (2013) indicates that WIL builds students confidence, increasing student's appreciation of the importance of employability skills and knowledge, as well as serving as an introduction to the world of work.

4 Discussion

Based on Kolb's theory of learning framework used in this study, we can conclude that students have been exposed to experiences that enable learning during WIL if they are significantly exposed to all the four constructs of the framework. From the results presented in this paper, the students were exposed to all the four stages of the learning cycle as defined in Kolb's framework. Average mean value of 3.4 for all the four stages is an indication that the students were exposed to activities that enable learning.

Figure 6 show that all the stages of the learning cycle were achieved. The level of participation on all four constructs; active experimentation was clearly most often practiced, which is confirmed by the results which show a mean of 4.4648, standard deviation of .76318 and t-test of 142 which equals to 30.679. Students perceived WIL as a useful tool hence they can envisage themselves applying the skill and knowledge acquired through WIL in the future.

Reflective observation activities were the second most regularly practiced, the results show a mean of 3.9038, standard deviation of .96803 and t-test of 142 which equals to 17.280. Students often reflected on their training through activities like feedback sessions, completing logbooks and supervisor's and mentor participation.

Abstract: conceptualisation was the third most practiced with the results that show a mean of 3.8292, standard deviation of .74220 and t-test of 142 which equals to 21.341. Students could link their WIL experience and make comparison between their theoretical and WIL knowledge.

Concrete experience was least practiced by the students, with the results that show a mean of 1.621, standard deviation of .7023 and t-test of 142 which equals to 36.721. Students participated less on concrete experience activities, with problem solving being often practiced, followed by team building exercises then, work projects, and presentation. Client interaction was the least practiced activity.

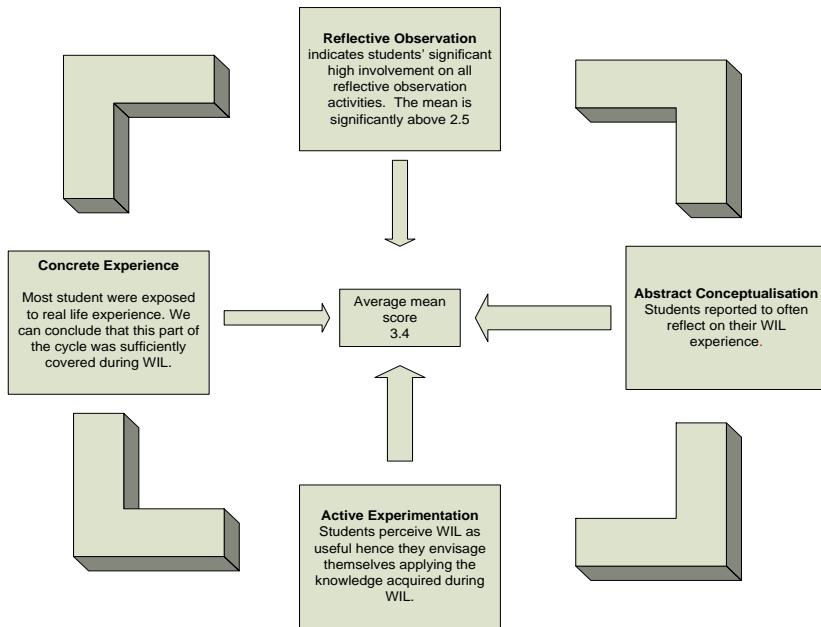


Figure 6: Results based on Kolb's theory of learning

3. Conclusion

The study was successfully conducted to investigate the influence of work integrated learning on students studying at a University of Technology in KwaZulu-Natal. The conclusions are limited to the findings of this study but it is important to mention that a thorough effort was made to ensure this research study is unbiased and scientific. From the findings, it can be concluded that the students were exposed to all four constructs and they managed to get enough on the job experience. Furthermore, the students managed to see a direct link between classwork and their work experience.

However, a significant percentage of the students expressed less confidence given tasks where they must work independently. It is recommended that the relationship between companies and universities is strengthened in order to have successful work integrated learning. This can be accomplished by the use of advisory committee meetings.

Universities of Technology have realised the importance and the role that is placed by their industrial partners. They have since formed what is now known as Advisory Committees or Advisory Boards, which is made of industrial partners and university staff members. This is a committee where curriculum issues are discussed and agreed to, it is also where WIL structure is discussed; as well as development of sustainable working relations and partnerships between university and industry are formed. All academic departments are required to conduct these meeting at least once every semester.

Reflective observation highlighted the importance of work mentors and a supervisor. The study conducted also has shown that the availability of a supervisor to students ensures that reflective observation activities are accomplished. This research study also highlighted the importance of work supervisors in order for students to gain knowledge and skills in the workplace. It is recommended that the relationship continues to grow as it is of mutual benefit to universities, students and employers. Partnership between Universities of Technology and industry ensures extensive involvement by all parties in development of curricula. It also ensures that curriculum is relevant to industry needs as well as employability of students. Consultation with employers also encourages innovative industrial research as well as practical ability required by employers to successfully train and employ students.

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WIL Challenges and Creative Solution at Vaal University of Technology

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Abstract: Work Integrated Learning refers to that component of Co-operative Education that can only be conducted by the employer in the work place. This training provides the students with an opportunity to apply and develop the academic knowledge he/she received at the University to relevant problem situations in industry and exposure to typical organisational culture, human relations and working conditions. In the HEQSF Work Integrated Learning takes various forms including simulated learning, Work directed, theoretical learning, problem-based learning, project- based learning and work place- based learning. The Vaal University of Technology opted for the last two forms. The work place is a challenge for the University. To address this, research projects were allocated to students who are dealing with project-based learning and memorandum of understanding will be signed with the industries for those who are involved in workplace-based learning.

Keywords: Work Integrated Learning, Challenges, Solution, Project -Based learning, Workplace-based learning

1. Introduction

WIL is used as an umbrella term to describe curricular, pedagogic 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 placement. In 2007, the promulgation of the new higher education qualification framework(HEQF) in South Africa introduced the term work integrated learning (WIL) into

a Department of Education document for the first time. The HEQF (South Africa. Department of Education, 2007) states: where Work Integrated Learning (WIL) is a structured part of a qualification (Lewis et al. 2010).

Some qualification will be designed to integrate theory and practice through the incorporation of work integrated learning (WIL) into the curriculum. WIL is characteristic of vocational and professional -oriented qualification and may be incorporated into programmes at all levels of the HEQSF. In the HEQSF WIL may take various forms including simulated learning, work-directed theoretical learning, problem-based learning, project-based learning and work place-based learning. The selection of appropriate Work Integrated Learning depends on the nature and purpose of the qualification type, programme, objective and outcome, the NQF level at which the WIL component is pegged, institutional capacity to provide WIL opportunities and the structures and systems that are in place within the professional setting and sites of practice to support student learning. where WIL is a structured part of a qualification the volume of learning allocated to WIL should be appropriate to the purpose of the qualification and to the cognitive demands of the learning outcome and assessment criteria contained in the appropriate level descriptors. Where the entire WIL component or any part of it takes the form of workplace- based learning, it is the responsibility of institutions that offer programmes requiring credits for such learning to place students into appropriate work place. Such workplace-based learning must be appropriately structured, properly supervised and assessed.

The student's work place experiences need to be supervised by an experienced staff member, while exposing the student to the length and breadth of activities within the scope of the organisation. Importantly, the confidentiality clause needs to be maintained by the student during and after the process of Work integrated learning. Students need to be prepared to exercise their professional, ethical and technical skills so that they add value to the organisation while gaining experience in the work place. A clear outline of roles and responsibilities need to be exercised at the very beginning of the learning period.

Skills are crucial in Morden manufacturing and increasingly dependent on higher level of education. The clothing industry is facing the consequences of systematic failures to invest in education and development in a predominantly black workforce.

While significant progress has been made in the sector Education and training authorities, the overall level of skill is inadequate to the task of rapidly raising quality and shifting to high value-added production. Current training efforts are not bringing large enough numbers of workers into the learnerships and the industry itself is not able to finance major skills upgrade. The capability of management at all levels is also a weakness. This is partly due to the view that textiles and clothing are sunset industries, making them unattractive to graduates. This weakness is compounded by the lack of investment in skills development. A significant scaling up of skills is required to address the ailing industry (Priestly, 2011 & Scott et al., 2007).

2. Literature Review

There are numerous challenges in the South African Higher Education (SAHE) system. One of the more prominent ones is the current debacle on #feesmustfall campaign and the language policy that has impacted universities (King, 2016 & Kruss, 2004). This amplified the fiscal constraints to an already ailing economy as students demand free education. Other forces impacting the academic arena are emergent ICT, focus on research as an avenue for the generation of funds, diverse student body, low pass rates of particularly black students and the demand for accountability in higher education (DoHET, 2009 & DoE, 1997). In addition, governmental policies are attempting to create an integrated society through the prioritisation of the development of a new democratic dispensation (Webster & Mosoetsa, 2002). The fundamental transformative agenda is centred around ‘equity’ of access and success, representatively in terms of student, staff and governance, financial support structures for disadvantaged students, and relevant curricular that would enable job opportunities and the focus on teaching and learning processes. Badat (2007) alludes to the engagement with overarching structural challenges at national level in higher education. My conclusion to this dilemma is to deal with it through discipline, law and order, and the end of corruption and dishonesty. Socialisation a critical construct in the learning process and need to be encouraged

A systemic understanding of development has contributed to a strong focus on socialisation as a critical dimension of learning (Garrison, 1997; Graham, 2005 and Hussey & Smith, 2003). The definition of socialisation provided by Cooper-Thomas

and Anderson (2006) promulgates socialisation as continuous life-long learning through engagement of students across boundaries that share and reflect on all teaching and learning aspects.

Danielson (2004) suggested a conceptual model based on organizational renewal through the process of ongoing socialization. Danielson proposed that “boundary changes resulting from changing contexts are catalysts for the next iteration of the socialization cycle.” Trowler and Knight (1999) strengthen the argument by alluding to students as agents of change who are in a battle with the construction of identity in a changing environment especially in terms of induction processes. They also mention that in order to better understand socialization, there needs to be an awareness of different needs in the career stages of students. This can be better realised with the help of the devoted mentorship.

Socialization and induction require predicament, and organisational socialisation is a complex process when compared to conventional induction and is defined as “the accommodative process which takes place when new entrants to an organisation engage with aspects of the cultural configuration they find there” (Graham, 2005; Hussey & Smith, 2003 and Toohey, 1999). The research done by Trowler & Knight (1999) concludes that the induction of students requires reconceptualization as current practices are poorly planned and ineffective. This is as a result of poor communication between Institutions of higher learning and training providers/industry partners.

Luckett’s model provides clear articulation in terms of knowledge progression in a South African context in higher education where it is developed through experiences of an epistemically diverse curriculum (Luckett, 2010). The building blocks of knowledge start from a disciplinary context and leads progressively to epistemic knowledge building which is of extreme importance in the engineering discipline. It may be seen as progressive in nature and aligns students and lecturers as agents in the process of re-contextualisation. The process of knowledge building enables (re)interpretation, reconstruction, re-contextualisation through cultures, power relations, socialisation in the curriculum. I interpret Luckett’s view of the curriculum as aligned with Toohey in the 5-step process that entails the discipline-based approach, performance and systems-based approach, personal relevance approach, cognitive approach, and the socially critical approach (Webster, 2002). Toohey mentions in his

final stage of development that the goal of graduates is to attain a level of self-realisation in a social context. This entails that students should understand, critique, develop arguments and defend positions. The aim is to take autonomous action to eradicate social disparities. Luckett and Toohey's model draw on the social character of knowledge assimilation as the focus on the epistemology of curriculum provision. Students are facilitated in the way knowledge is produced in this discipline and the teaching-learning environment and pedagogy. There is a high degree of practical application of theoretical concepts in laboratories, simulated and real work environments. However, it is unclear as to the extent to which students understand and develop competence in discipline specific knowledge. It is evident that the development of research skills lack until third and four year of study in which students are expected to do research projects. I firmly believe that research skills should be introduced in the first year of study and act as a scaffolder in all years of study as per Luckett's model. Moll's suggestion of "close coupling between the way knowledge is produced" in the discipline and the way students are educated in the discipline would enable new knowledge in the field (Moll, 2004).

3. Methodology

The research process underpinning this investigation comprises a method approach which involves qualitative data. Data were gathered through a series of focus group and individual interviews and analysed in terms of the idyllic relationship between education and the workplace. The research participants were semesters 3 and 4 students, and industry stakeholders. The case study methodology enables factors of influence to be analysed to determine problematic issues and provide a resolution.

3.1 Results and Discussion

3.1.1 University Policy

The university requires that the supervisor be registered at the specific professional body, the supervisor must have a higher qualification than the students. The professional body requires the students to meet the exit level outcomes and specify the nature of the workplace. The Universities of Technology are thus seeing a decline in the cooperative education system for the same reasons that the apprentice system has

declined in the rest of the world (Young 1998). An additional reason has to do with differences between theoretical academic knowledge and contextualised workplace knowledge – and the difficulties of creating meaningful articulation between them – particularly when the difference between the knowledge forms and structures are poorly understood by both educators and workplaces.

Work Integrated Learning poses several challenges to traditional Universities, Universities of Technology and comprehensive Universities. Programmes offered by traditional Universities that do not take into account graduates' career trajectories need to consider issues of citizenship, graduateness and employability (without succumbing to vocational drift). Programmes that traditionally includes practical, internships and other forms of workplace experience need to reconsider the alignment of curricular and pedagogic practices. Among the challenges that WIL poses for ex-technikon practices in Universities of Technology and comprehensive Universities, is a new an extended role for what was previously known as co-operative education. The ex-technikons acknowledged and valued the experiential learning, understanding that students develop important knowledge and skill in the workplace. They tended, however to defer to the practices and requirements of work and industry, often valuing these over a academic disciplines. The challenge WIL offer is to develop student's employability in a broad, rather than a narrow sense that includes and aligns theoretical learning with practice-based learning. The innovative practices offered by the inclusion of web-based ICTs and social media in WIL offer additional educational and logistic challenge and opportunities to the Higher Education sector as a whole. it will also be important for South African higher education community, in conversation with international peers, to develop curricular, pedagogical and quality management systems that build on the strength of current best and innovative practices, develop areas of weakness and engage extensively and intensively with curriculum and WIL specialist.

3.1.2 Recognition of prior learning (RPL)

The recognition of prior learning (RPL) is ‘a process whereby people’s prior learning can be formally recognised in terms of registered qualifications … regardless of where and how the learning was attained. RPL acknowledges that people never stop learning whether it takes place formally at an educational institution or whether it

happens informally' (SAQA, 2005). Many institutions have policies on RPL for admission to, and advanced standing within, a qualification. the process of RPL can be summarised as:

- Identifying what the person knows;
- Matching the person's knowledge, skills and experience to outcomes and associated assessment criteria;
- Assessing the candidate's knowledge against outcomes; and
- Crediting the person for skills, knowledge and experience acquired in the past.

In most RPL cases, candidates need to be carefully assessed to ensure that they are appropriately placed within a programme

3.1.3 University Resources

a) Financial resources

The university lecturer/WIL Co-ordinator, in consultation with the head of department or programme, should ensure that the departmental budget and resources are sufficient to cover the financial and logistical support necessary to implement the programme and to ensure the quality of the WIL curriculum, in particular its effectiveness for bringing about engagement and learning, students' satisfaction with the experience, as well as a risk management strategy that anticipates likely contingencies and builds in administrative responses to possible eventualities. Financial resources are necessary for the payment of additional staff, the provision and maintenance of a website, library resources for WIL, transport of staff to worksites, etc.

b) Staff resources

The international higher education benchmark for student to staff ratios when students are on work placement is 88:1; while in South African Universities of Technology (where work placement is common), the ratio is 234:1 (Wessels, 2005). This means that the quality of support for students in work placements is usually not adequate. This phenomenon is much clear at Vaal University of Technology resulting in some of the students not being visited during their WIL and this is due to the work overload of WIL co-ordinators on campus. For programmes with large numbers of

students, a university lecturer might be dedicated to coordinate the WIL programme, and have assistants to support the work, particularly if there are large numbers of students involved. There must be support staff to handle the correspondence, appointments, travel arrangements, accommodation and records.

c) Physical resources

The different curricular modalities require different physical resources. For Work Directed Theoretical training learning existing university teaching spaces are probably adequate. Site visits are often required in Work Directed Theoretical training learning, and arrangements for such site visits are necessary. Problem Based Learning requires venues other than lecture halls to facilitate group work; if such resources are not available, this would affect the quality of learning, and a more problem-oriented approach might be taken in which lecture halls could be used for pair work, for example. PJBL similarly demands appropriate space for group meeting and group work on projects. It involves students making regular visits to workplaces or community sites, and then returning to the university to work on the project. This would tend to involve careful timetabling on the part of university teachers, with visits to workplaces planned well in advance of the project. Work Place Learning takes the students off the campus but may require space for university teachers to meet regularly with them for the purposes of ‘debriefing’, monitoring progress, and dealing with problems. Irrespective of the WIL curriculum modality, sufficient resources need to be made available to support university teachers and students to enable them to achieve the intended outcomes.

3.2 Students Problems

Some students have problem to be placed because of outstanding subjects. The companies don't want to employ the student who will be asking every time the leave go the university to write the tests, to submit the assignments or to attend lectures and poor academic performance by the students can also affect the placement.

3.2.1 Organisation

- No programme for structure WIL,
- Organisations are reluctant to provide WIL,

- lack of expertise to supervise WIL,
- confidential constraints,
- strict period of intake student for the programme.

Solution

The WIL component at Vaal University of Technology (The Faculty of Engineering and Technology) takes form of Project-based learning(PJBL), involves learning through projects. Projects can be ‘real’ projects located in the world of work. Such projects generally involved elements of research and the supervision by both a University lecturer and workplace supervisor or mentor. PJBL can support the acquisition of an extensive, integrated knowledge base that students can draw on and apply to the analysis and solution of problems. More often the problems in PBL are simulated and the learning takes place in the university (with some input from workplaces). In work-integrated PJBL the projects are generally not simulated, but involve learning through practice in a work context, as in service-learning or in a University-industry collaborative research project. Projects, like problems, are a means of engaging students in complex, work-related issues, through which they develop and transfer skills and knowledge. PJBL is thus a strategy that recognises both students’ inherent drive to learn and capacity to do useful work (CHE, 2011). Projects do not always lend themselves to ‘coverage’ of all outcomes in a curriculum. This means selecting those topics that reflect the most important ideas and concepts in the curriculum and incorporating those topics into projects. It can also mean identifying what is achieved through the PJBL activity and filling the gaps through other teaching and learning activities to achieve curriculum alignment. And Workplaced-based learning (WPL) takes place when students are placed in work environments for the purposes of learning. Learning in the workplace therefore usually involves students in planning and implementing an activity, in reflection on and evaluating the activity, and making adjustments for future action. The student uses this reflective process to determine what was useful or important to remember and uses this learning to perform another activity. In this sense, workplace learning mirrors the way humans naturally learn. WPL curricula

tend to be based on kolb's (1984) learning cycle, or versions thereof. The learning cycle proposes an iterative series of processes which underlies learning. there are four stages:

- Concrete experience: one cannot learn something simply by watching or reading about it; active involvement is necessary.
- Reflective observation: student attention should be focused on particular elements of the experience. This means taking time out of doing and pausing to consider what has just taken place.
- Abstract: conceptualisation: through a process of inductive reasoning, the students analyse observations, explain them, and integrate them into logically sound theories.
- Active experimentation: the students consider how they are going to put what they have learnt into practice (gosling & Moon, 2018)

Learning becomes less efficient where one or more of the learning cycle stages are missing, or where a student lacks the skills or opportunity to deal with one of them. Sites of practice in the Health Sciences (state and private hospitals and clinics) and teacher education (public and private schools) have the appropriate structures in place for the induction, mentoring, supervision and assessment of student practitioners. WPL has long been accepted in traditional universities (as well as in universities of technology and comprehensive universities) in programmes such as nursing, medicine and teacher education – and a range of practices for their supervision and assessment have been developed (e.g., clinical assessment, the teaching practicum). In cases where there is no, or little, infrastructure to accommodate WPL, these structures have to be created, and it is the role of the higher education institution to ensure that there is support for WPL.

Difficulties arise in contexts where the site of practice does not have appropriate structures and systems to support student learning. The lack of structural support for learning and assessment has caused many well-intentioned WPL interventions to fail. In traditional universities, the Engineering disciplines have tended to separate theory and practice. The University offers theoretical Engineering and an academic qualification, while the Engineering councils accredit engineers as professionals. there are

several reasons for this. one reason is that, unlike hospitals and schools, there are no specific teaching-oriented engineering workplaces. In commercial and industrial contexts there are few structures or resources in place to support student learning, or to supervise and assess student practitioners. Where such structures are lacking, WPL is not always appropriate in an undergraduate programme because learning conditions are too varied (i.e., dependent on the individual workplaces) resulting in potentially good learning in some contexts and very poor learning in others. In the case of Engineering, PBL and PJBL have generally been more effective than WPL (Savin-Badin & Major, 2004). (It should be pointed out that both PBL and PJBL could include a limited, structured, WPL component.)

Another reason why WPL has not always served the purpose that it was originally designed to meet, has to do with the changing nature of workplaces. Many employers require entry-level employees with high-level technical skills, and this makes a first or second year student ‘apprentice’ not particularly useful to a modern technology-based workplace; nor does it provide the student with appropriate learning experiences.

It needs to be acknowledged that effective WPL is unlikely to happen without strong theoretical learning. Students will need a solid grounding in the disciplines associated with their programmes of study in order to gain full competence in their professions. Students should also understand how the knowledge production systems of the disciplines are relevant to extra-academic contexts, if they are to prepare themselves adequately for South Africa’s diverse social and economic needs. Effective WPL should be included in discipline-based knowledge and should endeavour to understand appropriate disciplinarity. If this is not the case, polarity is likely to occur and an ‘antidisciplinary’ attitude taken in which vital discipline-based concepts are ignored or trivialised, rather than enlarged through linkages among disciplines and across contexts.

The first form of learning, each staff member of the department who is involved in research gives a topic to the student to work on. For the last form of learning, the department in which the student belongs with the department of cooperative education together identify the companies and sign a memorandum of understanding (MoU). The MoU assists the University to know how many students the company are going to take per year or semester. With the new programme (diploma), the process is easier

than the old programme (national diploma). The new programme, the WIL component has 6 months compare to the old programme with 12 months. Some departments have created the flexibility for the students to register for WIL at any semester so that the students can complete on time and register for the next level.

4. Conclusion

The University should be concerned to ensure that the students complete their programme and graduate accordingly. The integration of professional and academic concerns in the curriculum will go some way towards addressing this requirement. The HEQSF requires at the University of Technology (ex-Technikon) students to do Work Integrated Learning before they can graduate. The work place is a challenge for University as well as for the students. University should locate the workplace and monitor the students, build relationship with the experiences. To address this challenge the University has to come with some solution

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Factors Influencing Graduates' Employability - A Case Study of the Namibia University of Science and Technology (NUST)

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Abstract: The objective of the study was to examine factors that can influence prospective graduates to study at the Namibia University of Science and Technology (NUST). In addition, perceived factors that can enhance graduates' employability prospects in the labour market were explored. The graduate cohort of 2017 participated in the quantitative survey base case study. A random sample survey method was employed, 1 000 questionnaires were randomly distributed to 1 573 cohort of April 2017. The sample of 258 respondents participated in the study, data was collected and analysed using the SPSS 2010. The results of the study revealed variety of considerable factors that are significant to enhancing graduate employability, among others graduates perceived institutional/department reputation, practical-orientation of the study programme, availability of scholarship, provision of supervised work experience/work integrated learning, chances to participate in research projects. The study offers practical and policy recommendations for further considerations by the university management.

Keywords: *University, Graduate employability, Work integrated learning, Work based learning, Institutional reputation, Quality of teaching*

1. Introduction

Graduate employability concerns developed and developing countries worldwide. Research shows that in most developing countries graduate unemployment is related to youth unemployment (Bohen & Chertavian, 2016, p.305). In Namibia while the national unemployment rate is estimated at 34%, persons with university education (i.e. certificates/diploma/Masters/PhDs) accounted for a combined unemployment rate of 24.5% (Namibia Statistics Agency, 2017).

Policy-makers across the world tend to tie higher education (HE) institutions to economic and societal needs (European Commission, 2003, 2005, 2011). Evidence shows that first, universities are under pressure to prepare graduates with employable skills, and second governments have explicit expectations that HE institutions can supply graduates who are readily adaptable to the work environment (Clarke, 2008; Cable, 2010). Thus, the main aim of most universities is to help students achieve high-quality learning outcomes (Fry, Ketteridge & Marshall, 2009, p.42). To achieve high quality outcomes, universities need to align curriculum and theory in terms of teaching, learning and assessment, invest in physical and human resources to develop graduates' skills and/or attributes, and improve student support services (International Higher Education, nd., p.9-10).

Since 1990 the Government of Namibia continue to exert pressure on HE institutions to increase the quantity and quality of graduates to meet labour demands (Ministry of Education and Culture (MEC) (1993, p.108-112); Ministry of Higher Education, Vocational Training, Science and Technology (MHEVTST) (1999, p. 8-10; Tubaundule, 2014).

The Namibia University of Science and Technology (NUST) is one of the two public HE institutions in the country. NUST provides high level applied, scientific, technical and technological education and training (NUST, 2017). Research in HE indicates that “The quality of higher education training cannot exceed the quality of its educators” (McKinsey & Company, 2008) cited in Tubaundule (2014). Against this backdrop, the university places graduates' employability high on its teaching and learning policy agenda. Among others, NUST implements a Work Integrated Learn-

ing (WIL) programme to enhance undergraduate students' employability opportunities at graduation (Polytechnic of Namibia, 2009, p.9; NUST, 2017).

However, in 2017, NUST conducted a Graduate Survey on the perceived factors that influenced graduates to study at the institution; and the perceived factors that enhanced graduates' employability opportunities in the labour market.

The next section provides a literature review of the concept of graduate employability; followed by the factors that influence graduates to study at universities with specific reference to NUST. The section also discusses perceived factors that enhanced the employability of NUST graduates in the labour market.

2. Conceptualising Employability

There is no common definition of the term 'employability' in the literature. The most popular definitions define employability as (Tran, 2016):

...a set of achievement - skills, understandings and personal attributes – that makes graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy (The Enhancing Student Employability Co-ordination Team – ESECT (Yorke, 2006, p. 8).

...a set of skills, knowledge and personal attributes that makes an individual more likely to secure and be successful in their chosen occupations to the benefit of themselves, the workforce, the community and the economy (Moreland, 2006).

...skills required not only to gain employment, but also to progress within an enterprise so as to achieve one's potential and contribute successfully to enterprise strategic directions (Australian Chamber of Commerce and Industry & Business Council of Australia, 2002).

...the skills almost everyone needs to do almost every job. They are the skills that must be present to enable an individual to use more specific knowledge and technical skills that their particular workplaces will require (UK Commission for Employment and Skills, 2009).

A recurring theme across the definitions above is that graduates will require a set of key skills and/or attributes to enter into the employment market, to find and retain jobs and to develop their careers. Research argues that the 21st century graduate will

not only need professional knowledge or technical skills but also generic skills such as coping with uncertainty, working under pressure, planning and strategic thinking, reliability, communications and interpersonal interactions, teamwork and networking, writing and speaking; information technology skills, creativity, self-confidence, self-management and time-management, willingness to learn and acceptance of responsibility (Andrews & Higson, 2008; Tran, 2016).

However, as prospective graduates become aware of their future employability skills and/or attributes, they tend to seek information about HE institutions that will give them the highest return.

2.1 Factors that Influence Prospective Students' Choice of University to Study

Universities worldwide are increasingly exposed to consumer choice as students become better informed, more mobile and able to make judgements about a range of potential preferred HE institutions to study. International and national prospective students are thus always confronted with various factors in much more complex ways than has been the case in the past, especially when deciding at which university to study (Moogan & Baron, 2003; Briggs, 2006).

Numerous studies have found that employment prospects, course content, institutional reputation, marketing strategies, financial factors and institutional location were among the most important factors that influence prospective students' choice of an institution to study. Researchers indicate that future employment prospects and course content are the most important factors influencing choice amongst prospective students. In fact, evidence shows that the decision on students' future subject of study commences before they even consider the location of the institution to study (Anderson, 1999; Archer & Hutchings, 2000; Price, Matzdorf, Smith, & Agahi, 2003; Kakkad & Nair, 2016).

Institutional reputation is widely covered in higher education. In their study Roberts and Allen developed the concept of institutional reputation and stated that universities adopt the following definition: 'Your reputation is defined by what other people say about you, not what you say about yourself.' (Allen & Roberts, 1997, p.16). Evi-

dence shows that institutional reputation is also linked to employment prospects on the national level, also making it one of the most important factor in influencing prospective students' choice of a university. However, some surveys have suggested that students' networks such as support from families, schools and alumni play a crucial role in providing information about reputable universities (Archer & Hutchings, 2000; Kakkad & Nair, 2016).

Recent studies indicate that effective marketing strategies have been fundamental means of communication used to reach prospective students across the world. Various information sources including the internet, newspapers, word of mouth, education agents and government sources have aided students' decision-making process in terms of university choice. Internet has been a critical source of information for most students (Kakkad & Nair, 2016).

Similarly, financial factors also influence students' choice of the HE institution to study at. While the cost of living, distance and travel costs may stifle prospective students' choice of a university, availability of financial assistance may influence students to apply to any HE institution irrespective of distance and travels or costs of living (Anderson, 1999). Equally, further evidence shows that facilities factors (laboratories, libraries, equipment), where provided to a high standard, are also perceived as having an important influence on students' choice of an institution for further study (Price, Matzdorf, Smith, & Agahi, 2003).

Moreover, a study conducted by (Rudhumbu, Tirumaki & Kumari, 2017, p.34) found that "location of the institution, quality of staff, quality of academic programmes on offer, image and reputation of the institution, quality of educational facilities, prospects of graduates from the institution getting employed, career fairs, and advertising strategies" are the most influential factors for university choice.

Other studies have indicated that the main benchmark between universities remains 'league tables', which offer a 'signpost' value to potential students by providing broad indications of a university's standing. Perception studies suggest that though 'league tables' are unreliable in aiding predictions of student choice, some prospective students find them useful measures of quality educational provision, thus influencing their choices of an institution (Briggs, 2006; Anderson, 1999).

Admittedly, factors that attract new entrants to HE institutions do not explicitly translate into future graduate employability opportunities; rather universities need a skills development agenda that establishes a ‘quality fit’ between students, programmes and labour market demands.

2.2 Factors that Enhance the Employability of NUST Graduates

As stated above institutional image and brand names are not sufficient tools that enhance graduates’ employability skills required in the labour market. University-industry collaboration studies have reported universities are under mounting pressure to produce graduates who demonstrate a wide range of skill and/or attributes including analysis, reflection, critique and synthesis, including ‘soft’ personal skills, namely communication and presentation skills (Harvey, 2003; Fry, Ketteridge & Marshall, 2009, p.276).

In response to industry needs, first and foremost, universities have introduced a plethora of new teaching and learning approaches to enhance the skills and/or attributes of graduates’ future employability opportunities. For instance, universities have begun to integrate work-based learning (WBL) as part of their education programmes (NEF, 2007). Most universities see work-based learning (WBL) as learning for work, which provides an opportunity to undergraduate students as part of their degree course. WBL helps students to link theory to real-life projects for a few months to a whole year (Fry, Ketteridge & Marshall, 2009). Field reports indicate that “WBL activity has improved most students’ generic and personal transferable skills (e.g. multi-tasking, working under pressure, communication, timekeeping, interpersonal and reflective skills).” (Fry, Ketteridge & Marshall, 2009, p.274). Second, in the era of accountability debate universities have introduced internal quality assurance mechanisms aimed at strengthening graduate employability. Today, most universities have sought it necessary to incorporate and promote graduate employability into their strategic plans. Also, HE institutions are creating internship, employment, and entrepreneurship platforms to maximise graduates’ potential for career development (UNESCO, 2017).

Third, across the world university departments are introducing innovative approaches to teaching, learning and assessment that are intended to enhance employability. Universities have begun to embed key skills in the curriculum rather than ad-

dress them through stand-alone courses. For examples, as part of embedding key skills in the curriculum, different departments have begun to give greater emphasis on oral presentations, the use of more ‘real world’ examples in teaching, more group working and the introduction of more final-year projects. Also, there are examples of changes in assessment practices involving increased weighting in assessment for problem-solving and numeracy skills and lower weighting for theoretical knowledge (Mason, Williams & Cranmer, 2009).

Fourth, other HE institutions have begun to promote employer involvement in course design and delivery. Such initiatives include employers commenting on the relevance of course content to future employment prospects, providing materials and ideas for student projects, and giving guest lectures. In some cases, employer involvement is being promoted through formal membership of course advisory panels; largely dependent on personal contacts between employer representatives and university staff (Mason, Williams & Cranmer, 2009). In the current study these measures were included in the analysis of the links between employability skills initiatives at NUST and graduate labour market outcomes.

3. Case study: Namibia University of Science and Technology (NUST)

NUST was established under the Higher Education Act (No 7 of 2015). NUST prides itself as a premier university of science and technology preparing leaders for the knowledge economy. A responsive university creatively meeting the needs of students, society and the economy through multiple pathways for excellent education, applied research, innovation and service in collaboration with stakeholders (NUST, 2017). In 2017, the university enrolled between 10,000 to 14,999 students in its various undergraduate and graduate degree programmes (NUST, 2017). As an emerging institution, the university’s student population continues to increase exponentially every year. This study was conducted to first understand the factors that influence students’ intentions to study at NUST. Secondly, the study sought to describe the employment status of students who graduated at the university. Thirdly, the study

intended to measure what factors graduates perceived as responsible for increasing their chances of employability.

Largely, this study was conducted to determine the quality of higher education during students' studies and to help assess the employability and mobility of students' post-graduation. In addition to monitoring student performance, it is envisaged that the findings of this study will be used for planning and decision-making purposes regarding the funding for the development of new education and training programmes.

4. Methodology

To examine the issues addressed above, the study used a quantitative descriptive survey methodology to collect demographic data April 2017 NUST graduates. A descriptive survey research is dedicated to collect information about the current circumstances to be able to describe, interpret, and resolve situations (Aggarwal (2008) cited in Salaria, 2012, p. 1). Moreover, it is a convenient methodology for representativeness of the population. This insures that the selection of individuals from a sample of a population are selected during the study and conclusions can be drawn from the sample for the entire population (Creswell, 2015, p. 142).

4.1 Population and Sample Size

Simple random sampling method was employed to make certain that participants from the target population has an equal chance of being selected (Creswell, 2015, p.143). Of the 2 378 eligible graduates a total of 805 diploma and certificate graduates were excluded from the study. Thus, 1 000 questionnaires were randomly distributed to 1 573 cohort of April 2017 graduates. 258 questionnaires (or 25.8%) were collected and analysed for this study.

4.2 Data Collection Methods

A self-administered structured Likert-scale designed questionnaire was developed and distributed to research respondents (Bryman, 2016, p.195). The questionnaire contained three questions. Question 1 consisted of demographic characteristics of respondents such as gender, age, marital status and regional centres of origin. Gender had two variables (female, male), while age was measured on seven categories (17-

22, 23-27, 28-33, 34-39, 40-45, 46-50 and older than 50). Marital status had four measures, namely never married, married, widowed and divorced/separated. Graduates from 10 NUST regional centres (Gobabis, Katima Mulilo, Keetmanshoop, Windhoek, Ongwediva, Opuwo, Otjiwarongo, Rundu & Walvis Bay) were included in the study.

