

The logo is a shield-shaped emblem with a white border. Inside the shield, three hands are depicted in a circular arrangement, overlapping each other. The hands are colored green, teal, and purple. The background of the cover is split into two main sections: a purple section on the left and a teal section on the right, both with a halftone dot pattern. The logo is centered on a white, irregular shape that separates these two sections.

**THE SOUTHERN
AFRICAN SOCIETY
FOR COOPERATIVE
EDUCATION**

**THE AFRICAN JOURNAL FOR
WORK-BASED LEARNING
VOLUME 3**

EDITOR: DR ROELIEN BRINK

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Journal policy

The *Southern African Society for Cooperative Education (SASCE)* is an independent publication, and serves as a medium for articles of interest to researchers and practitioners in work-based learning. The Journal provides a focal point for publication to address the increasingly important notion of work-based learning research from throughout the world. The broader context is that of linking formal institutional learning to the requirements of the world-of-work in a holistically conceptualised curriculum encompassing theory and practice. Currently, many diverse examples of the link between learning and work exist. *The African Journal for Work-Based Learning* tries to provide a forum for a scholarly understanding of the epistemological bases for learning *for* work, learning *at* work and learning *through* work.

While it is intended that the journal will be academic in nature, it should also serve as a resource for scholars, researchers and workplaces. Examples in the form of essays or discussion papers of best practice, good partnerships and cooperation will thus also be welcomed.

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The view expressed in this journal are those of respective authors.

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The African Journal for Work-Based Learning

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CONTENTS

Application of academic learning <i>Annie Moletsane and Kholeka Constance Moloji</i>	1
The development of work integrated learning model for the interior design qualification <i>Rita Cilliers and Pieter Smit</i>	22
Determining best practice from graduate employability: a work integrated learning case study in hospitality management <i>Henri Jacobs</i>	41
Skills evaluation of final year interior design diploma students on completion of WIL within the relevant industry to contribute practical findings to the new interior design curriculum <i>Pieter Smit</i>	55
Piloting dual-track apprenticeships in South Africa <i>Ken Duncan</i>	78
The relevance and significance of critical thinking and problem solving skills to the chemical industry: opinions of employers of chemistry graduates in the Western Cape <i>Fundiswa Nofemela</i>	92
Central University of Technology students' perceptions of work integrated learning: An Interactive Qualitative Analysis <i>Anri Wheeler</i>	103
Article Guidelines – Notes to Contributors	119

APPLICATION OF ACADEMIC LEARNING

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Abstract

Today's interdependent and complex world requires that we prepare young men and women for innovative competency through cooperative and work-integrated education. Against the backdrop of the National Development Plan 2030, we argue that within a developmental state such as South Africa, cooperative education because of its applied, descriptive, evaluative and pragmatic nature (Bartkus & Stull, 1997) should be embedded within the school and tertiary education curriculum. We use Edison's five competences of innovation, namely, solution-centered mindset; kaleidoscope thinking; full-spectrum engagement; master mind collaboration and super value creation, as a lens to show how the South Africa to sharpen its innovative edge and continual contribution to global scientific and technological advancement. The complex challenges of poverty, inequality, high levels of unemployment, illiteracy, crime and disease that span many years in the country, require collective effort, innovative minds, knowledge and attitudes to respond appropriately and effectively. Indeed, neither government nor the market can develop the necessary capabilities required to address these challenges, on their own. The collaboration between the education institutions with government and industry to provide enhanced capabilities is imperative because long-term shifts in global trade and investment are reshaping the world economy and international politics. These shifts carry risks that affect the lives of all citizens. Greater investment in research and development, better use of existing resources, and more nimble institutions that facilitate innovation and enhanced cooperation between public science, technology institutions and other education sectors are required (National Development Plan, 2030).

Keywords: Work-Integrated Learning, National Development Plan, embedded knowledge, innovative minds, global competency

1. Introduction

Taylor and Govender (2013, p.18-19) assert that academic learning integrated with work-based learning, and vice versa, has never before generated such interest globally. Coll and Zegwaard (2011) posit that there has been a proliferation of terms used to describe, in broad terms, what is essentially co-operative training, or WIL (if, indeed, these two terms are to be taken as synonymous); and this proliferation appears to be growing. Some terms have a well-established history within some sectors, such as practicum, internships, cadetship; however, other terms appear to be newer, such as work-based learning, workplace learning, practice-based learning, industry-engaged learning, career and technical education, collaborative education, industry-based learning, and work exchanges.

Some of these terms have been created by institutions that are striving to be distinctive in their offerings, and represent an institutional term – rather than reflect an established term in a particular subject sector. Recently, the World Association for Co-operative Education (WACE) has begun using the term ‘work-integrated *education*’, rather than co-op or WIL, since the term ‘education’ is more holistic (viz., both learning and teaching). This is an argument that is convincing. The term ‘work-integrated education’ may present a useful umbrella term, overcoming the challenges presented by the diversification, and at times somewhat fluid use, of other terms (Taylor & Govender, 2013, p.18-19).

In order to move towards a new stage of co-operative and work-integrated education for innovative minds with global competency, demands that we re-think what we mean, what we do, and how we do it when we bring together the theoretical aspects of learning and their application in the workplace. In this regard, co-operative education is seen by Taylor and Govender (2013, p.14) as a strategy that combines, based on the concept of experiential learning, the process of making meaning from direct experience. South Africa’s (SA) Higher Education Quality Committee (HEQC) defines co-operative education as: ‘A philosophy of learning that promotes the concept of enhanced learning, based on co-operation between educational institutions and industry, commerce and the public sector’ (HEQC, 2004).

Work-integrated learning (WIL) is defined by the Queensland University of Technology (2011, p.1) as the process that occurs in the curriculum where students learn through engagement with industry and community partners in authentic activities that are planned for and assessed in order to develop and integrate their knowledge, skills and dispositions through creative problem solving in real world contexts. Thus, in an academic environment, learning is intentional, it is about how we perceive and

understand the world, about making meaning (Fry, Ketteridge & Marshall, 2000, p.8). Thus, for Blom (2013, p.viii), WIL is about *learning*, and not about working. Work is the vehicle for learning. Employers, nevertheless, benefit from their involvement and participation in the process, not least by being able to identify the best new potential entrants to their workplaces.

The combination of the theoretical aspects of learning (academic learning) and the application to work situations (WIL) is an integrated learning mechanism that facilitates the identification and utilisation of embedded knowledge. For Engelbrecht (2003, p.5), embedded knowledge represents the *underpinning knowledge* that the student has to understand, and has to be able to explain in relation to his or her performance in a specific job situation. In other words, it has to do with extracting implicit knowledge in a particular field of study, and then applying it explicitly in practice. Thus, work-integrated learning focuses on: (i) Theory and practice in relevant authentic, work-based contexts; (ii) it is aimed at developing specific competence that forms part of the overall curriculum; (iii) it relates to the development of knowledge, skills and attitudes in an integrated way; learning work practices; whole person and interpersonal relations development; (iv) it is achieved through the placement at and hosting of students by employer organisations; (v) it is facilitated by workplace mentoring, aimed at helping the student recognise her/his strengths and development needs; and it is dependent upon a structured training relationship between the university, the host employer organisation and the student (Geertsema, Hendrick & Groenewald, 2010, p.1).

In the light of the above, work-based learning is a component of a learning programme that focuses on the application of theory in an authentic, work-based context. It addresses specific competences identified for the acquisition of a qualification, which relates to the development of skills that would make the learner employable, and would assist in developing his/her personal and professional skills.

In order to assess integrated learning, integrated assessment strategies should be used; and they should be based on combined embedded knowledge, in terms of equal parts of the classroom and experiential learning processes. Integrated assessment of experiential learning should thus be carried out by the employer and professional bodies, together with academic staff (HEQC, 2004, p.26; White Paper for Post-School Education and Training, 2013, p.36).

This assessment we believe could include three broad global competence categories, namely: (i) Applied competence; (ii) critical thinking, problem-solving and communicative competence; and (iii) collaborative and personal leadership competence. The focus and purpose of such an assessment is

on learning, on how it is done, and how it can be better, not on normative comparisons. Assessment is a continuous process that drives instruction. Further, assessment does not bring an end to learning; it provides information on how to continue to develop skills, knowledge and abilities with respect to the course learning objectives/outcomes.

Having said this, it is important that we think of assessment as an active demonstration of our understanding and ability to apply this understanding. We need a different process, and a new language, to identify how to assess a student's capability for using and applying knowledge. The education of an individual, understood in terms of developing a capability for using and applying one's knowledge, cannot be adequately assessed by traditional testing. Grading on a curve, which sorts students into groups for administrative purposes, says nothing about how each student is using his or her talents or growing towards their potential.

In this regard, Blom (2013, p.viii) is of the view that work experience hugely enriches the learning experience and reduces the mismatch of educational outcomes and workplace requirements.

In South Africa, a key aspect of South Africa's National Development Plan: Vision 2030 (2011) is sustainable development, with business, government and civil society playing inter-related roles, in order to improve the lives of all South Africans (Taylor & Govender, 2013, p.14). The White Paper for Post-School Education and Training (2013) is one of a range of recent skills development and human resource draft legislation that highlights the responsibility of higher and further education and training institutions to ensure that the education and training they deliver meets the needs of the economy.

Other applicable legislation includes the National Skills Development Strategy III and the National Skills Accord (2011). We argue that within a developmental state, such as South Africa, co-operative education – because of its applied, descriptive, evaluative and pragmatic nature (Bartkus & Stull, 1997) – needs to be embedded within the school and tertiary education curriculum.

We agree with Taylor and Govender (2013, p.14) with regard to the fact that 50 million people in South Africa, of whom nearly 70% are under the age of 35, a 25.2% official unemployment rate (Statistics SA, 2012), and a national Vision 2030 (2011) to reduce unemployment in SA to 6% by 2030 should send a strong message that education, training and skills development are important.

This is thus the rationale for undertaking this theoretical study; and the purpose is to examine how a new stage of co-operative and work-integrated education; and the application of academic learning could create a fertile context for developing innovative minds with global competency.

2. Context of the study

In South Africa, the former technikons (now called universities of technology) introduced the practice of work-integrated learning (WIL) many years ago, to the great satisfaction of students and workplaces (Ori, 2013, p.vi). In spite of this, Mthembu (2013, p.2) points out that except for the Work-Integrated Learning Research Unit (WILRU) of the Cape Peninsula University of Technology (CPUT), there are hardly any other knowledge centres in South Africa that focus on work-integrated learning, as both theory and praxis. He further argues that, in the absence of a groundswell of studies producing credible research and innovations, we run the risk of WIL being seen as a hollow pedagogical claim by universities of technology, without much empirical evidence to show that it works better than many other pedagogical strategies available from traditional universities. It is within this context that this paper seeks to understand how the application of academic learning for a new stage of co-operative and work-integrated education could facilitate the development of innovative minds with global competency among our students.

3. Problem statement

The interface of education and work has long been seen to be problematic (Ori, 2013, p.vi). While Blom (2013, p.viii) confirms that work experience hugely enriches the learning experience and reduces the mismatch of educational outcomes and workplace requirements, Ori (2013, p.vi), on the contrary, argues that higher education institutions are keen to ensure that their graduates are valuable assets to their prospective workplaces. However, the refrain for many years has been that there is a mismatch between the outputs of institutions and the expectations of workplaces.

The problems identified internationally include a growing awareness of the need for sound educational theory underpinning work-placement program design and curriculum. Of note, there are the current theories of learning, which allow for the diversity and contextualized nature of co-op/WIL programs, and have been able to accommodate cognizance of the dual-sector nature. Furthermore, the *assessment* of learning and program evaluation still remains problematic, arguing that the purpose of work-placement programs needs to go beyond the mere production of work-ready graduates (Coll & Zegwaard, 2011, p.1).

Mthembu (2013, p.1) makes the point that in South Africa, there is no coherent and co-ordinated policy and practice framework for the implementation of co-operative and work-integrated education. For Mthembu, the lack of a policy framework has inhibited institutions from devising these policies and practice with any kind of clarity; and this prevents *WIL-power* from being optimally practised by universities in partnership with industry.

In a study that was undertaken by Moletsane (2013), at the Vaal University of Technology, within the department of hospitality, she found that a common problem that persisted throughout the hospitality industry was the high turn-over rate. Agreeing with Ori's assertion of the mismatch between the outputs of institutions and the expectations of workplaces, Moletsane indicated that many hospitality industry professionals often pointed out that the reality of students' first jobs within the industry did not match their expectations of their first jobs.

A further problem that is pointed out by Mthembu (2013, p.2) is that in South Africa, WIL is not planned for; neither is it funded, nor is it quality assured. While there are commendable attempts from the Department of Higher Education and Training (DHET), including the establishment of a directorate in the department and an emergent facilitation of WIL, as well as the efforts from the Council on Higher Education (CHE) with their recent production of a WIL guideline; there is no dedicated funding for WIL; there is no quality-assurance system; and WIL is not necessarily interlinked with planning.

The research questions arising from the stated problems are thus:

- Why is a new stage of co-operative and work-integrated education for innovative minds with global competency an imperative in a globalized economy?
- What are South African universities doing in research and innovation for *WIL-power* (Mthembu, 2013, p.2)?
- How could the application of academic learning help us to develop innovative minds with global competency?

4. The literature review

Applicable legislation on skills development within the context of South Africa in the twenty-first century in its response to globalisation and the demand for relevant skills provides a framework within which we base our arguments for the need to move towards a new stage of co-operative and work-integrated learning. The growing complexity of the work place – accelerated through the dynamic

impact of globalisation on national economies, production and trade – has put the question of HRD at the heart of contemporary public policy and development strategies.

Developments in the global context make it imperative for all countries to respond effectively to the dynamic and competitive forces that impact on how national economies relate to the global economy (Human Resources Development Strategy 2010 – 2030, 2007, p.8). The legislation also provides a basis for the need to produce innovative minds with global competency. The scope for, and the constitution of practical educational innovations and key education policy decisions governing skills development through co-operative and WIL that are shaping the education of the rising generation of global/local citizens, transnational workers, and cosmopolitan learners, require collective effort and intelligence (Brown, 2007, p.172).

For Brown in post-industrialised societies, the State, educational institutions, business and civil society need to converge, in order to provide resources for developing a global reflexive consciousness among students, with an information ‘super-highway’ that would stimulate needs, threats, and opportunities by expediting data flows and the programming of possible solutions (p. 171).

5. The National Development Plan: Vision 2030

Taylor and Govender (2013, p.21) point out that, eleven million jobs in South Africa by 2030, with the reduction of the current unemployment rate to 6% by 2030, need to be created. They indicate that the University of Johannesburg’s work experience project is but one initiative aimed at supporting this national project. It has done so by taking a positive step in developing partnerships with industry, and the further marketing of co-operative education/WIL, as a viable education model, by creating employable graduates who are ready to be absorbed into mainstream employment.

Workplace and work-readiness skills are considered important in ensuring that this process occurs seamlessly: such workplace-readiness skills are key to the successful entry into the workplace, and to continued employment. Mthembu, Orkin and Gering (2012, p.214) suggest that there are at least five aspects that differentiate a university that has introduced WIL from those that have not; and these outcomes should be clearly discernible in the marketplace. These are: (i) The unique graduate attributes; (ii) the labour-market-oriented niche of the curricula; (iii) the learning environment, which encourages technologically infused teaching and learning methodologies and problem-based approaches; (iv) the culture of entrepreneurial academics, who are always focused on what happens in the work environment in theory and in practice, and on what innovations could be brought to bear

to transform the workplace; entrepreneurial academics and academic entrepreneurs are important; and (v) a research-inspired culture that bridges the gap between theory and practice is vitally important.

In this regard, in January 2011, the Minister of Higher Education and Training, Dr B.E. Nzimande, released the National Skills Development Strategy (NSDS) III, with its key driving force, in order to improve the effectiveness and efficiency of the skills-development system in South Africa.

The NSDS III consists of eight goals; and it is designed to respond to the eight skills development challenges, as outlined in Chapter 1 of the report. These skills impact on the ability of the South African economy to expand and provide increased employment opportunities. The intention of the strategy is thus to make sure that the energy and resources of education and training stakeholders are focused on ensuring that these challenges are addressed, and that a significant measurable impact is achieved over the five-year period of the strategy (National Skills Development Strategy III, 2011-2016, p.7).

Consequently, the Department of Higher Education and Training (DHET) is currently leading a process to determine and develop a system that can properly capture and enable the analysis of: (i) The impact of the programmes offered in educational institutions, i.e. Did the programme address the scarce skills needs and enable improved productivity, economic growth and the ability of the work force to adapt to change in the labour market? (ii) The post-learning outcomes, i.e. Did learners register with professional bodies or continue learning where relevant? Did unemployed learners gain employment? (iii). The Transformational Imperatives data comprise the following: Was priority given to race, class, gender, geography, age, disability and the HIV and AIDS pandemic? (iv) The NSDS Pillars data, i.e. Were skills-development programmes based on the pillars? (v). The HRDSA Objectives data, i.e. Did the skills-development plans factor in the HRDSA objectives? (p.10).

The complex challenges of poverty, inequality, high levels of unemployment, illiteracy, crime and disease that span many years in the country, require a collective effort, innovative minds, knowledge and attitudes to respond appropriately and effectively. Indeed, neither government, nor the market can develop the necessary capabilities required to address these challenges, on their own.

6. Post-school education system

The White Paper for Post-school Education and Training (2013, p.36) states that most successful vocational or occupational learning takes place as a result of an integration of theoretical learning,

workshop-based practical learning, and learning in the workplace. For this reason, the Department of Higher Education (DHET) now places a significant emphasis on workplace-based learning, as well as on the promotion of work-integrated learning. However, the policy environment in South Africa has caused confusion in the area of workplace learning, with uncertainty about the long-term status of apprenticeships and their relationship to learnerships, as well as problems with qualifications leading to learnerships (White Paper for Post-school Education and Training, 2013, p.11).

Despite this confusion, co-operative education has become an ever-more important strategy across the world, where industries are requiring graduates that “can do”. In the light of this, South Africa is amongst those countries that are entrenching this concept through its emerging post-school education system, the Nationals Skills Development Strategy and the Human Resources Development Strategy (Ori, 2013, p.vii). The demand for graduates who can function effectively in the workplace has resulted in universities of technology and comprehensive universities in some instances experiencing mission drift, losing the focus on their mission of producing technicians, technologists and other mid-level skills at undergraduate level (White Paper for Post-school Education and Training, 2013, p.11).

The collaboration between the education institutions with government and with industry to provide enhanced capabilities is imperative; because long-term shifts in global trade and investment are reshaping the world economy and international politics, particularly in the context of an under-performing economy in a fragile global economy (National Skills Development Strategy III (2011-2016, p.4). The symbiotic link between an effective, high-functioning general education system and the meaningful progress of young people in the post-school system, as well as the world of work recognises and acknowledges that skills development and post-school education require partnerships and co-operation between academia and the workplace – in other words, they need co-operative education (Ori, 2013, p.vii).

Furthermore, the White Paper for Post-school Education and Training (2013, p.36) insists on better collaboration between State-owned enterprises, government departments and other channels, in order to re-establish and extend the central role that employers play in providing on-the-job training for skills development, through apprenticeship, learnerships and internships. Blom (2013, p.viii) asserts that employability is about gaining those attributes that make a young person attractive as an employee; but it does not necessarily equate to employment; nor should it create the expectation that it does.

Thus, WIL and employability are not the solutions for unemployment. Rather, they enhance the learner's chances for a better fit and a seamless transition from learning to work. It would be wrong, therefore, to create the impression that if every young person gained an opportunity to undertake some form of work-based learning, the unemployment rate in South Africa and elsewhere would be reduced. Blom further posits that WIL and *employability* are not the solutions to unemployment. Rather, they enhance the learner's chances for a better fit and a seamless transition from learning to work.

It would be wrong, therefore, to create the impression that if every young person had the opportunity to undertake some form of work-based learning, the unemployment rate in South Africa and elsewhere would be reduced.

As indicated earlier in this paper, the NSDS III essentially responds to eight (8) pressing challenges that impact on the ability of our economy to expand and provide increased employment opportunities, namely: (i) The inadequate skills levels and poor work-readiness of many young people leaving formal secondary and tertiary education and entering the labour market for the first time, and the many who enter the world-of-work without a formal qualification; (ii) the longer-term unemployed, who lack basic numeracy and literacy, and do not possess entry-level skills; (iii) the continuing skills shortages in the artisan, technical and professional fields; (iv) the over-emphasis on NQF level 1-3 learnerships, with insufficient progression towards more appropriate (intermediate and higher) skills; (v) the approach by businesses to retrench rather than retrain and redeploy working people when structural change occurs; (vi) systemic blockages, such as the lack of synergy between the various post-school sub-systems; the lack of role clarity of the various parts of the skills-development system; inefficiency and waste; and the silo mentality, which prevents partnerships and alignments; (vii) the absence of coherent skills-development strategies within economic and industrial sectors; (viii) the urban bias of economic development, and consequently, the urban bias in skills development initiatives (p.19).

Thus, the intention of the strategy is to make sure that the energy and resources of education and training stakeholders are focused on ensuring that these challenges are addressed, and that measurable impact is achieved over the five-year period of the strategy (p.19).

7. The application of academic learning for creating innovative minds

Indeed, if learning in the academic context is to affect positively how individuals approach the world-of-work, academic learning must be perceived as relevant, and be learned in a way which promotes transfer (Fry et al., 2000, p.9). Thus, measures to enhance the student's integration of the experiential learning experience into the classroom studies, might well include learning agreements, course requirements, assessment mechanisms, the interaction of teaching staff with the experiential learning programme, and the less-formal connections among students, teaching staff and co-ordinators of experiential learning (Engelbrecht, 2003, p5-16).

In the steps to create innovative minds through co-operative and WIL, the Department of Higher Education and Training is expected to play a leading role in ensuring that the goals and objectives of the NSDS III are realised, including, as summarised, the requirement to develop annual implementation plans, including specific targets – where the appropriate (implementation plans and targets are announced by the Minister on an annual basis) would build the necessary capacity for effective monitoring, evaluation and support in the entire skills-development system and its institutions (p.24).

A Labour Market Intelligence Partnership (LMIP) project has been established in a partnership between the DHET and the Human Sciences Research Council (HSRC), with the HSRC leading a research consortium responsible for supporting the establishment of a “credible institutional mechanism for skills planning in South Africa”. The LMIP project commenced in February 2012, with an allocation of R74.5 million in funding from the National Skills Fund (NSF); and it would continue until March 2015, unless further extended.

The LMIP has been designed to foster collaboration between the research community and key actors in the post-school and skills-development policy environment in South Africa; and it has, as its core mandate, five broad objectives, namely: (i) Information and knowledge advancement: to advance information and knowledge of the post-school education and training system in relation to inclusive growth; (ii) labour market intelligence: to interpret and analyse information and knowledge in the light of policy, sectoral needs and other education, and training skills issues, and to build models to create labour market intelligence to inform strategic planning and interventions; (iii) the necessary research capacity development: to develop research capacity in the area of education and training, skills development and labour market analysis; (iv) institutional capacity development: to enhance the institutional capacity of the DHET and its stakeholders to gather and interpret labour market

information; (v) research dissemination: to create a community of practice through dissemination activities with policy-makers and researchers (NSDS III, 2012-2016, p.29).