Question 2, had six items on a five Likert-scale (extremely important, important, never important nor not important, moderately important & not important at all). Question 3, had nine items with five scales (very good, good, unsure, poor & very poor).

Questionnaires were distributed and completed before the graduation ceremony. This strategy of data collection had two advantages: (a) it was cheaper to administer to a diverse group of respondents, was quicker to administer, and (b) had lesser interviewer effects (Bryman, 2016, p.175-176). However, the strategy had three shortcomings. First, it contributed to a low response rate, second, the strategy resulted into limited time for respondents to complete the questionnaires, and third, it contributed to a high level of incomplete responses to some questionnaire items.

Since the study had a response below 30 percent (Bryman, 2016; Welman, Kruger & Mitchell, 2012, p.154), caution should be taken not to generalise the findings of this study to the entire student population of NUST or to other institutions of higher education across the world.

4.3 Data Analysis

Collected data were coded and analysed using SPSS 2010 to develop descriptive statistics. Summarised data and cumulative scores were presented in percentages by means of tables, histograms, bar and pie charts Welman, Kruger & Mitchell, 2012, p.224, 232). The university's Department of Planning and Institutional Research assured the content, criterion and construct-related validity of the measures included in the questionnaire.

4.4 Ethical Considerations

Three ethical standards were observed in this study. First, researchers did not only explain the purpose of the study, but also reassured respondents that their collected data will be used strictly for academic research purposes and programmatic improvements in NUST. Second, respondents were informed of their right to voluntary par-

ticipation in the study and that they could withdraw from the study without any penalty.

Third, respondents were informed that collected data would be handled with strict confidentiality and that their names and any other personal details would not be revealed to any third party (Bryman, 2016, p.527; Blanche, 2014, p.71-72). The results below are reported in a summary without any link to respondents' personal details.

5. Results

The presentation of survey results examines the perceived factors that influenced 2017 cohort of graduates to study at NUST. Also, the presentation examines the factors that respondents perceived to enhance graduate employability.

Question 1: Background data of respondents

To contextualise the findings of the study Figures 1- 4 below present the background characteristics of research respondents. 1.1 Gender of respondents

The diagram below presents the gender of the respondents who took part in this study.

Figure 1: Gender (n=258)

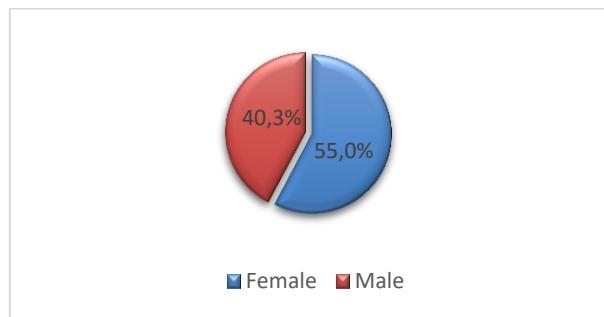


Figure 1 above shows that more female 142 (55%) than male (40.3%) respondents participated in this study. 12 (4.7%) respondents did not indicate their gender.

1.2 Age of respondents

The diagram below provides respondents' age categories.

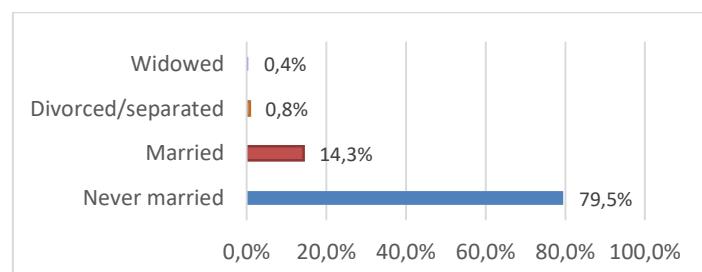
Figure 2: Age (n=258)

Source: NUST (2017)

It is evident in Figure 2 above that 24.4% of respondents were 17-22 years old, while 43.8% were 23-27 years old, and 13.2% were 28-33 years old. While 8.5% were 34-39 years old, 3.9% of the respondents were 40-45 years old. 0.8% were 46-50 and older than 50 years old respectively.

1.3 Marital Status

The diagram below presents the findings of respondents' marital status.

Figure 3: Marital status (n=258)

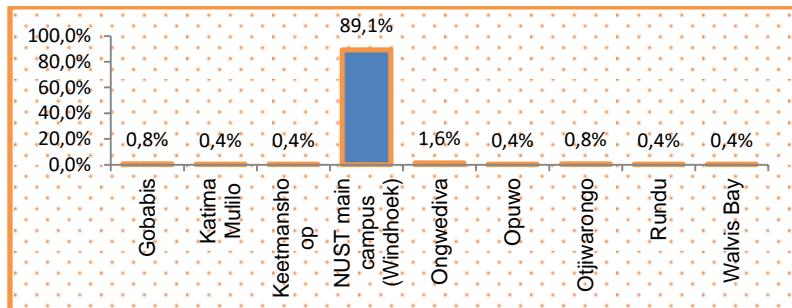
Source: NUST (2017)

Figure 3 above shows that 80% (205 out of 258) of respondents in this survey were never married; 14.3% (37 out of 258) were married; 0.8% (out of 258) were divorced/separated, and lastly 0.4% (... out of 258) were widowed.

1.4 NUST centres

The diagram below presents the results of respondents' location.

Figure 4: NUST regional centres (n=258)

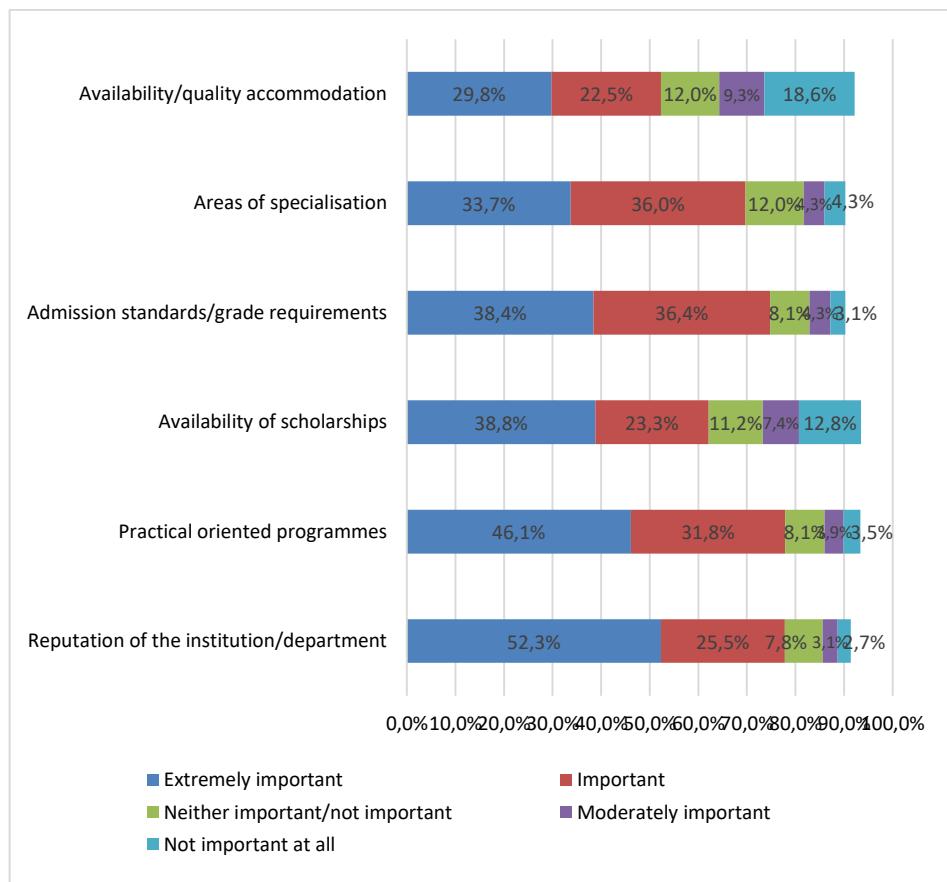


Source: NUST (2017)

It is evident that 89.1% of respondents completed their studies at NUST main campus situated in Windhoek, less than 1% came from Gobabis (0.8%) and Otjiwarongo (0.8%), the two nearest towns to Windhoek. More than 1% of respondents registered at Ongwediva 1.6%, situated approximately 700 kilometres from Windhoek. A mere 0.4% of respondents from Katima Mulilo, Keetmashoop, Opuwo, Rundu and Walvis Bay centres participated in this study. About 15 graduates did not indicate their centres of origin. The next section presents the perceived factors that influenced graduates to study at NUST.

Question 2: What factors influenced graduates to study at NUST? Figure 5 below provides responses to this question.

Figure 5: Factors that influenced graduates to study at NUST (n = 258)



Source: NUST (2017)

Figure 5 above shows that the reputation of the institution/department (52.3%), practically oriented programmes (46.1%), availability of scholarships (38.8%), admission standards/grade requirements (38.4%), area of specialisation (33.7%) and availability/quality accommodation (29.8%) were the most important factors that influenced prospective students to study at NUST.

Question 3: What factors enhance the employability of NUST graduates

**Table1: Factors that enhance the employability of NUST graduates
(n=258)**

Factors	VG /G	Un-sure	VP/ P
Teaching quality of lecturers	84.1%	9.3%	1.2%
Assistance/advice on examination	79.5%	10.1%	5.1%
Structure of degree programme	78.3%	9.7%	6.2%
Availability of technical equipment	78.3%	6.2%	9.7%
Examination system	74.5%	16.3%	2.7%
Academic advice offered	72.5%	13.6%	7.4%
Opportunity for out of school w/ teaching staff	70.2%	12.0%	12.8%
Provision of supervised work experience/WIL	67.0%	10.9%	14.3%
Chances to participate in research projects	66.3%	16.3%	11.7%
Quality of equipment in laboratories/workshops	59.3%	24.8%	10.1%
Accommodation facilities on campus	31.0%	47.3%	13.2%

Key: VG/G = Very Good/G = Good, VP/P= Very Poor/P = Poor

It is evident in Table 1 above that the quality of teaching (84.1%), and the type of support students received during the examination period (79.5%) were the two most factors that enhanced graduates' employability. The structure of degree programme (78.3%) and the availability of technical equipment (78.3%) were the third most important factors that enhanced graduate employability. Respondents indicated that examination system (74.5%), and academic advice offered (72.5%) were the fourth and fifth factors that had a potential to enhance graduate employability; were fol-

lowed by opportunity for out of school with teaching staff (70.2%). Interestingly, provision of supervised work experience/work integrated learning (67.0%), chances to participate in research projects (66.3%) and quality of equipment in laboratories/workshops (59.3%) are amongst the factors enhancing employability of graduates. Respondents reported that accommodation facilities on campus (31.0%) was the least contributing factor to their employability.

4. Discussion of Findings

Results of the study showed that two hundred fifty-eight 2017 graduates consisting 55.0% females and 40.3% were surveyed to examine factors that influenced them to study at the Namibia University of Science and Technology (NUST) and also explored the possible factors that enhanced their prospects of employability in the labour market. On a 5 Likert-scale questionnaire, graduates responded to each of the two questions. Slightly over 50% of the respondents indicated that institutional reputation was a key factor that influenced them to study at NUST. Further, respondents indicated that factors such as practical orientation of programmes, availability of scholarships, admission standards and availability of their area of specialisation influenced them to study at NUST. Moreover, respondents reported that the availability of accommodation was the least factor that influenced them to study at NUST. Analyses showed that the quality of teaching, students support during examination periods, structure of degree programme, availability of technical equipment, and examination system enhanced graduates' employability. Additionally, respondents stated that academic advice offered, out-of-school opportunities with teaching staff, supervised work integrated learning, and participation in research projects and quality of equipment in laboratories were likely to enhance graduates' employability in the labour market. Accommodation facilities on campus was considered likely not to enhance graduates' employability.

5. Conclusions

Data for this study revealed that institutional reputation was perceived as the key factor in the choice of NUST as a favorable institution for further study. The finding

is consistent with previous findings showing that other people such as families, schools and alumni define the reputation of an institution (Roberts & Allen, 1997; Archer & Hutchings, 2000; Kakkad & Nair, 2016 and Rudhumbu, Tirumalai & Kumari, 2017).

A further analysis of data in this study also shows that the practical nature of study programmes offered at NUST and the availability of scholarships were second and third factors perceived to have influenced respondents to study at NUST. While Anderson (1999) confirmed that financial factors can significantly influence the student's choice of the university to study, Price, Matzdorf, Smith and Agahi (2003) reported similar results regarding the influence of institutional facilities on students' choice. This finding could be attributed to two factors supported by previous research (Kakkad & Nair, 2016). First, it appears that students benefited from their former high schools and alumni networks for information about the reputation and the quality of academic programmes offered at NUST. Secondly, in relation to the above finding, it could also be interpreted that graduates that participated in this study benefited from effective marketing strategies such as internet, newspapers, word of mouth, education agents and government sources that NUST used to communicate and promote its educational programmes.

Regarding the question of the factors that enhances graduate employability, evidence indicates that the quality of teaching and learning and assessment plays a crucial role in determining graduates' future employment prospects. It is worth noting that the respondents' high perception of the influence of other factors is an indicator of the cumulative trust in the professional conduct of the staff at NUST. Previous studies have consistently argued that the quality of HE will largely be determined by the quality of its educators. Many researchers have argued that educators' professional expertise can have positive effects on how they combine various educational inputs to produce the desired educational outcomes (McKinsey & Company, 2008) cited in Tubaundule (2014).

These findings provide three implications for theory and practice. First, the findings put more onus on NUST to outperform their competitors in the higher-education market across a wide range of dimensions such as concentrating on boosting its repu-

tation by investing not only in physical infrastructure, but more importantly in human capital. Second, the graduates' ratings provide the alumni and current students a powerful voice for holding NUST to account for getting a return on their tuition fees. Third, the findings further provide data that could be used to pursue a range of alternative policy scenarios and/or commercial strategies that can be explored to better understand the behaviours of prospective students in the emerging HE market. For instance, the findings of this survey could be used to identify interventions that can increase postsecondary enrolment, retention, and graduation of skilled students that are able to contribute significantly to the socio-economic development of Namibia.

However, it should be noted that the claims made in this study about factors that influence individual students to study at NUST and the factors that enhances graduates' employability are anecdotal. The graduates' perceptions collected in this survey do not provide information on the knowledge, skills and values that graduates possess beyond their completed degree courses. One way to know and understand the graduates' skills and knowledge would be to investigate the extent to which graduates are competent employees in relation to their job performance in the real work environment by conducting graduate employability studies. In addition, there is a strong need for research assessing what are the university educators' qualities and attributes that have a strong influence on students learning outcomes and how such attributes and qualities could be used towards developing world-class university.

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Investigating IT Students' Perception on Their Technical Competency After WIL

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Abstract: . Work Integrated Learning (WIL) allows for the integration of academic learning with its application in the workplace. In some instances, the practice may be real or simulated and can occur in the mainly in the workplace although it is possible at the university campus or online. The purpose of WIL is to equip students with work skills hence it is advantageous for students to do their WIL in real work environments rather than in a simulated environment. It is imperative that proper planning goes into such programs so as to maximize student learning. This study investigated the perception of students on their technical competence after going through the WIL program. Universities aim at producing competent and confident graduate. It is thus important to investigate what student feel about their WIL experiences. The study was conducted among students studying towards a Diploma in Information Technology at Mangosuthu University of Technology in KwaZulu Natal. Of paramount importance in the investigation was the impact of WIL on student learning. This paper aimed at establishing the learning processes experienced by IT students during the WIL program. In carrying out this investigation, this work made use of a framework used to determine technical competence of employees. A questionnaire was developed using the framework. Our results pointed to the fact that technological changes in the industry are not available in the Universities hence most students struggle to adjust.

1. Introduction and Brief Literature Review

ICT penetration has positive effects on economic growth (Vu,2011) (Vu, 2013) hence many countries are investing not only in IT infrastructure but skills development. It is thus, crucial for Universities to produce a competent graduate who has confidence in his/her technical capabilities. High unemployment rate among young graduates is a concern to the government, parents, communities and universities. One of the contributing factor to this predicament is the gap between universities and the workplace. The graduates come out of the universities with little or no practical skills required in industry while industry is production oriented and are more sensitive on time. Thus, it is difficult for the industry to take a non-experienced graduate as this may slow their production or even lose a lot of money.

To realise this dream, MUT incorporated work intergrated learning in its Diploma curriculum. Work Integrated Learning (WIL) offers students the opportunity to explore and expand on theoretical concepts encountered throughout their academic studies in an applied real-life context. WIL also assists students in their transition from educational to professional practice informed by experience, engagement and reflection (Abery, 2015). The IT industry is ever-changing hence it has become crucial to for academia to keep track with current trends.

The Diploma program at MUT is divided into two streams – software development and computer networking. Students enrol for a 3 year Diploma which require them to go for WIL in the last semester of their program. Measures are taken to make sure that the companies that host the students have the required personnel and infrastructure that enable student learning. It is envisaged that after the six months program, the students will be confident enough to take up full time employment or interships. Of paramount importance is the students' technical competence. IT has become very competitive hence the technical competence of the graduates is crucial. How the student feel about their competence is a clear boost their confidence and self-efficacy. Prior research has shown that self-efficacy can significantly impact how people feel, think, behave, and motivate themselves.

Self-confidence might be in reference to specific tasks or a more wide ranging attitude you hold about your abilities in life. (Moore, 1952) stated that confidence equates to trust in self, being conscious of one's strengths and weaknesses, believing in your ability to be able to handle challenges as they present themselves. Further-

more, the author suggested a causality between self-confidence and competence, maintaining that, one is of little or no use without the other. In essence, people who have high self-efficacy:

- See challenging problems as tasks to be mastered, rather than threats to be avoided. This is of paramount importance in IT related subjects since student are expected to solve real life problems that can be very challenging given the ever-changing needs of clients and users.
- Develop greater intrinsic interest and focus in their activities.
- Set challenging goals and demonstrate a stronger sense of commitment to them.
- Quickly recover their self-efficacy following setbacks and disappointments (Bandura, 1994) /*.

Self-efficacy is therefore an important aspect of the student learning process. This paper therefore investigates IT students' perception on their technical competence after undergoing WIL. Through this article, the authors aim at contributing to the growing body of knowledge, by evaluating the effectiveness of both the Diploma program and the WIL program in developing confident and competent graduates. This knowledge is important for universities for the improvement of the WIL programme and even to inform curriculum design. Quantitative data from 100 student was collected and data was analysed in SPSS. A tool consisting of 5 constructs (Minne, 2014) was developed and tested for both reliability and validity.

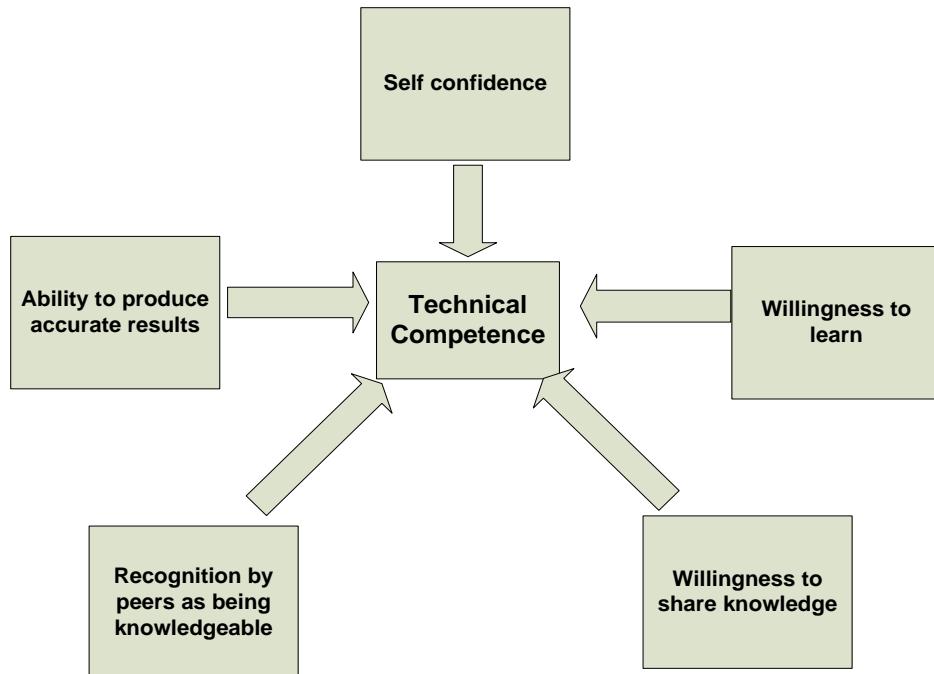


Figure 1: Factors affecting technical competence (Minne, 2014)

This model states that employees with strong technical skills:

- Possess the skills to do their work confidently and professionally.
- Produce results that are at or above standard.
- Keep their skills current and seek ways to continually improve their skills. They welcome the chance to learn and use a new technology.
- Share their knowledge with others and are willing to train others in their area of expertise. They also share what they have learned at seminars, workshops or other learning events.
- Are recognized by peers and/or customers as being a technical or functional expert.

The remainder of this paper is structured as follows: In the next section, we present a brief methodology used in the study. Section 3 presents our finding. A conclusion is given in section 4.

1.1 Benefits of WIL

The advantages of work integrated learning (WIL) to all partners can never be thought little of because of the social and monetary benefits that the WIL program conveys. Elijido-Ten (2014) states that work integrated learning is a three-way partnership of mutual benefit between students, industry and tertiary institutions. Inalienably, work integrated learning likewise also benefits the Government. The subsections beneath outline the benefit of WIL to the different stakeholders.

1.1.1 To Students

One of the major aims of WIL is to create a confident, independent individual who has the right skills and mindset that can be of benefit to the industry. WIL gives university students the chance to test and put into practice the theoretical knowledge gained in the classroom. In actuality, working in real life situations enhance the nature of graduates. In addition, research has also showed that WIL has the potential to improve employment readiness of students and job-related skills (Usher, 2011). Likewise, the work by Jackson (2013) WIL fabricates students certainty, expanding student's understanding for the significance of employability skills and knowledge acquisition, as well as serving as a prologue to the world of work.

1.1.2 To Companies

WIL allows for knowledge transfer from the academic world to industry. Young students usually have fresh ideas and eager to try them out in real work environment. In addition, WIL gives a business the prospect to take up the responsibility of student mentorship which allows for employee growth. The research conducted by Delahaye (2011) reported that students engaged with WIL are not only expected to use WIL for skills acquisition but must also apply that knowledge in ways that benefit the organisation. WIL furnishes a business with chance to survey studies as potential employees. By utilizing students through work integrated learning programs, managers have an advantage of picking equipped employees who comprehends the working environment and obligations.

1.1.3 To Universities of Technology

One of the major benefits of WIL to the Universities of Technology is the being able to industry input into academic programmes and curriculum. In addition Universities also benefit by getting an opportunity of remaining up-to-date with technologi-

cal advancement in industry. (Taylor and Govender ,2013: p.15). Through work integrated learning, Universities of Technology gain opportunities to be research partners with industries.

1.1.4 To the Country

The Council of Higher Education (2011) takes note of that work integrated learning isn't a convenient solution to South Africa's concern of low skills society however it can assume a noteworthy part in guaranteeing work preparation of graduates when entering the work environment. Moreover, Blom (2013) proposed that work integrated learning and employability isn't the answer for unemployment, rather they upgrade the student's chances for a better fit and a smooth changeover from learning to work. The National Skills Authority (2011) likewise concurred that WIL isn't "handy solution" to national skills deficiency and won't create "high skilled labour" but it can assume a noteworthy role in ensuring graduates readiness of enter and contribute to the world of work and South African society.

2. Methodology

This research aims to assess the students' perceptions on their technical competence after work integrated learning. This research was conducted on 2017 3rd year students doing a diploma in information technology. A questionnaire was posted online using google forms and sent to all students at the end of their WIL program which is at the beginning of December 2017. The questionnaire was made available for one week and the desired number of respondents was all 3rd year students who are currently on the WIL program or have recently completed one in 2017 with a good mix of ages, genders and both streams i.e. Software Development and Communication Networks. Convenient sampling on the basis of availability was used to select students to participate on this study. This paper is restricted to data collected from 3rd year students doing a diploma in IT at Mangosuthu University of Technology. Permission to conduct the study was obtained from Mangosuthu University of Technology and all the participants were informed that their involvement was voluntary and that they could withdraw from the study. They were also assured of anonymity and confidentiality.

After collecting the data, the next procedure to be done was data cleaning. According to Diamantopoulos and Schlegelmilch (1997) data cleaning is very important since it helps to identify omissions, ambiguities and errors in the responses. Bertram et al (2010) define analysis as a process that includes three main steps that the researcher needs to undertake. The first step is to analyse or to ask what the data say, the second step is to interpret or to ask what the data mean, and the third step consists of presenting the analysis to readers. In this study quantitative methods of data collection were used.

Quantitative data, also known as numerical data, is the data measured or identified on a numerical scale. Quantitative data is essentially analysed using statistical methods, and results can be displayed using tables, charts, histograms, and graphs. In this study data was initially analysed by Google Forms websites then further processing or statistical analysis was performed using SPSS software and Microsoft Excel 2013. The questions used a Likert scale from 1 up to 7. One (strongly disagree) being on the extreme negative of the subject under discussion and 7 being the extreme positive (strongly agree).

3. Findings

a) Student Confidence

Self-belief has been found to have a positive impact in the execution of tasks and duties both in the classroom and workplace. Our findings show that a big percentage of students had low confidence after going through the WIL program. Of all the respondents, 30% of them said they have low confidence in their knowledge of IT. This finding is worrisome given that a study conducted by Makki et al, (2015) found self-efficacy to be a powerful driver towards the ability to perform engineering assignments. These findings were further supported by a study by Hewitt (2015), on people working on musical projects. The study concluded that employees with better self-efficacy performed well in musical projects than the employees with low self-efficacy. This high score of lack of confidence is thus a cause for concern.

When asked if they fear messing up when I'm given a job or task to do at work, 70% agreed. This shows a lack of confidence on the part of the students despite having spent six months in the industry. More than 90% also felt that the knowledge that

they have is not adequate hence they said the wish they knew more than before going for WIL. However, 92% said they are not afraid too tackle new tasks which is a good indication of their confidence since the IT field is always evolving with new technologies. A study conducted by Larson et al, (2014) studied the relationship between self-efficacy and hard work. The authors concluded that there is a strong relationship between the level of self-efficacy and the effort that students.

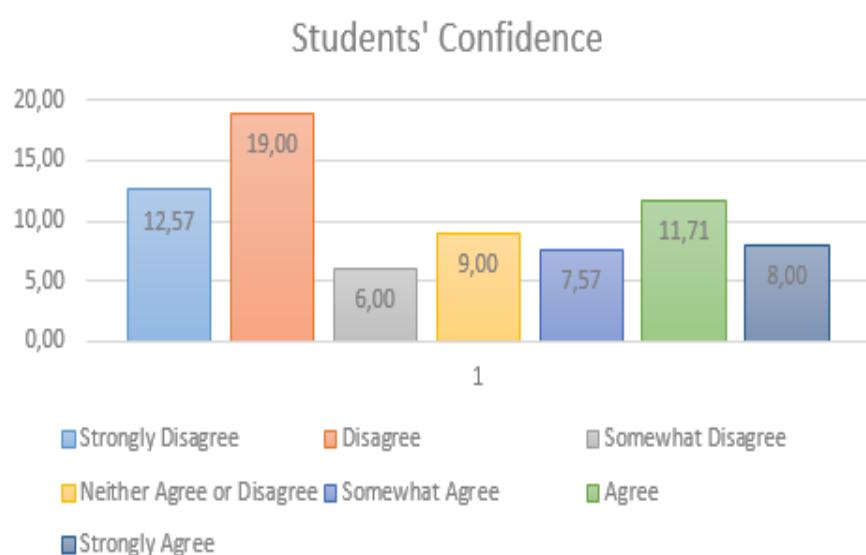


Figure 2: Student confidence

b) Ability to Produce Accurate Results

Ability to produce accurate results has been presented to be the same for both our streams which are communication networks and Software Development with both streams having the mean sitting at around 4.5. The results have indicated that more students are confident about their ability produce accurate results. More than 60% of the respondents indicated that they felt that their technical skills were just as good as their fellow peers on the job. When they were asked about their bosses or mentors perceptions about the work that they delivered, about 77% of the respondents either agreed or even strongly agreed that their boss or mentors relied on their results and they trusted the work that they produced. Most than 50% of the respondents indicated that they take less time to solve problems than others. This further echo their confi-

dence on the accuracy of the results that they produced during the WIL program. About 75% of the respondents expressed confidence in their own ability to solve problems with minimum help from their mentors or workmates. When they were asked to rate themselves against their peers, and they had to state to what extent they agree or disagree that their work mates always produced better results or solved tasks better, almost 67% disagreed with this statement with 13% strongly disagreed. This gave an overall feeling that majority of the respondents had a very positive perception about their own individual ability to produce accurate results during the WIL and this was prevalent in both the Communication network stream as well the Software development stream.

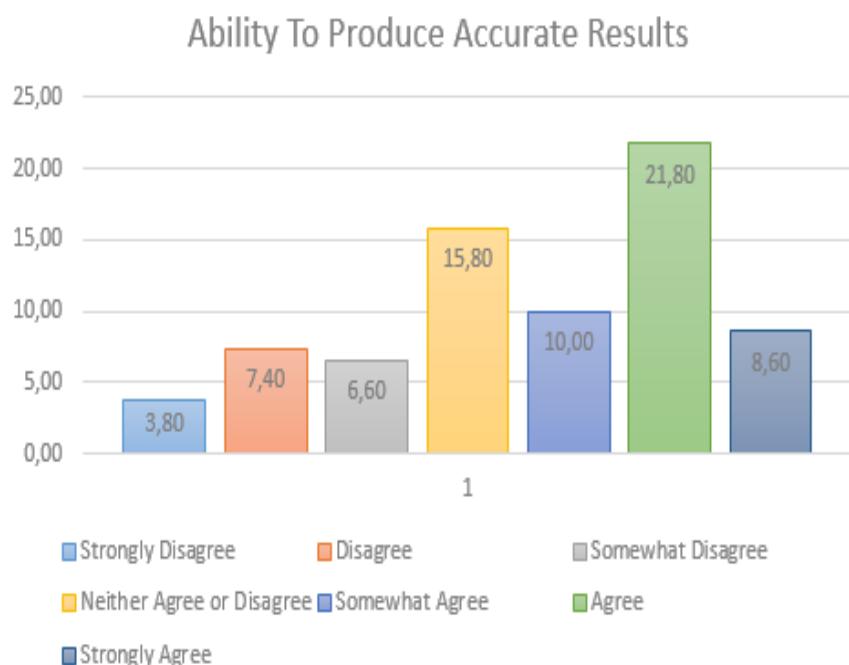


Figure 3: Ability to produce accurate results

c) Willingness to Learn

The student's willingness to put in extra effort in acquiring new knowledge related to their field of study had a very high and positive score. More than 65% reported that they research about work related issues after work hours. Over 75% of the students said they use platform such as YouTube to improve their understanding of IT related concepts. When confronted by difficult task at work, 68% of the students said

they usually consult their peers via social media. In some instances, some students said they make calls to other students working for other companies. Literature such as the work reported by (Kuo, 2014) show that technically competent individuals are always eager to learn more things hence further increasing their confidence and competence in their job. However, a big percentage (68%) said they rarely take an initiative to investigate other technology other than what they used in their work place.

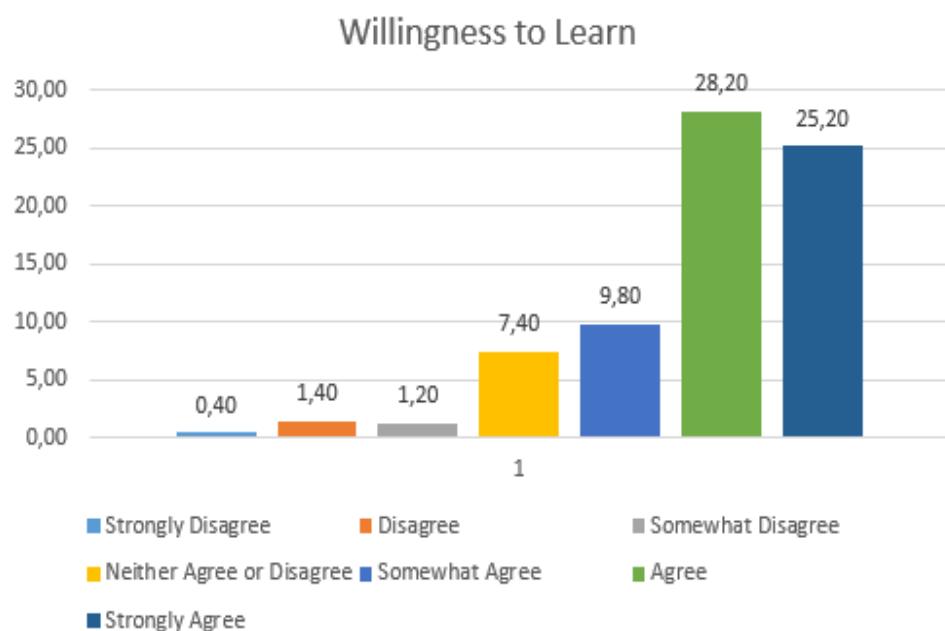


Figure 4: Willingness to learn

d) Sharing Experiences

Generally, students displayed a positive attitude towards knowledge sharing and were appreciative of its importance in peer learning (Yuen, 2007) Furthermore, students who are knowledgeable and have high self-efficacy are more likely to share their knowledge with others (Chiu, 2006). A higher percentage of the respondents said that they share their knowledge with peers. More than 60% of the students felt that they can teach other students technical aspects of their field. This is a

sign of confidence in the skills acquired during their WIL period. This is due to the fact that students are assigned to mentors within industry hence they always have someone to guide them through. This experience increases their confidence and their willingness to pass on their knowledge to other. As a result, this improves technical competence.

65% of the respondents reported that they participate in online forums and blogs that discusses IT related issues. Online forums are good for both knowledge acquisition and sharing. Participation on such forums thus shows that the students feel that they are technically competent.

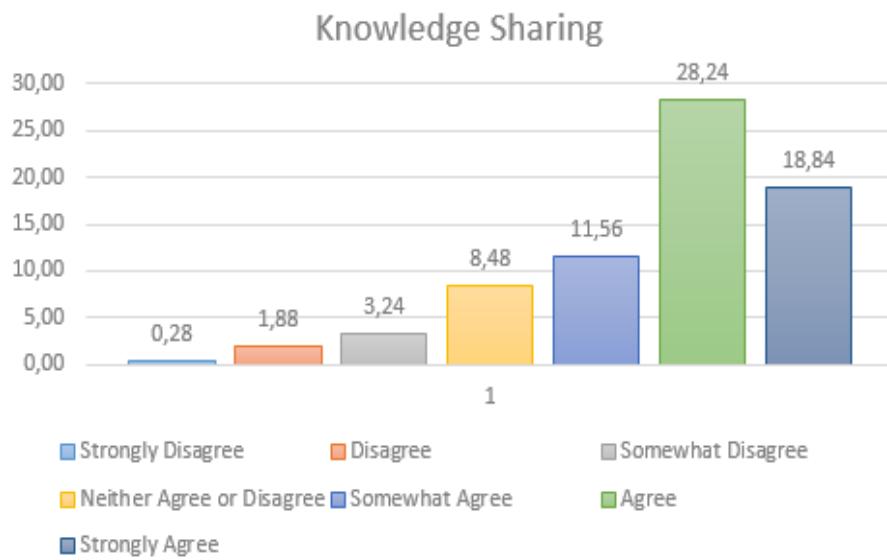


Figure 4: Sharing Experiences

e) Recognition by Peers as Being Knowledgeable

At least 75% of the respondents agreed with varying degrees that their peers recognise them as being knowledgeable in what they do. The peer

in this case includes workmates and fellow students who were also doing WIL. Asked if they are able to lead a team given a technical task, more than 80% expressed confidence in being able to do so because they thought their peers have confidence in their abilities. Employee peer recognition is one of the most important building blocks in building a fantastic company culture. Recognition from peers may come as a surprise, which can have a very powerful impact. Employee peer recognition motivates employees to do great work and perform even better in their next task. When working together as a team, employees tend to develop a new or more productive way to achieve the company goals. This is very crucial in improving self-efficacy of the student.

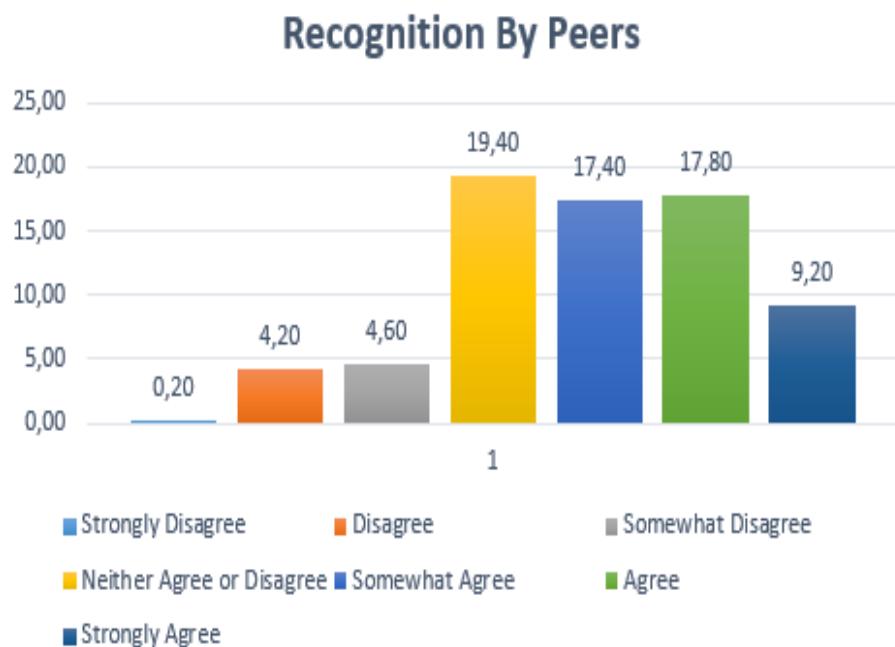


Figure 6: Recognition by peers as being knowledgeable

4. Conclusion

Educationists have, for a long time investigated factors that affect the performance of students in general. Of paramount importance is the quality of the graduate that comes out tertiary institutions. It is thus important to invest resources in improving the quality of graduates. One methodology that UoTs is using is the inclusion of WIL in the curriculum. WIL is aimed at producing graduates that are relevant to industry needs by allowing students to spend time in industry as part of their curriculum. This experience is expected to improve technical competence of the student. This paper therefore, investigated the perception of students' technical competence after undergoing WIL. This study has found out that after going through WIL, students are more confident in their technical abilities. However, there are certain aspects of technical competence that students still lack. For instance the students who participated in this research did not show high level of confidence in their abilities.

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Assessment Feedback by Industry Stakeholders of Hospitality Students During Work-integrated Learning Placements

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Abstract: A key focus of higher education institutions is to produce employable graduates. Work-integrated learning (WIL) has formed an integral part of the hospitality management qualifications at the Cape Town Hotel School (CTHS) for many years. There has been concern that students on current WIL placements for the qualification presently offered are not assessed adequately and lack feedback to assist students to meet the learning outcomes of the subject. The aim of this study is to investigate the assessment procedures of the current CTHS students on WIL placements. Surveys were conducted via email to registered students of the CTHS and hospitality institutions that accepted CTHS students for WIL placements. The findings revealed that less than 50% of the students received adequate feedback during the assessment process, and that there is a need for a revised assessment form which would encourage a better process in the assessment of WIL.

Keywords: *Assessment, feedback, formative, hospitality industry, managers and supervisors, Work-integrated learning*

1. Introduction

There is considerable research into the responsibility of higher education institutions to enhance the employability of students through the development of graduate attributes (Knight & York, 2003; McNamara, 2013; Oliver, 2013; Beaumont, Gedye & Richardson, 2016; Rowe & Zegwaard, 2017). Research has shown that there is a re-

duction in graduate unemployment in the case of students undertaking WIL placements (Jonck, 2014, p.277). Smith and Worsfold (2015, p.23) explain that students given the opportunity to work in the “real world” develop skills which enhance their ability to secure employment almost immediately after the completion of their studies. For these reasons WIL has become an important component within the structures of university education (Smith, 2012, p.247; McNamara, 2013, p.183; Jacobs & Teise, 2014, p.89; Jackson & Wilton, 2016, p.267). At the CTHS the WIL component is embedded as a credit-bearing subject in the National Diploma of Hospitality Management. Although a successful aspect of the course, there are challenges regarding the method in which the industry stakeholders assess the hospitality students. Studies have shown that the assessment of WIL is a contentious issue. The number of variables within a work environment make it difficult to ensure that appropriate and thorough methods of assessing WIL students are used (Ferns & Zegwaard, 2014, p.179; Hodges, Eames & Coll, 2014, p.189). Determining the most appropriate methods of assessing WIL presents something of a challenge (Hodges et al., 2014, p.189), as the student is exposed to a variable environment with external influences (Ferns & Zegwaard, 2014, p.180).

The current format of assessment for the CTHS WIL placements involves monthly assessments by the managers and supervisors who work with the students, as well as a portfolio submission at the end of the placement. The same assessment form is used for both second-and third-year WIL placements.

The purpose of this paper is to investigate whether there is sufficient feedback provided by the industry managers and supervisors during the assessment process of the hospitality students at selected hospitality establishments within the Western Cape.

2. Defining Work Integrated Learning

As an important component of the hospitality qualification at the Cape Town Hotel School it is essential that the concept of WIL is understood. Engel-Hills, Garraway, Jacobs, Volbrecht & Winberg (2010, p.65) identified that the Work-integrated Learning Research Unit at CPUT use the term “work-integrated learning” (WIL) to best explain the integration of the educational requirements of the institution into the

workplace-learning module. They define WIL as “an educational approach that aligns academic and workplace practices for the mutual benefit of students and workplaces”. Patrick, Peach, Pocknee, Webb, Fletcher and Pretto (2008, p.9) consider WIL to be a number of strategic processes that considers a specifically designed Australian curriculum to allow the theoretical aspects to be incorporated into the work environment. Similarly, the CHE Good Practice Guide defines WIL as “an umbrella term to describe curricula, pedagogic and assessment practices, across a range of academic disciplines that integrate formal learning and workplace concerns.” (Winberg, Engel-Hills, Garraway & Jacobs, 2011, p.4). Eames and Cates (2004, p.37) explain that the purpose of the WIL placement is to integrate the learning from the academic environment with the learning that occurs in the workplace and elaborate that the success of this integration is dependent on the curricula and pedagogy adopted in the WIL programs.

3. Understanding the Hospitality Industry

The hospitality industry is a sub-section of the tourism industry (Wood, 2015, p.3) and the two industries are often referred to as the hospitality and tourism industry. The crux of these industries is generally service-related, i.e. providing a service to guests. According to Walker (2009, p.7) hospitality and tourism can be divided into five sub-sections, namely travel and tourism, lodging, assembly and event management, restaurants, managed services, and recreation. Figure 1, adapted from Walker (2009, p.7), illustrates examples of the types of service-related sectors found under each section of the hospitality and tourism industry. The focus of this study is on the lodging sector of the hospitality and tourism industry which encompasses hotels, lodges and resorts. The core purpose of these establishments is to provide guests with accommodation and, depending on the type of hotel, services such as restaurants, bars, lounges, meeting and convention rooms, health spas, business centres, concierge services, in-room dining and general information services (Walker, 2009, p.100).

Hotels consist of a number of major departments that operate with revenue and cost centres on a daily basis. These departments are referred to as rooms division, food and beverage, marketing and sales, human resources, financial control, and facil-

ties, and each department is headed by an executive manager and numerous staff to “...get little things right all the time.” (Walker, 2009, p.122). The WIL programme has to correlate with the functions of each of the departments to ensure that students are trained in the skills of each function.

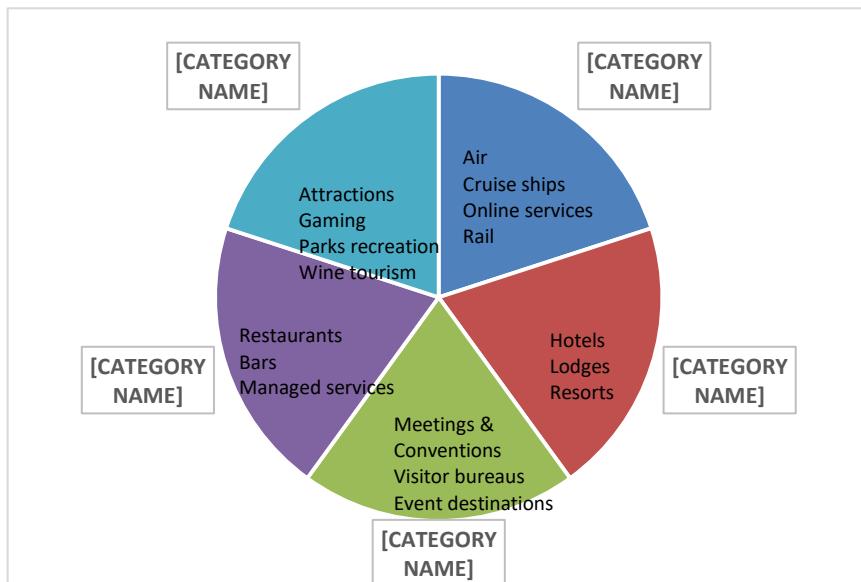


Figure 1: The scope of hospitality and tourism: Walker (2009:7)

4. Assessment in WILL

Assessments are a key component in improving education for the faculty, students and the programmes as it helps to measure the success of the students and gather feedback for improvement (Ben-Jacob & Ben-Jacob, 2014, p.245). Effective assessment methods are an essential part of any curriculum design (Patrick et al., 2008, p.40) and a keystone for any university qualification (Ferns & Zegwaard, 2014, p.179), especially where WIL is a compulsory integrated module. The progression of a student’s performance in higher education is epitomised through a variety of assessment methods, predominately termed formative and summative assessments.

Various views regarding the formative and summative assessment in higher education are a topic for much debate. In its most basic form, the summative assessment is

generally considered as the final assessment where the mark awarded is the final mark towards measuring whether the student's performance is satisfactory, so as to move onto the next level of a programme, or give accreditation at the end of a course (Knight & Yorke, 2003, p.16; Biggs & Tang, 2011, p.196; Winberg et al., 2011, p.41). There is little or no feedback given after a summative assessment. Prior to the assessment, it is important to clearly identify the purpose of the assessment as formative or summative (Knight & Yorke, 2003, p.17). Isaacs, Zara and Herbert (2013, p.16) argue that there is no set format for a summative or formative assessment, and the distinction is dependent on the purpose of the assessment "...to support feedback or to make a summary judgement."

In 1987 Rowntree (1987, p.7) identified the formative assessment as a means to develop and improve methods of teaching to enable the development and growth of the student. Sadler (1998, p.77) is in agreement with this explanation as the formative assessment is seen as the means to provide feedback to the student to enhance the learning process. Knight and Yorke (2003, p.32) and Ben-Jacob and Ben-Jacob (2014, p.245) support this explanation and expand on it by motivating that the purpose of the formative assessment is to provide the student with feedback on their performance thus allowing for reflection, and ideally, to develop ways of improvement in performance. The formative assessment, and the related feedback in higher education, can thus be considered as a means to encourage students to become self-regulated learners (Nicol & MacFarlane-Dick, 2006, p.199).

The formative assessment is categorised along a continuum from the most informal formative feedback obtained from peers, teachers and others from outside establishments, to the formal formative feedback gained from peers and teachers (Knight & Yorke, 2003, p.33). If the assessment of the student during the WIL placement is to be considered a formative assessment, then this type of formative assessment should be considered as formal formative feedback. Knight and Yorke (2003, p.34) describe the formal formative assessment as assessments designed according to the specific curriculum assessment framework of a specific course. This framework requires that the student completes the work and the lecturer provides the feedback that encourages student learning. This feedback is not limited to the lecturer and academic institution but includes feedback from external sources. Knight and Yorke (2003, p.34) argue the

idea that the formal formative assessment feedback is "... typically undertaken by academic staff or by supervisors of placement activity within a collaborating organization."

Considering this process in the hospitality work environment, the student completes the specific task within a workplace department, the feedback is provided by a supervisor in the department according to a pre-determined assessment criteria provided by the academic institution and, in an ideal world, the supervisor discusses this feedback to encourage self-reflection and therefore an improved learning experience. It is important that the feedback involves productive dialogue between the supervisor and student to allow for active and meaningful engagement (Gikandi & Morrow, 2016, p.155; Grosas, Raju, Schuett, Chuck, & Millar, 2016, p.1596).

4.1 The Role of the Workplace Supervisor and Workplace Assessment

As a credit-bearing module the WIL components of the National Diploma in Hospitality Management qualification it is required that the module is assessed and a mark awarded to determine whether the student is successful or not. Part of the allotted mark for the WIL component is the assessment of the student's performance whilst they are completing their placement within the hospitality industry. This is standard practice where the employer(s), as the best judge of the professional competence of the students, complete the students' assessments (Milne & Caldicott, 2016, p.175).

The supervisor at the WIL placement plays a crucial role in guiding and training the student (McNamara, 2013, p.186), as well as being responsible for the judgement of the student's performance (Winchester-Seeto, Rowe & Mackaway, 2016, p.102). Once the supervisor feels the student has reached a level of competency in the area of training, the assessment can take place. To allow for effective assessments the supervisors carrying out the assessment of the student should be aware of the learning outcomes of the specific task been assessed. As these learning outcomes are integrated into the WIL placement, the supervisor, with the guidance of the assessment form, can then assess the student. An example of this would be a student being trained on how to check-in a guest at the reception desk. The student would apply the theoretical knowledge of the guest cycle into the actual task of checking in the guest. Once this

has been successfully done a sufficient number of times the supervisor can then assess the student on the criteria according to the assessment sheet.

An important aspect of the assessment is the feedback provided by the supervisor to the student and the self-reflection carried out by the student. The feedback given should be encouraging, motivational and assist in providing valuable feedback on areas where improvement is required (Knight & Yorke, 2003, p. 35, quoting Mentkowski & Associates, 2001, p.82). Peach, Ruinard and Webb (2014, p.242) state that feedback is a means of providing information regarding a student's development. They elaborate that it is the supervisor in the workplace that can ratify whether the student has achieved the workplace skills, which include technical skills related to the workplace and generic skills such as communication and interpersonal skills, problem solving, critical-thinking and teamwork. Ferns and Zegwaard (2014, p.180) stress that the constructive feedback from the workplace supervisor is vital when evaluating the intangible components of the WIL placement.

The workplace supervisor is an essential element in the development of a student during the WIL placement, however McNamara (2013, p.187) stresses that it is important that the students are supported by the academic supervisor in their development both prior to the WIL placement and during the WIL placement. Subsequent research by Winchester-Seeto et.al. (2016, p.113) corroborated this by stating that “(T)here is clearly a need for hosts and academics to work more closely together and to develop strategies to promote closer cooperation and communication”.

5. Research Method

i. Purpose of the research

The purpose of this paper is to determine the assessment process of the hospitality students by the workplace managers and supervisors during WIL placements.

ii. Participants

This study investigated the assessment methods for CTHS WIL students in 2017 and addressed the methods the assessment process is handled in hotels in the Western Cape, South Africa. For this reason the study population was twofold:

- All the students registered for WIL at the CTHS in 2017,
- All the hotels in the Western Cape that accepted CTHS students for their WIL placements in 2017.

There were 159-student participants, compiled of 86 second-and 73 third-year hospitality management students at the CTHS registered for the WIL subject in 2017, of which 75 students completed the questionnaire, with 12 students not been eligible to complete the questionnaire. The sample size of hospitality establishments was 49 that consisted of the hospitality establishments within the Western Cape that had accepted second and third-year students for WIL placements in 2017. Of the sample group, seven establishments that form part of the same hotel group, declined in completing the questionnaire due to company policy. Of the 49 questionnaires distributed, 21 were completed.

5.1 Methodology

A descriptive research approach was applied to allow the delineation of the current methods of assessments used in the hospitality establishments and experienced by the students on WIL placements. The data collection was done through a mixed-method approach. The quantitative data was obtained through different questionnaires distributed to two population groups with each questionnaire compiled of a combination of quantitative and qualitative-types questions. The first questionnaire targeted the key stakeholders within the hospitality industry who accept CTHS students for WIL placements in 2017. Within the workplace there is no one definite employee assigned to assess the students and one of the purposes of the industry questionnaire is to establish the level of management that generally assesses students on WIL placements. The second questionnaire was sent to the second- and third-year students at the CTHS who had completed their WIL placements for the duration of 2017. The questionnaires were distributed via email and all data collection was anonymous.

Qualitative data was obtained through an open-ended question posed in both the student and industry questionnaire and through conversational type interviews con-

ducted with seven final-year students to establish their point of view regarding the assessment in WIL and the WIL placements in general.

6. Results

6.1 Feedback from Student Questionnaires

The purpose of the student questionnaire was to establish whether the students felt that a manager or supervisor on a monthly basis assessed them, with constructive feedback given during the assessment process. Although 69% of the respondents agreed their assessment was completed on a monthly basis, only 37% admitted that their assessment was actively undertaken between the supervisor or manager and the student with constructive feedback received. 52% of the respondents did mention that they received feedback on the assessment, even if it was at a later stage.

The data obtained from the open-ended question in the student questionnaire as well from the one-on-one interviews supported the findings. The students made comments such as “No, people also don’t want to complete them. They would take the form and give back to me without any feedback. Some people just consider the assessment form as just paperwork and do not realise its importance” and “No not really, they just wanted to get it over and done with”.

The students were asked whether they felt that the assessment of their work performance contributed towards their learning process. The feedback regarding the benefits of the assessment process were positive. The majority of respondents agreed that the assessment process contributed to the learning process and meeting the learning outcomes by identifying their areas of improvement. They also felt that managers and supervisors who conducted the assessment process were aware of students’ work performance and work ethic, although the percentage of respondents who agreed to this statement was only 62%, with 23% undecided. There should be an improvement in this scenario as an accurate assessment can only be completed if the manager or supervisor is aware of the work performance of the student.

6.2 Feedback from Industry Questionnaire

The purpose of the industry questionnaire was to establish the involvement of the industry managers and supervisors in the assessment of the students during WIL placements. A similar line of questioning was used, yet the findings differ. 52% of the respondents stated that they involved the student in the assessment process by allowing their input and giving constructive feedback to assist in the learning process. A further 43% stated that although the assessment is completed independently of the student, feedback for the marks awarded is still given to the student. The industry stakeholders (90%) agreed that the assessment process was important and the students do benefit and learn once they have been assessed.

The validity of the actual assessment form was questioned in both the student and industry questionnaire. The respondents were asked their opinion as to whether the assessment form should be more detailed and specific and differ for both second-and third-year WIL placements. Both the findings from the student questionnaire (64%) and the industry questionnaire (57%) agreed that the assessment form should differ. Data obtained from the qualitative question and interviews substantiated the importance of having different assessment forms for the first and final WIL placements.

7. Discussion

Currently, students on a WIL placement are assessed on a monthly basis. There is only one formative assessment form used to assess all students, regardless of the department in which they work, or the year of study that they are completing. There is consensus from both students and the hospitality industry that the assessment of students during the WIL placements is beneficial for the development of the attributes required for the hospitality industry and the learning outcomes of the WIL placement. The challenges that have emerged regarding the assessments are the methods for which the assessments are carried out and the lack of feedback from the workplace manager or supervisor to the student. In a number of situations assessments are not been completed together with students, therefore their input and feedback from the supervisor is limited. Biggs and Tang (2011, p.63-64) explain that the requirements of effective feedback, stating that the student requires a baseline knowledge of their current capabilities, and an understanding of what they are required to achieve, in

other words, the intended learning outcomes of the subject. As stated by Biggs and Tang (2011, p.65) the “(F)eedback is meant to bridge that gap between where they are and where they should be.”

If the assessment process is to be revised, then the actual formative assessment form requires adaption. Obtaining the ideal assessment form and assessment process can be problematic. McNamara (2013, p.185) observes “(O)ne ongoing challenge for internship programmes is to determine the most appropriate assessment that satisfies the requirements of all three partners”. Gil-Jaurena and Kucina Softic (2016, p.2) state that not all methods of assessment are suitable for different learning outcomes, a reason why new methods of assessing learning outcomes should to be evaluated (McNamara & Ruinard, 2016, p.5). Both student and industry feedback showed a requirement for department-specific assessment forms, as well as assessment forms that differed in second- and third-years of study. A more specific assessment form would allow the learning outcomes to be better defined and, as Biggs and Tang (2011, p.64) explain, allow the students to realise what they need to work towards. Emphasis in different assessment forms for first and final WIL placements should allow the manager or supervisor to encourage the final year student to work towards ensuring they have mastered the attributes for the hospitality industry, thus increasing their employability.

6. Recommendations

The current assessment process for the second and third year WIL placements includes formative assessment forms to be completed by the workplace manager or supervisor, and a summative assessment in the form of a portfolio. The challenge is that the students do not receive sufficient feedback regarding their work performance and the assessment forms are too generic. Two new assessment forms should be developed that are specific to either a first or final WIL placement. The assessment form for the first WIL placement should be operational in nature with no emphasis on supervisory experience. The final WIL placement should be assessed on both an operational-level as well as a supervisory level. This assessment form should also include

the graduate attributes expected of the students, thus allowing them an opportunity to work towards developing these attributes by the completion of their WIL placement.

A further suggestion from the study was for department-specific assessment forms, for example, an assessment form specific to the front office department. Such an assessment form for the front office department would require the assessor to evaluate whether the student has accomplished specific tasks at the reception desk, concierge and porters, switchboard, night audit, and reservations.

It was envisaged in this study that there might be problems with the process with which CTHS students are assessed by the hospitality industry during their WIL placements. The findings showed that approximately 50% of student-respondents felt that they were assessed adequately, however this figure is not sufficient. As a credit-bearing subject it is imperative that the correct assessment procedures are followed for all students, which will be to the benefit of the students, and ultimately the hospitality industry. The result is that the assessment process must be made more specific, which will force better interaction between the student and the workplace manager or supervisor. This can be done by making the assessment forms more detailed, with a required section for the student's input as well as the manager or supervisor's grading.

The assessment completed by the workplace manager or supervisor is a formative assessment that requires feedback to students to allow for reflection and development. The study revealed that, although this does occur, there is not enough feedback provided to the students. To ensure that the WIL placement is effective, all possible efforts must be made to ensure all students receive feedback regarding their work performance so that they can identify the areas requiring improvement. One of the suggestions from the study from both industry and student perspectives, was that the academic lecturer be involved in the assessment process. Although an excellent idea, logically it is not possible to implement such a process for every monthly assessment for each student. Some recommendations to assist in ensuring that feedback is given, could be:

- The assessment form is designed so that there is input from both the student and the assessor. Both parties should grade the student, with the student given an indi-

cation of what they think their performance is like, which is discussed with the assessor. The final mark on the assessment form is that of the assessor.

- The WIL lecturer or an academic lecturer is required to visit the student once during in the student's WIL placement. During this student visit, one assessment could take place between the lecturer, the student and an industry representative. At this time, discussions can be held on how the student has improved, any challenges that the student may have faced, and goals for the remainder of the WIL placement. Although the lecturer cannot give input on the student's work performance, the fact that the lecturer is involved in the process will encourage the feedback process.

7. Limitations to the Study

There were some limitations to this study. The response rate from both the students and hospitality industry was just below 50%, which could question the validity of the study. This study was done anonymously, however, after the completion of this study the researcher felt that it would have been beneficial to follow up the questionnaire with qualitative interviews with the student respondents to establish insight to the reasoning for their responses. A further limitation is that the study is limited to one University of Technology (UoT). A comparison study involving the WIL assessment procedures followed by all the UoTs in South Africa would establish the best method of assessing students during the WIL placement. The assessment of WIL is challenging on a global basis, and it would be deemed beneficial to all parties if the UoTs in South Africa shared their practices to develop an assessment procedure that worked for all universities, students and hospitality industries, and not be area-specific.

Future studies

As an integral part of university curriculums, the need for future studies in WIL placements is ongoing. The hospitality industry is an ever-changing environment and therefore future studies are required to ensure learning outcomes for the WIL component of the curriculum is meeting the demands of the hospitality industry.

A future study is recommended into assessment of students on WIL placements from the hospitality industry's perspective. The hospitality industry is driven by supply and demand and establishing the best ways to assess the students from their per-

spective will encourage an improved relationship between the student, the establishment and the academic institution. Technology plays an important part of everyday life. A future study is required to establish ways in which the assessment can be converted from a paper assessment to a digital assessment. Both an industry and a student respondent in this study mentioned this recommendation.

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Factors Constraining the Implementation of Work Integrated Learning in Namibia

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Abstract: . Work Integrated Learning (WIL) is internationally recognized as the new powerful form of engaged pedagogy. However, despite the Namibian's government awareness campaigns for local higher Learning institutions (HLIs) to implement WIL, there are still some undergraduate courses that do not engage in such pedagogy. Therefore, the paper aimed at revisiting the factors constraining the implementation of WIL in all undergraduate curriculums. The study found various factors within and outside HLI's autonomy that constrain the implementation of WIL. The study concludes that HLIs have the ability to implement WIL across all curriculums because most factors constraining the implementation are found within their autonomy as opposed to those factors outside their autonomy. The study suggests concrete solutions to key players in higher education spaces. This quantitative study employed an extensive literature review from a variety of genuine sources includes peer-reviewed articles and government reports. The study is biased towards the Namibian context.

Keywords: *Work Integrated Learning, Namibia, Higher Learning Institutions, Disciplines, Employers, and Students*

1. Introduction

Given the shortage of qualified and skilled human resources in Namibia (National Human Resources Plan 2010-2025) and the need for a speedy transformation of the country from the current level of development into an industrialised country by 2030 (GRN Vision 2030), the Namibian higher education sector is experiencing pressure from the government, industry and the community to demonstrate its ability to respond to skills shortages and the demand for world ready graduates. Coincidentally the national demand for well-prepared graduates coincides with the United Nation Sustainable Goal 4 which calls for youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship (United Nations General Assembly, 2015).

In reacting to similar demands above, there is an increasing interest in Higher learning institutions worldwide in the use of some form of work experience alongside the regular university curriculum (Billet 2009) by Work Integrated Learning (WIL).

Although defined and termed differently by different scholars, WIL is an umbrella term referred to a range of approaches and strategies that offer students the opportunity to explore and expand on theoretical knowledge and concepts encountered throughout their academic studies in an applied real-life context (work place) within a purposefully designed curriculum. (Abery, Drummond, & Bevan, 2015). Of recently WIL has been acknowledged to have been contributing to the preparation of graduates who are responsible citizens and equipped and ready to change and improve existing processes and practices, but not to merely adapt to the world as they find it (Patrick, Peach, Pocknee, Webb, Fletcher,& Pretto, 2008). Hence, WIL is considered as an engaged pedagogic approach as termed by hooks (2012) that yields to “productive workers, self-reliant entrepreneurs, responsible, good citizens, and selfless leaders” (Patrick et al., 2008, p. 9) of who are world-ready as per demand of government, community, employers and global world at large. However, “not all students have easy or equal access to WIL experiences even those for whom the experience is mandated by professional accreditation requirements” (Patrick et al., p. 9). In addition “firms often express dissatisfaction with the competencies of graduates they hire” (UNESCO,2016, p.95). The above quotations articulate two key important issues which serve as a point of departure for this study; a) that there are some disciplines that WIL experiences are mandatory and others are not mandatory and b) that even

among the mandatory disciplines there are students who do not get the opportunity for such experience. The study identifies a gap in the literature that justifies why universities have failed to provide equitable access to students not only who are traditionally mandated to by professional accreditation requirements, but to all disciplines. Taking into account that the United Nation Sustainable Development Goal 4 which all countries are members states (with an exemption of the 6 nonmembers states) requires for reassurance of inclusive and equitable quality education and promote lifelong learning opportunities for all (United Nations General Assembly, 2015).

Even though there is a significant body of scholarly research on WIL in tertiary education as acknowledged by Thi Tran and Soejatminah (2017) empirical research related to the challenges experienced by higher learning institutions in the provision of equitable access to all students regardless of the disciplines being studied remains Scarce. Thus, the paper aims to fill this gap in discussing the various factors that constraining the implementation of WIL. It is worth noting that this paper complements the Patrick et al., (2008) and the earlier Universities Australia's position paper on internship (2008) that discusses the various challenges experienced by Australian education system in incorporating WIL. However, it augments it by identifying the issues and challenges specific to new developing nation such as Namibia, which is characterized by low population and limited scope of industries.

The paper is organized to first introduce the key terms and different terminologies used interchangeably. It further discusses the methodology which was used to yield the research results. Finally, it presents the factors constraining the implementation of WIL derived from literature before it concludes with suggestions.

2. Research Question

What are the factors that are constraining higher learning institutions in implementing work integrated learning in all curriculums and what are the possible solutions to these challenges in assuring that WIL is implemented an all undergraduate's courses in all institutions?

3. Literature Review

3.1 Work Integrated Learning and Theorized

Work integrated learning is characterized by Internships, Work-Based Learning, Professional Practice, Work Placements, Service Learning, Practicums and Cooperative Education (Jackson, 2013). Despite different terminologies, models, and practices that vary, they are all based on a mutual purpose and understanding of the importance to enable students to integrate theoretical knowledge gained through formal study, with the practice-based knowledge gained through immersion in a work or professional context. (Patrick et al., 2008).

The core purpose of WIL has been fluctuating, previously WIL was structured to blend theory and practice to optimize student learning for traditional disciplines such as Nursing, Education, Engineering etc (Billet, 2011). Later on, the core purpose was shifted to close a perceived gap or what may be referred to as the "theory-practice divide between academic studies and the work that students were usually called upon to do when they graduate (Patrick et al. 2008, p. 9). Hence WIL during such period it was considered as a bridge for the student between the academic present, and their professional future (Martin & Hughes, 2009). Lately, the core purpose has switched to optimizing student's learning as an engaged pedagogy (hooks, 1994) that views education for social transformation, this is evident from recent literature of that is biased towards preparation of graduates for a world ready (Council on Higher Education, (2011) as opposed to earlier work that was biased toward producing work-ready graduates (Culkin, (2011), Blom & Benes,(2012) & Atkins, (1999).

Literature shows that WIL is not a one man's show, there should be a broad range of stakeholders involved in the planning and successful implementation of WIL, what is encouraging is that all stakeholders who are involved benefits in different ways (Patrick et al, 2008). Generally, the key stakeholders of WIL include; a) Industry, employers and the professional bodies –who are prospective employers of including not-for-profit organizations, b) the government-which is the legislator for policy and source of major funds for public education c) students, university academics, and professional staffs. Even though researchers, funders, consultants have recently joined the link to higher education they are not the key stakeholders.

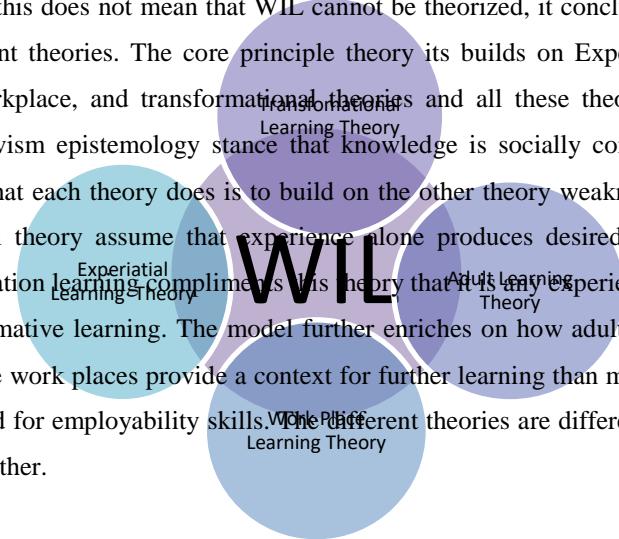
Although WIL seems to be over-researched, up until now, there is no single, unifying theory has yet been found in the literature on which to base WIL.(Hays, n.d), however, this does not mean that WIL cannot be theorized, it concludes that it draws on different theories. The core principle theory its builds on Experiential learning, adult, workplace, and transformational theories and all these theories are built on constructivism epistemology stance that knowledge is socially constructed (Crotty, 1998). What each theory does is to build on the other theory weakness, example experimental theory assume that experience alone produces desired learning, so the transformation theory complements this theory that *It is any experiences that leads to a transformative learning*. The model further enriches on how adults learn and bring in how the work places provide a context for further learning than merely just a training ground for employability skills.


Figure 1: WIL working model informed by The Four Pillars Model of IE&WIL (Hays, n.d)

3.2 The Rationale for WIL Within the Curriculum to Various Stakeholders

The benefits of WIL are anonymous across the literature, however only if properly planned, designed and monitored programmes that they could yield better results. (Rampersad, 2010) Ranging from benefits associated with employers, students and

the university (Brown, 2002; Murphy & Calway, 2006; Weisz & Smith, 2005). It is worth noting that “all stakeholders want to receive benefits from a WIL program” (Abeysekera 2006 p. 11). However, this paper discusses the benefits of WIL biased towards students.

Firstly is identified as the powerful form of pedagogy, a “valid pedagogy” (Patrick et al, 2008 p.11). Through this approach, students learn through experience, and this is in line with what hooks (2012) argues for. Her view of engaged pedagogy with that of the great philosophy Paolo Freire contrasted the practice of students passively receiving information that has been packaged by teachers or in textbooks in classrooms. hooks and Freire’s “banking model of education” (2000) disapproves of a disjoint between theory and practice as theory and practice are not separable. Furthermore, this pedagogy allows for the satisfaction of curiosity among students as the "instruction is designed to engage students in direct experiences which are tied to real-world problems and situations in which the instructor facilitates" (Shankar & Durrani, 2013, p.12) and encourages critical dialogue as opposed to directing student progress. What is fascinating about such type of pedagogy is that students go through experiential processes, they begin developing critical reflection and questioning skills, see moments of success, and feel personally invested in continued exploration (p.14).

Secondly, it provides a platform for developing and enhancing the student's relevant skills. WIL is generally accepted as a powerful vehicle for developing generic or professional skills and provides students with the opportunity to improve their employability and work readiness (Harvey, Geall, & Moon, 1998; Knight, 2007). These skills include such communication, critical thinking, decision-making, interpersonal, negotiation, problem-solving, self-confidence, teamwork, self-management and work ethics (Bennett, 2002; Oluyomi & Adedeji,2012). The same set of skills are could be argued to be desirable and important for any responsible citizen or individual rather be professional or nonprofessional skills/soft skills. Studies such as of Mason, Williams, & Crammer,(2006) and Patrick et al. ,(2008) argue for the need of WIL as these skills cannot be effectively be developed within classrooms settings hence a need for authentic real work place for their development or enhancement (Martin, Rees, Edwards, & Paku ,2012p. 11).