These objectives are underpinned by six research areas or themes, which respond to the major gaps in the South African labour-market intelligence. Each theme has a distinct focus, objective, design and methodology; but taken together, they are expected to generate quality 'intelligence' to inform ongoing monitoring, planning and policy-making for more effective skills development and equitable labour markets. The themes will not be discussed here – due to the limited length and purpose of this paper.

In order to be able to understand the meaning of a new stage of co-operative and work-integrated education for innovative minds with global competency, we draw from amongst others, the work of Edison, who lists five competences of innovation, namely: The solution-centred mindset; kaleidoscope thinking; full-spectrum engagement; master-mind collaboration; and super-value creation that can be adopted. Gelb and Caldicott (2007, p.1) suggest that in adopting a solution-centred mindset, academic learning should prepare students in such a manner that their mindset reflects their sense of purpose; and their sense of purpose should, in turn, organize their perceptions.

In other words, purpose determines perception. Gelb and Caldicott go on to say that Edison believed his success was inevitable; and this belief energized his every endeavour. His solution-centred mindset allowed him to embrace seemingly fantastic goals, like lighting the world, and making things come true. Edison aligned his goals with his passions; and he cultivated a powerful sense of optimism that had a magnetic effect on his co-workers, investors, customers, and ultimately, the entire nation and that is charismatic optimism.

This demands a new literacy with co-operative and work-integrated education – that is an asset in international competition, and where the demand for skilled labour opens borders (Brown, 2007, p.171). Brown further contends that higher education has become a potential point of admission to the cosmopolitan advancement; it provokes adjustments in its perceived purposes and organization, including those of co-operative endeavour and WIL.

With regard to kaleidoscope thinking, Gelb and Caldicott (2007, p.3), explain that Edison was able to generate a “vast range of ideas” and to consider many problems at once, each from multiple angles. They describe how, at the height of his exploration into electrical power, *he worked on forty projects*

simultaneously. (Seems unfathomable, right?) This term also defines how Edison, like Newton, Einstein and da Vinci, cultivated the use of metaphors, analogies and visual thinking to liberate his mind.

Drawing from this experience, a new stage of co-operative strategy and WIL demands that in our struggle to bring forward the tradition of using pedagogies for skill development, knowledge production and application, it is imperative that we produce critical, creative learners (Brown, 2007, p.171). The demand is that we should be able to produce critical thinkers, and problem-solvers, who have communicative competence and are able to identify problems and/or opportunities in organizational contexts, and to make specific recommendations, supported by theory, in order to improve the work situation.

These young workers should be able to accurately and competently use theoretical frameworks to interpret and solve business problems; and they should also be able to effectively communicate their analyses to others in a variety of professional contexts, and then implement their problem-solving activities with a commitment to quality performance.

Furthermore, Gelb and Caldicott (2007, p.4) explain how Edison used the innovative competence of full-spectrum engagement. Edison, according to these scholars understood that although time on the clock was limited, the wellspring of creative inspiration was boundless. He drew on a seemingly endless source of energy; and he had a remarkable range of expression. No matter what he was doing, he was fully engaged, living life in the present. Edison discovered an optimal rhythm to facilitate amazing stamina and high performance. In relation to co-operative and WIL, this would entail the ability of our students as young workers to demonstrate collaborative and leadership competence.

Through mastery of these competencies, the young worker should be able to collaborate as a member of a project team, take the initiative in identifying and solving problems, or pursuing opportunities for learning and improvement within the specific job description. This involves action learning, which is based on the idea that effective learning and development come from working through real-life problems with other people. As a support for experiential learning, it stresses the dual importance of understanding and taking action (i.e. the application of academic learning) (Fry et al., 2000).

The master-mind collaboration competency is particularly applicable in the corporate setting, where the innovative leader would be prepared to lead teams to innovate. Elements of this competency

should resonate with all leaders: (i) Recruiting for chemistry and results; (ii) designing multi-disciplinary collaborative teams; (iii) inspiring an environment of open exchange; (iv) rewarding collaboration; and lastly, (v) becoming a master networker.

All these should be combined with the intent to create and leverage, “higher group intelligence.” Emerging from the Green Paper process, work should begin, in order to develop a more synergistic and well-co-ordinated approach to skills development – with clearly defined, agreed-on national strategies, policies and plans that are centred on the growth of economic sectors, and support for employment creation within the framework of transformation (White Paper for Post-school Education and Training, 2013, p.4).

Applying super-value creation competency, Edison acknowledged and acted on the critical need to understand, measure and fulfill the needs of customers. As Gelb and Caldicott (2007) describe this competency, “Helping others is life’s most fulfilling endeavour. It’s great to follow your bliss, and do what you love; but if you truly want the money to follow, then you must strategically link your bliss to something that others, preferably those with discretionary income, want or need”.

Edison’s five competences of innovation are instructive. However, even if we were to employ them holistically, we would be confronted with many significant challenges in the country. Indeed, our development agenda remains the central focus of public policy; and it forms the basis of collective endeavour in all spheres of our society. However, dealing with some of the most intractable and urgent challenges that still remain, would necessarily include: poverty; income inequality; threats to social cohesion; ongoing demographic (race, gender, age, class and geographic) inequities; and the impact of globalisation (HRDS 2010 – 2030, 2007, p.6-7).

These challenges cannot be solved overnight; but with innovative minds, we should find creative solutions to abate them – within the stipulated period of five years – according to the legislation.

8. What constitutes the essence of good CWIE/WIL practice?

Edison’s five competences for innovation can be realised in combination with a model of good co-operative training and WIL, as described by Dr Calvin Smith and Vilma Simbag of Griffith University. Smith and Simbag, hold the view that there are different perspectives on what good co-operative and WIL are, based on what is valued by different groupings and individuals. Instructed by these researchers, co-operative and work-integrated education (CWIE) in its various forms and modes

comprise many different aspects. These are reflected in the image below that consists of several multi-coloured building blocks. These six core dimensions of CWIE can be broken down into further parts.

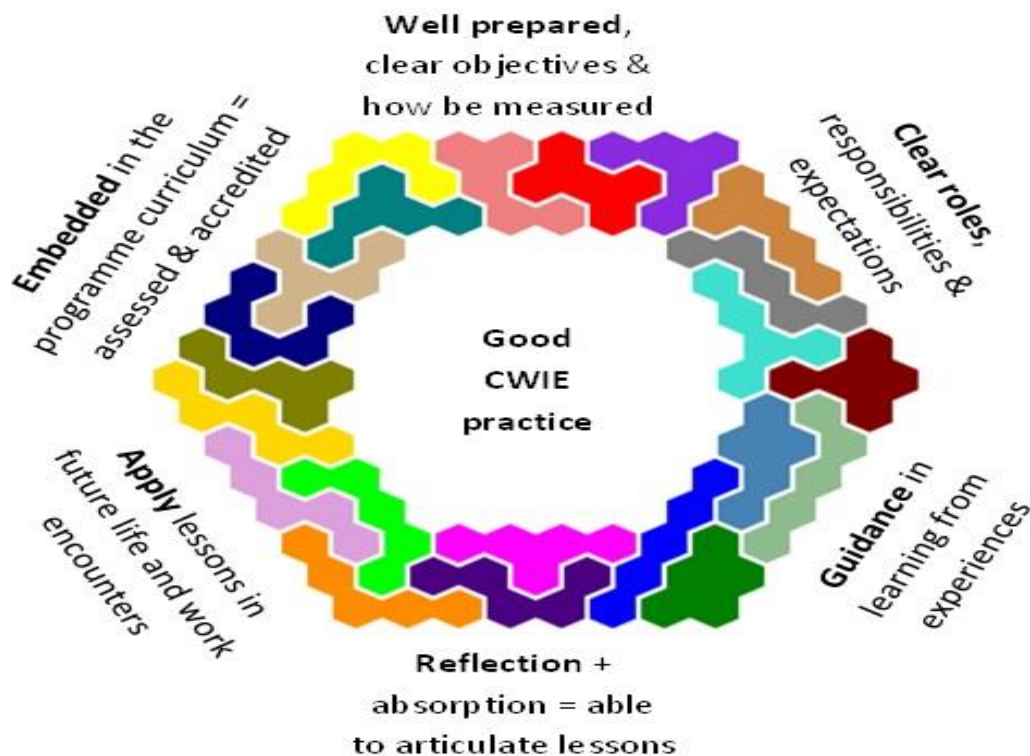


Figure 1: GIHE Good Practice Guide on Work-Integrated Learning (WIL) in the Curriculum prepared by Dr Calvin Smith and Vilma Simbag (10 November 2013).

The six dimensions above, namely: (i) Well-prepared objectives, and how they should be measured; (ii) clear roles, responsibilities and expectations; (iii) guidance in learning from experience, (for example, Kolb's learning cycle, 1984 suggests that in order to learn effectively, from experience, there must be a movement through reflection on experience – where observations on the features of, and issues in the context, are brought to conscious attention); (iv) reflection and absorption (i.e. the ability to articulate lessons); (v) the ability to apply lessons in future life and work encounters; and (vi) these issues should be embedded in the programme (assessed and accredited).

These six dimensions indicate how WIL could be improved in the context of universities in South Africa. These six dimensions of good practice in WIL can be built into the capacity-building areas, which Rizzo (2013, p.6) states comprise the focal areas in the universities of technology in South Africa, and specifically within the Engineering Faculties.

Rizzo further maintains that these faculties should strive to build their capacity in, amongst others: (i) workplace-oriented training; (ii) technology transfer by means of formal tertiary education; (iii) technology transfer to local industry, by means of formal certificate courses (industry) and projects; (iv) research and development; and (v) collaboration with local and national universities/institutes of learning.

However, while lessons can be learnt from the developed West, it is according to Ori (2013, p.vii) crucial that co-operative and work-integrated education can best be understood in the context of Africa; because African economies, more often than not, cannot be compared with the economies of first-world countries; and work placements are, therefore, not the simple matter they are in developed economies.

As the proclaimed 'voice' of co-operative education in SA, universities and other higher education institutions are expected to address the national skills commission theme, which is: 'Turning every workplace into a training space, on the topic of Implementation of work-integrated learning in institutions' (Taylor & Govender, 2013, p.19). However, due to the two levels of the policy and practice environment that require urgent attention, namely, the systemic and the institutional, Mthembu (2013, p.3) argues that *WIL-power* remains a WILL without power; because there is hardly enough willpower to make this work systemically and institutionally.

There is unanimous agreement that skills development has a key role to play in addressing the triple challenges in South Africa of unemployment, poverty and inequality, as well as the urgent need to accelerate growth and equity in the context of an under-performing economy in a fragile global economy. The fact that South Africa's current ranking is 146th out of 148 countries in the World Competitiveness Report 2013 in terms of education, reaffirms both the critical role of education and skills development, and the imperative for the country to ensure the rapid and effective delivery of skills and training driven by industry demands within a framework of partnerships (NSDS III, 2011-2016, p.4).

The skills required by students entering the workplace are identified as: (i) Self-discipline; (ii) time management; (iii) grooming; (iv) the ability to work well with others across age, culture, experience and seniority; (v) coping with diversity; (vi) adaptability to an unfamiliar environment; (vii) critical thinking; (viii) problem-solving; and (ix) the right attitude (Taylor & Govender, 2013).

The Strategic Integrated Projects (SIPs) present current and future opportunities for skills development to meet the labour-market needs; however, cognisance needs to be taken of the need for short-term solutions, sought within the existing complex skills-development systems, to ensure these are not opportunities lost (NSDS III, 2011-2016, p.4).

9. Implications for policy and practice

The organisation and support of co-operation, is crucial, given its impact upon programme development and implementation. It is important to develop global competences for innovative minds among our students through co-operative and WIL education. This would enable South Africa to achieve the NDP Vision 2030's goals of improved economy within the country, better global competitiveness, poverty-eradication, and a decrease in unemployment. It is important that we understand the nature of good co-operative WIL practice, and entrench it in our institutions – despite the diminishing funding challenges within the education system generally – and in particular, the absence of funding for co-operative WIL.

There is a need for more research in learning and integration of learning, in particular embedding pedagogical content knowledge in co-operative WIL programmes. It seems that the diversity of the practice is indicative of its value in terms of its *generalizability*, across disciplines, and that drawing upon diverse theories of learning could help us understand how co-operative/WIL works in different contexts (Coll & Zegwaard, 2011).

The key implications are reflective practice, pedagogical development, and the enhancement of graduate attributes. The practicum provides a graduate point of difference, which employers value. Through their placement projects, the students also bring significant benefit to the industry organisations. Evidence is provided to support the reflective teaching and learning process, which enhances student learning and industry relationships, and focuses on improving learner outcomes. Increasingly, students are encouraged to be pro-active rather than reactive, demonstrating initiative and adding value to the organisation; aiming to move beyond the student persona (Martin, 2015).

10. Recommendations

In agreement with Mthembu (2013), we also recommend that systemic and institutional policies be put in place, in order for the practice of WIL to become entrenched. We also recommend that steering

mechanisms be applied by the Department of Higher Education and Training (DHET), namely: planning, funding and quality assurance. These should take cognisance of work-based learning, so that higher education institutions are enabled to successfully implement WIL. To meet the expectations of industry, there is therefore a need for universities, particularly in the field of hospitality, to evaluate their curriculum – to ensure that their graduates are introduced to the theories, concepts and technical aspects of their profession.

It is further recommended that research in co-operative training and WIL be strengthened, in order to inform and improve practice. We also recommend that researchers and curricular developers focus on developing sound pedagogies that would enable integration on the workplace experience into the on-campus learning and advocate co-operative WIL programmes to be central to the degree of study, and be supported primarily by educators, rather than administrators.

11. Conclusion

The substantive scholarly literature cited in this paper shows that we have the evidence that co-operative and work-integrated education provide benefits for government, educational institutions, business and civil society; and that this results in a wide range of graduate attributes and innovative competences that are required in the twenty-first century. We have shown that co-operative WIL is well-founded, effective; and that it provides positive and competitive skills for students who participate in these programmes.

Our central national concern in South Africa is to accelerate development, so that there is a match between supply and demand for human resources. In this regard, the legislation on skills development, and the HRD skills-development strategy, are dependent on purposeful action, in order to increase the aggregate levels of skills in the workforce; so that opportunities for individuals are maximised, thereby benefiting society as a whole. The examples provided in this paper have illustrated the importance of integrating theory and practical work experience to enrich the co-operative WIL course curriculum and programme design. A defining feature of these applied learning practicum experiences is praxis, which links scholarship, critical thinking, research, and theory with practice.

It is hoped that these insights will be transferable to the South African contexts, in order to support the ever-expanding field of experiential learning in the various educational fields.

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THE DEVELOPMENT OF A WORK INTEGRATED LEARNING MODEL FOR THE INTERIOR DESIGN QUALIFICATION

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Abstract

Communication between institutions and the industry is of vital importance to support and distribute new design drawing techniques, new innovative ideas and share knowledge with students and staff alike. The specific demands in the industry will always determine the management model of work integrated learning (WIL) for the Interior Design (ID) qualification. WIL falls between the curriculum of Interior Design and the workplace and needs to remain focused with new technical interior design styles, work ethics and personal and social development skills. This article examines each section of the Interior Design programme, in order for it to be effectively involved in the new management model for WIL. The feedback from students and employers must be incorporated back into the curriculum and enrich the content of the programme, in order to reach the desired outcome of each level of training. (Tshwane University of Technology [TUT], Institutional operating plan, 2007) An empirical study was conducted using a quantitative research methodology that targeted students who had completed WIL, lecturers at different Universities of Technology (UOT's) and the active industry in Gauteng, Kwazulu-Natal and the Western Cape. The empirical outcomes of this study recommended modifying the present work ethics implementation of the student and industry. It is important to acknowledge that the Interior Design management model for WIL will form a division in the management strategy process at the (Tshwane University of Technology [TUT], Strategy for Co-operative Education, 2012).

Keywords: Interior Design Management Model; Incubator; Remedial education; Interior Design Programme; Interior Design Coordinator; B Tech programme

1. Introduction

To manage the work integrated learning (WIL) workload of lecturers, the Interior Design (ID) programme and the new development of a strategy for co-operative education at (Tshwane University of Technology [TUT], 2012) can be improved by dividing the responsibilities to all the role-players. According to Vardi (2009) increasing demands on academic work have resulted in many academics working long hours and expressing dissatisfaction with their working conditions. The new, on-campus incubator, with stimulating simulation of the WIL model is an additional benefit to the programme. It eases the administration workload and helps to reduce the search for workstations off-campus. This model is less complex and more transparent and ensures that discontent and problems do not impact disproportionately on staff, students and managers at workstations for WIL. The research outcomes, which are dependent on both the theoretical classroom study periods and the more practical WIL phases, are planned as part of the model since WIL forms an integral part of a student's qualification. The expectancy of learning allocated to WIL should be kept relevant to the requirements of the qualification. Programmes should be suitably structured, well supervised and assessed.

The work integrated learning research unit (WILRU) was commissioned to write a position paper on WIL (Work-Integrated learning and Higher Education Qualifications Framework [HEQF], Position paper on WIL, 2010). In this position paper, WILRU had a concern regarding the HEQF formation of WIL and suggested that it be described as “an educational approach that *aligns* academic and workplace practices for the mutual benefit of students and workplaces” Engel-Hills, Garraway, and Jacobs (2008). The position paper suggested the programme for WIL consist of work-directed theoretical learning, problem-based learning, project-based learning and workplace learning, with the possibility of many hybrid combinations.

2. Literature review

Although the Interior Design programme has WIL in place, there is no specific management exemplary for the WIL process, which is a credit-bearing subject of the Interior Design programme. This article is based on research carried out between students and staff from universities nationally and abroad, to find the relevant methods of preparing students for their WIL period and how WIL is managed in their respective Interior Design programmes (Tshwane University of Technology [TUT], TUT Policy, 2005).

The following (“universities”, 2012) were researched to collect evidence of their WIL management processes:

- Lessuis University College, Mechelen, Belgium
- RMIT University: (Royal Melbourne Institute of Technology), Australia
- Columbus College of Art and Design (CCAD), America
- Ryerson University: Ryerson School of Interior Design (RSID), Canada
- Mount Royal University, Canada
- Tshwane University of Technology (TUT), South Africa
- Durban University of Technology (DUT), South Africa
- Cape Peninsula University of Technology (CPUT), South Africa
- University of Johannesburg (UJ), South Africa

The National Skills Development Strategy was developed to manage all skill development and training within South Africa. Sector Education and Training (South African Education Training Authority [SETA], 2013) needs to align its calculated plans to this strategy and sign service-level agreements to ensure that it responds to the strategic needs of the country. The need to ensure quality skills in economic growth and social development was identified. This means that the Department must serve a growing number of young people and adults by providing entry points and pathways into the learning system and ensuring that quality learning takes place. The Director General summarised the strategic objectives of the Department as the need to expand access to education and training for the youth, to capacitate institutions and to increase the number of students successfully entering the labour market upon completion of training. In addition, he addressed the issues of expanding research and the development and innovation capacity for economic growth and social development.

The aim of the new management model for Interior Design is to promote opportunities in relation to both the teaching and learning strategies linked to the curriculum for Interior Design. This will ensure the delivery to the interior design industry of high-quality graduates with the necessary theoretical and practical skills in interior design already established.

The new Interior Design management model for WIL will be work-based on- and off-campus. Project-based learning (PJBL), problem-based learning (PBL), workplace learning (WL) and work-directed technical learning (WDTL) form well-described foundations for the development of a new management model for WIL for the Interior Design qualification.

The following section discusses the research methodology that was followed during the collection of information.

3. Research methodology

A quantitative research approach was undertaken by using certain areas of interest as a research instrument to collect data from a number of academic heads of department, staff members of the Interior Design departments, Interior Design students who have completed their WIL, supervisors and other human resources from selected companies. The purpose of this research was to compare the views of university staff, students, supervisors and other human resources from selected companies. On completion of the literature study, questionnaires were used to collect data from academic heads from tertiary institutions, students and selected companies in Gauteng, KwaZulu-Natal and the Western Province.

3.1 Measurement

Questionnaires were used to collect data. The questionnaires were divided into three sections. Section A was devoted to the biographical data, Section B focused on the demographical data and Section C, on the practical aspect, in which the respondents' experiences of the presentation and content of the subject were investigated. The questionnaires were piloted and corrected, after which they were distributed to and collected from the respondents, mostly by hand. Respondents were asked to reflect on their views using a 5-point Likert scale, with the range 1: strongly agree; 2: disagree; 3: do not know; 4: disagree; and 5: strongly disagree. Questions were clustered into 185 constructs.

3.2 Population and sample

In most research, companies, markets and products are the set populations that are of interest to the researcher. In this case, the target populations refer to companies in the industry and higher education institutions, including students and academic heads of departments at universities, comprehensive universities and universities of technology located in Gauteng, KwaZulu-Natal and the Western Cape. Sample were 100 respondents, consisting of 64 students, 18 WIL staff members of departments in higher education institutions and 18 supervisors or company owners in the industry.

Table 1: Criteria used in the selection of target population

TARGET POPULATION	CRITERIA
Higher education institutions (HEIs)	
1. One comprehensive university: UJ 2. Three Universities of Technology: TUT, DUT and CPUT	<ul style="list-style-type: none"> • Government subsidised • Located in Gauteng, KwaZulu-Natal and Western Cape • Offer the Interior Design programme
Students Students who completed their WIL training	<ul style="list-style-type: none"> • Received training in government subsidised higher education institutions in Gauteng, KwaZulu-Natal and Western Cape • Completed work integrated learning (WIL) in one discipline: Interior Design
Academic staff Full-time academic staff working with WIL	<ul style="list-style-type: none"> • Full-time academic staff members in the Interior Design discipline in government subsidised HEIs

TARGET POPULATION	CRITERIA
Companies: Supervisors	
KwaZulu-Natal Balito Durban Salt Rock Umhlanga Rocks	<ul style="list-style-type: none"> • Well-established • Approved WIL companies for training Interior Design students
Gauteng Pretoria Johannesburg	<ul style="list-style-type: none"> • Well-established • Approved WIL companies for training Interior Design students
Western Cape Franschhoek Cape Town Greyton	<ul style="list-style-type: none"> • Well-established • Approved WIL companies for training Interior Design students

The Interior Design discipline was used for the purposes of this study. The motivational factors for the selection of the abovementioned discipline include the following:

- It is a vocational and professional career orientated learning programme.
- The programme has a professional body.
- All HEIs selected for the purpose of this study offer the Interior Design programme.
- All Interior Design graduates are required to register at a professional body (IID) before becoming a practising interior designer in the industry.

Students targeted were those who had completed work integrated learning in the postgraduate programme of Interior Design. The following guidelines were used for the student population by using a multidisciplinary approach:

- **Comprehensive university:** Students selected to complete questionnaires were mainly from the Interior Design, third-year programme, who had completed their work integrated learning training as part of the National Diploma in Interior Design.
- **Universities of Technology:** Since Universities of Technology consisted of a merger between three technikons, students selected to complete questionnaires were from the Interior Design, third-year programme, who had completed their work integrated learning training as part of the National Diploma in Interior Design.