Lastly, WIL experiences provide an overpass for students to connect and create a network across business sectors. Supporting evidence is found in longitudinal studies in which employment rates among young people who worked while they studied are compared with employment rates among young people who did not.(Mason, et al., 2006). Furthermore, it improves student self-efficacy (Reddan, 2016, Billett, 2001) as practicums give students confidence, they experience the world of work (how the industry works) while gaining a cultural awareness of their discipline (Billett, 2001).

3.3 Work Integrated Learning in Namibia Higher Learning Institutions

The purpose and core functions of higher education are to produce high-level human resources in the professions, management, technological and vocational fields, arts and culture, as well as educators, academics, and researchers. In addition, the purpose of higher education is to develop new knowledge through research, discovery, innovation and the promotion and dissemination of new ideas. This contributes to higher productivity and improvements in living standards. (Investing in People, Developing a Country: Higher Education for Development in Namibia (MHVTST, 1999: 8-9).

In realizing that higher education contributes to the development of individual full potential and talent to the economy's need for high-level skills. WIL is identified as the pedagogy that will bridge the gap. In 2013, "a group of international experts was invited to Namibia to facilitate a discussion regarding the establishment of a national framework for cooperative education." Reinhard et. al (2016). The rationale was to set the foundation for higher learning institutions to integrate WIL in all disciplines apart from the traditional disciplines that had long integrated WIL, disciplines such as engineering, nursing, midwifery, law, medicine, and education. The final outcome of a national framework on WIL is not yet known to various stakeholders, neither was it launched.

Until the 1970s, Namibia had no higher education institutions, currently there two public universities, the University of Namibia (UNAM) which was established in 1992, immediately after Namibia's independence in 1991. It offers general formative academic programmes and professional programmes at both undergraduate and post-graduate degree levels. UNAM offers thirty-six undergraduate degrees across its dif-

ferent campuses across the country including all former colleges. In addition is the Namibia University of Science and Technology (NUST) which was formally known as the Polytechnic of Namibia (PON), established in 1994. It is still in the process of transition from a Polytechnic, NUST offers vocationally-oriented and academic degrees in technical subjects and applied fields for both undergraduate and postgraduate degree levels while smoothly phasing out former certificates and diplomas programmes. NUST offers vocational and academic degrees in technical subjects and applied fields.

In complementing the public universities, are Private higher learning institutions (PHEIs), the International University of Management (IUM), is the oldest established in 1994 as well. There are other 9 private higher learning institutions that are small and the primary focus are on certificates and diploma level, and with a small number of undergraduate degree programmes, and postgraduate programmes in specialized fields.

Both public and private universities operate differently with regards to WIL even for similar courses they offer. The two public universities have standalone units that facilitate the work integrated activities, but still not all disciplines students have equal access to WIL experiences. It is therefore important to understand the constraining challenges in the implementation Of WIL in assuring that all students have equitable access to broad range of experiences as others to be able to have a fair competition among themselves.

4. Methodology

To answer the research question on factors constraining the successful implementation of work integrated learning in Namibian higher learning institutions, a quantitative methodology was employed. Recent literature from peer-reviewed journals of cooperative journals such as the African Journal for Work-Based Learning (SASCE) and Asia-Pacific Journal of Cooperative Education, and some other different studies were selected from Emerald Publishers, SAGE Journals, Taylor and Francis, Springer and Google scholar databases were selected and reviewed. The articles were reviewed in detailed using content analysis to conclude the factors relevant to Namibian con-

text. The researcher has also drawn on her experiences being a quality assurance officer in one of the higher learning institution. Some descriptors used in selecting the 20 reviewed articles include, the date of publishing, the most cited article, the content, and contexts. Other additional genuine materials such as the UNESCO, government reports, strategic plan, and Higher education policies were added to provide the background to the study.

5. Findings and Discussions

There are various factors which constraining the implementation of WIL across all the curriculums in making sure that students penetrate the realm of equal access to authentic education in real work places. Most importantly the Australian research has enriched literature with several challenges associated with the design, development, and implementation of WIL programs (Rook, 2017), a lot can be related to Namibian higher institutions. The factors were grouped into two categories factors inside/within the higher institution autonomy, these are factors that higher learning institutions have control to change and subsequently successfully implement WIL. However, there are other factors that are outside the higher learning institutions autonomy. These factors higher learning institutions cannot change on their own, as they fall within a different space either government's or industries' space.

5.1 Factors within the University Autonomy

5.1.1 The Misconception of WIL

There is a misconception among academics surrounding the concepts and importance of WIL (Rook, 2017). Some academics view WIL as a programme for vocational disciplines or other traditional disciplines, 'old timer' disciplines that had a long time integrated WIL such as nursing, education, and engineering (Patrick et al., 2008, p. 32). Shulman's Model old model of pedagogical reasoning inform us how perceptions of pedagogy influence the teaching practice. Hence such misconception requires a restructuring of preconceived knowledge (Rooks, 2017pg 3) through awareness workshops for a different practice to occur. Reeders (2000) further observed that academics who were involved in WIL were barely provided with any training related

to WIL policy formulation, program design, preparing of students, sourcing of positions, assessment, student supervision, student mentoring, industry liaison, program evaluation or any other activity related to WIL process (Abeysekera, 2006, p 25). There is no literature however that cautions why WIL should be limited to some disciplines. Through a comparative grip, most universities in Australian and New Zealand offers WIL experience to all students regardless of the disciplines. McLennan and Keating cited by Rook (2017) advised that the successful integration and implementation of WIL into the curriculum does not only require a change in pedagogical approach to integrating theoretical, professional and experiential models of learning, academic's commitment and a significant amount of time. Hence it could be understood that teachers' positive perception and commitments are moderating factors towards the successful implementation of WIL.

5.1.2 An absence of WIL Lessor Officers

An empirical study of Clark, Rowe, Cantori, Bilgin, and Mukuria, (2016) shows that workload and time constraints for both academics and employers are the constraining factors towards the implementation. Martin et al., (2012) support that mentoring entails regular contact with the student and this can be time-consuming thus to an extent dictates the possible scale of WIL in an institution.

This could be because most higher learning institutions do not have lessor officers whose sole job descriptions centered on WIL activities. The lessor officers oversee the relationship between the institutions and the employers and who they do not only assures that all students get the opportunities for WIL experiences, but that they are well prepared academically and psychologically/emotionally. In addition, they check on the wellbeing of students time to time while in the work places. Martin et al., (2012) adds that since industries confidential information become vulnerable, it is the lessor officer's work to assure that students and industries sign confidentiality agreements or any similar formal demands from the employer to students. Similarly, there is a university contract that industries sign-off that stats up front the learning outcomes students are required to have achieved upon completing the WIL experience.

In summary she/he is the link between students, university, and the industry. Hence any ordinal academics may not only find the extra roles overwhelming on top her/his daily duties as a lecturer and a researcher, but it may clash with the day to day activities.

5.1.3 Lack of Budgets for WIL

The most recorded barrier of implementing WIL in history (Patrick et al., 2008; McLennan & Keating, 2008) and still at present years (Rook, 2017) is the financial resources to cater for all logistics pertaining to the planning and implementation. The inclusion of WIL in the higher learning institution's strategic plan demonstrates a strong commitment to this approach to learning (Martin et al., 2012), however, allocating budgets for the WIL is a deeper commitment to the realization molar activities. Many institutions have included WIL goals in institutional strategic goals. However, McLennan & Keating, (2008) advised that the commitment should be extended to the internal structures and support that value WIL, which is financial. Namibian universities can allocate a little as possible for WIL activities if WIL goals are not be realized. Just as they allocate funds for any other extra mural activities.

5.1.4 Ensuring of Quality Placements

Studies such as of Patrick et al. ,(2008) has warned against placing students for the sake of placing, but ensuring that students recognize their learning experience. The study further asserts that "the quality of the work experience is thus intrinsically tied to its relevance, structure, organization and intentionality" (pg 11).

Whose responsibility is it to look for quality placements is one of the questions surrounding the concept of placements in WIL literature? The placement question becomes more important and necessary, particularly in professions where there is either competition for placements from other educational providers or limited opportunities for placements especially to developing countries as Namibia with limited industries/corporate world. Dickson and Kaider (2012,p.1) added that it is even particularly challenging in units of study with large student cohorts with enrolments that are more than 100 students. Internationally universities are struggling to find quality placements for students (McLennan & Keating, 2008). Similarly, Namibian higher institutions find it challenging to find quality placements promotes learning for stu-

dents. The Namibian newspaper reports that "students have experienced challenges in finding placements at organizations for their internships, resulting in them experiencing delays in obtaining their qualifications. Another concern is that most graduates lack real-world experience as they have not been exposed to WIL." (2017 p. 14).

Martin et al.,(2012) asserts that some universities allow freedom of students to select the companies they would like, for some institutions academic selected the placements for students. Whatever the procedure might be as long as university signs a commitment agreement to clarify the expectations and responsibility of all related stakeholders and that placements environments will promote the quality learning, because being exposed to any workplace does not automatically leads to quality work placement experience which ultimately yields to learning.

5.1.5 Timetabling /slot allocation of WIL and a Clash of Other Institutional Agendas

Patrick et al., (2008) states that the length of placement can vary some may take up to the whole semester or even year. This challenges higher learning institutions in terms of the right time for placements as students get to be left out by other institutional activities that relate them academically and socially. Furthermore, with regards to the timing of placements, there is a debate among scholars and industries on the right time for placements. Patrick et al., (2008) reports of ongoing debates among scholars if students should gain first the theoretical knowledge and skills prior to WIL, or learning should concurrently take place, or students should scaffold an early work experience earlier and later again with an assessed WIL activity. The last suggestion could be deemed ideal for learning, however considering all other factors that are deemed to constrain the implementation of WIL such as the quality placements, lack of budgets for WIL this may not be applicable to Namibian context.

5.1 Poor relationships Between Higher Learning Institutions and Industries

Rooks (2017) maintains that creating and maintaining relationships between relevant stakeholders becomes important to consider when designing and implementing a WIL

program. The literature provides poor relationships that this study has grouped into two categories. Firstly the relationship between higher learning institutions and industries. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), (2016) there is no existence of strong partnerships between Namibian universities and the industries. Similarly, Patrick et al. (2008) echo that the weak partnerships between industries and higher learning institutions are a major challenge when implementing WIL into the Australian university curriculum since every stakeholder wants to benefit. Choy and Delahaye (2011,p.1) study substantiate that "successful WIL that meet the needs of individuals and their workplaces is premised on a learning partnership where the roles for the curriculum and pedagogy are genuinely shared". Especially that there is misunderstanding within the industries on role for higher education, industries view institutions as a training ground for future employees (Atkins, 1999). Patrick et al., (2008, p.65) emphasized that "university education is not about job training, instead the university must be (as it always has been) responsive to society and responsive to the needs of students to become productive members of society". Hence any relationship to be built should commerce with the awareness of the purposes and clarifications of expectations for each stakeholder.

Finally, the lack of national policy on WIL contributes to the same dilemma, as industries do not feel obligated to take part (UNESCO, 2016) and the few industries that come along on corporate responsibility ticket may not want to sign any contracts to tie them for any future responsibility.

Secondly, is the relationship between higher learning institutions, despite the few higher learning institutions in Namibian that cater for its 2.1 million people, institutions are failing to collaborate and work together with regards to WIL activities. Every institution is running its own center or unit in segregation. UNESCO, (2018, p.87) resonances that "different stakeholders are currently developing frameworks for work-based learning (job placements, apprenticeships, and others), but they do so in isolation". Patrick et al. (2008) emphasized the importance of learning from others and having access to information about different approaches to WIL.

It may be difficult for higher learning institutions to have a uniform approach towards to WIL, however, institutions can collaborate to set outcomes, have a dialogue with industries and the voice become one and stronger than single institutional voices.

This is viable to courses/disciplines that runs across all institutions. There is a need for better communication and coordination between different universities.

5.2 Factors Outside the University Autonomy

5.2.1 Lack of National Policy on WIL

The government is considered a key stakeholder in this study, not only that it is the major employer in the country, but because it "has national responsibility for higher education policy and funding"(Blom,2012 p. 7). However, according to UNESCO (2016, p.95), "Namibia does not have a national framework which should include a consistent legal framework, appropriate incentives particularly for SMEs, involvement/integration of the various bodies concerned, quality assurance and development strategies, adequate financing arrangements, and an active promotion strategy". This serves as a challenge firstly, to the institutions in developing institutional frameworks or legal documents as institution's WIL models or institutional policy are delivered or aligned to the national WIL policies. Secondly, to the industries, as they have no legal obligation to accept students for placement, hence they are reluctant to face the direct costs or any implicit costs involved.

According to Reinhard, Pogrzeba, Townsend, and Pop (2016, p.250) there is a national core working group for cooperative education which was tasked to draft a national strategy for cooperative education subsequently a national policy. According to UNESCO (2016, p.9), the work was to be finalized in a consistent manner "as soon as possible" and one may question when is soon? Because the report was released in 2016 and yet the outputs were not launched for the public usage thus challenging institutions in successfully planning and implementing WIL until now.

6. Recommendations of the Study

For WIL to be successfully implemented across all curriculums the study suggests that the following suggestions to each key stakeholder.

6.1 Higher Learning Institutions

- a. Allocate funds for WIL activities in the institutional budgets;

- b. Create awareness among employees (academics and administration staff members) on WIL and offer training workshops on how to successfully integrate Wil in the curriculum;
- c. Develop working documents on WIL as a reference material for present and future employees;
- d. Appoint a lessor officer or officers (depending on the number of students) to be the intermediary between students, universities and the industry;
- e. Engage in critical dialogue to create and maintain create strong sustainable partnerships with industries and the government;
- f. Provide counseling/orientation to students before placements.

6.2 Government: Ministry of Education

- a) Recognize and create awareness among the citizens on the importance of WIL activities;
- b) Launch the national policy on WIL to provide the foundation for WIL activities;
- c) Provide extra funds for institutions specifically for WIL programmes ;
- d) Collaborate with the Ministry of Industrialization, Trade and SME Development where all private business is registered to mandate firms to take part in the training of graduates;
- e) Facilitate the dialogues to promote higher learning institutions collaborations and higher learning institutions and industries collaborations.

6.3 Industries

- a) Take accountability of students learning for the future preparation (work and socially)
- b) Create and maintain relationships with higher learning institutions
- c) Supervisors have to take a different role as facilitators and create safe, interesting and exciting space where students can articulate their thinking freely.

7. Conclusion

The aim of this study was to explore on the factors that are constraining higher learning institutions in implementing work integrated learning in all curriculums and to suggest the possible solutions to these challenges in assuring that WIL is implemented in all undergraduate's courses in all institutions. Based on the literature review methodology and drawing on the researcher's experiences in the higher education spaces, the study found different factors that are constraining the implementation of the WIL in curriculums across higher learning institutions. Factors within the higher learning institutions autonomy to such as; the misconception of WIL, the absence of WIL lessor officers, lack of budgets for WIL logistics, quality placements, timetabling /slot allocation, a clash of agendas, poor relationships between higher learning institutions and industries and between higher learning institutions. In addition the study further found a factor outside the higher learning autonomy which is the lack of national policy on WIL, however, although the factor falls under the government space, still, the higher learning institutions can engage into critical dialogues to overcome the constraining factor.

A deep analysis of these findings concludes that higher learning institutions have the ability to implement WIL across all curriculums because most factors constraining the implementation are found within their autonomy as opposed to those factors outside their autonomy. The findings further inform that the success of the implementation of WIL depends heavily on the students as well, hence students should be oriented on how they should manage their own learning outcomes, as the interest in their learning is a moderating variable to the successful implementation of WIL. The study then suggests concrete solutions to key players in higher education including, the government to provide the national policy on WIL and be the catalysts for collaborations between higher learning institutions and industries. There is a need for WIL across all discipline for students to apply theoretical concepts taught in classrooms to practice-based tasks, ultimately enhancing quality of learning, but it requires each stakeholder to take a different role and a concerted effort as it is vital for the success of WIL programs.

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Enhancing Employability in Engineering Field: Opportunities and Challenges

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Abstract: In most recent years, universities have increasingly focused on the employability of students who become their graduates from different fields of study. While work-integrated learning program is one way of enhancing student's employability, the faculty of engineering could embed employability throughout the diploma programs using several strategies. These strategies may be based on the student lifecycle approach embedded into the Co-operative Education Framework within the university. This paper uses chemical engineering students as a case study for how employability can be progressively built throughout the diploma program. The paper suggests that students may be able

to undertake activities that enhance their employability as they shift into university, shifting through the degree program and then transition out of university into the industrial workplace. It is anticipated that student can develop their understanding of employability skills within the engineering context before they graduate with their qualification, throughout their studies and way after they have graduated.

Keywords: employability, engineering, work-integrated learning

1. Introduction

Universities are increasingly focused on improving the employability of their students (Clarke, 2017). Even though enough elaboration has been made regarding this, there is still no agreement in the current literature regarding the employability in a holistic way. (L. Bates & Hayes, 2017) state that students believe in employability as a short-term idea which is focused on securing a work-integrated learning placement. However, as much as the ability to obtain employment is a key element of employability, having necessary and required skills together with good personality traits are also an important part (Tymon, 2013). The key skills that employers are most interested in for graduate employment include communication, teamwork, information technology and organization (Brauns, 2012). These skills are widely referred to as ‘competencies’ in the engineering workplace.

Cooperative education programs aim to prepare students for the workplace and employability by developing generic and specific competencies useful to the student career development and to the employer. There are numerous definitions of competency reported in education and development literature. The professional body of engineering field provides information about the required competencies of chemical engineering technicians which are diploma graduates from Universities of Technology. The Engineering Council of South Africa (ECSA) defines competence as the possession of the knowledge, skills, and attitudes necessary to perform the activities within the professional category to the standards expected in independent employment and practice. ECSA further prescribes the knowledge component of competency that; it consists of knowledge from the engineering education process and knowledge

subsequently acquired, which is likely to be specialized and related to the engineering work context. Boyatzis (1982) define competency from an industry perspective as an underlying personal characteristic of an individual that facilitates superior performance in a given situation. According to Birkett (1993) competency is related to the manner in which individual attributes, such as knowledge, skills, and attitudes, are drawn on in performing tasks in specific work contexts – resulting in overall job performance.

There is evidence of benefits associated with work-integrated learning and development of engineering competencies (Makhathini, 2016). These include the development of self-efficacy (Coll, Lay, & Zegwaard, 2002) also work self-efficacy (A. Bates, Bates, & Bates, 2007) and career driven self-efficacy (Reddan, 2014). Co-operative education program which is work-integrated learning in engineering discipline also assists students to select and clarify (Zegwaard, Coll, & Hodges, 2003) career choices as well as professional identity and socialization (A. Bates et al., 2007). Furthermore, work integrated learning (WIL) in chemical engineering diploma is set to ensure that the student can function as an active and competent member of an engineering team in the workplace. The diploma is a 3-year qualification, the first 2 years of which constitute the theoretical component offered in the University of Technology (UoT). The WIL Practice 1 and 2 is the third and final year of this qualification. The time spent by the student in the workplace is two blocks of six months each but should not be less than 22 weeks for each block. WIL promotes the integration of theoretical concepts learned in the academic space with the industrial practices; it also allows students to develop other skills which might not be fully developed in the academic setting. The emphasis during the WIL period is therefore placed on the application of knowledge, development of skills and formation of professional attitude towards work. This is a traditional work-integrated learning course which requires industry placement which highly resources intensive and requires academic supervisors to undertake different roles and responsibilities which sometimes mean they need to abandon their academic courses. This means we need to evaluate different methods that might improve the employability of students by embedding multiple opportunities throughout their studies.

1.1 Employability

Regardless of different viewpoints amongst role players on what employability entails, whether it can be developed and the role of higher education institutions in its provision, there seems to be an increasing pressure for all academic offerings to include employability development (Tymon, 2013). Having said that, there is a confusion regarding the concepts of employability and employment, despite the fact that they are very different (L. Bates & Hayes, 2017). According to Oliver (2015) employment deals with an individual holding a position in the workplace, while employability is when an individual is capable of being employed. There are instances where individuals are highly employable but they are not employed or not holding a position of employment (Jackson & Wilton, 2017) for reasons such as family responsibilities. Previous studies suggest that employability entails sub-areas: information literacy and technology, teamwork, lifelong learning, professional practices, and standards also the integration of knowledge to practice (Smith, Ferns, & Russell, 2016). On the other hand, Clarke (2017) argues that employability has wide-ranging factors that include social capital (i.e. university ranking), human capital (competencies), self-management behavior and individual attributes (adaptability).

Furthermore, students commence their studies with the expectation that higher education qualification would improve their chances of finding a job (Brauns, 2012). This is a fairly reasonable expectation, given that labor demands are shifting to higher skilled workers and professionals. It is therefore important to highlight that the ultimate goal of higher education ensures that they produce graduates are employable after receiving qualifications. Bridgstock (2009) gives a narrow definition of employability emphasize skills and dispositions that might make an individual attractive to potential employers, often (not necessarily) focusing on short-term employment outcomes. Employability can also be defined as a graduate's achievements and his/her potential to obtain a 'graduate job' and not to be confused with the actual acquisition of 'graduate job'. Employability derives from complex learning and is a concept of the wider range than those of 'core' and 'key' skills (Yorke, 1998).

(Futage, Kinicki, & Ashforth, 2004) refer to employability as one's ability to identify and realize job opportunities, while (Hillage & Pollard, 1998) maintain that em-

ployability is “The ability to gain initial employment, maintain employment and obtain employment if required”. Interestingly, (Brown, Hesketh, & Williams, 2003) challenge the definition of (Hillage & Pollard, 1998). The author maintains that it is ideologically loaded because it ignores the fact that employability is predominantly determined by the labor market rather than the capabilities of the individuals suggesting that their definition of employability signifies a classic example of blaming the victim.

In summary, these definitions assume a connection between employment and employability, implying that if one has the right combination of skills, attitude, and behaviors, then one is supposedly employable. This is what every university and particularly MUT – department of chemical engineering is seeking to achieve; which is to identify the right combination of skills that will ultimately increase the likelihood of success in the employment of its graduates. It makes sense for employers to employ graduates with desirable skills and competencies relevant to the job market.

1.2 Student Lifecycle

As identified by Chester, Burton, Xenos, and Elgar (2013) the student lifecycle is imperative in understanding the needs of the students as they progress through their studies. This lifecycle focuses on four key elements of transitioning within the academic program, that is, the transition towards, transition in, transition through and transition up, out and back (Kift, Nelson, & Clarke, 2010).

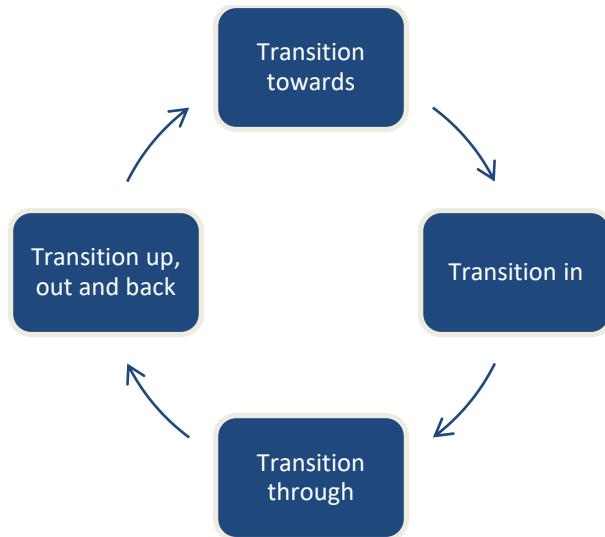


Figure 1: The student lifecycle (adapted from Lizzio (2011))

Lizzio (2012) describes the first stage, the transition towards, as the ambitions and the investigation done by the students before making a decision on their study field. In the second stage, as seen in figure 1, transition in, refers to the stage where the student commits to the field of study and actually prepares for it. The third stage, transition through, is aimed at progressive success in the field of study. The final stage, transition up, out and back, this is where students are now graduates and they come back to the university as alumni to encourage and play an active role in promoting the field (Lizzio, 2012).

The initial stage of the student lifecycle is the most important because if the students fail to do their investigation correctly about the field before they commit, then dropout rates become a high possibility. The student lifecycle can be used to support interventions for students so as to influence their employability (Ferns, Smith, & Russell, 2014). It is quite expected that the student may focus more on student identity at the beginning of the cycle, however as they progress through their studies they are interested in their graduate identity (Lizzio, 2011).

At the end of the student lifecycle, it is generally expected that engineering graduates need to be prepared for the increasing use of advanced and appropriate technology in their prospective workplaces (Patil, 2005). A report prepared by the Institute of Science and Technology at the University of Manchester highlighted the fact that

careers of the most engineering graduates included managerial tasks, despite the fact that many remained in predominantly technological jobs. According to Dudman and Wearne (2003) report states that most engineering careers demanded a variety of managerial skills and expertise, particularly in leadership and management of projects. Nair, Patil, and Mertova (2009) emphasize that the workplace performances of engineering graduates have been a constant subject of criticism. For an example, a report published in 2009 by Business Council of Australia (BCA) cautioned universities concerning falling behind in the ability to meet the industry needs. The report stated simulation techniques as one of the essential engineering skills that were lacking in graduates (Maiden & Kerr, 2006). Having said this, it is clearer that we cannot only do this during the work-integrated learning program so as to enhance students' employability, but we need to feature activities at all stages of the student lifecycle that will assist in this regard.

2 Proposed Employability Framework

The concept of employability framework is shown in figure 2. The framework is linked to the student lifecycle so as to stipulate the activities expected at each stage of the process. The timing of each activity is crucial to the success of the employability enhancement.

Students are able to participate in activities on all of the stages of the student lifecycle to improve their employability (Bates, 2016). In the beginning, students are able to see options for the career and methods they can use to increase their employability. The student needs to build networks while they are transitioning through the lifecycle using social networks or physical contacts. This may assist them in reaching prospective employers in the field. At the end of the lifecycle, students should possess some form of professional skills ready to be employed.

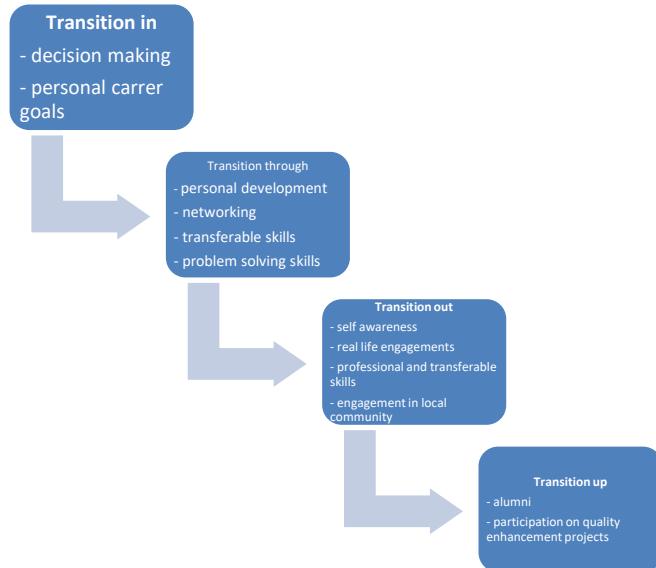


Figure 2: Conceptual employability framework

Students are able to participate in activities on all of the stages of the student lifecycle to improve their employability (Bates, 2016). In the beginning, students are able to see options for the career and methods they can use to increase their employability. The student needs to build networks while they are transitioning through the lifecycle using social networks or physical contacts. This may assist them in reaching prospective employers in the field. At the end of the lifecycle, students should possess some form of professional skills ready to be employed.

3 Chemical Engineering Case

The purpose of Work Integrated Learning (WIL) in chemical engineering diploma is to ensure that the student can function as an active and competent member of an engineering team in the workplace. The diploma is a 3-year qualification, the first 2 years of which constitute the theoretical component offered in the University. The WIL Practice 1 and 2 is the third and final year of this qualification. The time spent by the student in the workplace is two blocks of six months each but should not be less than 22 weeks for each block. WIL promotes the integration of theoretical concepts learned in the academic space with the industrial practices; it also allows stu-

dents to develop other skills which might not be fully developed in the academic setting. The emphasis during the WIL period is therefore placed on the application of knowledge, development of skills and formation of professional attitude towards work.

Nguyen (1998) explicitly defines engineering as a profession which is directed towards the application and advancement of skills based upon a body of distinctive knowledge in mathematics, science, and technology, integrated with business and management and acquired through education and professional formation in a specific engineering discipline. ECSA defines engineering as a broad field that embraces knowledge and training in business /management, science, social science and (computer) technology. In order for the engineering technician to function effectively in such a multi-disciplinary environment, engineering education must have the capacity to equip its graduates with skills and attributes (Nguyen, 1998) from these diverse areas: Social Science (communication skills, presentation skills, interpersonal skills); Computer/Technology (computer skills, programming skills, design skills, technical skills); Mathematics (problem solving skills, research and development skills, analysis/synthesis skills) and Management (leadership skills, team building skills). Thus WIL program seeks to address all of the skills and attributes in the listed diverse areas so as to better prepare graduates for employment.

In the past engineering, technicians were mainly concerned with technical aspects of engineering, which is known as hard-engineering. The roles of the technicians are changing, and a shift in the paradigm of engineering is becoming more appropriate in today's environment. Even though the shift involves movement towards soft-engineering, the technical aspect of engineering still remains the core function of engineering discipline. However, Duggins (1998) emphasizes that it's only the dimension of the core that has changed. Like any other University, MUT is endeavoring to produce graduates with the skills that are valued by employers and are seen to add to the SA country's prosperity and social capital.

How can we include employability in chemical engineering?

As shown in figure 3, the faculty of engineering uses numerous approaches within each stage of the student lifecycle to improve employability. The initial stage, a transition towards, include National Science Week where learners from nearby high

schools are invited for interaction with the university staff, where they receive some form of guidance about the careers. This is the area where much improvement can be made, by inviting relevant discipline-specific staff. For an example, engineers need to promote engineering field rather than having marketing department staff who only speak on generic issues being at the forefront of this activity. There is, however, a missed opportunity in this area, where the potential students could be invited specifically for an 'information evening' where they can further get information in the field.

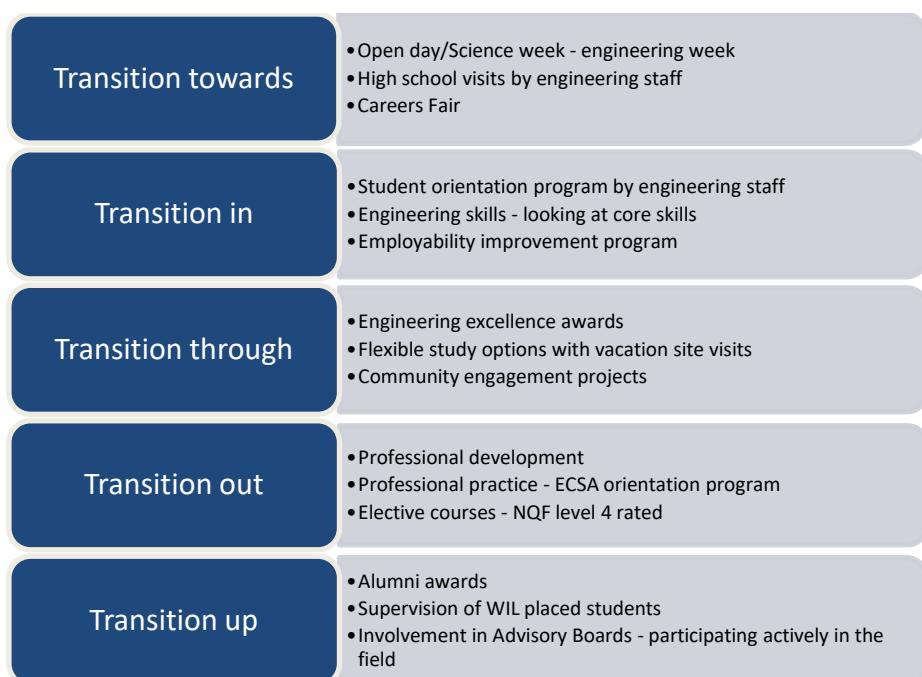


Figure 3: Embedding employability in chemical engineering using student lifecycle

As much as orientation phase is important in the transition in a stage, there has been less emphasis on the discipline-specific orientation event. Again this is a lost opportunity for the engineers to orientate the students in the field in a way that will promote employability. At the moment, the orientation event is hosted by other departments like Teaching and Learning Development Centre, Library Services, Counselling Department but the discipline faculty staff. Surely, this is an error from the engineering faculty as they miss an opportunity to effectively translate the academic discourse to their first-year students. There could be a core communication (engineer-

ing specific) course that will teach the key engineering communication skills, engineering referencing styles and technical writing skills. This course could also indulge students with career development. There is a lack of participation from our alumni whom can assist with the orientation phase, again a missed opportunity.

There is a lack of career development as student transition through their studies. The only activity that is close to career development during this stage is the site visits that are organized for the students to attend. However, these site visits are not as educative and engaging as we would like them to be. There is less interaction between the staff of the visited industrial site and the students, the students only interact with the host of the visit. There are different reasons that cause this, one of which is the time allocated for the visit (2-3 hrs), site safety regulations that prohibit untrained personnel from walking around in the absence of the host. One of the industrial sites visits totally prohibit students from walking in the site even with the host present, students have driven around in the bus while there is a tour guide narrating to them. The lack of interaction between the students and the industry technical staff makes the site visits a missed opportunity to improve employability. In addition, an employability improvement program that is offered by the co-operative education directorate is one of the strengths of the engineering discipline. Through this program, students are able to understand business terminology through project management activities. This program orientates students on the importance of housekeeping in the industry, the importance of doing things right the first time. After this program, students realize how their function will fit in the business or their prospective employer.

The department of chemical engineering does not offer any professional development course as the students transition out of lifecycle. The department only offers what is termed as 'work readiness program' which deals with activities such as job search, CV preparation, and interview techniques. This program is currently ineffective since the students are not compelled to enroll themselves into it since it is not credit barring. However, there is a course that will be featured in the new qualification (Engineering Communication) which will include the workplace discourse, engineering ethics, and professional development strategies. In addition, at the exit level of their study, there is a subject Chemical Engineering Design: Principles III which is

strategically positioned to enhance the independent skills, information searching skills, teamwork and problem-solving skills.

The only existing model of transitioning up is work-integrated learning which exclusively done in the industry before the diploma qualification is conferred. It may be said that the transition up stage is self-directed, it is scaffolded by support from WIL co-ordinators and industry mentors. As mentioned before, the chemical engineering alumni are seldom involved in activities related to the career development of future or current students. This is a lost opportunity for the department to involve its alumni in Career Fair and on the placement of students for work-integrated learning. An opportunity for the current students to be involved in community projects while enriching employability, where they can develop the large range of skills and competencies.

Furthermore, the chemical engineering department does include a range of work-integrated learning opportunities within its diploma program, including the Work Readiness program. The short course offering of employment improvement program where students develop their problem-solving skills using workplace simulated situations. These activities are designed to occur before, during and after students complete their chemical engineering studies.