3.3 Statistical analysis

The questionnaires were coded for statistical analysis by the researcher. Responses were captured directly from the questionnaires in collaboration with the Statistical Services of TUT.

3.4 Responses

- Of the total number of questionnaires distributed to the academic heads of departments and other staff members of the Interior Design departments at TUT, DUT, CPUT and UJ, all the questionnaires were received back (100% response).
- Of the total number of questionnaires distributed to Interior Design students who have completed WIL and are still studying the same Interior Design discipline at TUT, DUT, CPUT and UJ, all the distributed questionnaires were received back (100% response).
- Of the total number of questionnaires distributed to supervisors and other human resources from selected companies in Gauteng, KwaZulu-Natal and the Western Cape who have participated in WIL over the last three years, all the distributed questionnaires were received back (100% response).

- The 100% response rate was attributable to the fact that questionnaires were distributed and collected by hand. (DUT, UJ, CPUT and TUT, 2012)

4. Results

The 185 constructs (each construct consisted of a clustered question) included the information from Section A, the biographical data, Section B, the demographical data and Section C, the practical aspect in which the respondents' experiences of the presentation and content of the subject were investigated. From this information, the structure for the new management model of WIL for the Interior Design qualification at TUT was set.

5. Discussion on the development of a WIL management model for the Interior Design qualification

WIL, in the Faculty of Arts at TUT, falls under the heading: Work-integrated Learning (WIL): Simulation, Problem- and Project-based Learning. The workplace environment for problem-solving, project execution and simulation of design projects and their applications is simulated successfully by students staying on-campus and completing projects, instead of visiting the industry (Tshwane University of Technology [TUT], Strategy, 2013).

Interior design is a vocational programme in which the thinking processes and reasoning are stimulated at the same time, and the student is enabled to balance the organisation of the cognitive structure between practice and theory and between education and work more easily. The study will discuss the introduction of WIL into the first, second and third year and demonstrate how the preparation and different sections are connected.

The Council for Higher Education [CHE] (2001, p.18) specifies important rules and regulations for practical learning as elements of the curriculum of the Interior Design programme. TUT guarantees quality assurance, and the WIL policy is used with all policy rules and regulations disclosed and in place to ensure that the curriculum contents adhere to the management model in all aspects.

Under the function of 'workstation' fall the duties of the WIL co-ordinator, the training and preparation of students, as well as the research outputs that occur off-campus. During site visits, additional requirements or changes to the learning programme can be defined and agreed upon by

the employer. According to Forbes (2013) workplace approval is not a judgmental inspection but an exploratory task.

5.1 First year – observation on- and off-campus

Career orientation and the career decision-making processes start in the early years of a prospective Interior Design student. There are those who cannot make a career decision and arrive at an academic institution inexperienced and clueless. Nervously at first, the student becomes more relaxed as the studies towards the Interior Design qualification materialise. The success of Interior Design study depends largely on both training and experience. During the first year, training is accomplished through observation (watching), and the self-confidence gained from observation is interrelated with experience.

5.2 Second year – development: Design skills on- and off-campus

During the second year of study, the students, with thoughts still dominated by training and experience, rely on their capability to understand the processes of design. They feel more at ease with the terminology and the implementation thereof. They can also combine different cognitive information from different subjects and modules better, in order to produce a complete design project.

5.3 Third year – application of theory and practice

Acceptance of students in the workplace is a recurrent theme in many different occupations, such as engineering, nursing, art, design and teaching. One commiserates with these newly appointed employees having to test their skills, knowledge and practical abilities in interior design, while also combining their social practices to determine whether three years of study bear fruit or not. Nervous and alert, the students are at their best. They listen, observe, analyse and react with real knowledge.

5.4 Duties of the WIL co-ordinator- on - and off-campus

The following key performance areas (KPA's) for the employed WIL co-ordinator place a number of the major tasks and responsibilities on their shoulders:

- Support
- Education
- Administration

- Management
- Guardian to students
- Mentoring (Tshwane University of Technology [TUT], Duties for WIL co-ordinators, 2012)

Through the questionnaire, which researched competitive interior design industries, students who have completed WIL and the WIL staff members at different national higher educational institutions (HEI), the abovementioned list of duties was identified. The five main stages for the student include preparation, placement, monitoring, assessment and debriefing with assessment of the learning. To enhance the WIL undertaking in Interior Design, it is necessary to focus both on- and off-campus on the research output that helps the industry target researched aspects for preparing design.

5.5 Learning outcomes achieved

YES: Learning success and learning outcome. The WIL outcome will determine the final result of the assessed students' portfolios of evidence, that is, the report from the supervisors and a technical report explaining the work delivered during the WIL period.

NO: Not achieved. Those who failed their WIL training will be assisted with remedial action in conjunction with the Department of Interior Design, other academic staff members and the industry.

5.6 Year-end function

The WIL debriefing process, in the form of an exhibition/function for the industry, staff and WIL students, including members of the Directorate: Co-operative Education of TUT and invited guests, involves showcased design work done during WIL. Although this is an interior design display, first-, second- and fourth-year students can participate in the exhibition. Through this year-end function, recognition is given to the candidates who have graduated, and their work done during the year can be presented to family, friends and invited guests.

5.7. Incubator – simulation of WIL

According to the explanation of (Council of Higher Education [CHE], 2012, p.67) simulated learning takes place through an activity that involves imitating the real world in the academy and simulating certain key characteristics of the selected workplace in the industry. Mock meetings with clients are set up, design projects are completed and discussions with different industries take place, including costing, quotations and matching specification documentation.

Third-year – Incubator work: the industry brings the work to the on-campus incubator, and the student will complete the work under the supervision of the Interior Design staff.

5.8 Mentoring the student

The WIL co-ordinator also acts as a mentor and tutor for students during their time spent on- and off-campus. According to Pungur (2007) and Williams (2009) as mentioned in Rowe and Mackaway (2012) the WIL co-ordinator should be available and ready with full support.

6. The new micro-structure for the management model for WIL for the Interior Design qualification at the TUT

Learning takes place in an equipped environment, on- or off-campus. The proposed Interior Design management model for WIL indicates how this new management structure for the programme model will look in future (Wessels, 2013). The management model for Interior Design has been developed according to the programme contents for the subject interior design.

The following information forms the content of the development of the new proposed management model:

6.1 Content and micro-model

Table 1: (Author 2013)

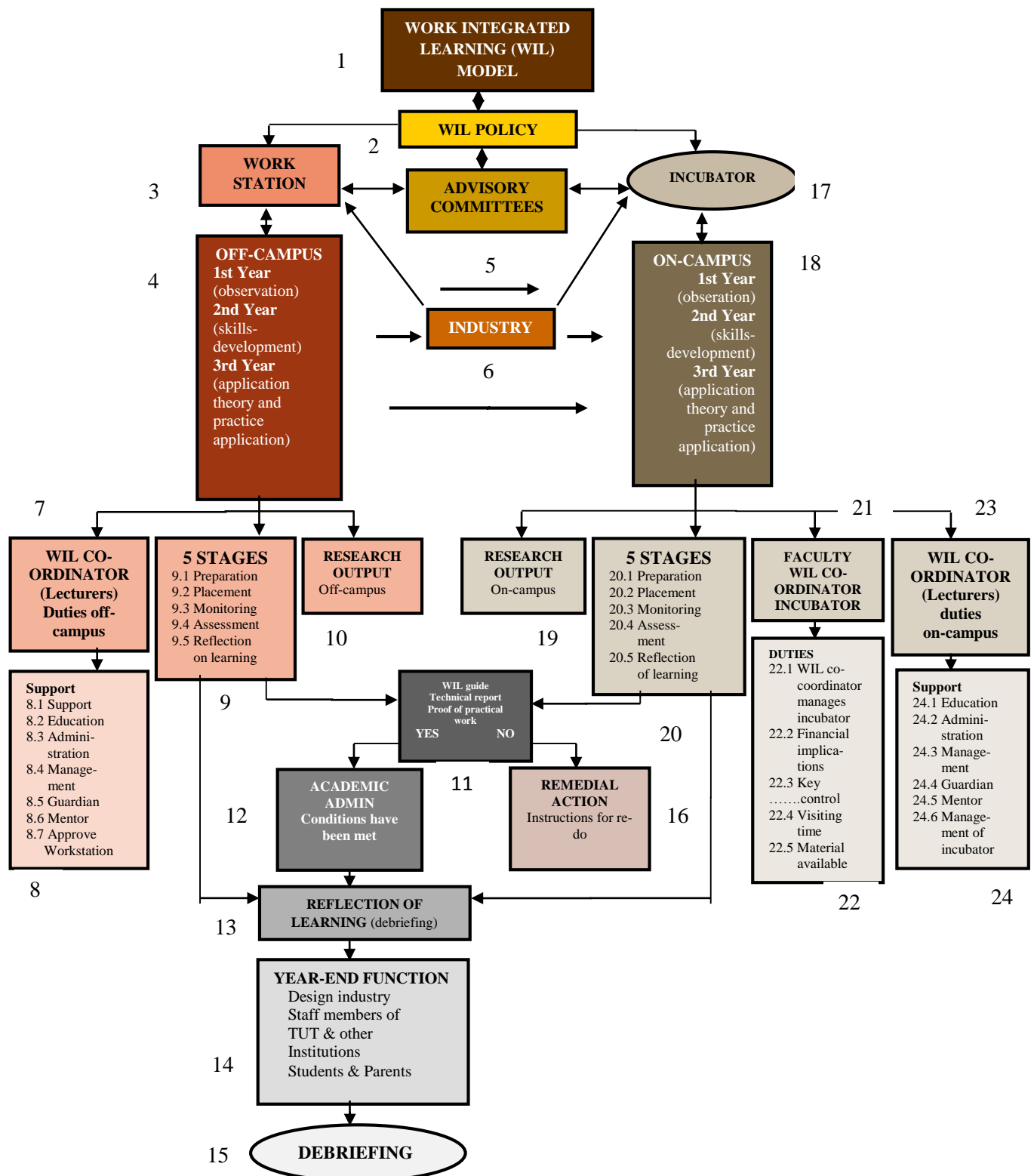
NUMBER	DESCRIPTION OF MODEL
1	INTERIOR DESIGN WORK INTEGRATED LEARNING (WIL) MODEL
2	WIL POLICY
3	WORKSTATION
4	OFF-CAMPUS/level 1, 2 and 3
5	ADVISORY COMMITTEE
6	INDUSTRY
7	WIL CO-ORDINATOR'S OFF-CAMPUS DUTIES
8	SUPPORT
8.1	Support
8.2	Education
8.3	Administration
8.4	Management
8.5	Guardian
8.6	Mentor
9	5 STAGES
9.1	Preparation
9.2	Placement

NUMBER	DESCRIPTION OF MODEL
9.3	Monitoring
9.4	Assessment
9.5	Reflection on learning
10	RESEARCH OUTPUT OFF CAMPUS
11	STUDENT OUTCOMES ACHIEVED
	Yes
	No
12	ACADEMIC ADMIN Informed that conditions have been met
13	REFLECTION ON LEARNING (debriefing)
14	YEAR-END FUNCTIONS
	Members of interior design industry
	Staff members of the TUT and other institutions
	Students
	Parents
15	DEBRIEFING: QUALITY ASSURANCE
16	REMEDIAL ACTION Informed the conditions have not been met
17	INCUBATOR
18	ON-CAMPUS/ level 1, 2 and 3
19	RESEARCH OUTPUT ON-CAMPUS
20	5 STAGES
20.1	Preparation
20.2	Placement
20.3	Monitoring
20.4	Assessment
20.5	Reflection on learning (debriefing)
21	INTERIOR DESIGN MANAGEMENT OF INCUBATOR
22	WIL CO-ORDINATOR DUTIES
22.1	WIL co-ordinator manager: Incubator
22.2	Financial implications
22.3	Key control
22.4	Visiting times
22.5	Materials available
23	WIL CO-ORDINATOR'S DUTIES ON-CAMPUS
24	SUPPORT
24.1	Education
24.2	Administration
24.3	Management
24.4	Graduation
24.5	Mentor
24.6	Management
25	PROJECT-BASED LEARNING (PJBL) PROBLEM-BASED LEARNING (PBL)
26	WIL POLICY FOR BTECH STUDENTS
27	ORAL PRESENTATION/EXHIBITION/FULL DISSERTATION
27.1	Oral presentation
27.2	Exhibition
27.3	Full dissertation
28	INDUSTRY OUTCOMES
29	YES

NUMBER	DESCRIPTION OF MODEL
30	ACADEMIC ADMIN - Informed conditions have been met
31	NO
32	REMEDIAL ACTION / Oral presentation, Exhibition
33	DEBRIEFING / Quality assurance
34	CO-OPERATIVE EDUCATION INFORMATION CENTRE (CEIC)
35	WIL CO-OPERATIVE EDUCATION INFORMATION CENTRE AND INTERIOR DESIGN WIL INCUBATOR
36	FACULTY MANAGER WIL FE
37	INFORMATION CENTRE ADMINISTRATION/Contracts with industries/information
38	WIL CO-ORDINATOR MANAGER/ INTERIOR DESIGN WIL CO-ORDINATOR
39	INTERIOR DESIGN WIL STAFF MEMBERS
40	INTERIOR DESIGN /WIL INCUBATOR FOR CAMPUS
41	INTERIOR DESIGN /STUDENT ASSISTANTS
42	INTERIOR DESIGN WIL STUDENTS
43	INTERIOR DESIGN INDUSTRY REPRESENTATIVES
44	INTERIOR DESIGN PANEL FOR ASSESSMENT
45	EMPLOYABILITY MANAGERS
46	EMPLOYABILITY PRACTITIONERS (EP)
47	FACULTY COMPUTER WORKSTATION FOR ART AND DESIGN STUDENTS
48	WORKSTATION STUDENT ASSISTANT

Diagram 2, 3 and 4 is depicted on the next pages.

Diagram 2: The micro- management model for WIL for the Interior Design qualification



**Diagram 3: The micro-management model for WIL for the BTECH: Interior Design qualification
(Author)**

Attention is given to project-based learning and problem-based learning, especially regarding the micromanagement WIL model for the Bachelor Degree in Technology. These two learning procedures form the basis of the B Tech: Interior Design.

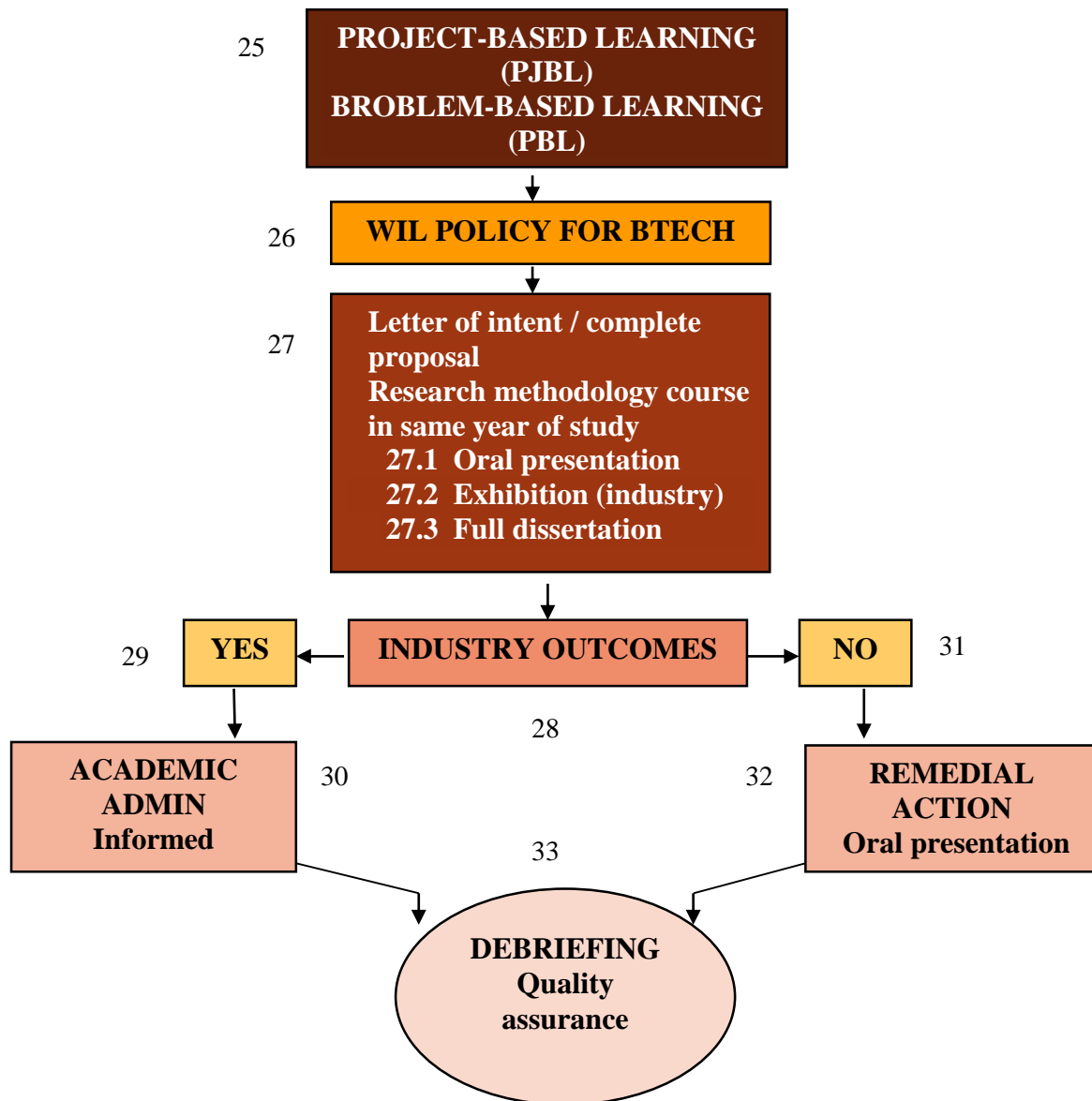
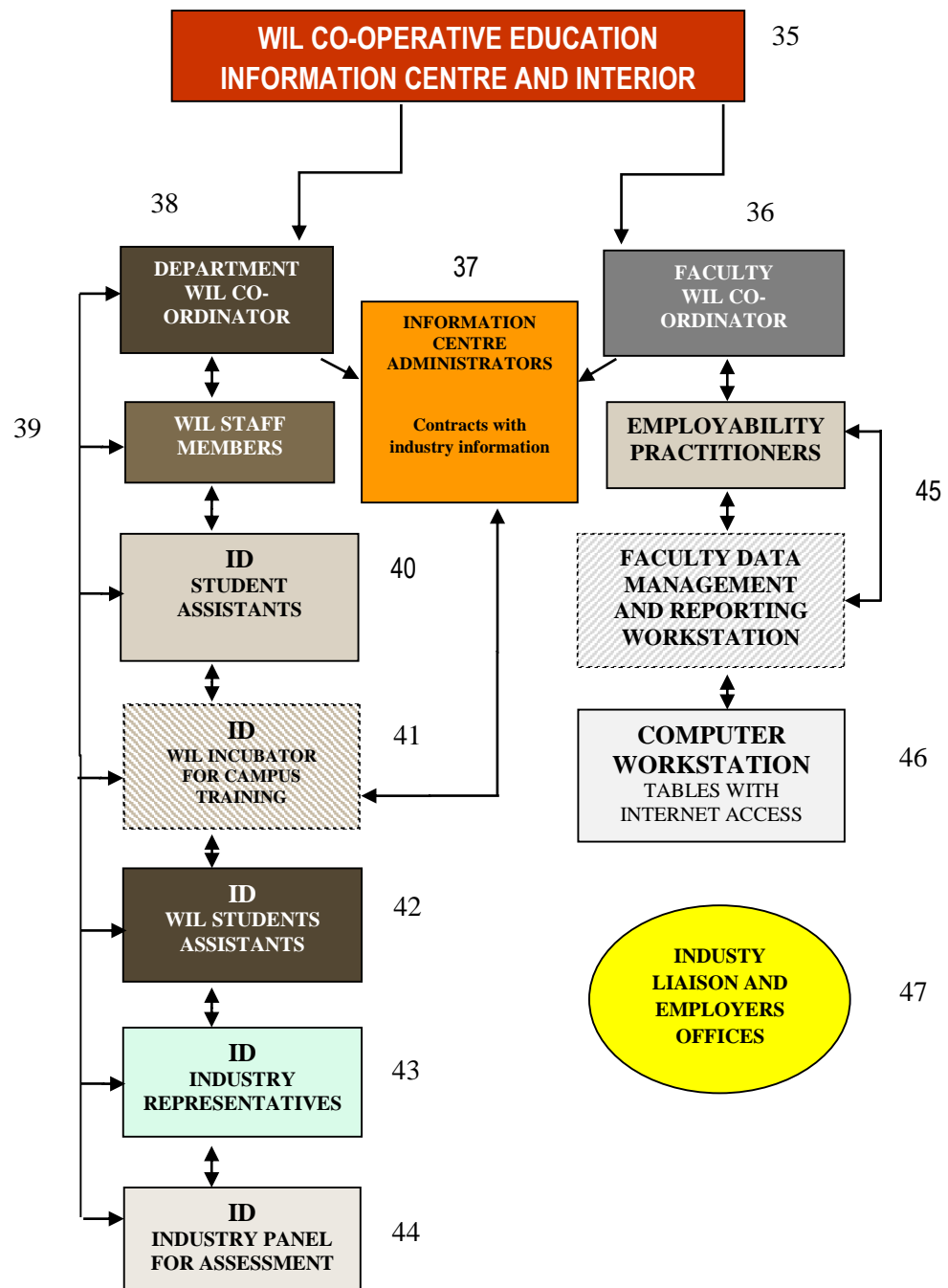


Diagram 3: Micro incubator management model for the Interior Design qualification in collaboration with the Co-operative education centre for the Faculty of the Arts (Author)

Take note that the green shades are used for Interior Design and the Grey shades are used for the information and employment centre.



The Interior Design WIL incubator is the hub where the industry, clients and government departments can come for help and/or design solutions performed by students under the supervision of qualified Interior Design staff members.

The incubator is designed to be managed as an inclusive interior design company. The students working in the incubator can fill positions such as administrative assistant, copier, telephone assistant, or even project leader and designer for a client. The different administrative jobs and duties that ensure the smooth running of the incubator will be rotated between the students undergoing WIL on campus, to enable them to become familiar with all the administrative training aspects.

7. Conclusion

The intention of the suggested new Interior Design management model is to promote a policy for the curriculum of the subject Interior Design. It should integrate academic learning with theoretical learning, problem-based learning, and project-based learning within the interior design industry. It should be structured, assessed and monitored to achieve the outcomes of the learning programme for Interior Design.

The main purpose of the new management model for Interior Design is to contribute towards the background knowledge and understanding of students in Interior Design by enabling them to participate in an organised interior design industry that conforms to the predetermined needs of the interior design community. It should furthermore enhance the students' understanding of the course content of Interior Design and broaden their appreciation of the discipline. In addition, it should give them a heightened sense of civic responsibility and a broader knowledge of the interior design work environment.

The aim of the new management model for Interior Design is to promote opportunities in relation to both teaching and learning strategies linked to the curriculum for Interior Design. This will ensure the delivery of high-quality graduates with the necessary theoretical and practical in whom skills in interior design have already been established to the interior design industry.

The implementation of the new management model for Interior Design requires adequate planning of the learning environment in Interior Design to promote flexibility, innovation and opportunities for assessing the students' critical cognitive skills as part of their WIL assessment.

The new management model for Interior Design will contribute to opportunities and options for the placement of students within the industry and also in the incubator by applying the following skills:

- Preparedness for working on interior design projects and in the interior field
- Preparedness and knowledge of design skills
- Understanding the workplace and the working thereof
- Life, work and study orientation for students before and after completion of WIL
- Successful placement due to the focus on a combination of the outcomes for Interior Design
- Workplace learning that is always relative to the Interior Design programme and outcomes stipulated by SAQA
- Interim continuous assessments throughout the Interior Design WIL period
- Promoting the students' integrity, dedication, knowledge, team co-operation and work skills.

The new management model for Interior Design contributes to the key issues in awarding credits for work placement. Successful placements have a great deal to do with factors that lie outside the competence of the student, such as the effectiveness of the WIL incubator and Interior Design staff members. Therefore, the incubator and employment must be student-friendly.

The new management model for Interior Design contributes to the establishment of an Interior Design incubator, and a vibrant interactive relationship among government, higher education, universities, students and the interior design industry. Therefore, strategic and vibrant partnerships between all role players and communities at regional, national and international levels are promoted and established. This includes innovative networks and joint academic development initiatives as well as joint WIL projects in interior design with local and international partners.

The new management model for Interior Design will establish an Interior Design incubator that is relevant to the needs of the interior design environment and its communities through teaching and learning. Research and development fulfill the needs of the interior design society by means of the appropriate transfer of interior design skills to the interior design community and students.

The new management model for Interior Design contributes to students who will be able to simultaneously study and engage in the interior design community via the establishment of an Interior Design incubator, which focuses on relevance, the latest technology and valuable applicable WIL skills.

The new management model for Interior Design addresses problems in an engaged, two-way, practice-oriented, real-world, focused and multi-disciplinary manner via the establishment of an Interior Design incubator. This model will assist in monitoring the social impact of interior design technology, give advice on technology, and changes in style and design. Researching and applying the most productive uses of interior design technology enable learning as part of a broader approach. During WIL in the incubator, the students are committed to access knowledge and skills of interior design, and make available alternative pathways into the interior design education. Students will lead the way in ensuring that their applied research in interior design benefits the community in South Africa. (SASCE, 2007).

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DETERMINING BEST PRACTICE FROM GRADUATE EMPLOYABILITY: A WORK INTEGRATED LEARNING CASE STUDY IN HOSPITALITY MANAGEMENT

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Abstract

Universities are faced with increasing pressure to produce employable, work-ready graduates for a constantly and rapidly changing work environment. Success in this respect would ultimately translate into evidence confirming the employability of students. Evidence from the 2011 graduate survey at the Central University of Technology, Free State confirmed the employability of students in the hospitality management programme as having achieved an employment rate of 85%. This paper investigates the reasons for this success to determine best practice on this subject. This analysis was done by using the Work Integrated Learning quality cycle as basis for the inquiry due to the link established between WIL and employability as part of the strategic transformation of education processes and systems project at the Central University of Technology, Free State during 2012. Various aspects and reasons were identified for the high employment rate, such as the manner in which students and employers are prepared for WIL, structure of the curriculum and the effective application of constructive alignment. The paper is concluded with the identification of best practice principles to facilitate the application thereof in other instructional programmes.

Keywords: Work-Integrated Learning, Graduate employability, Best practice, Curriculum, Constructive alignment

1. Introduction

The strategic transformation of education processes and systems project concluded at the Central University of Technology, Free State during 2012 indicated a direct link between WIL and the enhancement of employability. The aim of the paper is to establish best practice principles from the effective application of Work Integrated Learning (WIL) in a hospitality management programme that lead to the enhancement of the employability of students in the programme. The intention is that such principles could be applied in other programmes to achieve similar results.

The point of departure will be to provide a brief introduction to WIL and the principles thereof together with an overview of the application of WIL in the hospitality management programme of the Central University of Technology, Free State (CUT) by using the quality cycle of WIL (Forbes 2008:12) as the basis for the inquiry. This provides the backdrop against which best practice principles regarding the application of WIL will be established and tested.

2. Work Integrated Learning definition and principles

WIL is described as: “An umbrella term for a range of approaches and strategies that integrate theory with the practice of work within a purposefully designed curriculum” as stated by Patrick, Peach, Pocknee, Webb, Fletcher and Pretto (2008, p.iv). The bringing together of the theory of a discipline and its relevant work practice requires the involvement of industry, universities and students according to Papakonstantinou, Charlton-Robb, Reina and Rayner (2013, p.59) to form a unique tripartite relationship between the student, the employer and the university as stated by Newhook (2013, p.79). For students to learn effectively through direct implementation of their professional roles in real workplace settings a stakeholder-integrated approach is needed which involves sustainable relationships between all stakeholders (McEwen & Trede 2014, p.55; Fleming & Hickey 2013, p.209). Forbes (2006, p.7) therefore urges higher education institutions to ensure that WIL forms part of and is integral to the exit-level outcomes of the qualification and emphasises the need to determine that workplace learning is structured, planned, monitored and assessed at the correct NQF level to ensure integration with the curriculum outcomes of the entire qualification.

The integration of learning between the two learning sites was established by Heerde and Murphy (2009, p.3) to be an important principle of WIL. This integration needs to be formally part of the academic learning programme according to Jackson (2013, p.99) which corresponds with the view of Weston, Way and Hutcheson (2003, p.ii) that combining learning from the work place into the academic programme is a curriculum matter. As a curriculum issue the link between the institution and work place requires effective alignment (Edgar & Connaughton, 2014, p.29). Coll and Eames (2004, p.274-275) concluded that a successful WIL programme requires a strong curriculum and pedagogy underpinned by theory as well as objectives that are relevant and appropriate to all parties involved. Patrick, et al (2008, p.39) therefore propose that the WIL curriculum should set out to build a bridge of learning between the university and the workplace. A structured framework for WIL and treating it as an integral and integrated part of the curriculum, rather than a bolt on experience, are - resultantly advocated by Leong and Kavanagh (2013, p.2-3).

Collin and Tynjala (2003, p.344) furthers the argument on the integrated curriculum by stating that “...practical experiences involve learning how to apply theoretical knowledge held,” which requires that assessment should consist of elements addressing both knowledge built within the university setting, and the knowledge built within the context of the work environment” (Costley, 2007, p.9). A greater dependence must therefore be placed on learners to identify the knowledge and skills they need to learn relevant to their work experiences. This requires of assessment to be conceptualised in terms of participation in practical scenarios and to encourage learners to actively engage in self-assessment (Boud & Falchikov, 2006, p.410). The importance of self-reflective writings to capture and enhance the learning that had occurred is also emphasized by Beeth and Adadan (2006, p.103-120). Brodie and Irving (2007, p.18) found that when students are: “...able to apply and comment on their knowledge and their experiences, that this process provides students with their own justification for future learning.” Kramer and Usher (2011, p.25) also found that concepts and skills learned in the classroom are reinforced, but in addition noted the development of workplace skills and career preparation which shifts the focus more towards the role of employers.

The benefits of WIL to employers are predominantly found in the major reason why employers participate in WIL programmes:

- WIL placements are used by employers as a unique way of assimilating students into the work environment which provides the ideal platform to recruit graduates according to Bates and Bates (2013, p.55). This view is supported by Sattler and Peters (2012, p.6) who found that: “Employers who provided WIL opportunities overwhelmingly preferred to hire graduates who had gained WIL experience at their own workplace.” Further evidence is provided by the 2012 Internship & Co-op Survey which reinforced the fact that internships are a vital component of employers’ college recruiting programmes (National Association of Colleges and Employers, 2012, p.1-3).
- Weisz and Chapman (as quoted in Coll & Eames, 2007, p.134) determined that the overall employer benefits are financial in nature (lower recruitment costs and increased productivity) but that there are also issues relating to image such as addressing equity in employment and an enhanced public image of major multi-national corporates.
- The primary benefits to employers are summarized by the New Zealand Association for Cooperative Education (2014, p.1) and the Canadian Association for Cooperative Education (2005, p.6) as follows:
 - Reduced recruitment and hiring costs. Employers have a cost-effective means of evaluating future employees by means of an extended interview.

- Employers are considered to be co-educators as they provide learning beyond the bounds of the classroom and have the opportunity to influence the educational process and curricula to make it more relevant to the work situation.

In summary, it seems that the most important issues or principles to note are the unique tripartite relationship between the university, students and employers which provides a solid basis from which to align and link an integrated curriculum with the workplace. Assessment should address both knowledge gained at the university and the work environment and ought to include reflection on both knowledge components to enhance students' learning. There are also definite benefits for employers which stem from the platform that WIL provides as an effective recruitment tool. Having established common ground regarding WIL and the principles thereof it is now required to look at what the WIL component of the Hospitality Management programme entails.

3. Hospitality Management Work Integrated Learning

The Hospitality Management programme (Central University of Technology, Free State 2014, p.1-3) is a three year national diploma with a compulsory WIL component of one year (two components of 6 months each). The programme is structured as follows:

First Year:

January – November:	Theoretical and practical instruction on campus
December:	WIL (Kitchen as well as Food & Beverage training) commences at selected hotels and lodges

Second Year:

January – May:	WIL continues
July – December:	Theoretical and practical instruction on campus

3rd Year:

January – June:	Theoretical and practical instruction on campus
July – December:	WIL (management training at selected establishments in industry)

In structuring the analysis of the application of the WIL component of the programme, the WIL quality cycle as indicated by Forbes (2008, p.12) will be used. The WIL quality cycle includes the following key issues regarding WIL:

- Preparation of students and employers
- The placement process
- Visitation and monitoring (by Hotel School)
- Mentoring and assessment by employers
- Assessment and debriefing (by Hotel School)

Each element of the WIL quality cycle will now be dealt with individually to structure the analysis of the hospitality management programme.

4.1 Preparation of students and employers

An hour per week is scheduled for WIL on the time-table of the students during all 3 years of study.

The topics covered during this period include the following:

- CV and cover letter
- Interview techniques
- What to expect in the workplace
- Professional behaviour
- Work ethics
- Importance of reputation
- A culture of achievement and pride in the blazer of the Hotel School
- Profiles of hotels and lodges used for WIL
- WIL quality cycle

In addition, representatives from industry as well as the central WIL office at CUT speak to students regarding their perspective on WIL which is supplemented by talks with alumni about their experiences of WIL. The central theme of the whole preparation revolves around the importance and value of a positive attitude. The view is held and imparted that attitude is a conscious decision and thus expected of every student as part of the ethos of the Hotel School. It is therefore about creating expectations from day one that need to be and in the end wants to be matched by students through the pride that they gain in identifying with a successful culture and thereby consistently exceeding expectations in every aspect of WIL.

Employers are prepared for WIL through personal visits by a representative of the central WIL office at CUT. During such visits employers are approved for WIL should they comply with requirements in terms of infrastructure, staff and training requirements that will enable the students to achieve the

learning outcomes set for WIL. These visits are also used to build and maintain relationships with hotels and lodges of which 90% have a five star grading. Relationships with employers are crucial in cultivating a supportive learning environment for students. As co-educators of the students it is also about establishing a relationship of trust and a keen interest is therefore taken in employers which implies subscribing to their newsletters and congratulating them on achievements as well as their birthdays and those of their children.

3.2 Placement process

At least 90% of the 80 students are placed without an interview which is largely due to the relationship of trust that exists between the central WIL office at CUT, the Hotel School and employers. The choice of which student to place at an establishment is largely left to the Hotel School to decide. Trust is a critical issue for sustained partnerships. It is therefore also better to rather not place a student or students at a particular hotel and lodge rather than to place a student just for the sake of placement.

The database of employers used for WIL has not changed with more than 10% during the past 12 years which means that the employers and the culture of each hotel and lodge is well-known to the Hotel School. This enables a process of profiling through mutual agreement where students are placed with hotels and lodges where the students' profiles match their top three preferences best with regards to employers they would prefer to be placed with. A relationship of trust is therefore also required between Hotel School staff and students.

Although students provide their preferences, only the 10% who had been for an interview will immediately know where they are placed. The rest of the placements (together with those already placed) are announced at a placement ceremony held 6-8 weeks prior to the starting date of each WIL component. This is a very formal and dignified occasion attended by all staff and students of the Hotel School as well as their parents. Every attempt is made to make the students feel special to further foster a positive attitude and pride in themselves and the Hotel School.

3.3 Visitation and monitoring

Once placed, the students are visited at least once in the workplace during every WIL component by Hotel School staff for monitoring purposes. Due to the location of employers, relative to Bloemfontein, from the Limpopo and Mpumalanga provinces to Cape Town more visits are not possible. During such visits discussions are held with employers to elicit comment and feedback on the students'

performance. The discussions with students focus more on reports submitted and are the rubrics for assessment used given to students. This is also seen and used as an opportunity to build and maintain relationships with employers. Employers are therefore visited at least 3 times per annum; twice during monitoring visits by Hotel School staff and once by a representative of the central WIL office. Experiences of visits to employers and students are shared and used track the placement of students as well as to inform one another of the outcome of visits to employers and students. Every staff member visiting a particular employer or student will therefore have a track record of outcomes of visits to be better informed and prepared for visits.

3.4 Mentoring and assessment by employers

Experience has shown that the quality of the mentoring provided by employers increases proportionately in accordance with the quality and type of relationship between CUT and employers as a result of an enhanced understanding of mutual needs and requirements as well as becoming more familiar with and trusting of one another. An important component of the mentoring process is the use of an induction programme for students when they start with their WIL to clarify expectations and familiarize them with the culture of the relevant employer. Due to the uncertainty experienced by students at the start of a WIL period with a new employer, it presents the ideal opportunity to establish a relationship of trust between the mentor and students. This provides a safety net to students which enable them to perform to their potential more quickly and also provides for richer and deeper learning experiences.

Assessments are done by the direct supervisors in the departments where students are placed. Clear guidelines are provided to employers in terms of the assessments required which contributes 20% to the final mark for WIL.

4. Assessment and debriefing by Hotel School

Two important aspects to note regarding assessments done by the Hotel School is the use of reflection as well as constructive alignment. The assessment tasks are given as two-fold, namely a practical demonstration of competence evaluated by the employer and a written assignment submitted to the relevant hotel school lecturer. It needs to be noted that the written assignment in the format of a report must include a discussion on how the specific hotel where the student is placed for WIL performs each function, a comparison of how the hotel performs each function in relation to the student's experiences at the hotel school, a discussion what the role of the student was in each

function in the hotel and a request to provide recommendations for improvement for the hotel (Minnaar, 2009, p.26). In this manner students are forced to reflect on knowledge already obtained and new knowledge gained.

Instead of using a learning outcome like: Describe the basic reservations and guest check-in/out procedures, the following type of learning outcomes are used instead: Apply the basic reservations and guest check-in/out procedures for two (2) different lodging establishments by means of a practical demonstration under supervision for each type of establishment. Students therefore have to use their own activity to construct their knowledge and the intended verb in the outcome statement is present in the teaching/learning activity and deployed in context in the assessment task which implies constructive alignment (Sunda, 2009, p.1 of 3; Biggs & Tang, 2007, p.59).

Students are debriefed during visits in industry and upon their return to the Hotel School upon completion of the first WIL component. The debriefing at the Hotel School during the second year of study is in the form of a group debrief where a representative from students placed at each hotel will provide feedback on their experiences. The aim is to reflect on and learn from other students' experiences as well as to prepare the first year students sitting in on the debriefing for their coming WIL placements.

5. Conclusions and best principles

In analyzing the application of WIL in the Hospitality Management programme it is clear that students and employers are at the centre of attention with a lot of effort dedicated towards these two other partners in the WIL process by CUT staff. This is evident even from the start of the WIL quality cycle where both students and employers are intractably involved in preparing both for WIL. The attention provided to them seems to encourage strong relationships of trust which provides the platform to elevate these relationships to a different level as proven by the trust bestowed on the Hotel School to be virtually solely responsible for the allocation of students to employers for WIL.

Although much is expected by the Hotel School of students in terms of performing in industry, the success seems to be as simple as cultivating a positive attitude which is in reach of all students. Students are almost left with no choice but to be positive given the importance that they experience as being part of a culture of success and placed on a pedestal during the placement ceremonies. The fact that parents are also involved in these ceremonies further broadens the support base for students by clarifying and aligning expectations with the primary support base of students.

Students and employers are again the centre of attention during monitoring visits done by the Hotel School in the work place. These are more than mere courtesy visits and are employers and students provided with constructive feedback regarding the performance of the student as assessed by the Hotel School at that stage. This further strengthens the relationship with employers and students as the intentions are to address any concerns of employers in person as well as to personally guide students for the rest of the WIL period to ensure their success. The constant sharing of information enables coordinated and informed visits and liaison with students and employers as all CUT staff are continuously aware of what is happening and has happened in the workplace with students and employers.

The level of mentoring is enhanced through the quality of the relationship established with employers. This is to the mutual benefit of employers and students by reducing any possible anxiety on the part of students and therefore enabling students to perform more quickly. The orientation of students is thus important and is facilitated by means of an induction programme offered by employers to students.

The use of reflection is not limited to the linking of knowledge obtained and gained, but provides for further application thereof in recommendations that need to be made for improvement. In terms of the WIL principles noted above that WIL is about the application of theoretical knowledge and a curriculum matter it therefore makes a lot of sense to apply constructive alignment as indicated by means of the example provided. The attendance by the first year students of the group debriefing session seems to be a productive way of adding to the preparation of these students for WIL in terms of peer feedback.

More importantly is to determine how can the successful application of WIL in Hospitality Management at CUT be translated into substantiated best practice principles? The answer is to be found in determining the link with the WIL principles identified and any further evidence to support such best practices identified. The following best practice principles were identified:

- The use of two WIL components in different years of study as part of the structure of the qualification is successful.
 - It offers opportunities to further build on knowledge and experience gained upon completion of the first WIL component. It becomes more of an integrated curriculum matter in this way rather than a bolt on experience as advocated by Leong and

Kavanagh (2013, p.2-3). The second WIL period is also better set up in this manner as Henschke (2013, p.4) found that students with previous working experience appear to be quicker in taking up opportunities offered and settle into organisations more quickly.

- The preparation of students for WIL needs to start during the first year of study and implemented as a continuous process for the duration of the qualification.
 - Usher (2013, p.1, p.11-12) determined that the challenges facing pre-service teachers during their practicum placements are numerous and they therefore need to be adequately prepared for placement.
 - The School of Nursing and Midwifery at Edith Cowan University in Western Australia provide students with foundational skills and the conceptual understanding required to implement a series of employment based projects and work based activities (Andre, Ewens & Foxall, 2013, p.1).
- Quality relationships with employers and students are face-to-face and are key requirements which involve walking the extra mile to elevate relationships to a level of trust.
 - A successful programme in the workplace is the shared responsibility of the student, the employer and the university and is most successful with the active involvement of all parties according to Henschke (2013, p.12).
 - It requires the involvement of industry, universities and students (Papakonstantinou, Charlton-Robb, Reina & Rayner, 2013, p.59) where a stakeholder-integrated approach is needed which involves sustainable relationships between all stakeholders (McEwen & Trede, 2014, p.55; Fleming & Hickey, 2013, p.209).
 - Successful programmes are heterogeneous (Mahat, 2013, p.1).
- Mentoring influences the performance of students and should include an induction programme for students.
 - Groenewald (2004, p.13) and Forbes (2007, p.3) have identified that workplace mentors/supervisors are critical to the success of workplace placements.
 - Bates (2008, p.12) found that each placement experience is unique due to the diversity of settings and experiences in the workplace which necessitates the induction of students (Henschke, 2013, p.7).
- WIL must be treated as an integrated curriculum matter which promotes the use of constructive alignment and reflection to enable the successful application of theory in the workplace.

- As a curriculum issue the link between the institution and work place requires effective alignment (Edgar & Connaughton, 2014, p.29). Coll and Eames (2004, p.274-275) concluded that a successful WIL programme requires a strong curriculum and pedagogy underpinned by theory as well as objectives that are relevant and appropriate to all parties involved.
- Bear in mind that WIL is primarily used as a recruitment tool by employers that influences the profile of students to be placed with employers: Know your employer – know your student.
 - WIL placements are used by employers as the ideal platform to recruit graduates according to Bates and Bates (2013, p.55). This view is supported by Sattler and Peters (2012, p.6) who found that: “Employers who provided WIL opportunities overwhelmingly preferred to hire graduates who had gained WIL experience at their own workplace.”
 - Due to WIL the University of Technology, Jamaica students are the most preferred candidates for employment (Gordon-Brydson, 2013, p.2).

In conclusion it can be stated that the aim of the paper was achieved since best practice principles could be determined from the effective application of Work Integrated Learning (WIL) that lead to the enhancement of the employability of students in the hospitality management programme. As such, these principles can be applied in other programmes to achieve similar results.

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SKILLS EVALUATION OF FINAL YEAR INTERIOR DESIGN DIPLOMA STUDENTS ON COMPLETION OF WIL WITHIN THE RELEVANT INDUSTRY TO CONTRIBUTE PRACTICAL FINDINGS TO THE NEW INTERIOR DESIGN CURRICULUM

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Abstract

Skills have become the global currency of the 21st century. Without proper investment in skills people languish on the margins of society, and technological progress does not translate into economic growth (Angel, 2012). When examining final year students within the interior design programme, the skills that they have learnt need to be correct, or applicable to the South African interior design job market, this remains high priority. It is important to be clear when identify the correct skills for the newly developed diploma which will replace the current qualification. The identified skills for the new curriculum must include for the development of highly skilled interior design final year students, which will benefit the employer and the demanding creative economy of South Africa. This demand shows that we need to identify the correct skills in the new interior design curriculum that could drive growth in this sector of the economy. Students are able to apply knowledge and skills gained from the new interior design curriculum, further enhancing the learning process and practical application thereof. The question is which skills should be part of the newly develop diploma so that students could have opportunities and encouragement to continue possibilities that are provided in the interior design labour market. Griesel (2003) indicate that workplace skills and applied knowledge is important for workplace tasks. This paper will evaluate the interior design skills needed by final year interior design students who complete work integrated learning (WIL) at a workplace, thus contributing to the newly developed interior design curriculum. To support the evaluation and contribution of the interior design skills for the new curriculum, it is highly important to research the background of a range of international Universities, Colleges and Private Institutions abroad. The interior design skills within their curriculum will help identify the duties, tasks and work conditions of an interior designer within the industry abroad. Further, to understand why certain skills are important to perform certain tasks in the industry, working conditions and key qualities of an interior designer within the industry. This research information will support the outcomes of the questionnaires of the final year interior design students who completed WIL. It will identify the interior design skills needed for the newly develop diploma which will replace the current interior design qualification.