4. Discussion

As emphasized by Clarke (2017) employability of (engineering) graduates is becoming increasingly important to universities globally. The faculty of engineering has a moderately strong focus on the employability of its graduates for a significant amount of time, as guided by ECSA framework. Sin, Tavares, and Amaral (2016) believe that students are aware that they are responsible for their employability in concurrent with their university. There are numerous factors that influence the employability including work-integrated learning or any prior working experience (Jackson, 2013). Students may use working experience outside of their field of study to enhance employability, they may consider engaging in community projects to enrich themselves and improve their self-efficacy. Some students may consider volunteering in the discipline-specific organization so as to develop some 'soft' skills and personality attributes such as organizational skills. All of these areas could increase the capability of students to be employable. L. Bates and Hayes (2017) suggest that there are

six curriculum elements within a work-integrated learning course that contribute to students' employability. These elements are authenticity, preparation, supervision, debrief, activities focused on knowledge integration (Smith et al., 2016).

There is a view from students (Tymon, 2013), alumni and industry (Berrie, 2006) that placements are a key mechanism that can be used to enhance student employability. At MUT, students studying engineering have two opportunities to undertake a placement. The first one is through the Co-operative Education Directorate Office. This is industry based learning, there are no community engagement opportunities that the faculty is able to secure or initiate at the moment. So there are limited options for the faculty of engineering on service learning, but this is an area that needs to be explored. Even though community engagement projects will be based on service learning, it is anticipated that it might enhance the employability of students as some end up as civil servants in water purification industry mainly.

There are resource issues that are involved in work-integrated learning courses (A. Bates et al., 2007) for an undergraduate student and perhaps a large number of students enrolled in engineering. The provision of alternative work-integrated learning opportunities is critical in developing the employability of the student group. In essence, we need much more courses that will encompass the employability of the student cycle apart from Chemical Engineering Design: Principles and the upcoming Engineering Communication course. While much has been done in terms of applying the student lifecycle in the engineering context, it has not yet been evaluated. There is a need for research to not only identify the effectiveness of the framework, but also the various components on employability. This could initiate a study where alumni can be interviewed on how they think employability can be enhanced within the student lifecycle, considering that they have walked the path already. Furthermore, a quantitative study can be initiated with an intention to capture the information using graduate survey questionnaires that focus on employment outcomes. Additionally, there has been evidence of gender disparities in engineering as a career (Makhathini, 2017) future research may consider this fact.

5.Conclusion

According to L. Bates and Hayes (2017), the employability framework is designed to be used as a tool across specific disciplines. The framework captures various aspects in the literature, including the need for students to be made aware of possible career options at the initial stage of the lifecycle (Sarkar, Overton, Thompson, & Rayner, 2016). Also developing their identities and shaping their professional networks by enrolling in professional associations (Jackson & Wilton, 2017) such as Engineering Council of South Africa. Furthermore, designing an inclusive curriculum through industry involvement (Baxter Magolda, 2004), and preparing students to take responsibility for their continued learning (Dweck, 2000). Even though the paper focuses on engineering discipline, it can be adapted to another discipline like sciences.

There is evidence in the literature that programs designed to improve employability are successful (Ashman, Scrutton, Stringer, Mullinger, & Willison, 2008; L. Bates & Hayes, 2017; Clarke, 2017). Therefore, universities can improve student employability outcomes. Other faculties and departments that are seeking techniques of scaffolding students' employability throughout the diploma program should begin by mapping their existing resources against the student's lifecycle and employability framework.

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The Challenges of offering WIL at conventional Universities: Case of University of Zululand

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Abstract: Work-integrated learning (WIL) is seen to provide critical “employability” knowledge and skills. In some instances, the practice may be real or simulated and can occur mainly in the workplace although it is possible at the university campus or online. The purpose of WIL is to equip students with work-related skills hence it is advantageous for students to do their WIL in real work environments rather than in a simulated environment. This practice is common and well suited for Universities of technology (UoTs). Most UoTs have put structures in place to support students, lecturers and the industry partners. These supports allow for the smooth running of the program. In traditional universities however, such support is not available hence WIL has unique challenges. In this paper, we investigated the challenges experienced by academic staff in running the WIL program at the University of Zululand, Department of Communication Science. Qualitative data was collected from academic staff who are involved in the WIL program. From our findings, it is evident that there is a lot of planning that must go into the running and administration of the program. Lessons can be learnt from UoTs in South Africa.

1. Introduction and Brief Literature

There has been a concern regarding the offering of WIL under the auspices of conventional universities. The envisaged programme might remain just an industrious idea and fail to develop students pragmatically. The difficulty centres around university lecturers who are supposed to facilitate WIL competently but fail to do so because they lack the competence and confidence due to lack of WIL training and other

support structures that exist in Universities of Technology (UoTs). The importance of support structures has been emphasized in work such as (Cooper et al, 2010).

Often, conventional universities are theory based, teaching and learning concepts have implemented practical part (WIL) where students do some trainings and have to apply theory (attained at school) to practice (at a work place). For the betterment of industrious performance by the students at work places, practicality ~~and~~ should go hand in hand with the theories learnt at school (Savery, 2017). The knowledge that students gain from WIL fortifies their competence and confidence and ensures that they yield productive results at their different working places (Wilson et al, 2017). Furthermore, employability, it is argued, has consequent outcomes for university reputations, retention rates and course demand (Orell, 2014).

It is the WIL facilitators' duty to ensure that WIL programme runs smoothly to benefit the students and the university. In a competitive education market of today, for universities to strategically position themselves, it is vital to ensure that their students are equipped with relevant practical skills (Orell, 2014). It is thus important for the classroom work to adequately prepare students for the outside world (Jackson 2015). Enhancing graduate attributes is thus a very important aspect in the competitive education market (Hall et al, 2017).

Furthermore, the concerned educational department is expected to have qualified facilitators to pioneer it. Their working conditions in terms of WIL allocations and visitations should allow their daily class activities to run smoothly without any compromise on the quality of the process. A vast number of challenges have been explored in the work by (Svensson, 2004).

Teaching and learning section is considered seriously by Higher Education Quality Committee as a core function of the restructuring of higher education (Scott et al, 2007). This Teaching and Learning publications have been cautious to increase the level of national and institutional debates quality and practice. To ensure that this approach is facilitated, Work Integrated Learning (2011) has been published and its intention is to assist those involved in programme to prompt other academics to consider the educational purpose and role of work-integrated learning in teaching and learning.

The rest of this article is structured as follows: A brief literature review is given in section 2 whilst sections 3 outlines the methodology employed in the study. Section 4 in the other hand, presents the findings of the study. A conclusion is given in section 5.

2. Methodology

The research reported in this paper made use of a case study research design. We picked this approach because of the idea of the issue under investigation. This study was conducted at the University of Zululand, Department of Communication Science, located in KwaDlangezwa, in the province of KwaZulu-Natal in South Africa. The Department of Communication Science offers WIL on both Diploma and Media Studies and Public Relations programmes on exit students (3rd years). Students are expected to spend six months at WIL and the practical undertaken at their work places adds to their continuous assessments at the end of the year. The target population was the lecturers who are involved in the WIL program within the department. The reason for choosing this population was because they were in the position to answer the research questions since the deal with WIL issues every year. Unstructured questionnaires were used to collect the data from the respondents. The main reason for using unstructured interviews is that they allow the interviewee to give their own perceptions of the research problem. Further to that, unstructured in-depth interviews give rich and detailed answers since the interviewer can interview the interviewee more than once.

3. Findings and Discussion

In this section we present and discuss our findings. A total of eight themes were identified and discussed in the following sub-sections.

a) Finding proper placement

Primarily, the WIL's intention is to equip students with relevant skills in line with the qualification that they are studying for. This is to develop and cultivate their own conceptual understanding about their field of expertise. Students learn theories at school and they are expected to demonstrate their acquisition of those theories in the workplace. However, a big number of the students do not get proper placement hence they won't be exposed to experiences that enhance acquisition of skills relevant their studies. This problem further impacts on how the lecturers assess the students during

the WIL period. There are specific outcomes that the academic program expects the students to meet. If these outcomes are not met, technically the student cannot get the required credits hence cannot graduate. Handling this challenge if the student doesn't have proper placement becomes a controversial matter because the department would have failed in getting proper placement for the student.

Furthermore, a student placed in an organisation that do not give relevant experience is disadvantaged when searching for employment after completing their degrees. The prospective employer may not see any relevancy of the student's prior experience. The problem of finding proper placement is mainly due to the lack of formal relationships between the industry and the institution. There are no formal MOUs signed between the industry partners and the institution hence the students go around looking for placement on their own. The issue of finding proper placement and its effects on student learning has also been explored in (Jackson et al, 2017).

b) Funding WIL for students:

The students undergoing WIL rely on the companies for funding. In most cases, companies do not have a budget for paying students hence students find themselves having to work without any payment. Although the main purpose of the WIL program is for the student to learn, if funding is not available, students may not be able to travel to work every day. Most of the students at the University of Zululand come from disadvantaged backgrounds and rely on NSFAS for their tuition. However, NSFAS does not give allowances for meals and transport to students who are on WIL. This makes it difficult for disadvantaged students who cannot afford the bus fare to and from work. There are higher cases of absenteeism from work due to financial problem. In the work environment, absenteeism is usually associated with lack of discipline. This poses a challenge when lecturers visit companies for student assessment. Penalising students due to absenteeism because of financial difficulties is an issue that is open to criticism and may appear to be unfair given the harsh economic environment that students find themselves in (Reinhard, 2015).

c) Lack of preparedness of the students

When most students go for WIL, they encounter the reality of the work environment for the first time. For most of them, adjusting to the work environment where there are stricter regulations is a challenge. As a result, some companies complain because of the lack of preparedness of the student. This problem is mainly because, there is no subject within the curriculum where students are taught work ethics and everything they should expect in the work environment. In some UoTs, lecturers adequately prepare the students by holding formal classes to prepare them for the work place. In traditional universities on the other hand, this practice has not yet been adopted despite its huge successes in UoTs.

d) No central office

The University doesn't have a centre or an office that assists our department to place students at work places. Students place themselves, which is practically part of an exercise when they apply for jobs themselves. Unfortunately, this approach is not practicable because students end up opting for any work place to fulfil the six months requirement of WIL. Some of the learning objectives that a student would have had to learn, may not be achieved. When assessing a student on the practical he/she has undergone, it becomes problematic to align module outcomes with the knowledge they are assessed on. Some of the components under teaching and learning that include enhancement of competence and confidence may not be achieved.

e) Assessment

WIL is facilitated by staff members who have a lot of other duties to perform within the academic environment. There is no dedicated person to handle the process hence every staff member takes part. As a result, there is lack of consistency in the assessment process because there are no formal guidelines. Furthermore, the lack of companies that can provide proper training also pose a challenge on conducting assessments. It is difficult to do assessments of students whose WIL training environment does not meet the desired outcomes. Additionally, due to time and financial constraints, students are only visited once during the six months period. A single visitation is not enough to conduct a fair and credible assessment of the student.

f) Heavy workload

The amount of time and effort required to run the administration of WIL is immense. Lecturers are usually overloaded with teaching and research responsibilities in addition to carrying the WIL load. As a result, some of the aspects of responsibilities of the lecturers are not adequately carried out. In most cases, it is the WIL program that suffers. For instance, it is desirable to visit students at least twice during the six months period but due to time constraints lectures end up making only one visitation. This compromises on the quality of the assessment conducted by the lecturers.

g) Students are usually late to find placements

It is usually a problem when students do not find placements on time. Their duration for WIL is six months and if they fail to start on time, it means they fail to achieve the requirements needed in their assessments to pass. This creates another challenge where the lecturers ought to be decisive and have a recovery plan to ensure that such students manage to reach milestone duration at the institutions they are stationed.

h) Lecturers are not trained to facilitate WIL

There are no workshops designed to equip lecturers on the handling of the WIL program. New lecturers are expected to learn on the job. This is despite WIL being a specialised area that has evolved over years. Furthermore, there is lack of continuity because, if one is involved in the management of WIL this year, the following year, the same person may not be involved. There is no progression in the sense that some challenges and mistakes of the previous year, won't be rectified. It is impossible for the next lecturer to enhance the standard of WIL as such because there is no smooth transition from one year's reports to the next year's one.

4. Discussion

Figure 1 illustrates interconnectedness of challenges that were found in our investigation. The biggest challenge is the lack of a central office that facilitates the run-

ning of the WIL programme. This results in staff having to take extra responsibilities to establish relationships with industry partners at the expense of other duties. Moreover, the absence of a central office also affects the ability of the students to access funding from funding institutions. Lack of funding increases student absenteeism from work due to lack of financial resources for travelling and accommodation. This presents a challenge since students who come from disadvantaged background are usually affected hence affecting assessment marks. Furthermore, these assessments are not uniformly conducted because some students get placements very late. As a result, assessments do not reflect the feedback as such and finally the negativity reflection emanates from the fact that students do not get proper placement.

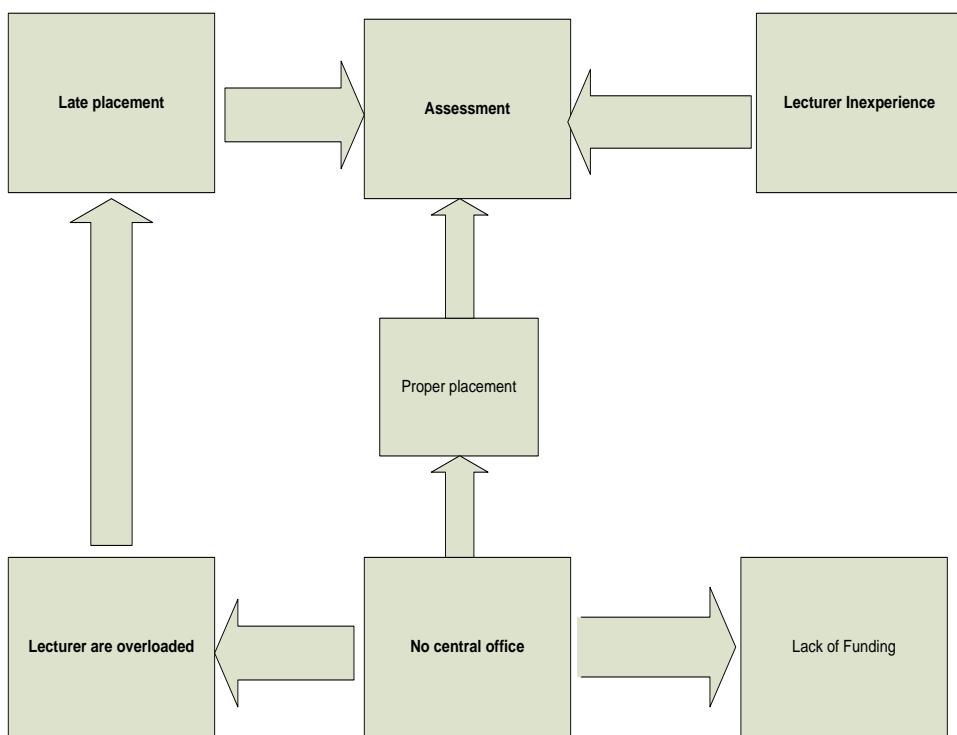


Figure 1 : The WIL problem matrix

5. Conclusion

Universities have, for a long time investigated factors and how they can produce competent and confident graduates who can make meaningful contributions in industry, nationally and globally. The introduction of WIL in mostly UoTs has solved this problem. However, conventional universities are yet to adopt this concept in its entirety. In this paper we explored the challenges of running WIL program in conventional universities. The study was conducted at the University of Zululand, Department of Communication Science. Our study has revealed that lecturers strongly feel that there are lot of challenges that conventional universities face in the running of WIL. These challenges are mainly because of lack of a dedicated office to handle WIL matters within the institution. Contrary to UoTs, conventional universities do not have clear standards on how WIL should be run and no formal structures are in place. The future work of this research will investigate the challenges faced specifically by students on WIL.

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Re-contextualisation and Lecturer Re-interpretation of Vocational Knowledge in a South African Hospitality Studies Curriculum

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Abstract: . The design of Technical and Vocational Education and Training (TVET) curriculum is based on the premise that it needs to have a unique identity from the one that focuses on the schooling sector in that it integrates theory, practice and the workplace. Re-contextualisation of the curriculum will impact programme design. That includes pedagogic re-contextualisation, a ‘combination of disciplinary knowledge with practice-based knowledge and local company knowledge’; as well as workplace re-contextualisation which entails ‘putting knowledge to work in the workplace environment’, whereby new knowledge is generated. Embedded in these characteristics is the ability by TVET educators to foreground different forms of knowledge which would include ‘skills’ and the ‘know-how’, each with their own ‘logics’. This article examines how the disciplinary knowledge, practical skills and work experience are integrated into a Hospitality Studies vocational education programme and how lecturers interpret such a curriculum. The article intends to provide other ways into an understanding of relations between ‘theory’, ‘practice’ and the ‘workplace’.

Keywords: First Keyword, Second Keyword, Third Keyword.

1. Introduction

The National Certificate Vocational (NCV), which then was a new set of qualifications, was introduced in South African Technical and Vocational Education and Training (TVET) colleges in 2007. The qualification indicated the government's intent to provide a valuable, vocationally centred alternative as a post-school qualification that could be delivered to a large number of young people in order to curb the reigning problem of un- and underemployment in South Africa (DHET, 2012). The NCV was introduced to position TVET colleges strategically to address priority skills demands by introducing sound general vocational programmes such as Hospitality Studies.

Hospitality Studies is one of the vocational education programmes that are supposed to be oriented towards the world of work with a strong curriculum emphasis on the acquisition of employable skills (Gewer, 2010). Hospitality Studies programmes, if well developed and implemented, could supply the global hospitality industry with quality graduates that are readily responsive to knowledge-driven economic needs.

Designing and implementing a curriculum is a challenge to curriculum designers and teachers internationally, including in South Africa (Madileng, 2017). One key difficulty is making decisions about what should be included or excluded from curricula. Looking towards both work and further learning, vocational education is supposed to bridge the gap between the world of work and the education and training system. Literature indicates many ways of analysing and understanding curricula (Wheelahan, 2007; Gamble, 2006; Moore & Muller, 1999). In one such view, Bernstein (1996, p. 2000) provides a possible way of understanding a curriculum and suggests tools by which to analyse the curriculum. Bernstein (2000, p. 6) describes a curriculum in terms of knowledge specifications, pedagogy and assessment. He argues that any curriculum is centrally concerned with the nature of knowledge and how such knowledge is presented and assessed and thus any curriculum operates according to a set of clear principles (Bernstein, 2000). The study on which this paper is based utilised Bernstein's recontextualisation and reproduction concepts, the two fields of the

pedagogic device, as a frame for a study of the Hospitality Studies programme offered in the NCV programme. These key concepts were employed to describe the different levels at which knowledge is selected and distributed in different social contexts. “The field of recontextualisation” refers to the process of selection of knowledge from the field of production, and this process results in the production of pedagogic communication. The recontextualisation process is further broken down into official recontextualisation and pedagogic recontextualisation fields. The official recontextualisation field is seen as the process by which the curriculum designers make selections about the knowledge, pedagogy and assessment that will become part of the official curriculum (Bernstein, 2000).

In order for quality curriculum delivery to be enhanced in vocational education, curriculum producers as well as the implementers of curricula need a thorough understanding of the nature of vocational educational knowledge (Madileng, 2017). These role players need to understand how the disciplinary knowledge, practical skills and work experience are integrated into a good vocational education programme. They also need to understand why and how knowledge is specified in respective subjects, the pedagogy of teaching, and the assessment practices in vocational education.

In this paper the knowledge structure of Hospitality Studies in the National Curriculum Vocational programme is examined, as are the perspectives of lecturers about the curriculum and their views about what guides their interpretation of the curriculum they teach from. Hospitality Studies is one of the programmes offered in TVET colleges. The programme aims to provide students with theoretical and practical skills to operate as a cook, waitron or accommodation assistant in various hospitality establishments. The programme includes some client service and human relations skills. It is made up of three compulsory subjects: English First Additional Language, Mathematical Literacy, and Life Orientation. In addition, students are also registered for four vocational subjects: Hospitality Generics, Food Preparation, Client Services and Human Relations, and Hospitality Services. The point is made here that a curriculum designed with clear and specified content knowledge can facilitate effective progression and sequencing of content which can, in turn, give greater epistemological access. We argue that it is essential that Hospitality Studies lecturers understand the recontextualising process of the curriculum design and their role in the process of

transforming classroom discourse. The value of such an inquiry lies in deepening our understanding of an under-researched part of the South African vocational education system, and specifically in a vocational field that is key to the development of South Africa's economy. This paper also adds to the existing literature on the quality of the curricula underpinning the TVET NCV Hospitality Studies qualification and may assist the TVET system in South Africa in assessing the expectations of industry in relation to their skills needs.

The paper first addresses perspectives on knowledge differentiation, work-integrated learning (WIL), the role of vocational educators and pedagogical aspects. This is followed by an explanation of the conceptual underpinnings and the research methodology employed in the study on which this paper is based. The research findings are presented with a discussion and a number of conclusions are drawn.

2. Vocational Knowledge in a Vocational Curriculum

In vocational education terminology the term 'differentiation' refers to outlining different domains of knowledge as well as knowledge and skills related to different occupational fields and within occupations. Bernstein (1996, p. 2000) uses the 'pedagogic' device to explain the social locations of knowledge and how knowledge is authorised and distributed at different levels of power structures. For Bernstein (2000), the pedagogic device is another way to describe the relationship between 'who says it', the 'voice of membership', and 'what is said', as a way of thinking about how social structures in the pedagogic discourse determine who gets what knowledge and how. This means that the 'pedagogic device' unfolds procedures through which knowledge is transformed into curricula, syllabi, lesson plans, classroom activities and online communication (Singh, 2002).

In the vocational education sector the challenge to classify knowledge is experienced when curriculum producers as well as the reproducers need to differentiate and to find a balance between theoretical knowledge or knowledge that requires systematic study, and practical 'know-how' that can usually be acquired 'by doing' in vocational sectors (Young & Gamble, 2006, p. 10). Young (2006; 2009) argues that although there is a need for vocational education to find a balance between conceptual and practical

knowledge, vocational qualifications that are based on strongly classified and framed applied disciplinary knowledge provide students with more essential knowledge than those qualifications that are weakly classified and framed. Such disciplinary knowledge of the vocational qualifications needs to be explicit. This is because, though all jobs require context-specific knowledge, many jobs also require knowledge involving theoretical ideas that are shared by a ‘community of specialists’ located within the disciplines (Young, 2006, 2008; Bernstein, 2000). This knowledge provides students with the capacity to apply this knowledge in the workplace innovate and participate in debates and controversies (Wheelahan, 2010, p. 37). In the workplace with well-grounded theoretical knowledge, background workers need to be able to use it in different ways and in different contexts as their work grows in complexity and difficulty. In addition to the disciplinary knowledge enabling students to see beyond the specific workplace or occupations, such knowledge can provide the basis for a student to progress to higher or professional education if well aligned. Young (2009, p. 158) points out that though occupational fields of practice differ in the complexity of knowledge that underpins practice and qualifications designed to prepare students for such occupations, those that are knowledge-rich domains such as the science and engineering related occupations, are more likely to provide employees with access to applied disciplinary knowledge than those where the knowledge base is less clearly developed. The newer fields of practice, like business studies and hospitality, Young claims, are more likely to have a variable relationship to disciplinary knowledge because their knowledge base is less developed and articulated.

TVET colleges are meant to impart skills and knowledge on how to do particular kinds of jobs. According to Winch (2013) they are meant to impart ‘knowledge-how’ and ‘knowledge-that’ to the TVET students. These two types of knowledge, when put together, are regarded by several authors (Barnett, 2006; Gamble & Young, 2006; Wheelahan, 2015; Young, 2009) as vocational knowledge, which is also referred to as specialised knowledge, that can only be dispensed to the student by teachers with specialist knowledge or any other specialist of the subject area or discipline. For Young, the more Abstract: and wide-ranging the theoretical knowledge, the more applicable it is likely to be to a range of technical processes that ultimately depend on it. Orchard and Winch (2015) state that artisans need theory because they must under-

stand what they are doing and why they are doing it, and must be able to think intelligently about how to do it better. For example, the bricklaying ability is regarded as dependent on knowledge of physics and the ability to apply it (Clarke & Winch, 2006; Winch, 2011, 2013), hence the need to incorporate theoretical knowledge in TVET curricula. Theoretical knowledge also provides an important basis for the cultivation of the intellectual ability, moral powers and capacities of individuals for better productivity in the workplace (Deng, 2015). However, the students should be able to articulate and integrate these bodies of knowledge into their day-to-day work activities because apart from pragmatic applications, theoretical knowledge in TVET enables individuals to move beyond their experience, develop new ideas and envisage alternatives (Young & Muller, 2013). Theoretical knowledge, therefore, has intrinsic educational value and significance, worthy of transmission in its own right, more especially in TVET.

On the contrary, the critics of theoretical knowledge such as Ryle (1949 cited in Winch, 2009) dismiss the idea that theoretical knowledge has a significant bearing on knowledge-how. Ryle implicitly supports a view of TVET that favours narrow notions of skill and associated training over knowledge-informed occupational practice. Carr (cited in Winch, 2010a) also seems to rule out the role for theoretical knowledge in practice. He argues that “a plumber does not need knowledge of the theory of hydraulics in order to successfully carry out his work” (2010a, p. 98). Clearly, Carr implies that a plumber should only be trained through experience at the workplace. Additionally, Kerschensteiner (1901, cited in Winch, 2006, p. 384) argued that, “learning through practical activity is very powerful and effective than passive absorption through instruction”. These assumptions about theoretical knowledge make the role of knowledge-that in occupational action more difficult to appreciate.

There is growing evidence of the potency of practice-based experiences for learning occupational capacities across the range of kinds and categories of work. This means that, more than being an artefact of the past, “learning through practice is probably still the pre-eminent form of the initial and ongoing development of individuals’ skills across a range of nations and cultures” (Billett, 2013, p. 129). Across human history, learning through practice has been the single most important process for developing occupational competence. For example, in Europe, for over a millennium before in-

dustrialisation, “the learning of occupations typically occurred in the family, or in small businesses which served and met the needs of their communities” (Billett, 2013, p. 126). In addition, Winch (2003) states that economic activities at earlier stages of capitalism suggest that much of the relevant knowledge used in the past belonged to the categories of knowledge-how, and to a lesser extent on knowledge-that. The forms of education that sustained such type of learning were in turn more family- and workplace-based than college-based. For example, Lave and Wenger’s (1991) community of practice approach is based on novices learning through imitation and observation at the workplace, which could lead to movement from the periphery of a community of practice to becoming an expert in a particular field. This practice involves a master-apprentice relationship, which accords apprentices with an opportunity to work under the close supervision of an artisan in all aspects of a trade without discursive elaboration (Gamble, 2013). Gamble (2013) gives an example of a master car mechanic in North Jutland whose apprentices became the best car mechanics in the region, although he had hardly ever said a word to them. This is evidence that though it does not result in a formal qualification, learning through practice and experience in the workplace is highly enriching and builds an individual’s skills and capacities. Knowledge-how, also referred to as practical knowledge, has its primary use in the performance of relatively restricted types of tasks typically, but not exclusively, requiring hand-eye co-ordination and/or manual dexterity (Winch, 2013, p. 283). A key feature of knowledge-how is that it consists in the exercise of a technique or way of carrying out the relevant activity (Winch, 2010b). These examples of learning which researchers regard as WIL (Abeysekera, 2006; Billett, 2001) are further elaborated upon in the next section.

3. WIL as a Practical Component in Vocational Training

WIL has been identified as a way of equipping students with knowledge and skills that prepare them for the workplace (Abeysekera, 2006). Increasingly, attention has been focused upon learning in the workplace through on-the-job training or WIL. The Green Paper for Post-School Education of 2012 stipulates that students in higher education institutions are required to go through compulsory workplace learning (DHEC,

2012) so that they develop basic work habits, occupational identity and specific occupational competences.

Currently much discussion and focus in South Africa is on WIL within the TVET sector as a crucial aspect of occupational and vocational learning. Today's challenging economic situation means that it is no longer sufficient for a new graduate to just have theoretical knowledge of a vocational subject; increasingly it has become necessary for students to gain those practical skills which will enhance their prospects of employment, more so for the hospitality industry. Consequently, higher education had to open up and become more attentive to the interests of the employers. As a result of this prerequisite the South African TVET colleges have recently been under increasing pressure to prepare graduates for the work environment by including a component on WIL in their curricula to achieve the expectations of industry (DHET, 2012). This has been the case because one of the roles of higher education is to provide industry with individuals who are well trained so that they can respond to the demands of knowledge-based occupations (CHE, 2011), and further demonstrate the skills necessary for participating in a global economy.

WIL aims to integrate theory and practice. This is a dual training system which brings together theory and practice and has a broad curriculum that entails a broad-ranging theoretical knowledge needed for an occupation. In this dual system, students are employees, who divide their time between a theoretical education in an educational environment, the practice of specific skills in a workshop, and controlled performance in operational conditions which cover the range of activities within the workplace (Clarke & Winch, 2006). The aim of this dual training system is to prepare the students for an occupation with legally and socially recognised status equivalent to professional identity (Winch, 2013). Its outcome is conceptualised as an overall occupational capacity as opposed to a bundle of skills specific to particular tasks similar to those practised in the workshop or a simulation room. In agreement, Barnett (2006), Gamble (2013) and Wheelahan (2015) say that this training system generates a whole being who is equipped with all the knowledge and skills that he/she requires to be a member of an occupation and not for specific tasks, as it emphasises employability skills which are sought by the labour market. This dual character of vocational knowledge is important for the TVET curriculum because the world of work demands

that employees have a range of knowledge and skills which enable them to think flexibly, to produce quality products and to work across a range of different practical contexts as the market demands from time to time. TVET curriculum should provide both theoretical knowledge and well-rounded practical skills to meet the needs of the employer. The acquisition of practical knowledge is a highly sophisticated form of imitation and assimilation that requires the help of experienced workers. Substantial experience of artisans in realistic conditions in workplaces is imperative for the creation of competent workers (Schön 2001).

TVET curriculum designers should thus be fully equipped for the planning and construction of programmes that are responsive to the complexity of the modern workplace, and should be able to incorporate bodies of knowledge in the curricula. While it is true that the addition of theoretical content to the TVET curricula gives students more flexibility in the job market, the paradox is that the absence of any practical aspect means that they are not ready for the workplace (Young & Gamble, 2006). The implication is that “the rounded TVET student should be able to embrace both theoretical and practical knowledge which cannot be separated if the student is to derive maximum benefit” (Maclean & Pavlova, 2013, p. 52). This shows that the relationship between theory and practice in learning to master an occupation is likely to be complex: “If one cannot practise without theory, and if theory is useless without knowledge of how to apply it, then the two have to be introduced very carefully in order to ensure that they support each other” (Winch, 2003, p. 57). Thus, theoretical knowledge and practice need to be mutually reinforcing. If vocational and technical education is to serve its purpose, theory has to be tied to practical work experience to give the vocational pathway its distinctive character. It therefore cannot offer theory without practice because job competence involves having the appropriate knowledge and skills, otherwise the promise that the vocational route leads to employability will be a false one (Young & Gamble, 2006).

The vocational nature of Hospitality Studies is ideal to utilise WIL as a method of transferring classroom activities to the workplace as WIL forces students to marry theory with practice by providing opportunities for practising acquired knowledge and skills (Mutereko & Wedekind, 2015b). This means that WIL experiences provide students with a bridge between the academic present and their professional future.

Jackson (2014) and Billet (2013) identified 12 transferable skills, although all these skills but ‘entrepreneurship’ are subsumed within the following: team-work, communication, interpersonal skills, problem-solving ability, organisational skills, information technology skills, numeracy, and learning how to learn. These are the kinds of skills that new entrants to the labour force are especially hard pressed to acquire.

One of the challenges presently happening at South African vocational colleges is that lecturers battle to apply appropriate pedagogical strategies to find a balance between theory and practice. Procedure is often taught as theory (Gamble, 2009) and what is called ‘theory’ often requires students to memorise and reproduce written versions of practical work procedures. For instance, instead of enabling them to demonstrate how to use a fax machine or to send an email, they would be required to explain how to use a fax machine or to send an email. Instead of students being exposed to a practical situation and asked to role play a company board meeting scenario where they would practise the role of the chairperson and the secretary in a meeting and take minutes, they will be theoretically asked to write the minutes of a meeting. This is an indication that neither the practical curriculum nor the theoretical curriculum of vocational education is well designed or well understood by the producer. TVET college lecturers thus need to blend theoretical knowledge and practical skills and effectively link them with the world of work. The next section briefly discusses research on pedagogical practices.

4. Reinterpretation of the Vocational Education Curriculum

Technical colleges have always been deemed to have a more direct relation to the world of work than schools or universities, both in terms of subjects offered and processes of teaching and learning (Gamble, 2009). As a result, throughout the world, different countries are trying to create improved synergy between the needs and purposes of their education and training systems, their local and regional labour markets, and their national economies (Unwin, 2003, p. 1). Several researchers (e.g. Shulman, 1987; Hoadley & Jansen, 2009) maintain that the success in achieving the objectives of a curriculum depends, in part, on the levels of teacher knowledge and their effective use of appropriate teaching strategies. Shulman (1987, p. 92) describes teacher

knowledge and the teaching process as an activity that “begins with a teacher’s understanding of what is to be learned and how it is to be taught. It proceeds through a series of activities during which the learners are provided with specific instruction and opportunities for learning.”

The TVET educator is expected to display a dual identity: that of professional educator as well as that of a business or industry professional. This is a critical difference with other teachers who tend to have a disciplinary orientation. Many South African TVET college lecturers seem to display at least one of these characteristics, either that of a professional educator or an industry professional, and not both. Some lecturers come into the vocational education sector with school teacher education qualifications and experiences of teaching in the schools’ General Education and Further Education bands with no particular training in vocational education itself (DHET, 2008). Given these challenges, TVET colleges need serious repositioning so as to revive the confidence of industry and of the public in the capacity of this sector. One of the focus areas should be the improvement of teaching and learning. In teaching the prescribed intended curriculum, vocational education lecturers therefore need to be experts in their fields of knowledge by interpreting the knowledge structure of their subjects, and to select from their fields of knowledge those ideas, facts, concepts and skills which are important enough to be taught. Assessment practices also need to link up with teachers’ beliefs about curriculum design, learners, learning and the very purposes of vocational education.

The extent to which content knowledge of NCV Hospitality Studies curriculum covered theory, practice and WIL was one of the focus areas of the research on which this paper draws. Another thrust of the research was to understand how TVET lecturers might reinterpret the intended Hospitality Studies curriculum.

5. Research Design and Methodology

This study is qualitative in nature. Qualitative research was chosen because it aimed at getting a better understanding through first-hand experience, truthful reporting and quotations of actual conversations between the researcher and the individual respondents (Welman & Kruger, 2003), regarding how they re-interpret the Hospitality Stud-

ies curriculum. The researchers chose this approach as meaning was let to emerge from the participants as it granted an interactive relationship between the researcher and the participants as well as their experiences with the NC(V) hospitality curriculum and the industry in question. This type of research permitted the adjustment of concepts, data collection tools and data collection methods as the research progressed. The researchers focused on the respondents' lived experiences by searching for deeper understanding of their experiences with the NC(V) hospitality curriculum so that the objectives of the research would be achieved.

Purposive sampling is selecting a sample on the basis of one's own knowledge of the population, its elements, and the nature of the research aims (Scott & Morrison, 2005). Purposive sampling is essential when researchers are studying a specific characteristic, feature or function. In this instance, the study intended to find out if the NC(V) hospitality studies curriculum aligned with the needs of the employer. To ensure that the research collected relevant information; enable increased participation by the participants, the researcher purposively selected lecturers that teach NC(V) hospitality studies as respondents to the study. Due to the nature of the qualitative study, it was necessary to keep the number of participants to a minimum to enable detailed qualitative data to be collected.