Keywords: Skills evaluation; design curriculum; duties; arts industry; levels of variables; task

1. Introduction

According to the (Department of Labour [DL], 2003) it has become an important challenge in South Africa to improve the ability of policy-makers, planners and researchers to identify skills that are in short supply or for which demand exists. In the case of interior design skills, determining industry needs is not as straight forward. Most economies lack adequate information on the skill composition of their population. In many situations, workers may be stuck in jobs where they cannot utilise their skills and many will be working in other capacities. Many engineers, for example, work as managers. For these reasons the analysis of the required interior design industry skills and in particular, the skills of those students entering the workplace is paramount. The development of the specifications for the new diploma should be undertaken under advisement. It is also important to adopt a multidimensional approach in identifying the interior design skills needed or lacking in the industry and prepare students accordingly.

The (Interior Architectural Design Profession [IADP], 2013) defined interior design as a rewarding, creative profession in which the designer helps people, through the use of original custom designs, considering function and aesthetics, in the home, in the workplace, or elsewhere while making the world a better place. It is one of the more varied professions and offer a multitude of job opportunities. It is typically demanding and requires hard work, utilising a multiplicity of professional skills, trade experience, current ever-changing technology, and continual education matched with people skills and being a creative problem solver.

The newly developed interior design diploma for final year students which will replace the current qualification with highly recommended interior design skills specific for the design industry will position him/her at an advantage compared to many others without any considered skill development within their interior design programme. These skills will empower students who are not yet prepared to start their own business in design. Graduates with the new interior design diploma qualification are more likely to scale the corporate ladder much faster. This research will evaluate the interior design skills needed for final year interior design students to complete WIL successfully and with possible future opportunity of employment. To interact with final year interior design students who complete WIL, taking into consideration their feedback to help contribute to the newly develop interior design curriculum. The following background information will give a better understanding of WIL at a workplace and how to select the most important interior design skills for the new diploma:

1.1 Duties and task of the interior designer in industry

The following duties and task of the interior designer is reflected from (My Future: Occupational Details [myfuture], 2012). The interior designer may perform the following tasks:

- Talk to clients and architects to work out clients' needs and intentions, making sure that safety requirements are met;
- Develop designs that are appropriate; functional and aesthetically pleasing;
- Prepare working drawings and specifications for interior construction;
- Have knowledge about materials, finishes, space planning, lighting, furnishings and equipment;
- Estimate costs of materials, labour and time, and give estimates to clients for approval;
- Organise supplies and prepare detailed instructions;
- Inspect the work of suppliers and trades people;
- Maintain time, cost and quality controls;
- Work with specialists in technical areas concerned with fire, hydraulics, and mechanical, electrical and structural design;
- Making sure that industry regulations are met;
- Prepare and administer tenders and contract documents;
- Re-design the interiors of old buildings and design furnishings.
- Knowledge about skills of cabinetmakers, antique furniture restoration and other trades of people who organise design exhibitions, commercial display stands as well as film and television production sets.

1.2 Working conditions of the interior designer within the industry

Interior designers require a thorough understanding of certain key elements, such as building construction, lighting, colour and furniture, to name a few. Interior designers may work alone, or as consultants within a design group. They visit clients in their homes and offices, and can often work long hours, including evenings and weekends. They usually work for clients on an agreed fee basis. Personal requirements are creativity and artistic flair; good at problem-solving and lateral thinking; able to work independently or as part of a team; good communication skills and aptitude for technical drawing and illustration. (My Future: Occupational Details, 2012)

1.3 Key Qualities of an Interior Designer working in Industry

According to Flora (2013) interior designers are good at multitasking. Interior designers work in both residential and commercial settings, drawing upon their knowledge of aesthetics, function and safety to enhance the look of a space. Many have a design specialty to best meet the needs of clients or attract a niche market. The U.S. Bureau of Labor Statistics projects that competition for interior design jobs will be fierce in the decade between 2008 and 2018 because of the high number of talented people attracted to this field.

2. Literature Study

2.1 Identification of different interior design skills in the curriculum from Universities, Colleges and Private Institutions abroad

It is important to know which skills different academic institutions abroad form part of their curriculum for their interior design qualification. This could provide the researcher with knowledge about different skills that are important for the interior design labour market within different countries, as discussed by their academic institutions. International skills in the curriculum of these different Universities, Colleges and Private Institutions will be identified and compared with the recognised national skills from questionnaires answered by final year interior design students who completed WIL. The (Department of Labour [DL], 2003) indicate that skill needs are not only identifiable in relation to occupations, but also in the areas of generic skills. These are skills that are required for individual development and to allow workers to contribute meaningfully to the organisations that they work in.

2.2 The following interior design skills in the curriculum of different international Universities, Colleges and Private Institutions will be identified and listed to be part of the identified interior design skills for the new interior design programme curriculum within the Department of Visual Communication.

2.2.1 Bachelor of Interior Design (2012/2013). Humber College in Toronto, Ontario, Canada.

Interior design degree curriculum balances creative problem solving with research, practical skills, and technology. A focus on sustainable design is integrated throughout the program in many subject areas, emphasised in interior design studios. Interior design classes are enhanced by a breadth of liberal arts and applied science courses. Collaborative and stimulating interior design studios enable you to master the design process and your presentation abilities, and later to acquire vital professional practice skills.

2.2.2 Bachelor of Science in Interior Design Program (2012/2013). High Point University, North Carolina.

Skills and knowledge necessary to successfully meet the job requirements for entry-level positions in the interior design industry. The faculty has identified six programmatic goals essential for students to achieve the aforementioned outcome. They will demonstrate the ability to: define problems as it relates to the field of interior design; engage in pre-design investigations that demonstrate the ability to gather and analyse relevant information, evaluate issues, and set priorities; explore and generate creative solutions via a systematic and coordinated design process that integrates functional and aesthetic concerns and justify and defend design solutions as it relates to relevant criteria derived from the problem/program or larger concepts that recognise best practices or innovation (e.g., socio-economic, sustainability, global issues).

2.2.3 Bachelor of Applied Arts (Interior Design) Degree (2012/2013). Algonquin College, Canada.

The curriculum integrates professional and general studies with an emphasis on critical thinking and applied research, and is enriched with an additional focus on international perspectives in interior design. The program contains a strong experiential component that includes simulated studio experiences, community-based design initiatives, and a 14-week co-op work term. In the fourth year, students have the opportunity to specialise in an area of interest specific to the profession and are required to complete an applied research paper. The integration of theory, analysis and practice prepare graduates to assume leadership roles within the profession. Graduates are able to apply strategic thinking and a research orientation to their responsibilities as professional interior designers, and can contribute to the development and evolution of the field of design.

2.2.4 Interior Design Certificate, (2012/2013) West Valley College; Saratoga; US.

The program offers specialty certificates that promote professional development in terms of successful course completion, alternative basic skills, and enhanced workforce development. These certificates provide alternative paths, and at the same time answer critical industry needs. This interior design program has a comprehensive, professional curriculum that provides courses focusing on the vital and basic aspects of interior design. Identify research, and creatively solve problems pertaining to the function and quality of the interior environment; perform services relative to interior spaces, including design analysis, programming, space planning and aesthetics; use specialised knowledge of interior construction, building codes, equipment, materials and furnishings; prepare drawings and

documents relative to the design of interior spaces in order to enhance and protect the health, safety, and welfare of the public.

2.2.5 Bachelor of Arts (B.A.); Interior design (2012/2013). Zayed University United Arab Emirates.

Interior design students acquire the appropriate technical skills and conceptual knowledge to design functional, safe, and aesthetically appealing interior architectural spaces for their clients. Students work on small residential to large commercial projects and learn about soft and hard decorative finishes, illumination, and the interplay between social and natural environments. Through research, problem solving, and applied practice, students understand the complexities of the built environment while developing creative solutions.

2.2.6 The following 16 skills were identified as some of the most important interior design skills in the curriculum from international Universities, Colleges and Private Institutions for the interior design qualification.

Identifying these important 16 internationally recognised skill sets will assist in developing the new interior design diploma curriculum within the Tshwane University of Technology. The above mentioned Universities, Colleges and Private Institutions play an important role in identifying and developing the skills needed by final year students from an academic perspective. The discussed institutions produce interior designers who are capable of innovation, as well as management of people and projects, handling change and uncertainty with regards to clients and projects well. Universities, Colleges and Private Institutions abroad are playing an important role in teaching the required skills for interior design students to be successful in the demanding arts economies of their country. The following 16 skills were indicated, from most important to least important from these international Universities, Colleges and Private Institutions for their interior design qualifications:

- | | |
|----------------------------|--|
| 1. Applied research | 9. Define problems |
| 2. Problem solving | 10. Design analysis |
| 3. Creative solutions | 11. Analyze relevant information |
| 4. Practical skills | 12. Set priorities |
| 5. Sustainable design | 13. Community-based design initiatives |
| 6. Presentation abilities | 14. Strategic thinking |
| 7. Defend design solutions | 15. Space planning |
| 8. Practice skills | 16. For Technical skills |

2.2.7. Identified skills (16) that form part of the questionnaire for evaluation by the final year interior design students after completion of WIL at a place of work in the South African arts industry

A recent Doctoral Technologiae thesis titled: Development of a management model for WIL for the Interior Design Qualification (Cilliers, 2014) identifies sixteen skills which form part of the 2014 final year interior design curriculum. These skills were identified after the questionnaires were analysed. Defined skills can be seen as the necessary competencies that can be expertly applied in a particular context for the interior design curriculum. These skills outline a number of competencies in the interior design curriculum. The following skills were identified that form part of the questionnaire findings:

- | | |
|---|--------------------|
| 1. Computer Skills | 9. Verbal Skills |
| 2. Design Skills | 10. Written Skills |
| 3. Intellectual Skills (A skill that requires some unique cognitive activity) | 11. Knowledge |
| 4. Motor Skills | 12. Comprehension |
| 5. Model building Skills | 13. Application |
| 6. Photography Skills | 14. Analysis |
| 7. Presentation Skills | 15. Synthesis |
| 8. Technical Skills | 16. Evaluation |

The above mentioned skills were identified after the questionnaires which final year interior design students completed once finishing their WIL period an authorised, industry relevant work place.

3. Research Methodology

In this research study a quantitative approach towards the research was used. In using the quantitative research approach, this study investigated all aspects of information that was needed for the appropriate requirements for improve and broaden the interior design skills after the completion of WIL at a workspace. A questionnaire (Likert Scale) was used to form part of the data collection, which involved the final year students of the Department of Visual Communication (interior design students) who completed their WIL period at a workplace during the past two years. The questionnaire was distributed and collected by WIL coordinators of the programme.

3.1 Analysis of Quantitative data

Data collected through the quantitative method was analysed according to descriptive analytical statistics. Tests on reliability (Cronbach Alpha) and validity (factor analysis) was done on the basic principles and the nature of cooperative education and the best practices in cooperative education. The abovementioned outcomes were used to determine if the interior design skills of final year interior design students improved and developed after their completion of the WIL period.

3.1 Measurement

Questionnaires were used to collect data. The questionnaire exist out of sixteen (16) different interior design skill questions, these indicated whether the WIL period proved to broaden their interior design skills after this period of practical implementation. The questionnaires were piloted and corrected, after which they were distributed to and collected from the respondents, mostly by hand. Respondents were asked to reflect on their views using a 5-point Likert scale, with the range 1: strongly agree; 2: agree; 3: disagree; 4: strongly disagree; and 5: I don't know. Questions were clustered into 16 constructs.

3.1 Population and sample

The population that formed part of this study contains TUT students. The sample mainly involved the final year students during the past two years of the Department of Visual Communication (Interior Design students) who complete their WIL training at a workplace.

3.2 Ethical Considerations

In this research, no existing students or the TUT institute was dishonored or criticised. The privacy of the students investigated and TUT was respected and delicate information was not used in this document. Questionnaires were sent out to the students and collected by the WIL coordinators in order to get feedback from their WIL experiences. The information was kept anonymous at all times.

3.3 Statistical analysis

The questionnaires were coded for statistical analysis by the researcher. Responses were captured directly from the questionnaires in collaboration with the Statistical Services of TUT.

3.4 Response

From a total of 29 questionnaires distributed to final year students during the past two years of the Department of Visual Communication (interior design students) who complete their WIL training at a Workstation, 29 were received back (100% response rate).

4. Results

Construct (Likert scale): The tables below indicate the frequency and percentage of participants according to categories or levels of variables.

Table 1 Indicate if your Computer Skills have improved/broaden during your six weeks WIL training at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if your Computer Skills have improved/broaden during your six weeks WIL training at your Workstation	9	20	0	0	0	29
%	31.03	68.97	0.00	0.00	0.00	100%

Nine participants have indicated that they *strongly agree* with this statement (n = 9; 31.03%) while most of the participants *agree* that if you were required to use creative skills to create presentations of projects using Auto CAD drafting to finish schedules during their WIL training at their Workstation, their **Computer Skills** have improved/broaden during their six weeks WIL training at their Workstation (n = 20; 68.97%).

Table 2 Indicate whether your Design Skills have improved/broaden during your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate whether your Design Skills have improved/broaden during your six weeks Work Integrated Learning (WIL) period at your Workstation?	10	16	3	0	0	29
%	34.48	55.17	10.35	0.00	0.00	100%

Most of the participants *agree* that students must understand design principles. Creativity is part of design skills. If you were required to possess strong creative and artistic skills to make certain designs of the company aesthetically pleasing for their clients, students feel positive about Work Integrated Learning (WIL) at a workstation to improved/broaden their **Design Skills** (n = 16; 55.17%). Those who *strongly agree* with this statement are in second place (n = 10; 38.48%). Only three participants are *not sure* that their **Design Skills** have improved/broaden during their six weeks Work Integrated Learning (WIL) period at their Workstation (n = 3; 10.35%).

Table 3 Indicate if your Intellectual Skills have improved/broaden during your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if your Intellectual Skills have improved/broaden during your six weeks Work Integrated Learning (WIL) period at your Workstation?	15	13	1	0	0	29
%	51.72	44.83	3.45	00.00	0.00	100%

Foundational competence - the ability for the interior designer to understand what he/she or others are doing and why identifying complex problems and reviewing related information to develop and evaluate options and implement solutions. Job requires analyzing information and using logic to address work-related issues and problems. Students were required to use your Intellectual Skills during your WIL period to be part of the designing team of the company Fifteen of the participants *strongly agree* (n = 15; 51.72%) and thirteen of the participants *agree* (n = 13; 44.83%) that their **Intellectual Skills** have improved/broaden during their six weeks Work Integrated Learning (WIL) period at their Workstation while one participant (n = 1; 3.45%) was not sure if his/her **Intellectual Skills** have improved/broaden during his/her six weeks Work Integrated Learning (WIL) period at his/her Workstation.

Table 4 Indicate if your Model building Skills has improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if your Model building Skills has improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	2	7	11	5	4	29
%	6.90	24.14	37.93	17.24	13.79	100%

Most of the participants were *not sure* (n = 11; 37.93%) that the skill of model building encompasses a wide variety of materials, techniques, and end results to improve/broaden their **Model building Skills** while seven participants *agree* (n = 7; 24.14%) and 2 participants *strongly agree* (n = 2; 6.90%) that their **Model building Skills** has improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation. Five participants *disagree* (n = 5; 17.24%) and four participants said that they *strongly disagree* (n = 4; 13.79%) whether their **Model building Skills** has improved/broaden after completion of their six weeks Work Integrated Learning (WIL) period at their Workstation.

Table 5 Indicate if you're Motor Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if you're Motor Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	5	14	7	3	0	29
%	17.24	48.27	24.14	10.35	0.00	100%

Most of the participants *agree* (n = 14; 48.27%) that an interior designer must have the physical ability to walk and stand for possible long periods of time and ability to lift move, and transfer weight of at least 80kg when utilizing samples for client demonstration and their **Motor Skills** have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation. Seven participants (n = 7; 24.14%) were not sure if their **Motor Skills** have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation while five participants *strongly agree* (n = 5; 17.24%) and three participants *disagree* (n = 3; 10.35%) that their **Motor Skills** have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation.

Table 6 Indicate if you're Presentation Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if you're Presentation Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	12	11	6	0	0	29
%	41.38	37.93	20.69	0.00	0.00	100%

Most of the participants *strongly agree* (n = 12; 41.38%) that interior designers often work one on one with clients, service providers, and contractors or as part of a team. Therefore, a designer must have the ability to work with different personality types, be good listeners and communicate and they indicate that their **Presentation Skills** have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at their Workstation while eleven students (n = 11; 37.93%) *agree* with this statement that their **Presentation Skills** have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation. Six of the students were *not sure* (n = 6; 20.69%) about the statement.

Table 7 Indicate if your Photography Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if your Photography Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	0	4	13	7	5	29
%	0.00	13.79	44.83	24.14	17.24	100%

Interior design photographers have to develop outstanding creative and technical skills that will give their photographs individual character and style and four participants *agree* (n = 4; 13.79%) while thirteen participants are *not sure* (n = 13; 44.83%) if their **Photography Skills** have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at their Workstation. Seven participants *disagree* (n = 7; 24.14%) and five participants *strongly disagree* (n = 5; 17.24%) with the statement.

Table 8 Indicate if your Technical Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if your Technical Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	12	17	0	0	0	29
%	41.38	58.62	0.00	0.00	0.00	100%

Most of the participants *agree* (n =17; 58.62%) that their **Technical skill** (practical skills) - means solving a problem with a practical design solution have improved/broaden after completion of their six weeks Work Integrated Learning (WIL) period at your Workstation while twelve participants *strongly agree* (n = 12; 41.38%) with the statement.

Table 9 Indicate if your Verbal Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if your Verbal Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	16	13	0	0	0	29
%	55.17	44.83	0.00	0.00	0.00	100%

Most of the participants *strongly agree* (n = 16; 55.17%) that knowledge of media production, communication, and dissemination techniques and methods; includes alternative ways to inform and entertain via written, oral, and visual media which improved/broaden their **Verbal Skills** after completion of their six weeks Work Integrated Learning (WIL) period at their Workstation and thirteen students *agree* (n = 13; 44.83%) and support this statement.

Table 10 Indicate if your Written Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if your Written Skills have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	5	21	3	0	0	29
%	17,24	72.41	10.35	0.00	0.00	100%

Most of the participants *agree* that their **Written Skills** have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation on design and visual communication skills to develop their ability to express themselves verbally. It leads students from basic writing skills to fluency in a wide range of genres that professionals need for communication with Colleges, employers, suppliers, clients, and the market companies (n = 21; 72.41%). Five participants *strongly agree* (n = 5; 17.24%) about the improvement /broadening of their **Written Skills** after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation while 3 participants were *not sure* (n = 3; 10.35%) about the statement.

Table 11 Indicate if you're Higher Thinking Skill: Knowledge have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if you're Higher Thinking Skill: Knowledge have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	8	21	0	0	0	29
%	27.59	72.41	0.00	0.00	0.00	100%

Most of the participants *agree* (n = 21; 72.41%) that if you were required to exhibit memory of previously learned interior design materials by recalling facts, terms, basic concepts and answers their Higher Thinking Skill: **Knowledge** have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation and eight students *strongly agree* (n = 8; 27.59%) and support this statement.

Table 12 Indicate if you're Higher Thinking Skill: Comprehension has improved/ broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if you're Higher Thinking Skill: Comprehension has improved/ broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	8	19	2	0	0	29
%	27.59	65.51	6.90	0.00	0.00	100%

Most of the participants *agree* (n = 18; 65.51%) that if you were required to demonstrate, understanding of interior design facts and ideas by organising, comparing, translating, interpreting, giving descriptions, and stating the main ideas their Higher *strongly agree* Thinking Skill: **Comprehension** has improved/ broaden after completion of their six weeks Work Integrated Learning (WIL) period at your Workstation. Eight of the students *strongly agree* (n =8; 27.59%) that their Higher Thinking Skill: **Comprehension** has improved/ broaden after completion of their six weeks Work Integrated Learning (WIL) period at their Workstation while two participants were *not sure* (n = 1; 5.56%) about the statement.

Table 13 Indicate if you're Higher Thinking Skill: Applications have improved /broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if you're Higher Thinking Skill: Applications have improved /broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	12	15	2	0	0	29
%	41.38	51.72	6.90	0.00	0.00	100%

Most of the participants *agree* ($n = 15$; 51.72%) that if you were required using new knowledge obtain in interior design and solve problems in new interior design situations by applying acquired knowledge, facts, techniques and rules in a different ways their Higher Thinking Skill: **Applications** have improved /broaden after completion of their six weeks Work Integrated Learning (WIL) period at your Workstation while twelve students *strongly agree* about the statement ($n = 41$; 38%). Two of the participants were *not sure* ($n = 41$; 38%) if their Higher Thinking Skill: **Applications** have improved /broaden after completion of their six weeks Work Integrated Learning (WIL) period at their Workstation.

Table 14 Indicate if your Higher Thinking skill: Analysis has improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if your Higher Thinking skill: Analysis has improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	10	13	6	0	0	29
%	34.48	44.83	20.69	0.00	0.00	100%

Most of the participants *agree* (n = 13; 44.83%) that their Higher Thinking skill: **Analysis** has improved/broaden after completion of their six weeks Work Integrated Learning (WIL) period at their Workstation while they present and defend interior design opinions by making judgments about interior design information, validity of ideas or quality of work based on a set of criteria and ten participants *strongly agree* (n = 10; 34.48%) that their Higher Thinking skill: **Analysis** has improved/broaden after completion of their six weeks Work Integrated Learning (WIL) period at their Workstation.

Table 15 Indicate if your Higher Thinking skill: Synthesis Have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Indicate if your Higher Thinking skill: Synthesis Have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	7	17	5	0	0	29
%	24.14	58.62	17.24	0.00	0.00	100%

Most of the participants *agree* (n = 17; 58.62%) that if they were required to compile interior design information together in a different way by combining elements of interior design in a new pattern or proposing alternative solutions their Higher Thinking skill: **Synthesis** have improved/broaden after completion of their six weeks Work Integrated Learning (WIL) period at their Workstation. Seven participants *strongly agree* with this statement (n = 7; 24.14%) . while five students were *not sure* about this statement (n = 5; 17.24%).

Table 16. Did your Higher Thinking Skill: Evaluation have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?

CONSTRUCT	Strongly agree	Agree	Not sure	Disagree	Strongly disagree	FREQ
Did your Higher Thinking Skill: Evaluation have improved/broaden after completion of your six weeks Work Integrated Learning (WIL) period at your Workstation?	9	19	1	0	0	29
%	31.03	65.52	3.45	0.00	0.00	100%

Most of the participants *agree* (n =19; 65.52%) that their Higher Thinking Skill: **Evaluation** had improved/broaden after completion of their six weeks Work Integrated Learning (WIL) period. If they presented their interior design opinions by making judgments about interior design information, validity of ideas or quality of work based on a set of criteria and nine students *strongly agree* (n = 9; 31.03%) that their Higher Thinking Skill: **Evaluation** have improved/broaden after completion of their six weeks Work Integrated Learning (WIL) period at their Workstation. One participant was *not sure* (n =1; 3.45%) about this statement.

During the debriefing session with the students certain skills were mentioned as highly important and advised recognised skills that in their opinion were not current and should therefore not be part of the new curriculum. From the research done with students the following skills were indicated as most important to less important that improved/broaden the interior design student's skills after completion of their seven weeks Work Integrated Learning (WIL) period at their places of work:

- | | |
|------------------------|---------------------------|
| 1. Verbal skills | 9. Analyses |
| 2. Knowledge | 10. Evaluation |
| 3. Technical skills | 11. Motor skills |
| 4. Computer skills | 12. Comprehension |
| 5. Intellectual skills | 13. Written skills |
| 6. Application | 14. Synthesis |
| 7. Presentation skills | 15. Model building skills |
| 8. Design skills | 16. Photography skills |

The following 16 most important interior design skills were identified from the curriculum of various international Universities, Colleges and Private Institutions, these skills will assist in developing a new, national and internationally relevant interior design qualification:

- | | |
|--------------------------------------|--|
| 1. Creative problem solving | 9. Defend design solutions |
| 2. Practical skills | 10. Applied research |
| 3. Sustainable design | 11. Community-based design initiatives |
| 4. Presentation abilities | 12. Strategic thinking |
| 5. Identifying and defining problems | 13. Design analysis |
| 6. Analyse relevant information | 14. Space planning |
| 7. Set priorities | 15. Technical skills |
| 8. Creative solutions | |
| 16. Applied practice | |

5. Selection of interior design skills for the final year interior design diploma

Interior design skills become part of the global currency of the twenty first century in South Africa. Without proper investment in interior design skills in the new curriculum of the final interior design diploma, progress will not translate into economic growth, and South Africa can no longer compete in an increasingly knowledge-based global design society. Interior Designer Skills and Knowledge (2013) indicate that the global economic crisis in South Africa, with high levels of unemployment, in particular among design youth, has added urgency to fostering better interior design skills for the final year interior design diploma. The most promising solution to these challenges is investing from the first year until the final year curriculum effectively in interior design skills.

How can the first, second and third year interior design students prepare them for a rapidly evolving interior design labour market in South Africa? The correct interior design skills need to be prepared starting to be trained and examined from first year level onwards. Investing in the education of the correct interior design skills requires a strategic approach. This approach must start with the first year interior design curriculum and finish in the third year interior design curriculum.

Alphabetical the following skills (first 8 skills from the results from the questionnaire from the final year interior design students who completed WIL nationally through TUT, the second 8 skills reflect the most important skills identified in the curriculum of the above mentioned international

educational institutes. These are advised to form part of the new interior design curriculum for the final year interior design diploma at TUT:

- | | |
|---------------------------------|----------------------------|
| 1. Analyse relevant information | 9. Intellectual skills |
| 2. Application | 10. Presentation abilities |
| 3. Creative problem solving | 11. Presentation skills |
| 4. Creative solutions | 12. Practical skills |
| 5. Computer skills | 13. Set priorities |
| 6. Define problems | 14. Sustainable design |
| 7. Design skills | 15. Technical skills |
| 8. Knowledge | 16. Verbal skills |

The 16 newly identified skill set (above) when implemented into the new curriculum shall be evaluated again when the next group of final year interior design diploma students complete WIL at an industry relevant workplace. The results will contribute every year to updating the interior design curriculum ensuring that WIL students as well as TUT graduates are at an advantage when entering the job market.

6 Conclusion

The 16 identified skills support the development of a stronger, more current final year interior design diploma WIL component. Tshisikhawe Nesamvuni Priscilla and Rita Cilliers (2014) indicate that the General Learning Programme Information has a vocational orientation, which includes professional, vocational and industry specific knowledge that will provide a well-grounded understanding of the theoretical principles and procedures within the interior design profession. The purpose of the final year diploma in interior design is to develop diploma students that will be able to apply interior design principles and procedures to the professional planning, designing, equipping and furnishing of both residential and commercial interior spaces.

The qualified learner will have the competency to creatively apply specialised principles, procedures and regulatory knowledge that will enable them to manage and implement practical solutions that will innovatively solve interior design problems within an African context. On completion of the final year diploma in interior design, diploma students will be able to enter the local and international interior design industry. The industry includes companies in South Africa and companies abroad that are involved in corporate image building, exhibition design, retail merchandising, shop fitting as well

as the leisure industry. The entrepreneurial focus of the programme will also enable graduates to set up their own business, answering to specific requirements of local communities as well as the growing demand for indigenous South African Interior Design.

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PILOTING DUAL-TRACK APPRENTICESHIPS IN SOUTH AFRICA

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Abstract

This article describes the rationale behind a pilot of Swiss/German-style 'dual-track' artisan apprenticeships being conducted by the South African Department of Higher Education and Training (DHET). It reviews progress made to date and difficulties encountered, and draws some tentative lessons from this experience.

Keywords: Apprenticeships, artisan, block-release, VET colleges, dual-track, skills development, SETAs

1. Background and Context

South Africa has set itself the ambitious goal of producing 30'000 new artisans a year by 2030 (DHET, 2015) - more than double the present output of just over 14'000 par annum (NAMB 2015). To this end, the national Department of Higher Education and Training (DHET) has initiated a range of programmes aimed at increasing the number of apprentices being enrolled, improving the quality of their training, accelerating their progress, increasing their pass rate in trade tests and generally removing systemic blockages to artisan training and development. An early consideration was the delivery mechanism for apprenticeships. Currently, most apprenticeship training in South Africa is conducted through a long-established "block-release" system whereby apprentices spend three months of each year learning the theory of their trade in technical and vocational education and training (TVET) colleges and the remainder of the year in their workplaces, where they learn by doing the practice of the trade. While this system served well enough in the past, it has in recent years come under more critical scrutiny for its clear separation of theory and practice, its perceived weakness in promoting regular interaction between colleges that provide trade-theory courses and companies that employ the apprentices, and the extent to which public TVET colleges have as a result fallen

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behind industry in technology, work-processes and performance standards. It seemed, then, that other models of apprenticeship training should also be considered. South Africa is not alone in this respect. Apprenticeship systems have recently been, or are still being, reviewed and revised in a number of other countries, making this an opportune time to consider lessons from best practice internationally.

In 2010, South Africa's Minister of Higher Education and Training led a high-level delegation to Germany where he became interested in the "dual-track" system of apprenticeship training in that country. This interest was reinforced in May 2011 by a similar technical visit to Switzerland, where the dual-track system is also used. At the end of that visit, in an address to the Swiss-South African Chamber of Commerce in Zurich, the Minister proposed that dual-track apprenticeships be piloted in South Africa. It was understood from the start that a sophisticated training system deeply embedded in a particular socio-economic context cannot simply be 'cut-and-pasted' from one country to another. However, there is no reason why the fundamental principles and even some specific procedures of good practice cannot be adopted and adapted elsewhere. The idea of piloting dual-track apprenticeships was debated within the DHET and some of its civil society partners as part of wider discussions that preceded publication of the DHET's 2013 ***White Paper on Post School Education and Training***. By mid-2012, the DHET was resolved to pursue a broad and multi-pronged strategy of revitalising public TVET colleges as hubs of initial artisan training through innovative delivery modes. It seemed that some form of dual-track apprenticeships might serve that objective and a decision was taken to proceed with a pilot.

2. Project Rationale

The characteristic feature of a dual-track vocational education and training (VET) system is that it combines education at a vocational school or college with on-the-job training in the workplace *in a single, integrated learning programme*. This is different from apprenticeships in South African, where theoretical components (such as the N-courses) and sometimes even practical components are presented, assessed and certificated separately from workplace experience. Dual-track VET systems have long been standard in Germany, Switzerland and Austria, and more recently have also been adopted in Denmark, Holland, Hungary, Portugal and several countries in the Balkans and Asia. As practised in most of these countries, the dual-track system requires apprentices to spend about 75% of their time working in host companies, where they get on-the-job practical training and experience, and the remaining 25% in training colleges where they get a mix of theory, simulated practice and

sheltered work.² Typically, apprentices work three or four days a week in the company and spend only one or two days in the college. This ensures rapid and reiterative application of newly-acquired knowledge and keeps the college instructors in close communication with workplace supervisors. Although this split-week rotation of apprentices between college and company is the most visible feature of dual-track apprenticeships, an equally-important but less obvious element is the way responsibilities are shared amongst the implementing partners. Employers and professional associations jointly bear the primary responsibility for organising and administering apprenticeships - including their curricula, performance standards, assessments, certification and overall quality assurance. The state acts as a notary of agreements between the partners and subsidises the public vocational education and training colleges. An Organisation for Economic Cooperation and Development (OECD) survey of employer engagement with apprenticeships found that the direct and decisive influence that Swiss employers have over every aspect of apprenticeships was a major reason for their high levels of confidence and participation in this form of training (OECD, 2009). This is an important point. Approximately 40% of all companies in Switzerland and 25% in Germany employ apprentices— a participation rate considerably higher than in most other countries (Steedman, 2011). No reliable data are available on the percentage of private-sector employers offering apprenticeships in South Africa but incomplete reports from the Sector Education and Training Authorities suggest that it is less than 5%, perhaps as low as 2%.

Dual-track apprenticeships in Switzerland, Germany and Austria have demonstrated definite advantages for the apprentices, colleges and employers alike. (Wolter, Mühlemann & Schweri, 2006; Mühlemann & Wolter, 2007; OECD, 2010). One important benefit for the apprentices is that they are from an early stage assigned meaningful work under real-life conditions. This fosters the development of their sense of responsibility and productive value. It also means that theory and practice are very closely integrated, immediately reinforcing one another and thereby promoting more thorough learning. This in turn contributes towards high trade-test pass rates; both Germany and Switzerland boast on-schedule pass rates of over 90% for their apprentices, compared with less than 50% in South Africa. (Roodt & Wildschut, 2012) There is also evidence that German and Swiss apprentices attain

² The distinction being made here is that 'simulated practice' refers to practical tasks that have been designed by the instructor and assigned to the apprentice as a training exercise. It is really *pretend*-work. 'Sheltered practice', on the other hand, is work that has been commissioned by a commercial client and is being done in the college by apprentices under supervision. It is not merely a training exercise but *real* work that must be performed to the clients' specifications, including quality of workmanship, delivery time and budget.

higher levels of competence than their South African counterparts. For example, Swiss and German contestants are invariably amongst the top performers in the biennial World Skills Competitions, while South African entrants have to date fared poorly. Recent research suggests that few South African apprentices progress beyond a nominal level of competence in their trade (Rauner, Heinemann, Piering & Hauschildt, 2012).

Benefits of the dual system for colleges include regular interaction with local employers, which in turn leads to closer alignment of the college curricula with the needs of industry and fewer differences between college and company in terms of work practices and ethos (including discipline, timekeeping and quality standards). It also provides a foundation for other forms of collaboration between college and company, such as staff exchanges, additional work and training contracts in both directions, and the promotion of action-research and reflective practice.

Given the centrality of employers to the apprenticeship systems of Germany and Switzerland, it is no surprise that they are operated at the lowest possible cost to companies. This is another essential ingredient for their success and a major part of their appeal to employers. Although the cost of training conducted in a public college or vocational school is covered by the state from the general fiscus, along with social insurance contributions, the apprentice's in-company training and employment costs must still be borne by the employer, who recoups them from the value of the apprentice's work. Research in both Germany and Switzerland has repeatedly shown that there is a nett benefit to a company in hosting an apprentice – that is to say, the employer actually makes a profit when the value of the apprentice's labour is deducted from the cost of training. The higher the level of the job being trained for, the greater the employer's return on investment in an apprenticeship. So, apart from securing a supply of skilled labour, there are good financial arguments for hosting apprentices in Germany and Switzerland. This is why many firms train more apprentices than they themselves need (OPET, 2004 & 2011; Rauner, Heinemann, Piering & Bischoff, 2009; Mühlemann & Wolter, 2007; Zwick, 2007; Tremblay & Le Bot, 2003). The exact opposite is true in South Africa, where apprentices spend far less time on production and far more in a training centre than their Swiss or German counterparts. Thus, apprenticeships are viewed by many employers as a cost that must be reduced as far as possible and are rarely implemented without the provision of a training grant from one of the parastatal Sector Education and Training Authorities (SETAs).³

³ According to figures presented on 24 March 2012 to the HRD Council's Task Team on Artisan Training and Development, upon which the author serves, the average cost of training an apprentice in South Africa at that

With the prospective benefits of dual-track apprenticeships in mind, the South African DHET launched its pilot of dual-track apprenticeships in mid-2012, with an initial time-horizon of 4 years, i.e. to July 2016. The Swiss-South African Cooperation Initiative (SSACI), a development agency with considerable experience in TVET through apprenticeships and the public college system in South Africa was contracted by the DHET to manage the implementation of the pilot project.

3. Objectives & Focus

The principal objective of the pilot project is to test the value of dual-system apprenticeships for South Africa, i.e. their practicality for local conditions, their effectiveness, their cost and their appeal to local employers. Secondary objectives are to experiment with a more flexible delivery of trade-theory training courses by public TVET colleges and to gather “real-time” information (i.e. while training is under way) on the relevance to industry of the courses that currently form the trade-theory component of apprenticeships.

The project focuses on trades that are currently in high demand in the engineering industry, namely mechatronics technicians, welders, electricians and vehicle body-builders. Apprentices are drawn from students in public TVET colleges and undertake workplace-based training in parallel with their trade-related college studies through a weekly-rotation system, with alternate weeks being spent in the college and the workplace. This suited the employers better than a split-week system because they felt that it typically takes 4-5 days to complete a meaningful task in the workplace. The apprentices also spend their college vacations at the workplace so as to gain as much work exposure and practical experience as possible.

The project has two funding channels:

- i. The National Skills Fund which is covering non-recurring project-specific costs such as management and evaluation

time was around R300'000 over three years. The task team tried to quantify the training grant that would be necessary to make up the difference between the value of an apprentice's work and his/her total cost to employer, and so make it palatable for employers to train above their own needs. However, in the absence of any reliable data on the productive value of apprentices, the task team struggled to come up with a figure that would satisfy employers but not bankrupt the SETAs or the National Skills Fund, from where the grant would have to come. After much debate, in 2014 a standardised grant of R139'350 per apprentice was agreed upon.

- ii. Apprenticeship training grants from participating Sector Education and Training Authorities (SETAs) which, in line with national grant funding policy, offer a standard grant to employers of R139,350 per apprentices to cover recurring costs such as the training expenses and the apprentices' allowances

This reflects an important design-principle of the project – namely, that dual-system apprenticeships should be financially viable within the existing funding framework for apprenticeships. If the project proves that a dual-system approach is effective and should be more widely adopted, sustainable funding will be available through established systems and formulae.

By the end of 2014, three sites, each comprising a public TVET college and a cluster of employers, and each focusing on a specific trade, had been established. The curricula of the college programmes and the trade training schedules had been mapped and integrated with one another and training was under way with 20-30 apprentices at each site.

4. Research Methodology

While there have been a number of comparative studies of apprenticeship systems in different countries – most recently by Harhoff and Kane (1997), Steedman (2011), the International Labour Organisation (ILO, 2012 & 2013), and Smith and Kemmis (2013) - they are mostly confined to descriptions of the various countries' policies, regulations and organisational arrangements regarding apprenticeships, rather than evaluations of their outputs and efficacy. There is an obvious reason for this. Apprenticeships in any country are interwoven with the broader educational, social, cultural, political, economic and industrial relations systems, and so make comparisons difficult and often unhelpful. Moreover, few countries implement different apprenticeship systems simultaneously - South Africa does so more by accident than by design⁴ - so it is seldom possible to compare different approaches within the same context. Nevertheless, Steedman (2011) and the ILO (2013) report that the dual-track systems in Germany, Switzerland and Austria seem to have better progression and completion rates, and better labour market outcomes in terms of employment, than the systems in other countries in their studies.

⁴ From 2001 to 2013 apprenticeships in South Africa were administered by at least 14 different parastatal Sector Education and Training authorities and a few other state agencies without any consensus on the organisational arrangements, training curricula, standards of competence, quality assurance or even the occupations for which a trade test was required.

For this project, it was assumed that the key measures of success or failure would be the progression and completion rates of the apprenticeships and the uptake of further cohorts of apprentices by employers beyond the pilot phase. These will not be determinable until after the completion of the pilot in 2016. In the meantime, though, it was considered important to capture experience and lessons learned along the way, which are the focus of this paper. Three months after the commencement of the project, all seven employers and each apprentice were given questionnaires to complete on their experience of the project to date. From the beginning, monthly meetings have been held with the seven companies and three colleges involved in the project to discuss experiences, issues, problems and progress. In October 2014, the project was evaluated by independent researchers commissioned by SSACI, who conducted a comprehensive review of project documentation and semi-structured interviews with project personnel within the management agency, colleges and participating companies. Data from all these sources, and from quarterly project management reports based on site visits and interviews with college and company staff and the apprentice themselves, are distilled into the evaluative comments in this article.

5. Progress to Date

The first apprentices in the project are only scheduled to do their trade-tests in March 2016, so it is too early to assess the results of their training. In the meantime, however, college lecturers report that the apprentices' early exposure to the workplace has enhanced their academic performance. This came out strongly in a survey of the opinions of college staff conducted in May 2014 (SSACI, 2014), wherein typical comments were:

- "Our instructors love teaching the [dual-track] students. Their commitment and drive to learn have stepped up tremendously since they commenced on the programme."
- "You can immediately distinguish the [dual-track] learners from the rest of the group: Work ethic, tidiness, punctuality – they have taken on the values that are key for success in a workplace."

The external evaluators (DeWaal & Franklin, 2014) reported similar findings:

"Lecturers at both colleges highlighted their observations of how the [dual-track] has benefited apprentices thus far:

- Improved attitudes towards college and coming to class – lecturers commented they enjoy teaching the [dual-track pilot project] apprentices because they are more engaged during class.
- Apprentices are described as being more 'future' directed and seem to think about their careers more seriously than their [non-project] counterparts.

- There has also been an improvement in student motivation.
- Lecturers also commented that the quality of apprentice also seems to be much better in terms of work quality, social, communication and, generally, better well-rounded apprentice/worker for the workplace. “

This impression seems to be lasting. In a report to the project manager in July 2015 (SSACI, 2015), one of the participating colleges noted that:

“The advantages of the [dual-track pilot] programme for the college are that:

- You have a much more balanced student with a lot more dedication towards his/her academic performance.
- The students are always present in class and have a high attendance rate.
- The workplace also gets more involved in the curriculum of the college and can give some valid inputs on how to make it better and more workplace related.
- Discipline of the students in class is very good and we as lecturers do not have any disciplinary issues with the students. “

Participating colleges say that the pilot project has also brought other benefits at institutional level. According to the evaluators (DeWaal & Franklin, 2014):

“Lecturers commented that through their involvement in the [pilot project] they have had access to additional opportunities such as meeting more regularly with employers... These types of experiences have benefited the way they teach all their students, not just [dual-system] apprentices, and they are also much more aware of how they set-up their own assessments.”

Employers, too, have responded well to the dual-track system, especially the close interaction between college and company that it fosters. The evaluators (DeWaal & Franklin, 2014) found that:

“Despite the challenges of the [pilot project], employers are generally positive about the dual-system and find working more closely with the colleges of particular benefit as a first step towards bridging the gaps between industry and college training.”

For example, the HR Manager at one large company employing dual-track apprentices wrote to the project manager in July 2014 (SSACI, 2014) that:

“I do find the dual system better. I feel the fact that the learners are continually exposed to both the educational institution and workplace simultaneously affords them a better chance of actually passing the trade test.”

This view seems to have been reinforced by subsequent experience because in July 2015 the same manager wrote that (SSACI, 2015):

“The dual system is definitely now our preferred method of training artisans. The project has a number of benefits... Firstly, it is structured in such a way that colleges and employers have to engage with each other on a constant basis. We never had to do that before but now we are in regular contact with the college as we have to discuss curriculum issues, student rotations, logbooks, student discipline etc. ... In this way, the system builds the capacity of the local college and ensures that colleges train to the needs of industry. Having access to a well-run public college that employers have confidence in significantly reduces training costs.

“The second advantage of the project is that we have found that students are learning very quickly. The dual rotation allows them to learn the theory in the college and then immediately have this reinforced with on-the-job experience. This method of training is much more effective than training models that front-load the theory and have the practical component tacked-on right at the end of the training programme. Students that do the theory first with the practical workplace experience only months or even years later, have often forgotten the theory by the time they arrive in the workplace.

“The [dual-track system] ensures that the apprentices become productive very quickly. This means that the students start generating profit for the company and contribute to offsetting their training costs. We give them real work to do and don’t keep them sitting around doing simulated training in a training centre. This is invaluable for the students as they - at a very early stage - begin to gain valuable work experience.”

6. Challenges Encountered

Notwithstanding these encouraging findings and comments, numerous systemic and operational difficulties with serious implications for South Africa’s national public skills development system have been encountered during, and sometimes exposed by, the pilot project (De Waal & Franklin, 2014; SSACI, 2014 & 2015). Foremost among these are:

6.1 A widespread lack of understanding of the emerging new regulatory dispensation for apprenticeships. South Africa’s national training system is still under construction, including apprenticeship funding and administration, the approval of workplaces as training sites, the determination of apprentices’ allowances and a host of other important details. SETAs, colleges

and employers have different understandings of what regulations are currently in force and when new ones will come into effect. This creates high levels of uncertainty amongst decision-makers (and hence slow decision-making) and high potential for misunderstandings.

6.2 Lack of employer confidence in government programmes: Many employers, on being invited to participate in the pilot project, expressed reluctance to take on the risks of a programme as innovative as dual-track apprenticeships, citing bad experiences with previous government-supported initiatives. Of great concern to the employers is the possibility that the colleges or SETAs will fail to deliver on their part of the bargain, leaving the company to make up the resulting deficits. Clearly, much work will have to be done to build employers' confidence in state systems.

6.3 The inefficiency of SETAs, which register apprenticeship contracts and administer the grants. Examples of onerous and sclerotic administration encountered in this project include:

- The registration of apprentices by the relevant SETA for the wrong trade or at the wrong level, an error that took an inordinately long time to rectify
- Documents that are long and full of arcane language, have to be witnessed by as many as six different people, be submitted to head office via a regional office which makes no input other than to stamp the original, and finally take months to process within the SETA
- The insistence of each SETA on its own format for information that more than one may require. For instance, applicants for apprenticeships must undergo a medical examination and the report, signed by a doctor, is sent to the SETA to which the employer is affiliated. However, no applicant can know in advance which prospective employer will accept him or, therefore, which SETA will register his contract. Thus, some applicants submitted medical reports in one format only to be told later by a SETA to go back to the doctor and get the report re-written in another format, at their own expense.

6.4 Poor administration amongst some host-companies. This took project management by surprise, given the private-sector's loud and frequent criticisms of government systems. The HR departments of some large participating firms mishandled the relatively simple processes of interviewing, selecting and inducting candidate apprentices. Many applicants were not told whether they had been chosen; successful applicants were instructed to sign contracts before being given a chance to read them; information regarding conditions of service was withheld

("Your pay is not important"); and so on. It seems that inefficiency is not, after all, a state monopoly.