Data were collected at three TVET colleges in Gauteng that offer Hospitality Studies as one of the NCV programmes. Document analysis was used in combination with other qualitative research methods as a means of contrasting and comparing findings to determine how the Hospitality Services curriculum is recontextualised. The documents that were analysed were the NC(V) Hospitality Services Level 2–4 Subject Guidelines (SGs). Hospitality Services is one of the courses that make up the Hospitality Studies programme. The subject covers housekeeping, food and beverage services and front office. Hospitality Services aims to provide students with practical, marketable skills essential in the hospitality industry as an employee or entrepreneur (DHET, 2007, p. 1). Level 2–4 SGs were used in the analysis as this subject featured several times in the interview responses. The SGs for Hospitality Services cover a broad range of topics relevant to developing hospitality service skills in a range of functional areas, applicable to different departments (Umalusi, 2013). According to the SGs, Hospitality Services is supposed to produce students with practical food and

drinks service, front office and accommodation skills that can be applied in wide hospitality contexts. It is for these reasons that we chose to use just this one subject in the document analysis of the Hospitality Studies curriculum. The SGs for Hospitality Services were subsequently analysed in order to ascertain the extent to which the curriculum leans towards the needs of industry. The data and findings were reported qualitatively.

As an additional data source, five NCV hospitality lecturers from three TVET colleges in Gauteng were interviewed. The issues that were discussed included perspectives of the lecturers about the nature of the Hospitality Services curriculum, their perceptions on the relationship between the Hospitality Services curriculum and the needs of industry, and how the lecturers incorporated theory into practice in the teaching and learning processes. Themes that emerged from the data and the literature used to analyse information obtained through semi-structured interviews of the lecturers included: an understanding of theoretical and practical knowledge in a vocational curriculum, views about how WIL is covered in the intended curriculum, what they claimed they taught in their classrooms, and how they did this.

6. Findings

The outcomes-based curriculum approach was adopted in the design of TVET curricula, including the Hospitality Services curriculum. This is a politically driven approach which was employed to meet the socio-economic, socio-historical and socio-political needs of the country (DHET, 2007). The rationale behind this approach was that it would develop in students values such as social justice, human rights and equity, and that those students would benefit from a learner-centred approach to learning. In examining the Hospitality Services curriculum, I noted that the outcomes-based intended curriculum displays a lack of conceptual integration, knowledge sequence and progression. The analysis identified that the NC(V) Hospitality Services Level 2 SG comprises 15 topics, and that of Level 3 and 4 have seven each. These topics are shown in Table 1 below.

Table 2. Curriculum topics – hospitality services

The Topics		
Level 2	Level 3	Level 4
<ul style="list-style-type: none"> • Glassware • Crockery and Cutlery • Drinks Machines and Equipment • Function Rooms • Counter Service • Takeaway Service • Drinks Service • Beds, Bed Linen and Coverings • Room Service • Toilet and Bathroom Area • Guest Bedrooms • Floor and Floor Coverings • Public Areas • Linen for External Laundry • Incoming and Outgoing Telephone Calls 	<ul style="list-style-type: none"> • Maintain cellars and beverage storerooms • Provide a table drinks service • Provide a table service • Provide a counter service • Provide a takeaway service • Maintain housekeeping supplies • Provide housekeeping services within designated areas 	<ul style="list-style-type: none"> • Serve bottled wine • Prepare and serve cocktails • Provide a silver service • Maintain the drinks service • Maintain the cleaning programme in a specified area • Plan and conduct meetings • Maintain the receipt, storage and issue of goods

The topics above demonstrate that they are relevant to the hospitality industry because they demonstrate skills that are related to the industry. At Level 2 the topics cover some descriptions of concepts and their functions such as ‘glassware; cookery and cutlery; counter, takeaway and drinks services’. The Level 3 and 4 topics denote an expansion of content knowledge covered at Level 2. They cover application of knowledge such as ‘provide a table drinks and services; maintain housekeeping supplies; provide a silver service; maintain the drinks service’. Some topics have been repeated across these levels. It is not easy to differentiate the level of complexity between content knowledge covered at Level 3 and 4 of the curriculum.

Each of the above topics is broken down into subject and learning outcomes. However, I chose to use only the learning outcomes under the topic ‘drinks services’ which cuts across the three levels of the NCV programme in the analysis. The learning outcomes that were used are presented in Table 2 below. These are competency-based outcomes that are outlined in the SGs to guide the lecturers on what the students should be able to do at the end of their learning process.

Table 3. Interpreted subject and learning outcomes; Adapted from the Department of Higher Education and Training, 2007

Level 2	Level 3	Level 4
Topic: Drinks Service	Topic: Provide a table drinks service	Topic: Maintain a drinks service
<p>Subject outcome: Prepare drinks service areas in a hygienic, proficient and systematic manner within determined timeframes.</p> <p><i>Learning outcomes: The student will be able to:</i></p> <ul style="list-style-type: none"> ▪ Identify drinks service items and understand how to handle, clean and store each item. ▪ Understand the importance of maintaining appropriate stock levels and stock rotation procedures. ▪ Understand the importance of ensuring that drinks service customer areas are clean and that furniture is undamaged and in place prior to service. ▪ Activate environmental controls according to procedure and deactivate once service is over. ▪ Identify appropriate signage and promotional material and place it correctly. ▪ Serve drinks according to 	<p>Subject outcome: Provide a table drinks service in an efficient and organised manner that is cognisant of customer needs.</p> <p><i>Learning outcomes: The student will be able to:</i></p> <ul style="list-style-type: none"> ▪ Explain the drinks selection available and advise customers by using basic selling skills. ▪ Take a drinks order according to procedure. ▪ Set up the order using the correct equipment and present correctly for service. ▪ Serve non-alcoholic drinks according to procedure with the correct glasses. ▪ Serve tea and coffee in the appropriate manner. ▪ Deal with accidents, breakages, and spillages. ▪ Identify responses to unexpected situations. 	<p>Subject outcome: Maintain the drinks service in own area of responsibility and communicate effectively with staff members to maintain service standards and enhance customer service.</p> <p><i>Learning outcome: The student will be able to:</i></p> <ul style="list-style-type: none"> ▪ Implement procedures for the drinks service maintenance ▪ Describe the legal requirements for the operation of a licensed premise. ▪ Explain the consequences of selling alcohol to under-aged or intoxicated persons. ▪ Understand why staff needs product knowledge and should comply with service standards. ▪ Devise ways to motivate staff in increasing sales. ▪ Discuss ways to deal with violent/disruptive customers and provide appropriate guidance to staff in the area. ▪ Understand why equipment should be maintained safely and hygienically. ▪ Implement the fault and maintenance reporting procedures and

<p>procedure using the correct service equipment.</p> <ul style="list-style-type: none"> ▪ Dispose of waste and refuse hygienically. Understand the need to restrict access to drinks service areas. ▪ Handle unexpected operational circumstances. 	<ul style="list-style-type: none"> complete all the necessary paperwork. ▪ Complete all set-up procedures required prior to service delivery, including cleaning, clearing and restocking the drinks service area and preparing all equipment ready for service. ▪ Politely and friendly communicate with customers. ▪ Be able to handle unexpected operational situations.
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The outcomes statements were analysed, guided by theories of knowledge differentiation and debates about the construction of an ideal vocational education curriculum as discussed in the literature review. The following themes were followed in unpacking the knowledge representation of the above-mentioned outcomes: practical and theoretical knowledge; WIL and soft skills in vocational education and training.

The next section discusses how the listed outcomes statements of the Hospitality Services represented practical knowledge and theoretical knowledge.

6.1 Practical Knowledge Versus Theoretical Knowledge

The learning outcomes in Table 2 do not clearly show the infusion of theory into practice; instead, they focus more on the acquisition of practical knowledge and relatively little on theory, especially at Level 3 and 4. The practical knowledge learning outcomes are characterised by terms such as ‘serve, set up, implement, dispose, devise’, as identified in the following examples:

Serve and clear bottled wines

Dispose of waste and refuse hygienically. Understand the need to restrict access to drinks service areas.

Set up the order using the correct equipment and present correctly for service.

Implement the procedures for the maintenance of a drinks service.

These terms clearly focus on the ‘how to’ part of the curriculum. For Moore and Muller (1999), subjects that integrate knowledge forms, such as outcomes-based curriculum design, tend to reduce knowledge to knowing and experience. An outcomes-based Hospitality Services curriculum design is an example of a curriculum that limits focus to what students have demonstrated they can do in one context and not what they know, and that characterises the curriculum as denoting the ‘voice of the know-er’. Selection of knowledge for inclusion in the outcomes-based curriculum design signals the performance indicators that should be displayed by students and not by the content knowledge of the subject students need to cover.

On the other hand, few theoretical knowledge related outcomes are identified by terms such as: ‘explain, discuss, describe, identify, understand’. These are mostly included in the Level 2 curriculum. For example:

Identify drinks service items and understand how to handle, clean and store each item.

Explain the drinks selection available and advise customers by using basic selling skills.

Discuss ways to deal with violent or disruptive customers and identify the guidance that should be provided to staff in this area.

These terms refer to the ‘what’ aspects of the curriculum. Observantly, in some learning outcomes no clear distinction is made between the acquisition of theoretical knowledge and mastery of practical skills, which potentially makes them difficult to interpret. In some instances, the learning outcomes seem to be difficult to interpret due to the way in which they are expressed. For example, with ‘Identify procedures for handling, cleaning and storing food service items’, and ‘Deal with accidents, breakages and spillages’, it is unclear whether the requirement is theory-based or practice-based. In a similar study, Umalusi (2013, p. 64) has concluded that unclear learning outcomes result in different lecturers interpreting them in unique ways and under normal circumstances would be regarded to be theory-based rather than practice-based, and are thus taught as such.

6.2 WIL as a Component part of the NC(V) Hospitality Curriculum

The Hospitality Services curriculum claims to provide college students with opportunities to access knowledge that is contextually specific and applicable in the workplace. On analysing outcomes statements of the Hospitality Services curriculum, I noted that there are visible learning outcomes that illustrate practice but not specifically in the industry-based setting. This is because students' competencies in the achievement of the outcomes can be assessed both in the college simulation rooms and workshops, and in the workplace, but the SGs did not allocate time for practice in the workplace. For example:

Take a drinks order according to procedure.

Set up the order using the correct equipment and present correctly for service.

Implement the fault and maintenance reporting procedures and complete all the necessary paperwork.

The above finding shows that the NC(V) Hospitality programme as currently presented in TVET colleges might not have sufficient contact with the hospitality industry to help students develop the skills that industry desires.

a. Soft Skills in Vocational Training

During the interviews with all the lecturers, they voiced a general concern about the poor levels of soft skills often associated with employability. The respondents indicated that the students are often not prepared for the workplace because they lack these employable skills. I was thus prompted to examine whether outcomes statements contained any of these soft skills or not and to find out whether they form a part of the curriculum. The learning outcomes were analysed according to the soft skills that were perceived by the respondents during interviews as being important for hospitality graduates to possess. These included: communication skills, team-work, time management, personal traits, writing skills, and basic life skills. The mentioned soft skills are deemed to be directly linked to the identity of the hospitality industry, but could not be located specifically in any of the analysed learning outcomes, meaning

that the analysed learning outcomes did not reflect knowledge that relate to the imparting of these soft skills to the students. This means that the content on soft skills might not be addressed in the curriculum, because the learning outcomes in the study do not mention the development of these skills.

b. Semi-structured Interviews

At first I wanted to understand the profile of participants in terms of their qualifications and teaching experiences. This information provided insights into their levels of understanding and interpreting the intended Hospitality Services curriculum. One of the lecturers had completed a NATED Certificate, two had completed the NATED (N4-N6) N Diploma, and another one had completed the National Diploma and specialised in Hospitality Studies. The fifth participant completed the Bachelor of Technology and a Post-graduate Certificate and also specialised in Hospitality and Tourism. Table 3 below shows the number of respondents with their highest qualifications and teaching experiences.

Table 4. Qualifications and teaching experiences

Highest qualification obtained	Number of lecturers (N)	Total years of teaching experience at the TVET college
NATED Certificate (Lecturer 101)	1	3 years
NATED N Diploma (Lecturer 102 &103)	2	3 and 4 years respectively
National Diploma (Lecturer 104)	1	5 years
Bachelor of Technology and Post-graduate Certificate (Lecturer 105)	1	5 years

Lecturer 101 conceded that in his first year of teaching he found it difficult to interpret the Subject and Assessment Guideline documents into a concrete teaching programme and content. In his opinion:

... the documents are sketchy, and besides, the learning outcomes show the intention of assessments. I would say, our curriculum is more of an assessment

one. I think I could have been in a better position if I had a teacher training qualification. I wish the college and DHET would offer some form of pedagogical training to those lecturers that are not trained, things would be far much better, we would at least know what to do once in the classroom or workshop. I also feel that if I had industrial experience I would be able to teach some concepts better, more especially the technical ones.

He also affirmed that he had never been into industry before, not even during training. Therefore, he did not have much knowledge of how things are done in industry. He also revealed that he was forced to teach concepts by the book. Lecturers 102 and 103 stated that they enjoyed teaching Level 2 students and that the Level 3 and 4 students were more challenging. Both participants had industry-based training for 18 months as part of their NATED N diploma training. Lecturer 104 enjoyed teaching at all the levels of the NCV programme. The fact that she did not have experience of the teaching profession was a challenge for her. She struggled to interpret some outcomes statements and practical activities and preferred to follow the textbook method. On the contrary, Lecturer 105 stated that she found teaching NCV Hospitality quite interesting because she had a qualification in the hospitality trade and was also a qualified teacher and therefore had the basis of teaching methodology. She said although she had found it difficult to interpret the syllabus at first, she quickly found her way and now she is an expert in the field. She also said that she had worked in the hospitality industry with no interruption for two years and that she also went to the workplace for WIL during training for nine months. She added that the college once took her to industry for practice for five days, and although the five days were too short she revealed that she at least had a grasp of some skills and concepts. She went on to say that this experience has helped her in a positive way when it comes to the teaching of skills to her students because she has a rough idea of how things are done in industry. She stated:

It is essential to know what is going on in the hospitality industry. That helps you to share your experiences with your students and use appropriate examples in your lessons. You get an experience of how the industry functions and how people work together.

In terms of the lecturers' perceptions about how the curriculum designers recontextualised theoretical and practical knowledge in the design of the Hospitality curriculum, Lecturer 101 revealed that the learning outcomes for the NC(V) curriculum were more inclined towards theory than practice. He said that in comparison to practical knowledge, theoretical knowledge in many instances dominated what was offered by way of the curriculum. In support of the sentiments of Lecturer 101, Lecturer 104 indicated that, they spent most of their time with students, providing a lot of drilling exercises theoretically, to ensure that students master concepts in preparation for the examination. Lecturer 102 stated that the curriculum was designed in a form of a list of outcomes that were subjected to individual lecturer interpretation. She stated:

[T]he document that is supposed to guide us in our preparation is just a list of outcomes. We have to decide whether we teach students the concepts theoretically or practically.

For Lecturer 103 there was a difference between the Level 2 and Level 3 and 4 curricula. At Level 2, many concepts were explained, while at Level 3 and 4, there were many activities and case studies. The timetable did not allocate enough time for practical work, so most of the activities were done in a form of assignments. She thus found it difficult to distinguish between theory and practice. Lecturer 105 said that there was no balance between the two; in fact, there was more theoretical knowledge than there was practice. She went on to say that this was confirmed by the time-tables that they were using that favoured a curriculum that is heavily laden with theoretical content rather than practice.

When asked what limitations they encountered in their effort to implement the curriculum, Lecturer 101 raised concerns about limited resources to engage students in practical work. He further reflected that the increase in enrolment and the sizes of classes that they have did not match the type and amount of facilities that they have. This limitation resulted in TVET institutions operating under stringent conditions and compromising on quality when it came to training. For Lecturer 102, resources at the college as well as limited time allocated for practical were a serious barrier. She stated that "in some cases, consumables are not available on time mainly due to shortages of money to address the requests of different practical sessions". This respondent also went on to say that this challenge limited them as lecturers and that it was a main

concern especially when it came to the dispensation of practical lessons to impart the necessary skills to the students. She further stated that “this scenario forces lecturers to focus their effort on the theoretical aspects of the curriculum or teach practical components theoretically, thereby failing to inculcate the type of skill that industry needs”. Lecturer 103 also said that she believed that industry uses new systems and software in taking bookings and stock control, but in college they still taught their students the manual ways of doing reservations and still taught how to do the bin card. Lecturer 104 noted that there was a very serious mismatch of the curriculum to the needs of industry due to a lack of resources. She also mentioned that the time allocated for practical lessons on the time-table was another limiting factor. Her view was that time-tables mostly do not accommodate the practical aspects of the curriculum and the lack of time caused her to teach concepts theoretically. Lecturer 105 indicated that they had never had facilities that they could use for hospitality services related areas such as bar service, restaurants, housekeeping and front office. She further stated:

[F]or the hospitality curriculum to be implemented successfully, there is need for fully fitted working kitchens that can serve one station per student, proper restaurants that are equipped, well-equipped computer labs, classrooms and a good supply of consumables. We however don't have these facilities, there are shortages of training materials in the hospitality section; engaging each student in practical work in our old kitchens and restaurants pose critical problems, considering that most of the equipment is outdated and broken too.

7 Work-integrated Learning

When asked about their understanding of WIL and its importance to training, Lecturer 101 stated that the industrial workplace is likely to have modern equipment and changed work practices and skills developed around the technology, and thus made it an appropriate setting for training and learning. He went on to say that this meant that the students could achieve more if WIL was part and parcel of the training package. It was just unfortunate that he had no such experience himself. Lecturer 102 and 103 claimed to have enjoyed work-based learning. Lecturer 102 said that most of the ac-

tivities she experienced at the industry were new to her. They were not part of her college training curricula. She strongly believed that TVET Hospitality Studies students would benefit more if allowed to apply college knowledge in a real industry setting. Lecturer 103 did her WIL in a restaurant. That is a different experience from a hotel which offers varied experiences such as reception, bookings, and bedroom services, which restaurants do not offer. She stated that she believed TVET students would benefit more if allowed to experience a hotel environment in their training. Lecturer 104 experienced WIL whilst she studied her National Diploma. She enjoyed the practical they had at the university as well as six months' WIL experience in a hotel environment. When she first started teaching at the TVET college, she was surprised that the NCV curriculum did not have a WIL component. For her, that was depriving the students of an opportunity to internalise their learning and experiment with new technologies. Lecturer 105 said that she understood WIL and that it was important because students gained valuable experience by way of applying what they had learnt practically in the workplace, developed their skills in interacting with fellow workers, customers and management and discovered in which direction they would like to steer their careers. This lecturer stated:

Learning in the workplace helped students keep abreast of technological developments in order to maintain a competitive edge. The students also get to attain the soft skills that employers mostly put emphasis upon when they advertise jobs.

All the respondents acknowledged that WIL was not included as a component part of the NCV Hospitality curriculum. Lecturer 101 revealed that final-year students (Level 4) voluntarily and during vacations went to seek work-based experience with any company of their choice for about ten days or less, and the colleges were themselves not involved and did not do follow-up visits. Lecturer 101 concurred and said that the students "go out there out of their own will and they are provided with workbooks, but only on request".

To summarise, the Subject Guidelines for Hospitality Studies focuses more on what the students need to be able to do (practical knowledge) and does not pay sufficient attention to what they need to know (theoretical knowledge) as the learning outcomes are more practice-oriented. On the contrary, most of the interviewed lecturers viewed

the curriculum as more theory-oriented and most of their lessons were theoretically presented. The findings from both the interviews and the document analysis revealed that some learning outcomes showed some links with workplace knowledge, but that the SGs did not make provision for WIL. The imparting of soft skills is not addressed in the SGs, and this might result in students failing to bridge the theory-practice gap. The findings also illuminated the importance of having fully resourced facilities and workshops to help facilitate the implementation of a well-formulated vocational curriculum. The next section presents a discussion of the findings.

8. Discussion

The main aim of the NC(V) qualification is to equip students with broad theoretical knowledge and practical skills to enter the technical and trade fields of employment or to proceed into higher education. This could be made possible if there is an imparting of both the ‘knowledge-how’ and ‘knowledge-that’ to TVET students because a vocational curriculum is meant to merge practical knowledge and theoretical knowledge, with significant time allocated to practical activities so that the students are furnished with the necessary skills that industry desires. The South African Department of Education (2006, p. 12) also states that “the NC(V) will offer programmes that will consist of theoretical knowledge integrated with the practical knowledge and values specific to each vocational area for the good of the student and industry”.

An analysis of the SG documents in this study has revealed that the recontextualisation of content knowledge of NC(V) Hospitality Studies includes more practical knowledge than theoretical knowledge. Moore and Muller (1999) would associate outcomes which denote theoretical knowledge with the ‘voice of knowledge’; that is, what is known. In analysing the outcomes statements of the intended curriculum I noted that the competencies that make up the practical knowledge are dominant as compared to theoretical knowledge. Drawing on Bernstein, Wheelahan (2010, p. 37) argues that a reduction of knowledge into ‘a voice of membership’ with a gradual shift from disciplinary knowledge into generically oriented knowledge denies students the opportunity to master such knowledge, to recognise the boundaries between different kinds of knowledge, and to develop the capacity to navigate and use such

knowledge in other vocationally oriented programmes and contexts. Although all jobs require context-specific knowledge, many also require knowledge involving theoretical ideas that are shared by a ‘community of specialists’ located within the discipline (Young, 2006, 2008). Workers therefore need to be able to use the acquired theoretical knowledge differently depending on the demands of contexts as their work increases in complexity and difficulty.

The learning outcomes in the SG documentation show some links with the workplace, but no provision is made in the SGs for WIL. Also, some learning outcomes in the SGs are not clearly stipulated as to whether they are theoretically or practically oriented. The risk associated with this is that such learning outcomes may be interpreted differently by different lecturers, but are mostly taken to be theoretically based. The unclear and unspecified type of a curriculum design cannot provide a basis against which content knowledge can be selected, implemented and assessed (Madileng, 2017). Outcomes statements, which tend to provide bits of unspecified information, on their own, cannot be mapped against content knowledge which has its own strong grammar. Despite the practical nature of the programme as revealed by the analysis of the SGs, and on reinterpreting the curriculum, the lecturers who participated in this study confirmed that they still taught practical concepts theoretically. The reasons mentioned for emphasis on theory rather than practical included the following: a limited understanding of ways to unpack the outcomes statements, as well as the lack of resources such as consumables, physical infrastructure and facilities to execute the crucial practical aspects of the vocational subjects – the latter which also brought about concerns about a high lecturer–student ratio of up to 1:30. The outcomes-based design structure of the curriculum, which made it look sketchy, negatively affected the ways in which the lecturers interpreted the outcomes statements. The study findings have revealed that lecturers with no pedagogical qualifications found it difficult to interpret the subject and assessment guidelines during the implementation process.

The internal and external assessments as outlined by the research are theoretical in nature and students were required to know the textbook by heart and be able to recite it. This adversely affects the amount of theory the students are exposed to. The South African Qualifications Authority (SAQA) (2000, p. 18) states that:

... in the assessment of learners, the notion of applied competence is often ignored and assessment focuses on foundational competence or in limited cases, practical competence.

Similarly, Umalusi (2013, p. 66) found that the Hospitality programme Assessment Guidelines documents referred to practical assessments which were never practised. This indicates that teaching programmes, the assessments and examinations satisfactorily reflect theoretical knowledge and not practice. This finding is concretised by Umalusi (2008) and Wedekind and Mutereko (2016b) who noted that the NC(V) qualification framework and its supporting documents are seen more as an ‘assessment curriculum’ rather than a teaching curriculum and that most lecturers, if untrained, might have difficulties interpreting them.

The teaching staff in TVET colleges has been identified as “key drivers of change” (DHET, 2008). Their capabilities as subject matter experts as well as experts in their trade are of major importance if colleges are to produce graduates with skills that are “relevant to the needs of industry” (DHET, 2012, p. 24). The African Union (2007) also contends that the delivery of quality TVET is dependent on the competence of the lecturer; competence measured in terms of their knowledge of the subject matter, their technical expertise and pedagogical skills as well as being abreast with the new technologies in use in the workplace. This implies that the lecturers should be able to interpret the curriculum if its design provides them with proper guidelines and if they are given adequate pedagogical training.

9. Conclusions, Implications and Recommendations

Many researchers in vocational education (Barnett, 2006; Gamble, 2013; Maclean & Pavlova, 2013; Wheelahan, 2015) propose that content knowledge of TVET curricula should include the theoretical knowledge and practical knowledge so that it produces graduates who are capacitated with the understanding and the skills that are aligned to the needs of employers. The content knowledge for the NCV Hospitality curriculum does not seem to have any balance of theoretical knowledge and practical knowledge as suggested by research. Lucas et al. (2012, p. 9) further propose a vocational edu-

tion learning programme which is broadly hands-on, practical, experiential, and real-world, and often at the same time elicits theoretical knowledge.

This paper has highlighted that learning by attempting to solve real-world problems in the workplace can be a highly effective means of developing expertise that is desired by the employer. The importance of the WIL experience cannot be denied as students could be exposed to the realities and the competencies that they require in the workplace. Synergies between hospitality related industries, curriculum designers and TVET colleges is essential to assist in the design of the credit bearing WIL component of the curriculum since it has emerged is that this aspect is not fully practised by TVET colleges as it is not a part of the NC(V) curricula. The lack of partnerships between industry and education to assist in the inclusion of current and relevant knowledge and skills in training is futile. WIL and the impartation of generic skills are not addressed on the SGs; both of which are important in building a graduate that has a bountiful of employable skills that are desired by industry. If all of these problems are effectively addressed, and the curriculum reformulated to balance off theory and practice it could go a long way in the production of a TVET graduate who has the proper skills for the needs of the employer. Classroom-based instruction alone does not produce future graduates who are adequately equipped for the workplace (Fleming & Eames, 2005b; Jackson, 2013; Mutereko & Wedekind, 2015; Winch, 2009). The role of WIL seems essential in the development of the desired graduate profile, which needs to include discipline-specific knowledge, skills and attitudes, as well as generic cognitive competencies. It is for these reasons that I suggest that obligatory WIL with credits should be one of the major components of the NC(V) hospitality programme if graduates are to be regarded favourably by employers and desired by industry.

As a final reminder, I wish to highlight the statement by Lucas, Spencer & Claxton (2012) that vocational expertise in a particular trade is in itself not an adequate basis for teaching, because much depends on the way a vocational curriculum is implemented. For example, the extent to which students are engaged with underlying knowledge principles depends to a large extent on the lecturer's pedagogical training, subject expertise and specialised knowledge as well as access to other resources. For example, the extent to which students are engaged with underlying knowledge princi-

ples depends to a large extent on the lecturer's pedagogical training, subject expertise and specialised knowledge as well as access to other resources.

This study has highlighted a range of issues in relation to the NC(V) hospitality studies curriculum and its alignment to the needs of employment. Certainly, industry requires graduates that are ready to run once on the job floor and this is expected to be done through a well-formulated vocational curriculum that contains all the aspects of vocational training. Evidently, the NC(V) hospitality studies curriculum is not able to provide for this because of the complexity brought about by the lecturers' dual professional identity needs as both skilled trades-persons in a particular trade and as trained vocational teachers. Lucas et al. (2012) state that vocational expertise in a particular trade is in itself not an adequate basis for teaching because much depends on the way a vocational curriculum is implemented. As revealed by the reported study, most TVET lecturers are not adequately pedagogically trained to implement a vocational curriculum with precision and some do not have the latest industrial experience and know-how to facilitate important skills and knowledge with their students. It is evident that practical components are rarely practised and demonstrated in the poorly equipped simulated environments of TVET colleges. Such training can hardly suffice as 'industry experience/practical application'. The professional and pedagogical competence of any vocational teacher – and of hospitality teachers in particular – is crucial to the successful implementation of a vocational curriculum and thus on-going in-service pedagogical support should be offered to untrained and/or inexperienced lecturers. Only then might the TVET environment become more effective and conducive to the training and employment needs of South Africa.

10. Ethical approval

The research reported in this paper has been subjected to ethical review and approved by the research ethics committee of the University of the Witwatersrand. Approval to conduct research was obtained from the respective TVET College principals and the lecturers who participated in the project signed consent forms and a declaration to participate in the interviews. They were assured of confidentiality and anonymity in use of provided information.

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A Dynamic Ubiquitous Management System for Work Integrated Learning

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Abstract: There is a huge challenge in managing of student information in Cooperative education and Work Integrated Learning because of the growing number of students and the different role players in these activities namely: the WIL students, the preWIL students, the

university staff and the various industries that employ the students. In this paper we look at various international systems Tshwane University of Technology Cooperative Education has tested and propose a hybrid dynamic ubiquitous management system that incorporates all the various facets and phases of Work Integrated Learning.

Keywords: WIL, Management Information Systems, Ubiquitous, WILMS, Graduate Recruitment

1. Introduction

Recruiting is one of the most important, yet difficult tasks for any HR department. This is due to the fact that employers usually receive an enormous number of job applications which costs time and effort to manually identify and select potential candidates. As a consequence, this has led to the need for developing automatic systems for facilitating the recruitment process. The goal with the Tshwane University of Technology (TUT) Work Integrated Learning Management System (WILMS) was to create a system that was easy to use for TUT students to be able to create professional Curriculum Vitae's that staff as well as students can access from any computer anywhere in the world to assist them to find either Work Integrated Learning (WIL) or Graduate placement.

Currently WIL is being managed in most departments at the various UoT's either by use of paper based records, excel spreadsheets or / and out dated insufficient electronic systems that do not cater for all the 5 stages of WIL: preparation, placement, monitoring, evaluation and debriefing. Due to this, it is hard to keep track of the growing number of students in the field doing their internships, students who still require in-service training opportunities and the companies that are employing them.

Student evaluations in the field are also extremely cumbersome as the current systems being used do not have the necessary functionality to manage and assist lecturers while in the field performing student evaluations.

These gaps in the current systems led us to the development of WIL-MS to help manage the WIL component of our courses and all the different stages namely: before placement (preparation), during placement (placement and monitoring) and after placement (evaluation and debriefing).

2. Background

In 2012 and 2013 TUT purchased a license for Prospects online CV system from a United Kingdom based company and Simplicity from a United States based company. The two systems were tested for 2 years and were found lacking in functionality. In addition to that, both systems covered some of the needs of the Cooperative Education Department (Graduated Recruitment and Employability) but none of the Work Integrated Learning needs.

i. System needs of Cooperative Education Department

Coop department had specific requirements that they needed in a system in order for them to automate their processes namely:

- Student and Company Registration. The proposed system needs to capture all required student and company information as needed by the department.
- Preparation. Through the system, the coop department should be able to prepare students for employment through their various training up skilling activities such as: interview skills, CV writing, cover letters and work ethics. The proposed system should be able to manage all these activities as required.
- Placement. The proposed system should be able to manage advert placements from both internal and external role players (company representatives).
- CV Database. The Coop department and the university partner companies need to have a readily accessible database of all student CVs. The proposed system needs to be able to handle all CVs from all disciplines in the university.
- Bursaries. The proposed system should be able to handle bursary and scholarship applications from the seta's and private sector.

ii. System needs of Work Integrated learning.

In TUT Work Integrated Learning (WIL) is managed at departmental level. Every department has its own requirements and needs. The system that was to be used would have to satisfy the generic needs and phases of WIL namely:

- Preparation. During this phase the students are prepared for WIL through various upskilling tasks such as CV writing, work ethics and how to behave in an interview. The proposed system would need to keep track of all these events per student for record and auditing purposes.
- Placement. The proposed system would need to automate and simplify the process of finding placement for WIL students.
- Monitoring. During this phase, a WIL lecturer / coordinator monitors the students as they are in the field. The proposed system needs to manage the monitoring and tracking of the students. Monitoring can be done physically by the coordinator, through emails or phone calls. The system should be able to assist the coordinator to manage the two.
- Evaluation & Debriefing. During these 2 phases the students are evaluated for the work they have done during their internship program. The proposed system needs to keep track of all student evaluations from both their lecturers and their mentors in the various companies.

3. Proposed Work Integrated Learning Management System for South Africa

WILMS (WIL Management System) is an online portal used to manage WIL and recruitment services in universities. WIL-MS was developed with the following objectives in mind:

- Electronically keep track of all students who have acquired in-service training,
- Electronic records of the companies that take on our students as interns,
- Facilitate and assist the coordinator during WIL visits,
- Draw real-time reports of the WIL status of the various departments,
- Electronic records of the advisory committee members,
- Portal for companies to post adverts,
- Portal for students still looking for internships to post their CVs and apply for advertised job opportunities,
- ECSA, DHET Reports,
- WIL eligibility reports for each department, • Online workbook completion.

A. WILMS Unique Features

WILMS offers several unique features such as:

- Online storage of both students' and company data.
- Role based access control. WILMS is created for different role structures in a university namely:
 - Department WIL Coordinator, ◦ Head of Department, ◦ Faculty WIL Coordinator,
 - University WIL Coordinator, ◦ Pre-WIL Students, ◦ WIL Students, ◦ Company Representatives and ◦ Mentors
- Smart summarizing of students' data.
- Advanced reporting using visual aids such as graphs for easy, quick and accurate interpretation of students' data.
- Ease of access to the system using different mediums such as smart phones, tablets and computers.
- Google maps integration.
- Android Mobile App to assist WIL coordinators while in the field.

Through this app the following can be done:

- View students information,
- View company information,
- Find directions while in the field with turn by turn navigation capability,
- Fill evaluation forms online

B. WILMS Framework

WILMS is made up four key components with data being sent between them. Figure 1 shows the complete WILMS framework with the four key components and the kind of data sent between them. In the next section we explain these components in more detail.

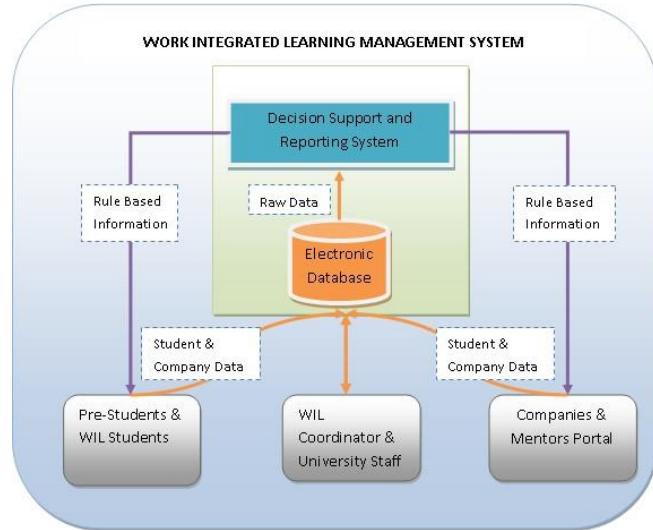


Figure 1: WILMS Framework

1) WILMS Server

WIL-MS-Server is the main component of the system. It is the brain of the system and it houses two sub components the decision support and reporting system / knowledge base and the student and company records database.

- a) Electronic database: This is the central part of the system where all the students' and company data is stored. It is able to manage the cross-relations between the students and company data, departments in the university and the university staff that are allowed access to the system. It includes several procedures and triggers that control data consistency across all WIL-MS platforms, error tracking, backups and reminders and alerts.
- b) Decision Support System (WILMS-DSS): This is the rule-based knowledge base of the system that uses the stored data to create useful information and reports. WILMS server is a centralized component and access to it is through web service API calls. Any device with the right authentication protocols and internet service will be able to have access to it.