6.5 Large gaps in college capacity: All participating colleges appear to be under strain from the workload of multiple projects superimposed upon their normal activities. Staff participating in the dual-track apprenticeship pilot project changed often and it was difficult to retain consistency in planning and implementing the college components. This led to delays and errors, such as keeping employers waiting for the names of suitable candidates and putting forward prospective apprentices who did not meet essential selection criteria. Colleges often needed repeated exhortation and guidance in attending to tasks that should be part of standard college procedures, such as verifying applicants' biographical information and educational attainments, lesson planning and preparation, and liaison with employers. Moreover, the colleges' assessments of apprentices' levels of knowledge and skill often differ dramatically from those of employers, suggesting that teaching staff in the colleges are unfamiliar with performance standards in the industries for which they are ostensibly preparing their students.

It is very worrying to think that the greatest threat to effective skills training in South Africa may not be an absence of innovative ideas or a reluctance to adopt them, but simply the inability of the main partners – colleges, industry and the SETAs – to perform their necessary functions.

In addition to the above, it must also be said that braiding the college training inputs into tasks and processes in the workplace so as to create an integrated, dual-track training curriculum has proved far more difficult than expected. Notwithstanding their mutual goodwill, colleges and employers have come into the project with utterly different views on what constitutes effective training, appropriate tasks for apprentices in different stages of learning, acceptable job performance and the assessment thereof, workplace behaviour, and responsibility for ensuring each of these essential elements. These differences take a long time and lots of shared, sometimes painful, experience to resolve. The college curricula, at least as they are currently interpreted and implemented by the teaching staff, are far from satisfactory in terms of their content, standards and overall alignment to industry. Moreover, the SETA-approved schedules for workplace-based training in the target trades are very different in both content and organisation from the college curricula. This is not a new insight – researchers and employers have been saying it for years – but the dual-track apprenticeship pilot project, by bringing participating colleges and companies into close interaction with one another for the first time in decades, has starkly highlighted their differences and the need for coherent artisan training curricula.

This spurred the National Artisan Moderation Body (NAMB) to expedite the development of new occupational qualifications in the artisan trades that the DHET intends to implement in public colleges from 2016 onwards.

The pilot project has also highlighted an unintended and undesirable effect of the apprenticeship training grants on offer by the SETAs as part of the national levy-grant system. It has long been a complaint of organised labour and not a few DHET and even SETA officials that many South African employers will not ‘train an employee to use a pencil unless they receive a grant to do so.’ In the dual-track apprenticeship pilot project, the project managers (SSACI, 2014 & 2015) have seen apprentices spending inordinate amounts of time in the workplace training centre, in addition to the public TVET college, instead of on production, where the skills and habits of performance to standards are best acquired. We hypothesise that employers would not do this if the SETA training subsidy did not skew the finances of the apprenticeship to such an extent that the apprentice’s productivity is not critical to a positive cost-benefit calculation.

7. Conclusion

On balance, as the section “Progress to date” in this article notes, the pilot project, now two-thirds of the way towards its conclusion, has already brought value to colleges and employers. Significantly, as a result of experience gained to date and the interest it has generated in the concept of dual-track apprenticeships, other agencies have now come forward with additional sites and resources, including the German government’s international agency for development co-operation, GIZ, which has committed funding and personnel for a parallel dual-system pilot project to be run from May 2015 to December 2018 in four new sites. An important new element in this project will be the structuring of the curricula around new content and outcome-performance specifications, called the National Trade Test Content, now being defined by the National Artisan Moderation Body for each trade. The first two of these new curricula – for electricians and welders – are currently being developed by SSACI, under contract to the DHET, and reflect lessons learned from the dual-track apprenticeships pilot project so far. Thus, the project may already be said to be making a definite and positive impact on the national artisan training system.

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THE RELEVANCE AND SIGNIFICANCE OF CRITICAL THINKING AND PROBLEM SOLVING SKILLS TO THE CHEMICAL INDUSTRY: OPINIONS OF EMPLOYERS OF CHEMISTRY GRADUATES IN THE WESTERN CAPE

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Abstract

Recent literature shows that employers require new graduates to have specific employability skills over and above the technical skills specific to their qualification. This paper presents an extract of results from a study that was conducted in 2013 in which employers of analytical chemistry graduates identified critical thinking and problem solving as some of the skills that are relevant in their environment. The study was conducted using a mixed method approach. The first phase was a quantitative method which yielded a list of skills that were deemed to be relevant. The second phase was a qualitative method which comprised of focus group interviews. Through a triangulation method, the results of the two phases were analysed in order to answer the research questions.

Keywords: employability, skills, problem identification, problem investigation, problem analysis, problem solving, critical thinking

1. Introduction

Students enrol at an institution of higher learning with a specific purpose: to acquire a qualification, find employment, be independent and advance in their chosen career (Moleke, 2005, p.21). As a result, the role and ultimate measure of an institution's success should not so much be the throughput of its students, but whether or not its graduates are able to find employment and meet the requirements of the employer with respect to their performance. For this reason, it is imperative for an institution of higher learning to keep abreast of the evolution that characterises the world of work and to understand the different needs of the different sectors with respect to the type of graduate that they produce. Various pieces of literature provide lists of employability skills that are required by industry across disciplines, however, there seems to be limited literature that focusses on specific skills required in specific sectors, especially in the South African context. The challenge that this poses is that universities may not be having concrete evidence of whether the graduates that they produce are really prepared for the industry that they would be working in.

In its 2005 report on employment experiences of South African graduates, the Human Sciences Research Council (HSRC) noted that only 60 percent of graduates find employment immediately after graduation (Moleke, 2005, p.19). The report indicates that this is probably attributable to a “skills mismatch problem” that exists between the types of skills and qualifications held by graduates and the demand for certain of these skills by potential employers (Stewart & Knowles, 1999, p.375; Cilliers, 2000, p.7; Moleke, 2005, p.19). This mismatch is because it is no longer adequate for graduates to have a qualification, but to have, over and above their degree, specific employability skills that will enable them to be productive in the workplace. Some of the literature that was reviewed for this study has shown that critical thinking and problem solving skills are amongst the skills that are required by industry across various disciplines and sectors (Griesel & Parker, 2009; Overmeyer & Morris, 2008; Curtis & McKenzie, 2002; Cilliers, 2000; Stewart & Knowles, 1999; De Lange, 1998; Clarke, 1997).

In 2013, a study was conducted in order to establish a list of skills that are critical to employers of analytical chemistry students in the Western Cape as well as to understand the relevance of those skills to the industry. Graduates of analytical chemistry work in chemical laboratories where they apply basic qualitative and quantitative analysis methods, quality control of raw materials and finished products as well as in research and development. Employers of analytical chemistry graduates can be grouped into chemical, cosmetic, petrochemical, food, pulp and paper, nuclear, research and pharmaceutical industries and research.

This investigation was conducted amongst employers of analytical chemistry students/graduates in the Western Cape, using a mixed methods approach of both quantitative and qualitative methods. The results of the study showed that employers of analytical chemistry graduates attach some specific significance to the ability to think critically as well as solve problems, amongst other skills.

2. What are problem solving and critical thinking skills?

A problem is the perceived gap between the existing state and a desired state, or a deviation from a norm, standard, or status quo (business dictionary.com). Problem solving therefore is an individual's ability to select and use efficient and useful tools and actions to reach the desired state. It has different stages which Snyder and Snyder (2008, p.90) identify as follows:

- Identification of the problem – understanding the real question the person is facing
- Definition of the context – establishing the facts that frame the problem. In manufacturing sectors the 5why's model is used. This is an iterative question-asking technique used to

explore the cause-and-effect relationships underlying a particular problem. This is achieved by repeating the “why” question five times to get to the root of a problem (Jimmerson, Weber & Sobek, 2005).

- Enumeration of the choices – exploring the different opinions available
- Listing reasons explicitly – thinking about why this is the best choice
- Self-correcting – re-looking to establish what could have been missed

In essence, to navigate the stages detailed above, it is evident that one is required to think critically about the different aspects of the situation that they are faced with. This links with Snyder and Snyder(2008) who define critical thinking as a process of actively and skilfully conceptualizing, applying, analysing, synthesizing and evaluating information that is generated by observation, experience, reflection, reasoning or communication as a guide to belief and action (Snyder & Snyder 2008).

3. Methodology

The research took the form of a mixed method approach which comprised of:

- a) A quantitative method with the objective of measuring the opinions of employers of analytical chemists in the Western Cape in respect of the desired skills for their environment. The quantitative method is a procedure for the collection and analysis of data in order to test a hypothesis. This data is presented in numbers (Struwig & Stead, 1994, p.338) and it has the advantage of enabling the researcher to reach a large representative sample and to collect a fairly structured data. However, its nature limits the respondents from voicing their opinions.
- b) A qualitative method which consisted of open-ended information that the researcher had gathered from the quantitative phase (Creswell & Plano Clark, 2007). This method was chosen for its potential to allow the researcher to obtain the respondents’ perspectives while allowing for the description of the respondents’ social context (Struwig & Stead, 1994, p.338).
- c) A triangulation method of mixing data. The purpose of using this method was to obtain different but complementary data (Cresswell & Plano Clark, 2007, p.70) as well as a multifaceted view of the problem (Foss; Ellefson: 2002, p.244). This allowed the researcher to compare and contrast the results of both the quantitative and qualitative analyses.

In the quantitative phase, questionnaires were administered among 35 workplace supervisors. The questionnaire required respondents to identify skills or groups of skills that are required in their

environment. The results of this phase yielded a list of employability skills that the employers deemed to be relevant in their environment. Amongst the skills that emerged on this list, were critical thinking and problem solving skills.

The qualitative phase comprised focus group interviews. Focus groups were formed according to the skills or groups of skills that they had identified to be important in their environment. This was done in order to get substantial depth and detail. Where it was possible, face-to-face interviews were conducted. In one instance where it was impossible to conduct a face-to-face interview, a telephonic interview was conducted. Despite the advantage that this provided, this type of interview method presented some challenges in that it was not possible to pick up nonverbal cues from the interviewees as would have been the case with face-to-face interviews (Sekaran, 2003, p.225-231). It was also difficult to build rapport with some of the interviewees to the extent that the face-to-face interviews would have permitted. With a face-to face interview, the researcher was also able to clarify questions and ensure that the questions were understood. In the focus group interview stage 12 respondents were interviewed on the significance of the skills in their environment. The focus groups were formed according to the organisations where the respondents were employed and represented the pulp and paper, chemical industries and government sectors.

For this particular section of the study, all respondents had identified problem solving and critical thinking as skills that are important for their environment. All the participants had supervised students and/or graduates from the institution under investigation in the period 2008 to 2010. Six participants had supervised both students and graduates, while the other six participants had only supervised trainee analysts in the period under investigation.

In order to understand the significance of the skills, the interviewees were asked to explain how the skills are used as well as what the significance of the skills is in their specific environments was. Additionally, the participants were asked to suggest ways in which the institution under investigation could develop the skills in question in their students.

4. Results

The quantitative results indicated that the four stages of problem solving were amongst the ten most important skills in the industry under investigation. After time management skills, which was rated the most important (mean=1.44; SD=0.577), the results showed the first three stages of problem solving as follows: the ability to identify a problem (mean=1.46; SD=0.503); the ability to investigate a

problem (mean=1.46; SD=0.503); the ability to analyse a problem (mean=1.48; SD=0.505) emerged to be amongst the top five important skills. The final stage which is the ability to get to a solution of the problem had mean scores that placed it as the ninth most important skill (mean=1.62; SD= 0.725). Interestingly, the ability to think critically (mean=1.76; SD=0.591) had mean scores much lower than those of the different stages of problem solving. The results of the interviews, however, showed that the respondents did not view critical thinking and problem solving skills as separate but that the skills were in fact inter related. (Snyder & Snyder, 2008).

5. Problem solving skills

The different stages of problem solving, that is, problem identification, investigation, analysis and solving, were treated as separate skills in the investigation in order to establish the extent to which each stage is considered important or not important in the sector. In the quantitative phase the different stages were dealt with separately, however, in the qualitative phase, the participants did not separate the different stages but rather referred to all of them

a) The ability to identify a problem

The quantitative results of this study indicated that the initial stage in the problem-solving process, that is, the ability to identify a problem, had been identified as one of the skills that are extremely important in the environment under investigation (mean=1.46;SD=0.503). This means that employers in this environment require the graduate to be able to observe a problem and conceptualise a statement of question.

b) The ability to investigate a problem

Like the problem-identification stage, the ability to investigate a problem (mean=1.46; SD=0.503), is valued by the respondents as it indicates that the graduate is required to have the cognitive skill that allows him or her to sift through information in order to isolate the problem through observation and questioning.

c) The ability to analyse a problem

According to the mean score for the ability to analyse a problem (mean=1.48; SD=0.505), it seemed that it is a requirement in this environment for the graduate to have the ability to identify a problem and explore alternatives, thus considering all the facts before taking a position towards implementing a solution (Snyders & Snyders, 2008, p.90).

d) The ability to solve a problem

In the analysis, it seemed as though the respondents require that new graduates, on identifying a problem, should be able to consider all the facts and take a position towards implementing a solution. This ability to combine all the facts to reach the desired state, although not very close to the other stages in terms of its mean scores, was definitely amongst the skills seen to be most important in the environment under investigation (mean=1.62; SD=0,725) .

In the qualitative phase it transpired that, just as Snyders and Snyders (2008, p.90) state, the respondents link problem-solving attributes to critical thinking and therefore view the ability or inability to troubleshoot as a significant indicator of problem-solving abilities. The interviews revealed that while the students, at their level, are not required to implement solutions to a problem, they are certainly required to be able to do initial problem solving through observation and questioning, as well as by consideration of all the facts at hand, before reporting the problem to a senior staff member. This, according to the interviewees, indicates that the student has thought about the problem before reporting it.

It became clear during the interviews that the reason why the ability to solve problems had mean scores lower than those of the other phases of problem solving, is that the students and new graduates are not really expected to go beyond identifying that there is a problem and doing some basic troubleshooting.

Emerging from the interviews also, was that because the environment under investigation is highly automated, the ability to note deviations from the standard and to troubleshoot is the main indicator of critical-thinking abilities. The respondents felt that in certain instances the students tended to panic when confronted with a challenge and needed to be guided constantly.

Use and significance of problem-solving skills

1) *Use of problem-solving skills*

Problem-solving skills are used to identify, investigate and analyse a problem, then come up with a solution.

“When a machine does not switch on, you find that someone calls the supervisor and then finds out that the plug is not switched on. This is an indication that the person did not attempt to investigate the problem on their own. This is an indication that problem solving skills are lacking”

Problem-solving abilities, according to them, are often used to trouble shoot when the instrument fails to either calibrate properly or produces results that are constantly out of the normal ranges.

The interviewees in the focus groups also linked the use and significance of this skill to the discussion on critical thinking. According to them, it is natural for a person with problem solving skills to think critically about every situation that they are confronted with.

A worker who is able to use problem solving skills is also able to work independently. This is critical in the chemistry environment as the new graduate is often working alone.

2) *Significance of problem-solving skills*

According to the interviewees, because of the high cost associated with the work in this environment, the students or new graduates are expected *“to see when something is not quite right with the instrument or the sample before running an analysis”*. One of the interviewees made the point that supervisors are not always in the laboratory and that therefore, the student or new graduate ought to be able to investigate the source of a problem and attempt a solution on his or her own. In the interviewees’ opinion, *“the ability to identify a problem, troubleshoot and then seek help where necessary shows independent thinking ability”*.

6. **Ability to think critically**

Interestingly, the ability to think critically (mean: 1.76; SD: 0.591) did not emerge amongst the top skills required in the environment, yet, in the interviews, the respondents emphasized its importance and indicated that it is linked quite closely to problem solving abilities.

Use and significance of critical thinking skills

1) How critical thinking skills are used in the environment

According to the respondents, the use of this skill implies that a worker is able to receive information, evaluate it and thereafter determine his or her own interpretation of the information. The implication is that as a new graduate, one is often required to follow the lead of older employees. It is important to be able to evaluate all information that one receives and formulate one’s own interpretation instead of blindly following other people’s direction.

According to the focus group interviewees, new graduates come into an environment where certain employees have been working for a long time and are used to doing things in a

particular, but not necessarily the correct way. These employees often “cut corners” when doing certain procedures. New graduates tend to think that this is acceptable, and, even though they know the correct way, often follow the lead of the older employees. This perpetuates incorrect procedures in the work environment. In order to demonstrate critical thinking abilities, new graduates are expected to evaluate what they are doing and understand why they are doing it. This enables them not to simply follow other people’s lead but to be able to interrogate the way things are done in the workplace.

It also transpired during the interviews that because the environment under investigation is an automated one, many of the problems in this environment are due to instrument failure. The origin of a problem of this nature can range from an unconnected plug to a faulty instrument. While it is the senior technicians that maintain instruments, the new graduates are expected to be able to trouble shoot basic things. One of the interviewees used the example of an instrument that is running in a carousel and suddenly stops. The technician should be able to ask himself/herself, “Why has the machine stopped and what could be the source of the problem?” The critical thinking ability helps the person handling the instrument in the troubleshooting in order to find the origin of the error instead of “running to the senior technician all the time”.

Further, because workers are allocated to work on an instrument individually, the ability to think critically helps them to carry on working on their own without supervision instead of “being prodded all the time”. When they have critical thinking abilities, students are *“able to note deviations in the standard and are able to think about them”* and *“try to work out causative factors before calling a supervisor”*, some interviewees said.

2) Significance of the ability to think critically

The significance of critical thinking is that people with these abilities can evaluate facts and are less likely to be misinformed (Facione, 1998). The significance of critical thinking abilities in the environment under investigation is that when working alone, it is crucial for the student to be able to note deviations in the standard when working on an instrument, and then be able to analyse the possible origin of the deviation before calling on the supervisor.

7. Suggestions for improving the levels of critical thinking and problem solving skills in students

Chadha (2006) and Schulz (2008) suggest that academics need to adopt different teaching styles for developing non-technical skills in students. These authors suggest the use of one of the three approaches as suggested by Drummond, Nixon, & Wiltshire (1998), namely:

- Embedding approach in which the skills are developed as being part of the curriculum throughout the course.
- Bolting-on approach in which the skills are developed as a free-standing module.
- Integrating approach in which skills are developed explicitly within the core discipline. This approach encourages the development of skills during work placement, along with technical skills.

On being asked for suggestions as to how the institution under investigation could help students to develop critical thinking and problem solving skills, the focus groups suggested that complex exercises and practical activities that challenge the students to think critically is one way that could help. For the researcher this implies that the participants are in favour of the Embedding approach to skills development where the skills are developed as being part of the curriculum throughout the course.

8. Conclusion

The results of the study showed that, like with previous studies, employers require new graduates to have a set of general employability skills over and above job specific skills. The study further confirmed that critical thinking and problem solving skills form part of the general employability skills that are required by employers.

It was interesting that, although critical thinking was not rated close to problem solving in terms of its mean scores, it is certainly viewed to be just as important by employers.

The study revealed that while the employers do not require new analytical chemistry graduates to provide a solution to a problem beyond doing some troubleshooting, they certainly value the ability to identify and analyse a problem as well as think deeply about information that is presented to them. This means that after identifying a problem, they should be able to investigate and analyse it before handing it to a senior analyst for a solution. This also requires them to have critical-thinking abilities.

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CENTRAL UNIVERSITY OF TECHNOLOGY STUDENTS' PERCEPTIONS OF WORK INTEGRATED LEARNING: AN INTERACTIVE QUALITATIVE ANALYSIS

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Abstract

This study explores Central University of Technology students' perceptions of the key elements in work integrated learning (WIL). Work integrated learning is a process mainly implemented in universities for the purpose of giving students exposure to the working environment and thus enhancing their employability. It includes theoretical forms of learning, problem-based learning, project based learning and work placed learning. Studies on work integrated learning have revealed immense benefits to students and employers involved including enhanced personal, academic and emotional abilities. These benefits can however only occur if WIL is implemented effectively and the students are personally motivated and involved in the process. Therefore student perceptions are important. This study investigated the perceptions of CUT (Central university of Technology) students with regards to work integrated learning. These students all live in the rural area of Matjhabeng which has limited resources. An interactive qualitative analysis which uses systematic representation techniques to present qualitative data was used as methodology. The results showed that employer support and experience are the primary drivers and influences in the work integrated learning, if these elements are in place it will lead to adaption in the working environment and contribution to the working environment which will in turn influence participating in various activities and competency respectively. The main outcome of all these elements is to enhance employability. The results indicate that students need more support from employers in order to enhance their future employability especially in rural areas with scarce resources.

Keywords: Interactive Qualitative Analysis, Work integrated learning, student perceptions.

1. Introduction

Work integrated learning is a process mainly implemented in universities for the purpose of giving students exposure to the working environment and thus enhancing their employability (Windberg, Engel-Hills, Garraway & Jacob, 2011). Literature defines Work-Integrated Learning' (WIL) as an approach to career focused education that includes theoretical forms of learning , problem-based learning, project based learning and work placed learning(Lester & Costley, 2010). It is described as an educational approach that aligns academic and workplace practices for the mutual benefit of students and workplaces in that it not only enhances employability but also the quality of future employees (Kramer & Usher, 2011). Work-integrated learning does not merely depend on pre-defined development plans and on learning resources, it also considers students' actual tasks, personal competency character and work field as being pertinent in the learning process (Ley, Ulbrich, Scheir, Lindstaedt, Kump & Albert, 2008). The placement of students in work areas often expose the students to potential employers and may offer a direct instrument to move from the tertiary educational institute into employment after graduation (Braunstein, Takei, Wang, & Loken, 2011; Calway & Murphy, 2000)

Central University of Technology is one of the Universities in South Africa that uses work integrated learning in their various academic programs. Studies have shown that work integrated learning is of immense value in university programs as it improves academic performance, enhances interdisciplinary thinking and motivates students to learn (Windberg et al., 2011). WIL also improve: communication skills, team work, leadership, critical thinking and co-operation(Kramer & Usher, 2011). Consequently WIL has identifiable career benefits, for example, career clarification, professional identity, increased employment opportunities and salaries, development of positive work values and ethics, increased competence and increased technical knowledge and skills (Windberg et al., 2011).

The work placements component of WIL gives students an insight into the workplace, where they can observe and practice to be professionals (Cooper, Orrell, & Bowden, 2010; Zegwaard & Laslett, 2011). Despite all the other benefits of work integrated learning the main benefit remains that it enhances student employability and considering the high cost of higher education today it is becoming increasingly important that students reap the reward of employment to justify higher education studies(Betts, Lewis, Dressler, & Svensson, 2009).