2) University Staff Portal

This is a smart portal that will be used by different university staff members depending on their access level to prepare, monitor and debrief students. The different university staff roles found in WIL-MS are:

- a) Department WIL Coordinator – this role manages the WIL component in his / her department. He is responsible for the following:
 - Managing pre-WIL student CVs in his department,
 - Managing WIL students information in his / her department,
 - Managing the companies and mentors that have employed students from his department,
 - Managing the advisory committee,
 - Monitoring of students in the field,
 - Debriefing of students,
 - Printing of marks,
 - Creating and printing of reports required by DHET / ECSA or any other governing body.
- b) Head of Department – this role oversees what the department WIL Coordinator does in his department and thus can perform the same tasks.
- c) WIL Coordinator Assistant – this role assists WIL coordinators with some of their less important tasks. He / she can assist with the following:
 - Adding WIL students into the system,
 - Adding companies into the system.
- d) Faculty WIL Coordinator – this role views WIL data reports of all the departments in his faculty that have a WIL component.
- e) WIL Directorate / University WIL Coordinator – this role views the WIL data across all faculties and departments in the university.
- f) Graduate Recruitment and Employability – this role is used to prepare students for employment. The following are the tasks performed by this user:
 - Add and manage events to prepare students like recruitment drives,
 - Assist students with their CVs,
 - Add and manage job adverts.

- g) Super Admin – this role is used to configure, manage and add the different university staff roles, faculties and subjects into the WILMS

3) **WIL Students Portal**

This portal will be used by students at the university to send out their CVs (before they get internship) and manage the WIL process and workbook during the internship. There are 2 roles for this portal:

- a) Pre/Post-WIL Students: this role is used by students eligible for WIL to look for employment and graduate students. The following tasks are performed by this user:
 - Manage their online CV,
 - RSVP to preparation events organized by the graduate recruitment department and
 - Respond to job adverts.
- b) WIL-Students: this role is used by registered WIL students. In addition to the above pre-student tasks, the following are specific tasks performed by this user:
 - Manage their workstation information and
 - Complete the online workbook,

4) **Company and Mentor Portal**

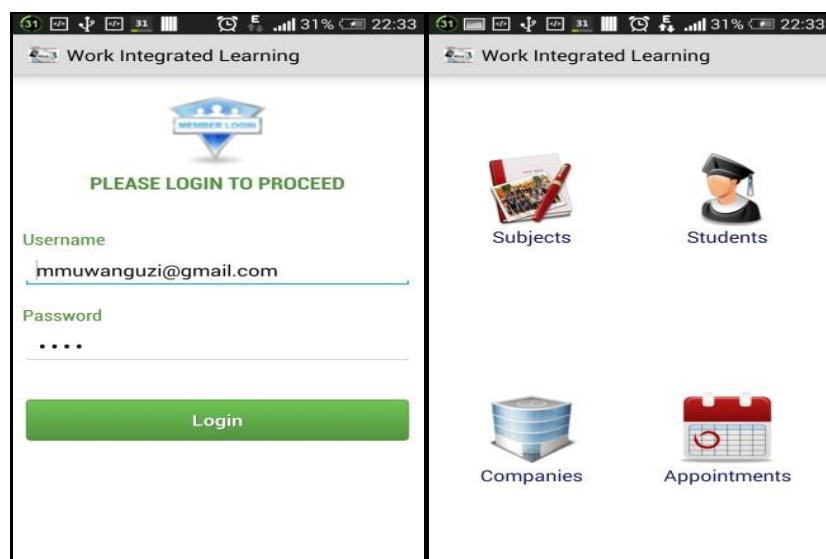
This portal is to be used by the companies that are looking to employ our students and those that have already employed our students and are mentoring them. There are two roles attached to this portal:

- a) Company Representative: this role is responsible for viewing CVs and adding company job adverts into the system. This role deals with the preWIL students.
- b) Student Mentor: this role manages the student interns assigned to him / her. They complete the workbook online and grade the interns' performance in the workplace.

C. WILMS Screenshots

Below are some screenshots of the proposed WILMS portal

1) WILMS Mobile App



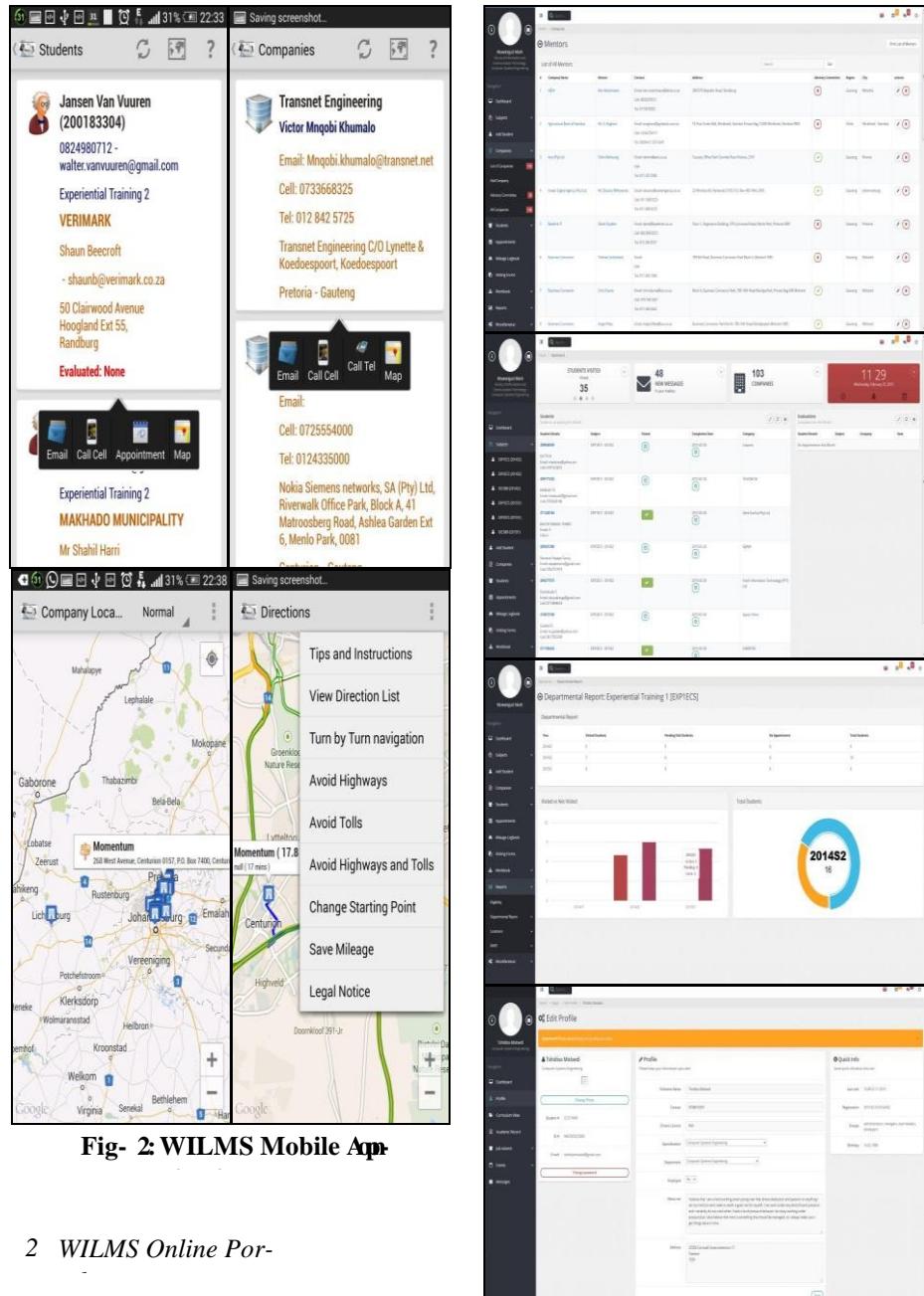


Fig- 2: WILMS Mobile App

2 WILMS Online Por-

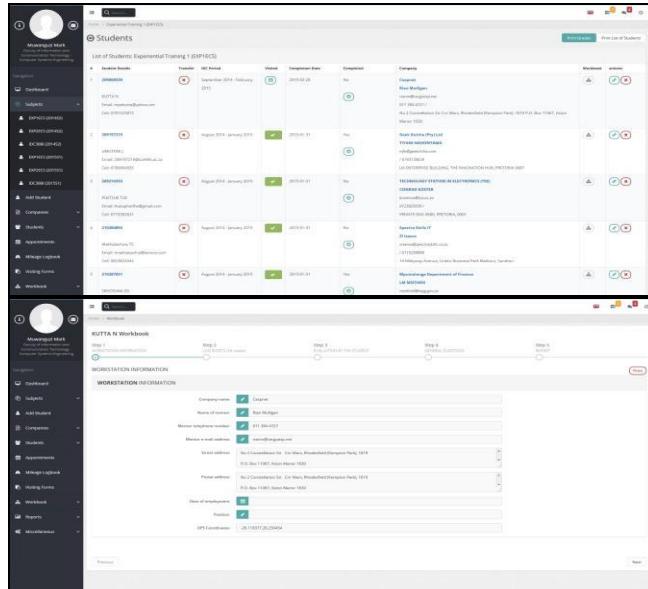


Figure 3: WILMS Online portal

4. WILMS Framework Evaluation

To evaluate the proposed framework we used the Criteria-Based evaluation method for Information Systems proposed by Chen et al (2011). This entails evaluating a system / information System Framework based on a list of criteria, checklists, principles or goals and objectives.

The framework proposed was built, designed and developed by a University lecturer and WIL coordinator with close consultation from the university Coop department and Industry partners and thus it satisfies all requirements and system needs of all stakeholders listed in the background section of this article.

To measure the success of the pilot of the proposed framework / Information System, the DeLone and McLean Information Systems Success

Model (DeLone W, McLean E, 2003) (DeLone W, McLean E, 1992) was employed and this is divided up into six categories namely:

- Systems Quality: The proposed framework needs to meet its customers requirements and should be aligned to the organization's purpose and strategic

direction (ISO9000:2005). WILMS framework was built based on the requirements of all stakeholders involved in WIL and graduated recruitment.

- b) Information quality: Wang & Strong (1996) propose a list of elements that can be used to assess information quality. The proposed framework was designed taking the following elements into consideration:
 - Intrinsic IQ: this entails the confidentiality, accuracy and objectivity of the information provided.
 - Contextual IQ: this entails taking a look at the relevance, value-added, timeliness and completeness of the information provided by the system.
 - Representational IQ: this entails the interpretability and format of the information provided by the system. The information needs to be presented in a format that is interpretable to whoever requires the information.
 - Accessibility IQ: this entails how accessible the system is, what electronic mediums the system can be viewed on and the underlying security of the system
- c) Use: The framework proposed needs to be useful, useable and user friendly.
- d) User satisfaction.
- e) Individual impact. This is “the measure of the extent to which the proposed framework has influenced the capabilities and effectiveness, on behalf of the organization and key-users” (Gupta, Sharma and Rashid, 2009)
- f) Organizational impact: The impact of the proposed system can be measured in the graduation output produced and the number of students finding employment. Amongst other factors, our graduation rates have tripled because of the automation of the WIL process and the vast database of companies.

The proposed system was built with above goals and objectives in order to make it a successful Information System.

5. Future Work and Conclusion

In this paper a Work Integrated Learning framework is proposed, designed, tested and piloted in 3 universities; Tshwane University of Technology, Vaal University of Technology and Cape Peninsula University of Technology successfully.

Moving forward, the researcher and designer would like to analyze the data and use machine learning to learn from past records in order to predict how well a student would flourish in a specific company.

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The Benefits of Work Integrated Learning for Undergraduates

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Abstract: . Work Integrated Learning (WIL) Programme is internationally recognized as a major platform in developing graduates with employability skills that prepares them for the work environment. In Tshwane University of Technology (TUT), WIL students are developed through two of the following programmes: work-directed theoretical learning (WDTL) and project-based learning (PBL) or work-directed theoretical learning and workplace-based learning (WPBL). This paper discusses the benefits of having a WIL programme incorporated within the university's curriculum and outlines some of the challenges that have been experienced with running the programme. Therefore, this paper is relevant to argue the role WIL plays in developing undergraduates professionally, for the working environment.

Keywords: Work-Integrated Learning;benefits, challenges, placement, assessment

1. Introduction

Work integrated learning (WIL) is a programme that facilitates the placement of students within an organization in order to integrate academic learning with its application in the workplace (Jackson, 2015, p.350; Trede, 2014, p.159; Smith, 2012, p.247). In particular, the WIL programme is important for the development of professional competence through attributes and employability skills that prepares students to be ready for the work environment (McNamara, 2013, p.183). In order to attain this, the university plays a critical role in preparing the students for the world of work and liaising with industry to ensure

that we have employable graduates. Thus, the university has to prepare the students for their future work roles (Trede, 2014, p.159).

2. Benefits of Work Integrated Learning

Employability skills are the skills required to gain employment and progress within the work environment and as a result, to contribute towards the work conducted (Smith, 2012, p.247; Bridgstock, 2009, p.33). The benefits of having WIL for any programme is the production of graduates that are employable as a result of their competence in their disciplinary fields within a rapidly changing work environment. In addition, WIL gives the university an opportunity to keep track of the trending changes within industry and to pro-actively adapt to the work environment changes (Bridgstock, 2009, p.31-32). Through WIL, a relationship between the university and community-industry is established and strengthened (Smith, 2012, p.248; Bridgstock, 2009, p.32). Not only that, but there is an opportunity to ensure that graduates have the ability to obtain and maintain work. The student's personal benefits from WIL include the improvement of generic skills (written & verbal communication), working in teams and with technology (Bridgstock, 2009, p.33).

A number of students enrol for a course either because of an interest in a particular subject or it was the programme that was available and their grades were good enough to enrol for that particular programme. In most cases, students have unclear views about their future careers however, this uncertainty becomes eliminated by the exposure to the work environment or through community based projects, as a result of the student's participation in a WIL programme (Fern, Campbell & Zegwaard, 2014, p.3). A detailed description of WIL benefits is discussed, with reference to career & academic benefits as well as personal and employer benefits.

2.1 Career and Academic Benefits

Because WIL is about students obtaining work experience prior to their graduation, in most cases this gives WIL students an advantage over graduates without work-experience in obtaining or maintaining work. This occurs as a result of relationships established and in some cases maintained during WIL search or project based learning (PBL)/work-place based learning (WPBL) (Fern, Campbell &Zegwaard, 2014, p.3). Work-directed theoretical learning (WDTL) stimulates the students' thinking, increases their research abilities and develops their time management skills. Fern, Campbell &Zegwaard (2014) pointed out that "some WIL coordinators have shared how after the completion of project based learning or work-place based learning, the student's enthusiasm about their discipline has increased" (Fern, Campbell &Zegwaard, 2014, p.3-4).

2.2 Personal and Employer Benefits

According to Trede (2014), "workplaces shape professional identity, which is done early for WIL students through WIL programme rather than after they are graduates. Professional identity takes into account workplace cultures and professionalism, that gets stimulated and initiated during WIL and also raise awareness of practices that are not beneficial" (Trede, 2014, p.159-160;164). As noted by Fern, Campbell &Zegwaard (2014), "students placed for WIL develop interpersonal communication skills, improve in their adaptability to change and the ability to make decisions gets enhanced. In addition, the students' ability to work within teams, achieve common goals, and develop organizational skills are well developed before the student becomes qualified in their discipline" (Fern, Campbell &Zegwaard, 2014, p.4). All skills developed, increases the students' chances of getting permanent employment or maintaining their position given for a period longer than the WIL duration, when compared to the student who has not participated in a WIL programme. WIL employers also benefit from WIL programme. Employers have to keep up with the trends within their discipline, specifically research projects on their subjects of interest. In order to do so, the introduction of WIL students to their companies gives them a platform of fresh and different ideas which are neces-

sary for growth and improvements, and ideas that will allow companies to remain strongly competitive to their competitors (Fern, Campbell & Zegwaard, 2014, p.4-5).

3. Challenges of Work Integrated Learning

Failure to place the total number of students searching for WIL each year means students not placed will add to the number of WIL search students each year. For instance, the number of students not placed within the Environmental Sciences Programme at Tshwane University of Technology (TUT) for the past three years (March 2015 to March 2018), was relatively low. However, problems arise when this number accumulates each year, resulting in a large number of students in search of WIL at the end of each year. Another major challenge experienced is in relation to the student's assessment at the end or completion of the WIL programme. McNamara, (2013) noted that "the assessment of student's professional competence in the work-place is unfair or problematic. The assessment of professional competency is assessed by the academic supervisors and heavily dependent upon the industry supervisor, which may be unreliable" (McNamara, 2013, p.183).

3.1 WIL Placement and Assessment

Case Study

The TUT's Environmental Sciences Programme is a three and a half years course that consists of three years of theory and six months of WIL programme. The successful completion of this course on record time depends on a number of factors, such as completing theory subjects and WIL immediately after that. Regrettably, not all students complete their theory subjects on record time, which means some students complete at the end of first semester and others at the end of the year, if not twelve months later. For this reason and because the placement of students occurs at random times, WIL search students are placed from January to November in our university. Often, not all WIL search students get placed at the end of each semester, which means the

number of students that need placement at the beginning of a new semester would increase. The increase in this number is often low for the Environmental Sciences Programme, however, accumulates at the beginning of each new semester. From this, a challenge is often experienced in placing students that have completed in previous years because they need to keep up with the trends in university curriculum and the work environment. In addition, the placement of students often relies on the ability of industry to accommodate WIL students in their organization. This means, the number of students placed each semester fluctuates.

Students that get placed for a WIL programme are supervised by an industry and academic supervisor. An industry or workplace supervisor is responsible for delegating work to the student that will provide learning opportunities, supervising and assessing the student's performance. An academic supervisor is responsible for the assessment of the student's monthly reports as signed by the mentor and submitted by the student. Communication between the student and an academic supervisor is limited to e-mails, telephone communication, visits to the institution upon request and a visit to the student's work-place at the end of the WIL programme. The student's first assessment is conducted by the industry supervisor based on the WIL duration, and the assessment completed during a WIL visit is the second assessment as conducted by the academic supervisor (McNamara, 2013, p.186). The form of assessment conducted by the industry and academic supervisor are outlined in annexures (annexure 1 and annexure 2). Two assessments are conducted and necessary because evaluation by industry supervisor only might raise issues such as reliability of the assessment. Therefore, the second assessment of WIL student is relevant and conducted during a WIL visit.

4. Student Preparation for WIL Placement

To ensure the continuous placement of WIL search students and student readiness for the work environment, students must undergo work-directed theoretical learning (WDTL). Work-directed theoretical learning involves the training of students with regard to the purpose of WIL, relevant stakeholders' roles and

expectations as well as the action learning cycle, which includes learning about reflection practices. The objectives of WDTL takes into consideration the introduction of WIL, discussion of subjects such as the purpose, outcomes and procedures associated with WIL and the discussion of the roles and responsibilities of individuals concerned (TUT staff, students, organizations). In addition, work-directed theoretical learning also takes into account action learning in the form of motivational talks, employability improvement training, curriculum vitae workshop, career expo and the incorporation of various projects. Action learning is focused at engaging students in activities that requires them to conduct, record and report observations, participate in problem-solving activities, designing action plans to resolve case studies and implementing good reflection procedures when writing and reporting on personal reflection.

Currently, work-directed theoretical learning is not fully functional because there are no time slots allocated for WIL on the student's timetable, which means activities conducted must be done so when the students have free periods. This is often challenging because the free periods available do not offer enough time for training coordinators to facilitate the set training. To date, the only WDTL activities conducted for the Environmental Sciences programme are motivational talks, CV workshop and employability improvement training. Motivational talks are conducted by TUT alumni in the Environmental Science Programme and the student's supervisors whom are now in the database of WIL companies for the programme. Employability improvement training is a two days' course that involves theoretical and practical activities which are necessary for preparing the student in terms of how the work environment should be perceived. A curriculum vitae workshop is crucial in preparing students on how to apply for WIL opportunities using various platforms, how students should prepare and conduct themselves before and during an interview, how to have their CVs ready and engaging to the employer and how to present oneself as an employable graduate. Lastly, a vintage recycling project was introduced in April 2018, which aims at promoting waste management practices and poverty alleviation through socio economic activities.

Participation in a work-directed theoretical learning will be followed by the enrolment in project based learning or workplace-based learning. A PBL involves learning through projects, under the supervision of a university lecturer and a workplace or community supervisor. Projects conducted are relevant to the student's discipline and occupational futures (Smith, 2012, p.247). Currently, the university-industry-community collaborative outreach and research projects are in the pipeline with the City of Tshwane, the Department of Environmental Affairs, TUT Green Arcadia and the Green Youth Network. Projects involved include participation in Environmental Sciences projects from various sections of the organization or different organizations. For example, these can be small or major projects that run throughout the year for a minimum of one week. Participation in these projects will lead to the accumulation of hours necessary to successfully complete the WIL Programme. WIL project based learning often is on voluntary basis, which means students have no funding for the duration of WIL. An attempt to rectify this considered the use of SETA. Thus far, an application for funding of the WIL project based learning has been sent to Energy and Water Sector Education and Training Authority (EWSETA). This means when projects are established, funding opportunities may be explored to enable the maintenance of students during the course of such projects and the successful running and completion of the projects concerned.

A work-place directed learning means students are placed in work environments for the purposes of learning and where the focus is on productive knowledge and skills rather than reproductive knowledge. As a result, the students will be actively involved and will have concrete experiences. The student will have to be aware of particular components of the experience through reflective observation, pausing to consider what has just taken place. The student will have to use inductive reasoning by analyzing observations, explaining them, and integrating them into logically sound theories, and then putting this knowledge into practice. Both project based learning and work directed learning incorporate the most important ideas and concepts in the curriculum, such as air, ecology, geology & soils, people & the economy and water. Students

participating in project based learning or work-directed learning are expected to have the development of applied competencies, producing and communicating information, specifically conducting stakeholder participation, problem-solving, collection of baseline environmental data and managing this data and reflection.

The assessment of a student for a project based learning or work-directed learning will include for instance, the identification of a problem within a community-industry project or the environmental work place using analytical skills such as document analysis, observations and interviews. The root causes of the problem in a community-industry project or the environmental work place must be correctly described and information on the root causes be collected and analyzed in a report in such a manner that the student's ability to collect information and present it accurately, comes to the fore. Workable recommendations on solutions to a problem experienced in the community-industry project or the environmental work place must be investigated and reported on in a presentation to supervisors/stakeholders/mentors. In addition, the assessment will include the baseline environmental data that has been obtained through the correct sampling and monitoring methods, such as: stack emissions data; water quality data; waste statistics; and vegetation description data; global positioning systems data that is either stored on an electronic database or on hard copy records, using the correct procedures. After each project, a report must be compiled in a relevant and appropriate manner for the community-industry project or for the environmental workplace. Through this, the students are able to capture their learning experience in a thoughtful manner, displaying awareness of stumbling blocks, triumphs and plans for improvement, in a brief WIL reflection essay. To improve on the assessment of WIL, an assignment, interview and a report (and reflection) will be included.

6. Conclusions

Work integrated learning is vital for the development of students for the working environment. Work integrated learning is about the practical placement of

students within an organizational order to integrate academic learning with its application in the workplace. The preparation of students for work integrated learning would be effective when WIL is considered as a subject rather than only as a practical placement of the student to a work environment. This means a timeslot on the student's timetable must be allocated in order for students to fully participate in work-directed theoretical learning. The benefits of students participating in a WIL programme include career, academic and personal benefits. In addition, the university and employers concerned also benefit by establishing and maintaining relationships that enable them to keep track of the changes that occur within industry and academics. Regrettably, challenges have been experienced with the placement and assessment of WIL students and the introduction of various work-directed theoretical learning activities necessary for preparing the students for a WIL programme. To address this, a time slot must be allocated for WIL preparedness activities. In addition, the students will enrol in project based learning (PBL) or work-place based learning (WPBL) and the assessment of WIL will include an assignment, interview and a report (and reflection). Based on the introduction of project based learning and new assessment forms, the WIL challenges experienced shall be addressed.

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Appendix 1

No.	Assessment	Rating	Comment
1.	Interest in work	4. Very enthusiastic. 3. Satisfactory amount of enthusiasm for job. 2. Interest spasmodic - occasionally enthusiastic. 1. Little enthusiasm for job.	
2.	Initiative	4. Self-starter. Ask for new jobs. Looks for work to do. 3. Acts voluntarily in most matters 2. Relies on supervision. Must be told what to do frequently. 1. Always waits to be told what to do next.	
3.	Organization and planning	4. Does an outstanding job of planning and organizing his/her work. 3. Usually organizes work adequately. 2. Does normal amount of planning and organizing.	

		1. Unable to organize and plan work effectively.	
4.	Ability to learn	4. Brilliant 3. Quick 2. Average 1. Slow	
5.	Quality of work	4. Usually thorough. Good work. Few errors. 3. Work usually needs review. Has normal amount of errors. 2. More than average amount of errors for a trainee. 1. Work usually done on careless manner.	
6.	Judgement	4. Uses good common sense. Usually makes excellent decisions.	
		3. Judgement usually good in routine situations. 2. Judgement often not reliable. 1. Poor judgements. Jumps to conclusions without sufficient knowledge.	
7.	Dependability	4. Can always be depended upon in any situation. 3. Can be depended upon in routine situations. 2. Somewhat unreliable. Needs above average checking. 1. Unreliable.	
8.	Attitude towards work	4. Motivated. Eager to learn. Positive. 3. Usually motivated and willing to learn.	

		2. Lacks motivation occasionally. Accepts tasks without challenge.	
		1. Not motivated. Do not want new challenges.	
9. Acceptance of suggestions and criticism		4. Expresses appreciation and takes prompt action on suggestions and criticism by supervisor.	
		3. Accepts suggestions and criticism by supervisor in satisfactory manner.	
		2. Reluctantly accepts suggestions and criticism by supervisor.	
		1. Resents suggestions and criticism by supervisor.	
10. Communication skills - written and oral expression		4. Good.	
		3. Satisfactory.	
		2. Needs improvement.	
		1. Unsatisfactory.	

Appendix 2

N. o.	Assessment	Rating	Com- ment
1	PowerPoint Presentation	Has the student compiled a PowerPoint presentation of 15-20 minutes' length? (5 marks)	
2	Evidence of work conducted	Does this presentation include photos and visual aids? [5 marks]	

.	3 Confidence and Audibility	Is the student confident and audible while presenting? [5 marks]	
.	4 Environmental Topic	The student must indicate which of the activities in which fields (as per logbook) (“environmental topic”) he/she was exposed to. [5 marks]	
.	5 Discussion of Environmental Topic	The student must briefly describe what he/she did in each “environmental topic” exposed to, and demonstrate that he understood clearly what had to be done in each environmental topic. [6 x 5 marks] [30 marks]	

Investigation on challenges facing WIL programme at TVET colleges in Limpopo Province

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Abstract: Work Integrated Learning is becoming compulsory in all study programmes at TVET colleges in order to provide learners with authentic workplace experiences. The purpose of the paper is to describe challenges experienced by learners at TVET colleges in Limpopo Province concerning Work Integrated Learning (WIL). The study investigated challenges experienced by stakeholders at TVET Colleges in Limpopo Province in WIL programmes. The study made use of both qualitative and quantitative methods to collect data. Questionnaires and focus group interviews were used as instruments for data collection. The results of this study revealed that learners face various challenges in WIL programmes. Some of the challenges are that learners are not visited or supervised by their lecturers when in the workplace. Some learners do not have parental support due to poverty and unemployment. It was also revealed that some tasks assigned at the workplace are not relevant or aligned to the theoretical training received at the college. Safety of the learners when placed at the workplace is also a challenge. This study then recommends that the engagement of college staff in WIL programmes at TVET colleges be intensified. The safety of learners must be a priority from both the college and the workplace. It is further recommended that a log book relevant to the field of study, be developed and used when learners go to the workplace.

Keywords: *Challenges; vocational education; work integrated learning, Limpopo Province, unemployment*

1. Introduction

Work Integrated Learning is an integral part of the learning programme for the National Curriculum Vocational (NCV), but many see it as a separate entity

from the curriculum (Thompson, Bates & Bates, 2016). In fields such as teaching and engineering, WIL is compulsory component of the qualification (Taylor & Geldenhuys, 2018; Cameron, 2017), whereas in other fields, such as criminal justice, it is not compulsory but an elective component of the qualification (Jackson, 2017). WIL is also an embedded component within the curriculum for Level 2, 3 and 4 of the NCV programme offered at TVET colleges (DHET, 2007) and it is therefore compulsory.

Many learners benefit from WIL placements as such placements aim at integrating theoretical knowledge imparted in the classroom and practical training from the workplace (Bauer & Gessler, 2016; Thompson et al., 2016). The WIL experience eases the difficult process of transferring skills from the classroom to the workplace and help in building learners' confidence (Jackson, 2017). Furthermore, WIL improves the learners' non-technical skills, sometimes referred to as non-cognitive skills or soft skills and provide learners with unique understandings of certain behaviours and conduct associated with their fields of specialisation (Jackson, 2017). Non-technical skills include communication, teamwork and interpersonal relations (Male, Bush & Chapman, 2011).

Despite the obvious benefits of WIL, challenges also exist. As WIL becomes more widespread, the ability to secure placements for the learners and other resources become increasingly difficult (McLennan & Keating, 2008). Learner placement can be college-arranged or self-arranged placement where learners find the placement by themselves (Jones, Green & Higson, 2017). Lack of institutional support often has an impact on the implementation of WIL and then affects learner participation in WIL programmes (Rook, 2016).

Most literature reviews on WIL focus on the design, development and implementation of WIL programmes (Rowe, Mackaway & Winchester-Seeto, 2012; Rook, 2017), but leave out accounts of the experiences of learners as stakeholders in the process. It appears from reviewing relevant literature that limited research has been conducted into how learners experience WIL (Taylor & Geldenhuys, 2018). This point seems crucial in that learners have to report on their WIL experiences which affect the quantity and quality of their learning.

This paper reports on an investigation into the challenges experienced by TVET learners with regard to WIL at TVET colleges in the Limpopo Province, South Africa. The paper contributes to the existing literature by advancing an understanding of factors that hinder the full participation of learners in WIL programmes. The paper is structured to review relevant literature, followed by an overview of methodology and presentation of the research results. Findings are discussed in respect to the implications of the challenges experienced by learners in WIL programmes, followed by some concluding remarks.

2. Literature Review

The following section will cover the literature review on the definition of work integrated learning, the role and purposes of WIL in TVET colleges, benefits of Work Integrated Learning, stakeholders in Work Integrated Learning programme and challenges encountered by learners participating in WIL programmes at TVET colleges.

2.1 Defining Work Integrated Learning

Work Integrated Learning (WIL) is broadly defined as “... an umbrella term for a range of approaches and strategies that integrate theory with practice of work within a purposefully designed curriculum” (Patrick, Peach, Pocknee, Webb, Fletcher and Pretto, 2008). Nonetheless, Atkinson (2016) defines work-integrated learning as learning that comprises a range of programmes and activities in which the theory of learning is intentionally integrated with the practice of work through specifically designed curriculum, pedagogic practices and student engagement. Both definitions above, states the integration of theoretical learning and practice of work as the fundamental principle of work integrated learning.

The work-integrated learning is used herein to refer to a broad range of experience-based education models and curriculum approaches where students engage with industry and community organizations, for example, service learning, work-based learning, community engagement, cooperative education (Rowe, Mackaway, & Winchester-Seeto, 2012). Work Integrated Learning should be purposefully linked to curriculum and assessment as it is part of the

education process (DHET 2007; Atkinson 2016). WIL must be learner centred wherein learners must be made aware of the vital importance of placement expectations from both the learner and the employer (Taylor & Geldenhuys, 2017)

2.2 The role and purposes of WIL in TVET colleges

Work integrated learning (WIL) programmes are currently common TVET practice worldwide. The purpose of WIL is to prepare learners for the world of work by linking the theoretical learning in classrooms to practices in the workplace. Another purpose of WIL is to improve learners' self-efficacy. WIL programme comprises two components of learning, namely theoretical learning and the practical learning. Theoretical learning takes place in the classroom whereas the practical learning takes place at the workplace, constituting the 'real' world of work. Learners engaging in WIL programmes develop new knowledge by combining what they learnt in class and what they learn at the workplace. Not only must they show the understanding of these new knowledge but they must be able to apply it in the workplace to increase productivity (Choy & Delahaye, 2011). In TVET colleges, learners have the opportunity to go into college workshops or simulation rooms to do practical tasks. These cannot be considered as the practical component of WIL. The college workshop is not the real world of work and should not replace the workplace.

In countries such as Ireland, Turkey and Italy the educational institution has the primary responsibility for the education and training of students whilst the industry is subsidiary to the entire training process. The industry only provides learners with experience in the working environment (Arslan, 2013). In Germany however, the opposite is true. Learners are primarily based at the workplace and only spend two to three days per week at the educational institution (Arslan, 2013). In South Africa, educational institutions such as TVET colleges have the primary responsibility for the education and training of students. It must be noted that when learners are placed, the learner is no longer under the control of the college(Taylor&Geldenhuys, 2018). The Institution will not

be held accountable WIL is thus incorporated in technical and vocational programmes.

2.3 Benefits of Work Integrated Learning

Work Integrated Learning have positive effects on learning, as learners can identify the theoretical concepts taught in class and put them into practice at the workplace (Freudenberg, Brimble & Vyvyan 2010). When learners are placed at workplaces their employment prospects are increased (Govender and Wait 2017). Furthermore, classroom-based instruction alone does not produce a prospective employee ready for work. WIL leads to the improvement of attitudes and behaviours towards work and the chosen industry.

Work-integrated learning (WIL) provides students with opportunities to develop specific skills and knowledge in the workplace, the underlying assumption being that not all skills can be learned in the classroom or workplaces, but through the integration of both classroom and workplace learning (Atkinson, 2016). Work-integrated learning can thus provide students with knowledge about an occupation or trade outside what is taught in the classroom, providing an introduction to a particular workplace, occupation or industry.

Smith (2012) considers work-integrated learning as relatively new jargon, although this type of learning has been practiced for more than 25 years (Bernhardsson, Gellerstedt, Winman, 2017). WIL offers learners authentic learning experiences that focus attention on creating synergy between theoretical learning and workplace practice (Smith, 2012; Bernhardsson, Gellerstedt, Winman, 2017).

In some instances, learners might choose not to go to workplaces because there was no proper preparation for and explanation of the importance of attending the WIL programme. In some other instances, the institutional structure might not allow for integration of WIL programmes into the normal curriculum programmes of the institution. This is often due to issues such as time allocation, financial constraints and lack of commitment from both learners and lecturers (Atkinson 2016).

In the course of engagement process, challenges are encountered by role players and, if not identified and resolved, those challenges might hamper the integrationprocess of WIL into the curriculum.

2.4 Stakeholders in Work Integrated Learning Programme

In a work-integrated learning programme setting, three stakeholders are thus involved, namely learners, employers or the industry, and the TVET college. Most literature sees a WIL programme as a relationship comprising three main stakeholders, namely colleges, employers or industries, and learners. However, some literature has expanded on the relationship to include government and the wider community (Arlans, 2013; Nelson, 2002; Calway& Murphy, 2011).For WIL to work, all stakeholders must give inputs that will contribute to the sustenance of the programme (Choy & Delahaye, 2011).

The college's role is to create the opportunities to enable the learner placement in the industry. This can be done by partnering with industry that is relevant to the programmes offered by the college. Although WIL require the partnership between industry, college and learner, the development of that partnership is often a lengthy process and difficult (Choy & Delahaye, 2011). The college as the educational institution provide the theoretical training to the learner. The learners' role is to participate in the theoretical learning and attend the workplace training. It is the responsibility of the learner to attend the workplace training as this prepare the learners to be ready for work. The emphasis of WIL programme should be on the learners. Successful WIL activities in higher education provide a vehicle for ensuring an academically sound, skilled and productive workforce, which can contribute to the future economic growth of the country (Reddan, 2012; Ferns & Moore, 2012). The industry plays an important role by allowing the learners space to practice what they learnt in class. Through proper management of the relationship between the college and the industry, many learners graduate with the required skills needed to enter in the workplace. In the next section, challenges that are encountered by learners participating in WIL programmes are discussed.

2.5 Challenges Encountered by Learners Participating in WIL Programmes at TVET colleges

The following section will highlight some of the challenges facing learner in WIL programmes. These are, Lack of financial support, resistance from employees and safety issue at the workplace.

2.5.1 Lack of Financial Support

Lack of financial support due unemployment and poverty is the major challenge experienced by learners. The unemployment rate of Limpopo Province was 40.5 % in the year 2007 (Weir-Smith, 2014). Most of the learners at TVET Colleges are from the families where one or both parents are unemployed (Nasman, 2003). Unemployment results in low or no income, which in turn lead to lack of financial support on basic needs for learners (Ndhlovu, 2010). Poverty and unemployment go hand in hand (Altman, Mokomane and Wright, 2014). The alleviation of poverty is one of the central goals of almost all the social expenditure. Bhatta, (2016) concluded that if the TVET training is available to all who require it, there will be a reduction in poverty.

2.5.2 Safety Issues at Workplace

Work Integrated Learning is a strategic opportunity that enhances learners' employability, however, it presents a number of distinct legal hazards that can have serious financial, operational and reputational consequences for both the workplace and educational institutions (Cameron, 2017).Safety around the workplace becomes a challenge to employers. The Department of Labour (DoL, 1997) requires that all persons performing duties at the site must be registered. The challenge is who should carry the responsibility should a learner be injured in the workplace. The potential host employers are reluctant to place students due to the safety issue (SACCI, 2011) and legislation that govern these workplaces. As a result, this become a hindering factor to the learner placement. One of those legislation is Compensation Act No. 130 of 1993. Compensation act require that anyone who does work at the workplace must be registered with Unemployment Insurance Fund (UIF). The Occupational health and safety act (OHASA) is another legislation that must be considered during the placement of learners. It is therefore required that the employer take learners through induction programme and training on basic safety applicable to the workplace, on the first day of placement. The safety officers or supervi-

sors are responsible for the task. Basic safety is applicable across the workplaces, however there are some aspects that are specific to a certain workplace. Studies have indicated that workers who have more positive attitudes towards safety are less likely to be involved in accidents(Clarke, 2006). This study is responding to the following questions.

2.6 Research Questions

1. What are the challenges experienced by learners at TVET colleges concerning WIL?
2. How do the challenges experienced by learners impact the integration of WIL into the NCV programme?

3. Methodology

The study used both quantitative and qualitative research approaches for the advantages indicated in Creswell and Plano Clarke (2011). In this case, the mixed method provided more comprehensive evidence for studying the research problem at hand than either quantitative or qualitative method alone. The quantitative data collection instrument used was a questionnaire for 192 learners. Proportionate stratified random sampling was used to select 192 learners from 3 TVET colleges in Limpopo Province. The constructs of the questionnaire used a 5-point Likert scale where 1= Strongly agree, 2= Agree, 3= Neutral/Not sure, 4= Disagree, and 5= Strongly disagree. The 192 questionnaires were collected and analysed using Excel. The qualitative data collection instrument used was focus group interviews with 12 randomly selected learners from 3 TVET colleges of Limpopo Province. Learners who participated in interviews formed second strata. where response from questionnaires were compared to response from focus group interviews. The interviews were recorded with the permission of participants, to allow for transcription later. The study was conducted on learners enrolled for NCV programme in second and third year of study.

4. Results and Discussion

The results of the study are presented in two categories, that is questionnaire and focus group interviews.

4.1 Learners Questionnaire Responses

In response to research question 1, table 1 below shows the frequency distribution of responses to the questionnaire completed by learners

Table 1: Frequency distribution of responses to the questionnaire

Statement /indicators	Frequency distribution											
	Strongly agree		Agree		Not sure		Strongly disagree		Disagree		Total	
	F	%	F	%	F	%	F	%	F	%	F	%
I attended workplace training before	47	25	83	44	10	5	20	11	27	14	187	97,4
Workplace training increased my understanding of vocational subjects	57	31	79	43	10	5	19	10	20	11	185	96,4
Employees at workplace are friendly	39	21	84	46	17	9	24	13	18	10	182	94,8
It was easy to go to workplace	34	18	85	45	18	10	32	17	19	10	188	97,9
I was briefed about the workplace before going	38	21	80	43	25	14	24	13	18	10	185	96,4
I knew what employer expect me to do during training	48	25	84	44	18	10	21	11	18	10	187	97,4
A supervisor or mentor was assigned for me on arrival	34	19	73	41	23	13	30	17	20	11	180	93,8
My family supported me to attend workplace training	82	43	64	34	10	5	17	9	17	9	190	99,0
I was visited by someone from college	15	8	49	27	19	10	70	38	30	16	183	95,3

Tasks given to me at workplace were relevant to my course	82	44	56	30	11	6	21	11	17	9	187	97,4
Training on safety in the workplace was done	72	39	68	36	10	5	17	9	20	11	187	97,4
I received an induction training on the first day at workplace	41	22	63	34	30	16	33	18	19	10	186	96,9
I can work with the employer who placed me	53	28	76	41	19	10	22	12	17	9	187	97,4
I was able to apply the theory I learned in class to the workplace	54	29	83	44	16	9	19	10	15	8	187	97,4
My mentor was helpful	63	34	76	41	11	6	17	9	17	9	184	95,8

Demographic profile of participants

Table 3 below indicates the demographic profile on gender versus age group of participants. The percentages of the totals are indicated for the purpose of comparison between the age groups of male and female participants.

Table 3: Gender vs Age groups of participants

Gen- der Vs age	F of (15 - 18)	%	F of (19 - 22)	%	F of (23 - 26)	%	F of (27 and above)	%
Male	0	0%	42	22%	61	32%	8	4%
Female	1	1%	43	23%	30	16%	6	3%
Totals	1	1%	85	44%	91	48%	14	.3%

The results revealed that both male and female learners participate in WIL programmes, however the number of female learners who participated in WIL programme is less than that of male learners who participated in WIL. The number of male respondents is 111 and number of female respondents is 81.

From the 192 respondents, only 1 learner indicated the age as between 15 – 18. The learners who indicated the age group 19 – 22 amount to 85, which is 44% of the total number of learners. The learners who indicated the age group 23 – 26 amount to 91, which is 48 % of the total number of learners. The learners who indicated the age group 27 and above amount to 14, which is 7.3% of the total number of learners. The analysis revealed that most leaners are in the age group 19-22 with the total 44%.

Attendance of WIL programme in the preceding year

The respondents in the study were NCV level 3 and level 4 learners. The policy states that the learners must participate in WIL programmes from NCV level 2 (DHET, 2007). This item seeks to test compliance to the policy requirements. The responses indicated that 130 learners agreed that they did participate in the WIL programmes and 47 learners did not participate. However, 10 leaners indicated that they were not sure on this item. On percentages, 22% indicated that they strongly agree and 44% agreed on the attendance. The graph below indicates the number representation of learners who participated in WIL programmes preceding year.

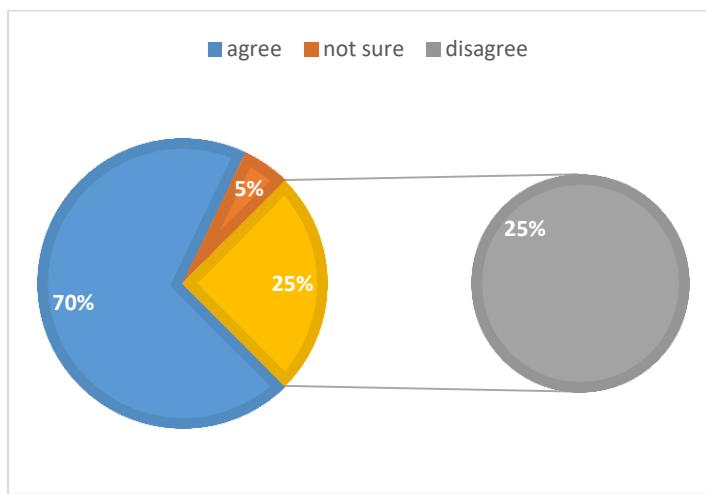


Figure 1: Graphical representation of learners who participated in WIL programmes in preceding year.

From the graph (Figure1), it is evident that 70% of the respondents attended WIL programmes previously in their NCV Level 2 or Level 3. It is also evident that 25 % did not participate. The reasons for not attending the WIL programme could not be determined by the response. The 70% response on the participation on WIL programmes previously is sufficient to justify that learners do participate in WIL programmes.

Visitation and supervision by college staff

On the item “I was visited by someone from the college at the workplace”, out of the 183 learners who responded to this item, 15 learners (8%) indicated they strongly agree, and 49 learners (27%) indicated that they agree. The number of learners who disagreed is 70 (38%) and strongly disagreed is 30 (16%). The analysis indicate that 100 learners responded that they were not visited and supervised by the college staff when in the workplace. When learners are not visited, they might be exposed to labour exploitation or they might not fulfil the purpose of the work integrated learning. Some learners might even choose not to go for WIL programmes (Dhliwayo, 2008).

Safety training at the workplace

In response to the item statement about “Training on safety at workplace was done” 188 learners responded, 34 learners responded that they strongly agree (18%) and 85 responded that they agree (45%). Those who disagree with the item that training on safety in the workplace was done is 51 learners (27%). Safety of the learners when placed at the workplaces is a great concern from all stakeholders. It is important that safety of the learners in the workplace is prioritised. The companies can lose a lot of money and production hour should an accident occur at their premises (Clarke, 2006). For this reason, the industry is reluctant to allow learners for WIL programmes.

Results from focus group interviews

Attendance of WIL programme

It was revealed from the focus interviews with learners at level 3 that the learners did not attend the WIL programme in Level 2. When asked the question “have you visited the workplace for work integrated learning before” the response was “No, we did not go to workplaces for practical”. In another college, learners indicated that it was the first time they hear from me about the work integrated learning. This led to conclusion that work integrated learning is not communicated to learners by academic staff. Subject Guidelines in vocational subjects require that learners must be exposed to workplace (DHET, 2007).

Lack of financial support

When asked if they would have financial support should they opt to go to WIL programmes, the learners indicated that it will not be easy because their parents are not working. However, some indicated that parents might afford some pocket money for some day and not all the time. The conclusion drawn is that lack of financial support due to low or no income (Ndhlovu, 12010), will lead to most learners not attending to WIL programmes.

5. Conclusion

This paper aimed to describe the challenges learners experience during the work integrated learning and it accomplished the aim by, defining WIL, then highlight the stakeholders in WIL and lastly, identifying and describing the challenges experienced by learners.

From the findings, it emerged that not all learners participate in WIL programmes. This might be due to lack of financial support. When the learners do not participate in WIL, they lose on the benefits brought about by WIL programmes. They will not experience the real world of work. Work integrated learning expose the learners to work opportunities. Supervision by college lecturers or academic staff is needed to strengthen the importance of WIL.

Unemployment and poverty affect the leaners. Learners can sell themselves to the potential employers or to referrals, and then unemployment can then be reduced amongst young people. Some of the learners can become employers

themselves after completing their studies and engaging with the workplaces.

WIL can make learners to be both employable and self-sustainable.

Safety around the workplace, is a concern when learners are placed in the workplace. It must be the first thing that is taught to learners immediately they arrive at the workplace. Learners read about safety in the books but when they are in the workplace there is no time to refer back to the book or manual. It must be in their conscious that they must always be careful and aware. When learners are aware of safety requirements, the risks of injury are minimised and insurance issue become minimal. Workplace managers can allow more learners to be placed when safety and insurance matters are minimal.

Recommendations

It is therefore recommended that:

- A uniform WIL programme for TVET colleges be developed and implemented consistently in-line with DHET policy requirements.
- Mentoring, supervision and visitation of learners placed in workplaces be a compulsory task of academic staff at TVET college, just like it is at Teacher Training Institutions.

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Knowledge-building Through WIL Contextualisation in the South African Schools' Chemistry Curriculum

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Abstract: The strengthening and expanding of TVET colleges includes the key objective of improving student throughput. The hierarchical knowledge structure of science subjects coupled with the fact that secondary schooling is the mainstream pathway into tertiary study necessitates that tertiary level science programmes articulate epistemologically with secondary school science curriculum. WIL recognises workplaces such as science laboratories, as a learning resource and site of knowledge production. However, it is possible that definitions of WIL focusing only at the level of post-schooling work-placements limit our understanding of its full potential for knowledge-building in science. In re-

sponse to the paucity of research around knowledge-building through WIL contextualisation in South African school science curriculum, and its possible relevance to TVET science education, we consider a Legitimation code theory perspective on WIL in school chemistry curriculum policy, paying particular attention to the concept of LCT semantic gravity. With Grade 10 South African school chemistry as the case in this qualitative curriculum study, document analysis focusing on contextualisation of science content is employed to explore the contribution of WIL towards knowledge-building. The results of the study provide insight into the epistemological potential of WIL, and have implications for informing TVET science curriculum and lecturer practice.

Keywords: *School chemistry curriculum, TVET science lecturer, work integrated learning, legitimization code theory, Semantic gravity*

1. Introduction

With massification and democratisation of access to South African higher education currently underway, enrolment in tertiary education has increased (Maringe and Osman, 2016). The white paper for post school education and training reveals that the highest priority by the Department of Higher Education and Training (2013) is the strengthening and expansion of Technical and Vocational Education and Training (TVET) colleges. However, despite improved access, many students still face challenges in their first year of tertiary study resulting in them dropping out (Jacobs et al, 2015). The South African Council on Higher Education (2013) reported completion rates for science degrees and engineering degrees being 23%, for science diplomas being 14% and engineering diplomas being 5%. This is highly problematic given that South Africa has not been producing sufficient science graduates to meet economic development objectives (DHET, 2013).

Science is a hierarchical knowledge structure - systematically principled and developed through integrating knowledge at lower levels and across a growing range of phenomena (Bernstein, 1996). The implication in such knowledge structures, is that the knowledge spirals towards higher states of abstraction (Young, 2011). While context-independent (or theoretical) knowledge has been described as powerful knowledge (Young, 2011), the abstract nature of

chemistry for example, poses a challenge to learners and even dissuades many students from studying it further (Sirhan, 2007). In contrast to contextualised and context-independent knowledge as typologies in the literature, there appears to be more of a silence around knowledge-building in relation to spanning the divide between them.

The above considerations highlight the distinction between physical access (acceptance and enrolment) into a science qualification, and epistemological access to science. According to Arbee, Hugo and Thomson (2015), epistemological access refers to the ability to effectively participate in the Discourse (way of being) of an academic discipline. The hierarchical knowledge structure of science coupled with the fact that secondary schooling is the mainstream pathway into tertiary study, warrants attention to articulation between secondary and tertiary knowledge-building. In discussing articulation in science programmes, Jacobs, De Bruin, Van Tonder and Viljoen (2015) focus on it as a connection that makes movement possible. In this paper, we frame epistemological articulation between school, higher education and the workplace, as connections between knowledge building practices in each that allows for progression from lower to higher education levels.

In South Africa, recognition of the workplace as both a learning resource and a site of knowledge production is evident in the training of professionals for fields such as health, applied sciences, engineering and business involving actual sites of practice (Winberg, Engel-Hills, Garraway and Jacobs, 2011). The SA Higher Education Qualifications Framework (HEQF) which came into effect in 2007 (DoE, 2007) was the first instance of use for the term ‘Work-Integrated Learning’ (WIL) in a South African Department of Education document (Lewis, Holtzhausen and Taylor, 2010). However, in its various forms and under the guise of other terms, WIL has always been a distinguishing feature of technical, vocational and professional education in the country (Winberg , Engel-Hills, Garraway and Jacobs, 2011).

Across the range of definitions available in literature, there appears to be an emphasis on WIL at the level of post-schooling, perhaps at the expense of considering its epistemological relationships to school curriculum. A growing

body of literature (eg. Ferns & Moore, 2012) is focusing on how the rich potential of WIL may be better realized. For example, the impact of student learning as preparation for practice is actualised only through curriculum integration between theory and practice-based experience (Billett, 2009) and more can be done to better prepare students for work placements (Nagarajan and McAllister, 2015). The nature of school curriculum is potentially relevant to both of these.

In terms of epistemological articulation, science knowledge-building strategies at school level are stepping stones towards science students' successful theory-practice integration in their tertiary learning and subsequent science careers. It makes sense for tertiary institutions to capitalise on and extend from the epistemological foundations provided by school curriculum. This is alluded to by Winberg et al (2011) who reveal the need for higher education practitioners to not only realise that knowledge is being produced in a variety of sites, but to also understand both theoretically and practically how different knowledge production systems function. In response to the paucity of research around school science knowledge-building through WIL contextualisation, and its possible relevance to science lecturer practice and training, this paper reports on a Legitimation code theory (LCT) perspective on WIL contextualisation in school science curriculum policy.

The seminal author of LCT - Karl Maton, flags segmental learning (learning of isolated ideas/skills strongly tied to context of acquisition), as a pressing concern in educational debates (2009). Segmental learning problematizes students' knowledge-building through it limiting transfer of ideas/skills to new contexts in everyday life, future studies or work (Maton, 2014). The issue of cumulative learning on the other hand, 'where new knowledge builds and integrates past knowledge, is becoming increasingly salient' (Maton, 2009, p. 43). Cumulative learning involves new workplace knowledge building on and integrating previous knowledge and is thus desirable for realising the educational benefits of WIL. LCT offers insight into cumulative knowledge-building within and across school and tertiary levels, and was thus adopted as the theoretical lens for this study (as discussed in the theoretical framework section).

2. Literature Review

The origin of context-based approaches to science teaching can be traced back to the early 1980's (Bennet and Lubben, 2006). According to Lubben and Bennett (2008), the reasons for contextualisation of science teaching in everyday experiences, fall into one of three categories. The first is perceived purpose of curriculum, such as providing pre-vocational awareness since everyday contexts can contribute to career choice decisions. The second is related to perceptions of learning, such as the use everyday situations from which science concepts are. The third is effect on achievement such as context-based courses resulting in a more positive attitude towards science learning. Bulte et al (2006) highlight that recognisable contexts are appealing to students and provide a rationale for learning concepts. While recogniseable or everyday contexts offer advantages towards the acquisition of new knowledge, unfamiliar contexts such as those involving workplace application of science knowledge also have value as acknowledged through WIL pedagogy.

In a broad sense, WIL is a generic term for describing educational models that engage students in professional development within curricula (Lewis et al, 2010). Adding some nuance to this notion of professional development within curriculum, WIL can be regarded as the curriculum practice of combining students' traditional/formal academic study with exposure to the world-of-work related to an intended profession (Jackson, 2015). Preparation for the world of work is a key feature of WIL literature and more directly evident through such terminology as occupational competence (Billet, 2009), vocational education, work placements, work-placed learning, work-based learning and work-readiness (Winberg et al, 2011).

Some researchers refer to approaches involving preparation for work placement as a stage of WIL. Nagarajan and McAllister (2015) for example, refer to both on and off-campus WIL components, thus acknowledging that WIL extends beyond just work placement activities. They recognise that the relevance

and application of on-campus learning to workplace settings is needed by students prior to their entering work placements. In agreement, are Martin and Hughes (2009) who state that equipping students with disciplinary content knowledge, critical thinking skills and exposure to the profession are in fact aspects of an early stage of WIL. This supports the notion of WIL contextualisation in school curriculum.

In terms of how WIL as a pedagogical approach is expressed, Blom (2014) indicates three ways: Learning for work –vocationally orientated/career focused learning intended for inducting entrants to their chosen vocation/profession; Learning at work – the range of modalities at workplaces which enhance knowledge and competency integration; and Learning through work –engagement of students in particular work-related tasks as part of the curriculum, to solve problems related to work in real life. School science curriculum such as In South Africa where no work placement is involved, is aligned to learning for work and through work. This layered view of WIL is echoed by Billett (2009) who reminds us that curriculum, pedagogic and epistemological responses are in fact required, before, during and after students WIL placements in order to integrate these experiences towards achieving their full educational value.

A successful strategy for WIL curriculum design and implementation to ensure students focus on theory-practice integration for connecting disciplinary learning with workplace application is by ‘designing learning activities that require the integration of disciplinary and workplace-relevant knowledge and skills’ (Winberg et al, 2011, p.15). However, there is paucity of knowledge regarding scaffolding mechanisms towards such integration in WIL curriculum prior to work placement, and we contend that lessons may be learned from how scaffolding of theory-practice bridging is approached in school science curriculum. This is because, like teaching and learning during pre-WIL placement at vocational institutions, work experience is not yet available to be drawn into the school science learning experience although levels of cognitive demand beyond basic recall and comprehension (such as application), still require scaffolding in order to empower learners.

According to Stuckey, Hofstein, Mamlok-Naaman and Eilks (2013), a new aspect of science literacy presented during the 1980's but which is sometimes implicit in the definition of science literacy, is the vocational dimension. The Work Integrated Learning: Good Practice Guide by the SA Council for Higher Education acknowledges the need for professional education to look both ways. Higher education lecturers of application-oriented subjects such as Engineering, Education, and Medicine, or who teach subjects such as Physics for Engineering, Education and Medicine should be guided by both scientific disciplinary knowledge, as well as knowledge for professional practice (Winberg et al, 2011).

In South Africa, tertiary studies towards science careers requires that the student have studied science at senior secondary or college level. The compulsory subject covering aspects of biology, geography, physics and chemistry at the general education and training (GET) level of schooling is Natural Science. At the further education and training (FET) level of schooling, Physical Sciences is an optional Grade 10-12 school science subject which combines physics and chemistry and for which the details are outlined in the Physical Science Curriculum and Assessment Policy Statement or CAPS (DoBE, 2011). The Physical Science CAPS is the focus of the analysis described in the research design of the current study, for identifying the knowledge-building potential of WIL contextualisation.

3. Theoretical Framework

The LCT approach to education, knowledge and practice is rapidly growing (Maton, 2014). LCT extends from social realism which recognises knowledge as being both based on an external reality, and socially constructed (Macnaught, Maton, Martin and Matruglio, 2013). It extends and integrates the approaches of Bernstein and Bourdieu (Maton, 2014). The LCT epistemic-pedagogic device models the social fields of production, recontextualisation and reproduction as being governed by a range of logics, and creating an arena

which is the site of struggle for power by different social groups (Maton, 2014).

WIL's recognition of workplaces as epistemologically useful is based on their potential for accommodating both theory and practice (Choy, 2009). The multidimensional toolkit of LCT includes semantics, which has the organising principles of semantic gravity and semantic density. In social practices such as education, semantic gravity is the degree of context-dependence of meaning while semantic density is the degree of condensation of meaning (Maton, 2014). Semantic density and gravity work together to frame the knowledge practices such as pedagogic talk and written materials, through semantic codes and profiles.

A range of semantic codes are possible due to both semantic gravity and semantic density existing along continua of strengths. For example, at different points in time, a science lecturer's talk or student's response to assessment may have stronger or weaker semantic density depending on how many meanings are condensed in their language. References that are more contextualised have stronger semantic gravity compared to those which are more decontextualized, having weaker semantic gravity. Due to the potential for semantic shifts between relatively higher and lower strengths of semantic gravity and density over time, it is possible to plot semantic profiles (Macnaught et al, 2013) of lecturers' talk or students' written reflections, for example.

In a semantic profile of talk or writing, the potential of upward and downward semantic shifts creating a semantic wave over time, is recognised as being powerful for cumulative knowledge-building. Semantic flatlines (regions of minimal or no semantic shift) on the other hand, suggest the author/speaker is stuck in a limited semantic range (Macnaught et al, 2013) and they constrain knowledge-building. Uncovering mechanisms for extending semantic range is central both to learning and fostering a society that is more inclusive and farsighted (Maton, 2014). There is resonance between the epistemological usefulness of workplaces and the LCT notion of semantic gravity. Semantic gravity thus features strongly in the research design for the study reported on in this paper.

4. Research Design

The research design was guided by the following research question, which extends from the rationale for the study:

- How does WIL contextualisation in the Grade 10 South African school chemistry curriculum contribute to knowledge-building?

One recognised route for qualitative enquiry, is case study. Case study methodology is one of the main types of naturalistic inquiry and involves investigating a specific instance/phenomenon in its real-life context (Cohen, Mannion and Morrison, 2007). While limited generalisability is a commonly mentioned disadvantage of case studies, this does not impact on its relevance to the current study's focus on the knowledge-building potential of WIL contextualisation in South African school chemistry curriculum. Furthermore, case studies have noteworthy strengths such as being grounded in reality, speaking for themselves, being capable of serving multiple audiences and being steps to action (Cohen et al, 2007). From this study, possible steps to action would refer to implications for TVET related chemistry curriculum and teaching.

The qualitative case in this study was the Grade 10 chemistry component of the SA school Physical Sciences Curriculum and Assessment Policy Statement or CAPS (DoBE, 2011). The sampling was purposive given the problem posed by abstraction of chemistry to students (Torregrosa and Martinez, 2015) and Grade 10 being the introductory year to the optional study of chemistry in SA schools. SA school physical sciences teachers' practices are mandated to follow the requirements set out in this policy. As explained earlier, a curriculum text is a pedagogic text conceptualised as being located in the recontextualising field of the epistemic-pedagogic device, and thus a legitimate object of analysis.

The research method of document analysis is strongly applicable to qualitative case studies (Bowen, 2009). Documents are distinct from data sources such as interviews and observations in that the documents being analysed already exist

before the research necessitates their use as data (Miller and Alvarado, 2005). Although often used to complement other methods, document analysis can also be used as a stand-alone method, for example in specialised qualitative research (Bowen, 2009; Miller and Alvarado, 2005) such as the current study. The document analysis of the Grade 10 chemistry component of the SA Physical Science Curriculum and Assessment Policy Statement (CAPS) (DoBE, 2011) involved the typical iterative cycles combining elements of content and thematic analysis. Bowen (2009, p. 32) describes content analysis as ‘a first-pass document review, in which meaningful and relevant passages of text or other data are identified’ and goes on to discuss data reduction by highlighting that ‘the researcher should demonstrate the capacity to identify pertinent information and to separate it from that which is not pertinent’. For the current study this entailed surfacing instances where the curriculum policy included WIL contextualisation. Subsequent thematic analysis of pertinent documentary data involves a careful and more focused re-reading/review of the data for the purpose of coding data towards constructing categories to uncover themes relevant to answering the research questions. For the purpose of the reported study, this entailed consideration of how instances of WIL contextualisation offer knowledge-building potential drawing on the notion of LCT semantic gravity.

5. Results and Discussion

Chemistry courses are sometimes perceived as involving a series of abstractions which appear to have no relevance to everyday lives or application outside of the chemistry classroom (Torregrosa and Martinez, 2015). Neither of these was true for the Grade 10 Chemistry component of the Physical Sciences CAPS (DoBE, 2011). This is evidenced by four examples of WIL contextualisation being identified during the content analysis stage of the document analysis, as shown in table 1.

In example 1, students acquire/demonstrate understanding of pure substances and mixtures through the context of everyday substances. Thereafter, they use

the chemical separation technique of paper chromatography for distinguishing between pure substances and mixtures. Chromatography is a chemical separation technique and there are many different types. While paper chromatography is a basic form, the significance of chromatography in chemistry is evident from Nobel prizes having been awarded for work on this technique (Harwood and Moody, 1992), and it was thus regarded as an example of WIL contextualisation.

Example 2 involves students classifying substances into the categories of metal, metalloid or non-metal - a convenient form of categorisation of substances, and visible on most periodic tables of the elements (Grayson, Harris, Mckenzie and Schreuder, 2011). Students are then required to actually test substances in order to identify their character. Thereafter, the question is posed regarding industrial use of these metals, non-metals and metalloids. Industrial application was considered an instance of WIL contextualisation.

In example 3, the notion of one mole of something containing Avogadro's number (6.022×10^{23}) of those things, is explained through the analogy of one dozen eggs meaning 12 eggs. The mole concept is then used towards the identification of substances by determining their empirical formula (chemical formula in terms of smallest whole-number ratio). Empirical formula is useful concept in qualitative chemical analysis and so was included as an example of WIL contextualisation. Example 4 involves students interviewing people whose lives have been changed through the construction of dams in their regions. The recommended assessments involve water purification and chemical analysis, thus qualifying its inclusion as a WIL contextualisation.

According to Blom's (2014) description of how WIL may be expressed, the four examples reveal the possibility of work, and learning through work even though the absence of work-placement in the school curriculum limits learning at work. Furthermore, the vocational dimension of science literacy which has long remained implicit (Stuckey et al, 2013), is made visible in these examples.

Table 1: Examples of WIL contextualisation in grade 10 chemistry component of Physical Sciences CAPS (DoBE, 2011)

Eg	Grade 10 Chemistry curriculum topic and page number	Description	WIL contextualisation
1	Pure substances: elements and compounds (p. 16)	Students are required to classify everyday substances as either pure or mixtures. Thereafter they are to use chromatography to show that ink-pens or 'smarties' are not pure colours but mixtures of colours	Chromatography
2	Metals, metalloids and non-metals (p. 17)	Students are required to revise the classification of substances as metals, metalloids and non-metals using their properties. They are then required to test substances to determine whether they have metallic, metalloid or non-metallic character. Thereafter they are asked how the elements are used in industry.	Industrial uses of elements
3	Atomic mass and the mole concept, Molecular and formula masses (pp. 50, 51)	The magnitude of Avogadro's number is conceptualised using the analogy of eggs eg 1 dozen = 12 eggs, 1 mole = 6.022×10^{23} eggs. Students are later required to determine the empirical formula of a substance from its percentage composition.	Chemical analysis
4	Hydrosphere composition and interaction with other global systems (p. 60)	Students are required to use data from interviews and literature to study the ecology of rivers and dams, and how dams have affected the lives of people in the region. The recommended experiment for informal assessment involves testing water for chemicals and pH. The recommended project for formal assessment is about the purification and quality of water.	Chemical analysis, water purification

We now proceed to a discussion of the thematic analysis of the results from the content analysis (as shown in Table 1). The thematic analysis involved viewing the examples of WIL contextualisation through the lens of LCT semantic gravity as described in the theoretical framework in order to identify trends/themes. While the content analysis focused on examples of WIL contextualisation, a further theme emerges of everyday practical context in each example. There is thus a double contextualisation of the more abstract chemical concepts in each of the 4 instances described in Table 1. Furthermore, it is evident that the chemical concepts themselves are located at a low semantic gravity (they are decontextualised) or SG -, the everyday contextualisation is located at high semantic gravity (contextualised in a non-specialised way) or SG +, and the WIL contextualisation at a more intermediate semantic gravity (contextualised but in a specialised way). This is summarised in Table 2.

Table 2: Examples of WIL contextualisation in grade 10 chemistry component of Physical Sciences CAPS (DoBE, 2011)

Se-mantic Gravity	Grade 10 Chemistry CAPS example and page number			
	Example 1 (p. 16)	Example 2 (p. 17)	Example 3 (pp. 50, 51)	Example 4 (p. 60)
SG -	Pure substances: elements and compounds	Metals, metalloids and non-metals	Atomic mass and the mole concept, Molecular and	Hydrosphere composition and interaction with other global

			formula masses	systems
SG Ø	Separation of substances by chromatography	Industrial uses of elements such as copper, graphite and silicon	Chemical analysis of identity of a substance	Chemical analysis Water purification
SG +	Classification of everyday substances as pure or mixtures	Classification of elements common in daily life as metals, non-metals or metalloids	A dozen eggs as a way of referring to 12 eggs, with a mole of eggs referring to 6.022×10^{23} eggs	The effect of dams on the lives of people near rivers

From Table 2 it is evident that contextualisation allows for increasing of semantic gravity. In LCT terms, this avoids a low semantic gravity flatline and is thus useful towards providing epistemological access for students. However, the everyday contextualisation has a higher semantic gravity than the WIL contextualisation. This means that while everyday situations/examples afford a good context for acquisition of abstract concepts, they may have the shortcoming of being grounded too strongly in everyday experience and being far removed from what Young (2007) terms powerful knowledge. Furthermore, repeated shifts from high to low semantic gravity results in what Maton (2013) terms downward escalators, which are problematic because knowledge-building characterised only by strengthened semantic gravity is too context-bound to build on previous knowledge or be later built upon. Repeated shifts from low to high semantic gravity results in upward escalators which are also problematic for cumulative knowledge building (Mouton and Archer, 2018).

The WIL relevance of each example affords a specialised context for application of the abstract concepts that lies closer to powerful knowledge than every-

day contexts do. In response to the research question then, WIL contextualisation in the South African school chemistry curriculum contributes to cumulative knowledge-building through its affordance of specialised contexts of application which contribute to providing epistemological access to abstract concepts (useful for all Grade 10 chemistry students) while avoiding the shortcomings associated with remaining in the everyday (useful for Grade 10 chemistry students intending to pursue chemistry careers).

For TVET curriculum and lecturer practice then, contextualisation of science concepts both in everyday and workplace examples could also allow for semantic waving in a way that allows both acquisition and application of powerful knowledge. Additionally, the double contextualisation could potentially avert upwards or downward escalators in a semantic profile thus allowing for more meaningful theory-practice integration. The results thus empirically inform improved scaffolding towards work placement, as called for by Nagarajan and McAllister (2015). Such a mechanism for focusing students on theory-practice integration by connecting theoretical learning with workplace application is aligned to what Winberg et al (2011) describe as a successful strategy for WIL curriculum design and implementation.

6. Conclusion

Despite improved physical access through massification and democratisation of higher education in South Africa, the high dropout rate in first year science courses at tertiary level points to a problem in terms of epistemological access. While the upward spiral towards abstraction makes hierarchical knowledge structures like chemistry powerful, it also poses a challenge to chemistry students and impacts negatively on chemistry education. The issue of contextualisation thus comes to the fore. Maton (2014, p. 106) reveals that ‘Enabling cumulative learning is central to education’ and that ‘mastering semantic gravity is a key to cumulative learning’. Through their contribution towards

shifts in semantic gravity, both everyday contextualisation and WIL contextualisation are epistemic-shift mechanisms which contribute to knowledge building.

While everyday situations/examples afford useful contexts for acquisition of abstract concepts, they are grounded very strongly in everyday experience and thus far-removed from powerful knowledge. The specialised WIL contextualisation in school chemistry curriculum lies closer to powerful knowledge and allows for a greater variety of semantic shifting opportunities between decontextualized chemistry theory, and contextualised everyday knowledge. In terms of epistemological articulation between chemistry in tertiary and secondary education, lessons may be learned from how scaffolding of theory-practice bridging is approached in school science curriculum. The implications for TVET curriculum and lecturer practice is that contextualisation of science concepts both in everyday and workplace examples contributes to semantic waving in a way that allows both acquisition and application of powerful knowledge. The results thus empirically inform improved scaffolding towards work placement in tertiary levels science programmes and potentially contribute to a successful strategy for TVET science WIL curriculum design and implementation.

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