However in a study done in Australia on knowledge management students it was found that despite the potential opportunity of employment imbedded in the WIL program a portion of students decide to go back to university to complete further studies, suggesting that the work placement experience may have influenced their decision (Ley, Lindstaedt & Albert, 2005). This indicates that all students do not perceive their work integrated learning experience the same. A reason for this might be that WIL covers a wide variety of experiences including: paying jobs, nonpaying jobs, mandatory WIL, voluntary WIL (Kramer & Usher, 2011). Some work integrated learning programs last an entire semester, while others may last only a few days. Even if it is widely accepted that WIL programs are valuable because they align theoretical classroom learning with practical workplace skills, it would not be reasonable to expect that the different types of WIL would have consistent outcomes (Kramer & Usher, 2011). This indicates that the benefits of WIL is not the same for every student that experience it and that the personal gain of every student should be investigated in order to adapt the program to ensure that students get the most out of it

This study focuses specifically on CUT students in the Matjhabeng area. This is a rural area and most of the students that attend this university live in the rural community with limited resources including financial resources (statistics SA, 2012). According to Statistics South Africa (2011) the Matjhabeng district has a youth unemployment rate of 49.7%. The Municipality of Matjhabeng faces significant challenges relating to unemployment; economic development as well as the provision of basic services such as water, sanitation, electricity, housing, health services, education, safety and social development (Matjhabeng Municipality, 2011). It is thus of even more importance to the students of Central University of Technology living in Matjhabeng that their higher education studies are beneficial to their academic career and lead to future employment

Work integrated learning can be of immense value to these students living in the Matjhabeng area but this will only be the case if Work Integrated Learning is implemented effectively (Lester & Costley, 2010). Effective work experience must include meaningful work as a means to an end, not an end in itself (Reggan, 2012). This is as the experience of work is not enough to produce transformed learning (Britzman, 2003). Learning in work placements needs to be deliberate and intentional, supported by induction of students and students' own reflections (Washbourn, 1996). Thus reflection and debriefing on the work experience by universities and parties involved are required to ensure that the personal value to the student is captured and understood (Bates, 2008). Students need to be involved in the work integrate learning process; this idea is supported by the academic shift from a focus on content to one that integrates content with process (De la Harpe, Radloff, & Wyber, 2000). This change

requires a student-centered approach as the lecturer must be aware of the student's stage of development, keeping their expectations in mind (Green et al., 2009). As the skills developed in work integrated learning are very personal, applied and reflective, students need to be included in the process of developing the most efficient work integrated learning methods (Reggan, 2012). Motivation is the key to student engagement and defined as a student's inclination, need, desire and persuasion to participate in, and be successful in, the learning process. It is driven and ensured by critical reflection and formative feedback; leading to preferred lifelong learning outcomes. Students become engaged when they are involved in their work (van Rensburg & Danaher, 2009).

The personal perceptions of the students involved in work integrated learning are of utmost importance to ensure an effective work integrated learning experience and thus employability (van Rensburg & Danaher, 2009). Subsequently employability is not just about getting a job, even though the student is on an occupational course it does not mean that somehow employability is automatic (Harvey 2003). Employability is more than the development of attributes, techniques or experience just to enable a student to get a job. It is about growing as a person and learning to know oneself within the working environment (Martin & Hughes, 2011). The emphasis of work integrated learning is thus less on 'employ' and more on 'ability'. In essence, the emphasis is on developing critical, reflective abilities, with a view to empowering and enhancing the learner (Harvey 2003). Work integrated learning proposes a holistic approach to reach a stage of employability through acquiring certain skills and abilities when motivated and involved (Martin & Hughes, 2011).

Literature has focused mainly on the numerous benefits to students that work placement affords, such as career clarification, realistic career goal setting, and understanding workplace expectations (Calway & Murphy, 2000; Cooke & Brown, 2006; Giles, 2010). However little has been discussed around how work placements are experienced from students in rural areas. The unique context of the rural Matjhabeng area will give insight into the importance of effective work integrated learning and also identify valuable elements for students in rural areas when it comes to work integrated learning. The results will also assist in molding the WIL program to be best suited for the students' needs so that the best outcomes can be reached. For these reasons this study asked:

- 1) What do Central University of Technology students' perceive to be the most important elements of work integrated learning?
- 2) How do Central University of Technology students' perceive the relationship among the elements of work integrated learning?

2. Method

Interactive qualitative analysis (IQA) was used to establish how the group of participants' mental model is structured in regards to the perceived important elements of work integrated learning (WIL). IQA uses systematic representation techniques to produce the participants' own unique perceptions on WIL. It is a participant oriented method where participants construct their own meanings in regards to the phenomena and also assist in refining the research question, thus research bias is subdued (Human-Vogel, 2006; Northcutt & McCoy, 2004). The participants generated and coded their own ideas and these ideas were then later the cues that were used for elaboration in the individual interviews. IQA is ideal for this research topic that explores the participants own perceptions on WIL, because the participants are guided through the process but they maintain ownership of the ideas generated. IQA also forms a theory in perception of the group or individual interviewed while respecting their knowledge of the phenomenon (Lodewyckx, 2006).

3. Participants

IQA protocol suggests that if a focus group is too large some of the participants may not have a chance to voice their opinion (Wyatt, 2010). IQA also suggest that individual interviews be conducted until saturation occurs (Northcutt & McCoy, 2004). Therefore a convenient, purposive sample of (N=11) Central University of Technology student participants were chosen for the focus group and (N=6) for the individual interviews. There were (N=9) male and (N=8) female participants. The age of the participants ranged from 19-42 years of age. The participants also represented different ethnical backgrounds as white (N=1) and black (N=16) students were represented in the sample All the students study at CUT and live in the area of Matjhabeng. Students also represented different courses presented by CUT and consisted of Education (N=4), Office management (N=5), Marketing (N=5), Human resource management (N=1) and psychology (N=2) students. It was essential for this study that all the participants had taken part in a work integrated learning program somewhere throughout their tertiary studies.

3.1 Focus group

The first step of the IQA process is the focus group session. The purpose of the focus group was to develop affinities (themes) (Northcutt & McCoy, 2004). The focus group consisted of 5 male and 6 female participants. Each participant was given blank note cards and a marker; they were then asked the following question: "According to you, what are the most important elements of Work integrated learning?" After the participants discussed the question, they were asked to write down keywords

about their thoughts and experiences of work integrated learning. These cards were then used as brainstorming cards and were presented on a white board so that all the participants could see each of the cards. Each card was discussed for clarity. The participants were asked to arrange the cards within groups of meaning; this process is known as inductive coding. The participants then brainstormed to find an affinity name that captures the meaning of each new formed group of cards. The researcher that facilitated the session made sure that the new formed affinities represented the opinions of all the group members. Once the affinities were established the researcher asked the participants to indicate individually on a piece of paper the relationship between the affinities. Each affinity was appointed a letter for example affinity 1 = A. The participants indicated the relationship between all the affinities in regards to the influence they have on each other, for example if they felt that A influenced B it was indicated as $A \rightarrow B$ or other way around $A \leftarrow B$ if the participants thought that no relationship existed it was indicated as $A <> B$. The results of the perceived relationships were then documented in an affinity relationship table (ART) (see appendix A).

3.2 Individual interviews

Individual interviews were held with male (N= 4) and female (N=2) Central University of Technology students that weren't part of the focus group. This was done to get a broader corresponding or contradicting view of students' perceptions (Norhcutt & McCoy, 2004). The scripts for the individual interviews were based on the responses of the focus group session. The researcher gave a brief description of each of the affinities as identified and defined by the focus group. The participants were then asked to discuss what they thought the relationships between the affinities were. The casual discussion of relationships were then coded in the same way as the focus group ($A \rightarrow B$, $A \leftarrow B$ or $A <> B$) and was also included in the Affinity Relationship Table (ART)

4. Results

The focus group and individual interviews revealed 7 Affinities

Table 1: Affinity descriptions

Affinity Name	Affinity Description
1 Experience	Acquiring relevant information and skills to perform specific tasks
2 Adapting	Becoming comfortable and familiar with the working environment
3 Contribution	Student contributing something positive to the working environment
4 Employer support	Must have proper training when assisting students
5 Employability	Being the best candidate for the job
6 Competency	Having necessary skills and academic knowledge to deal with a particular issue
7 Diverse participation	Taking part in a variety of activities at the workplace

After the affinities were coded the number of votes per relationship as represented in the ART was analyzed to establish the frequency and power of the affinity relationships. The optimal number of possible relationships was determined at 42. The affinity relationships were then sorted in a descending order of frequency and the cumulative frequency and percentages were determined. This was done because the research aims to establish the fewest relationships that represent the greatest variance (Lodewyckx, 2006). In this process relationships that attracted a very low percentage of votes were excluded from the group. This is done for the sake of comprehensiveness and richness of the data (Northcutt & McCoy, 2004). As seen in Table 2, the first 20 relationships explained 60.4% of the variation in the system that means that the first 20 relationships had 60.4% of the votes. According to the Pareto principle power was reached 12.871 at the 20th affinity relationship (Lodewyckx, 2006). Therefore it was decided that the first 20 relationships that got the most significant amount of votes will be included in the study. There was however a few conflicting relationships: $1 \leftarrow 5$ received 11 votes and $1 \rightarrow 5$ received 16 votes, $2 \leftarrow 4$ received 12 votes and $2 \rightarrow 4$ received 11 votes, $5 \leftarrow 6$ received 15 votes and $5 \rightarrow 6$ received 11 votes. Thus $1 \rightarrow 5$, $2 \leftarrow 4$ and $5 \leftarrow 6$ received the most votes of the different relation affinities and were selected to be included in the next step. $1 \rightarrow 7$ and $1 \leftarrow 7$ both received 11 votes, from the participants' early discussions it was evident that $1 \leftarrow 7$ was the more popular option and was included in the next step, however this was later balanced out in the final step (Northcutt & McCoy, 2004). Thus 15 Affinity relationships were used in the interrelationship diagram

Table 2: Affinity relationship table

AFFINITY PAIR	FREQUENCY	CF (CUMULATIVE FREQUENCY)	CPR (CUMULATIVE PERCENT)	CPF (CUMULATIVE PERCENT FREQUENCY)	POWER
2→5	18	18	2.381	4.017857143	1.637
1←4	17	35	4.762	7.8125	3.051
1→5	16	51	7.143	11.38392857	4.241
3→5	16	67	9.524	14.95535714	5.431
5←6	15	82	11.905	18.30357143	6.399
1→2	14	96	14.286	21.42857143	7.143
1→3	14	110	16.667	24.55357143	7.887
1→6	14	124	19.048	27.67857143	8.631
2→7	14	138	21.429	30.80357143	9.375
3←4	14	152	23.810	33.92857143	10.119
5←7	14	166	26.191	37.05357143	10.863
3→6	13	179	28.572	39.95535714	11.383
3←7	13	192	30.953	42.85714286	11.904
2←4	12	204	33.334	45.53571429	12.202
4→7	12	216	35.715	48.21428571	12.499
1←5	11	227	38.096	50.66964286	12.574
1→7	11	238	40.477	53.125	12.648
1←7	11	249	42.858	55.58035714	12.722
2→4	11	260	45.239	58.03571429	12.797
5→6	11	271	47.620	60.49107143	12.871
1←3	10	281	50.001	62.72321429	12.722
2→6	10	291	52.382	64.95535714	12.573
3←6	10	301	54.763	67.1875	12.425

AFFINITY PAIR	FREQUENCY	CF (CUMULATIVE FREQUENCY)	CPR (CUMULATIVE PERCENT)	CPF (CUMULATIVE PERCENT FREQUENCY)	POWER
4←5	10	311	57.144	69.41964286	12.276
4←6	10	321	59.525	71.65178571	12.127
1←2	9	330	61.906	73.66071429	11.755
2→3	9	339	64.287	75.66964286	11.383
2←3	9	348	66.668	77.67857143	11.011
2←5	9	357	69.049	79.6875	10.639
2←7	9	366	71.430	81.69642857	10.266
4→5	9	375	73.811	83.70535714	9.894
4→6	8	383	76.192	85.49107143	9.299
4←7	8	391	78.573	87.27678571	8.704
6→7	8	399	80.954	89.0625	8.109
6←7	8	407	83.335	90.84821429	7.513
1←6	7	414	85.716	92.41071429	6.695
3→4	7	421	88.097	93.97321429	5.876
3←5	7	428	90.478	95.53571429	5.058
2←6	6	434	92.859	96.875	4.016
1→4	5	439	95.240	97.99107143	2.751
5→7	5	444	97.621	99.10714286	1.486
3→7	4	448	100	100	0.0

The 7 identified affinities were converted into an Interrelationship Diagram matrix (IRD) (As seen in Table 3). This diagram is a representation of the perceived strength of the relationships between the affinities. The strength of each affinity is transformed to a Delta value. This is done by calculating the difference in the frequency of an affinity being the cause and the frequency of this same affinity being caused in relation to other affinities. An up arrow indicates that an affinity is the cause (out) and a

down arrow indicates that the affinity is being caused (in). The sum of the in box subtracted from the out box is the Delta (Δ). A high positive Delta indicates that the affinity is a driver that mainly causes the other affinities. A high negative value indicates that the affinity is an outcome that is mainly caused by the other affinities. A Delta value of zero or close to zero usually indicates the pivot and means that this affinity causes other affinities just as much as it is being caused. Table 4 indicates the drivers, pivot and outcomes as derived from the IRD

Table 3: Interrelationship Diagram Matrix

Tabular IRD										
	1	2	3	4	5	6	7	OUT	IN	Δ
1		↑	↑	←	↑	↑	←	4	2	2
2	←			←	↑		↑	2	2	0
3	←			←	↑	↑	←	2	3	-1
4	↑	↑	↑				↑	4	0	4
5	←	←	←			←	←	0	5	-5
6	←		←		↑			1	2	-1
7	↑	←	↑	←	↑			3	2	1

Table 4: Interrelationship Delta and Model Placement

		Out	In	Delta (Δ)
Primary Driver	Employer support	4	0	4
Primary Driver	Experience	4	2	2
Secondary driver	Diverse participation	3	2	1
Pivot	Adapting	2	2	0
Secondary Outcome	Contributing	2	3	-1
Secondary Outcome	Competency	1	2	-1
Primary Outcome	Employability	0	5	-5

The delta values are represented in the Systems Influence Diagram (SID). This diagram gives a clear visual of the perceived relationships between the affinities. Placement within the Systems Influence Diagram was determined based upon delta values in Table 3 and 4.

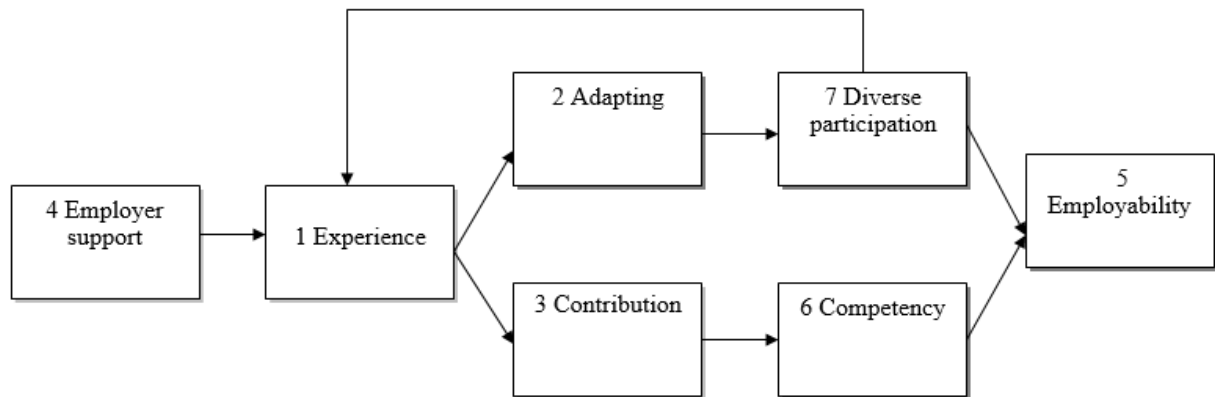


Figure 1. Systems Influence Diagram.

5. Discussion

The students identified the most important elements of Work integrated learning as employer support, experience, adapting, contribution, diverse participation, competency and employability. As seen in the Interrelationship Delta and Model Placement (Table 4) and in the systems influence diagram (Figure 1) the students identified employer support to be the most important driver in the Work integrated learning process. In other words Employer support is the most important factor that influences other factors in WIL. They defined employer support as “must have proper training when assisting students”. The students said that they want the employer to be trained before they go for work integrated learning so that the supervisors and mentors can properly train and assist the students when they are placed and not be confused as to how to utilize the students in the business. They added that employers should expose them to realistic working situations and not just minor activities that they feel would be suitable to a student. This was confirmed at the PSETA colloquium of 2015 when Luther Lebelo of SARS raised the concern that students aren’t getting optimal exposure when placed for WIL because businesses are afraid they will be in the way or cause damage. The students perceived that employer support lead directly to the secondary driver of experience. They saw experience as an essential element of work integrated learning which is influenced by employer support and then enhances and influences all the other elements. They identified experience as “acquiring relevant information and skills to perform specific tasks”. The value of gaining experience in work integrated learning is substantiated in literature where it is shown that learning simulations

build upon education and training to engage individuals in real-life scenarios to gain experience and reinforce knowledge and skills learned in the classroom and workplace (Betts, Lewis, Dressler, & Svensson, 2009). The students thought that gaining experience is the main reason for undertaking work integrated learning, they added that experience assist in better adaption in the working environment. They said this is important as adapting to the working environment directly after completion of studies can be a very difficult process especially without any prior working experience. Studies shown that positive adapting to the working environment because of previous learning and skills acquirement during WIL is one of the main benefits of work integrated learning (Windberg et al, 2011; Council for Higher Education, 2011). The students also found that experience leads to contribution, in other word with the development of skills and knowledge comes a greater impact on the working environment and contribution to the WIL employer. It was clear from the discussion that the students had a need to not only gain from the experience but also leave something behind in contribution to the company. Lester and Costly (2010) indicate that the working environment responds positively to students that are already in positions of authority or autonomy or students that maximizes the benefits from personal development and initiative to contribute to the company. Work-based programs appear to have a highly positive impact for independent professionals (Lester & Costley, 2010). If you look at the systems influence diagram (Figure 1) it shows that the students perceived that adapting in the working environment influences diverse participation which in turn enhances employability. This relationship was explained in that adapting to the working environment will bestow confidence on the students to broaden their horizons while doing their work integrated learning and the added experience in various areas of work then enhances their employability. They also indicated a strong reciprocal relationship between gaining experience and being exposed to diverse activities, the diagram shows that these two elements along with adapting to the working environment lies in a circle thus experience influences engagement in different activities but then the engagement in various activities at work further enhances their experience level.

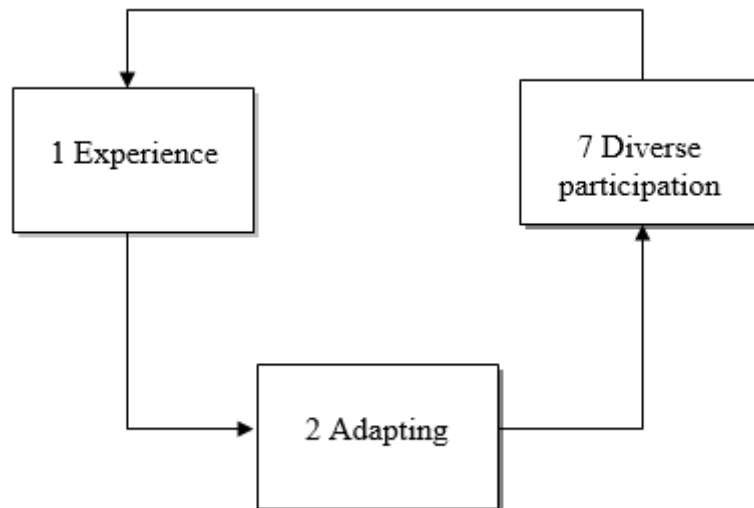


Figure 2: reciprocal relationship between elements 1, 2 and 7

They also perceived that contributing to their working environment while doing their work integrated learning leads to improved competency which then helps them to be the best person for the job. In the end the biggest outcome for the students is employability, when all the elements work together effectively it improves their chances of getting employed and as also confirmed in literature that is the most important proposed outcome for WIL (Council for Higher Education, 2011).

6. Conclusion

It is evident from this study that work integrated learning is a very beneficial program that may lead to future employability if other elements are in place. The students were mainly concerned with employer support and feel that without this element they will not grow as individuals, personally or professionally. The students also perceived that the main element that drives work integrated learning is to gain experience in order to be better equipped academically and personally, including gaining skills to survive in the working environment. As the students all live in the rural area of Matjhabeng it was expected that they will indicate employability as the most important outcome, although academic flourishing was also mentioned the main focus was employability. The students want to learn skills to adapt that will give them confidence to engage in diverse activities while doing work integrated learning. They also wish to not just gain from the experience but also contribute to the place that they work this will enhance they competency and in the end together with experience and ability to adapt enable them to be the best person for the job.

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Appendix A: ART

Affinity Pair	Frequency	Affinity Pair	Frequency
2→5	18	3←6	10
1←4	17	4←5	10
1→5	16	4←6	10
3→5	16	1←2	9
5←6	15	2→3	9
1→2	14	2←3	9
1→3	14	2←5	9
1→6	14	2←7	9
2→7	14	4→5	9
3←4	14	4→6	8
5←7	14	4←7	8
3→6	13	6→7	8
3←7	13	6←7	8
2←4	12	1←6	7
4→7	12	3→4	7
1←5	11	3←5	7
1→7	11	2←6	6
1←7	11	1→4	5
2→4	11	5→7	5
5→6	11	3→7	4
1←3	10	3←6	10

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Book (4 or more authors)

(Guerrero, Andersen, Afifi & Afifi, 2009) for the first time

(Guerrero et al., 2009)....

"Quotation" (Guerrero et al., p.76)

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(Marshall, 2008)

Chapter in an edited book

As noted by Marshall (1975)....

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Book No author

(The Australian Oxford dictionary, 1999)

Chapter in an edited book

As noted by Marshall (1975)....

"Quotation" (Marshall, 1975, p.76)

Personal Communication

(R. Brink, personal communication, May 28, 2010)

R.Brink (2010, personal communication, May 2) said ...

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(Western Australia. Department of Health Nursing and Midwifery Office, 2013).

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"Quotation" (Wilson, 1995, p.66)

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"Quotation" (Trefts & Blacksee, 2000, p.376)

Newspaper (online)

Randerson (2008) argues that.....

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E-Book

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Western Australia. Department of Health Nursing and Midwifery Office. (2013). *Aboriginal Nursing and Midwifery Strategic Plan 2011–2015*. Retrieved June 19, 2012, from <http://www.nursing.health.wa.gov.au/projects>

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Journal article (printed)

Abeysekera, I. (2006, March). Issues Relating to Designing a Work-integrated Learning Program in an Undergraduate Accounting Degree Program and its Implications for the Curriculum. *Asia-Pacific Journal of Cooperative Education*, 7(1), 7-15.

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BBC NEWS. (2008) *Factory gloom worst since 1980*. [Online] Retrieved June 19, 2012, from <http://news.bbc.co.uk/1/hi/business/>

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▼ Contents

Application of academic learning

Annie Moletsane and Kholeka Constance Moloi 1

The development of work integrated learning model for the interior design qualification

Rita Cilliers and Pieter Smit 22

Determining best practice from graduate employability: a work integrated learning case study in hospitality management

Henri Jacobs 41

Skills evaluation of final year interior design diploma students on completion of WIL within the relevant industry to contribute practical findings to the new interior design curriculum

Pieter Smit 55

Piloting dual-track apprenticeships in South Africa

Ken Duncan 78

The relevance and significance of critical thinking and problem solving skills to the chemical industry: opinions of employers of chemistry graduates in the Western Cape

Fundiswa Nofemela 92

Central University of Technology students' perceptions of work integrated learning: An Interactive Qualitative Analysis

Anri Wheeler 103

Article Guidelines

Notes to Contributors 119

