6.
Selected factors that influence strategic planning in South African higher education institutions
SAMUEL M. BOSIRE

26.
A conceptual competence-based framework for enhancing the employability of graduates
HERMANUS MOOLMAN

44.
Project Based Learning for professional identity: A case study of collaborative industry projects in Marketing
PHILIPPE VANDE WIELE, DARREN MORRIS, VINCENT RIBIÈRE AND JEAN-LOUIS ERMINE

64.
Graduate employability skills within the public service: A South African case
PETRONELLA JONCK

78.
A tale of two faculties: Exploring student experiences of e-portfolio implementation as a vehicle of reflective learning at Stellenbosch University
SONJA STRYDOM AND MAGDA BARNARD

92.
The interplay between theory and practice: Mathematics pre-service teachers’ learning experiences at a teaching school
ERIKA DOROTHEA SPANGENBERG

113.
The assessment of environmental education concepts and skills in Grade 10 Geography
KHOSI N.I. MOLALA AND JOHANNA G. FERREIRA

126.
Educators’ perceptions about implementing a road safety education programme in the context of curriculum change
MARTIN COMBRINCK AND JEANNIE GOVENDER

139.
Doctoral Corner
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**Address for correspondence**
Professor Dolina Dowling
Editor-in-Chief
The Independent Journal of Teaching and Learning
PO Box 2369 Randburg 2125 South Africa
E-mail: editor@iie.ac.za
1. Notes on contributors

3. Editorial
   Professor Dolina Dowling

6. Selected factors that influence strategic planning in South African higher education institutions
   Dr Samuel M. Bosire, Nelson Mandela University, South Africa

26. A conceptual competence-based framework for enhancing the employability of graduates
    Dr Hermanus J. Moolman, University of Free State, South Africa

44. Project Based Learning for professional identity: A case study of collaborative industry projects in Marketing
    Dr Philippe Vande Wiele, Bahrain Polytechnic, Kingdom of Bahrain
    Darren Morris, Bahrain Polytechnic, Kingdom of Bahrain
    Associate Professor Dr Vincent Ribière, IKI-SEA, Bangkok University, Thailand
    Emeritus Professor Dr Jean-Louis Ermine, Institut Mines-Télécom, France

64. Graduate employability skills within the public service: A South African case
    Dr Petronella Jonck, The National School of Government, South Africa

78. A tale of two faculties: Exploring student experiences of e-portfolio implementation as a vehicle of reflective learning at Stellenbosch University
    Dr Sonja Strydom, Stellenbosch University, South Africa
    Magda Barnard, Stellenbosch University, South Africa

92. The interplay between theory and practice: Mathematics pre-service teachers’ learning experiences at a teaching school
    Dr Erica Dorethea Spangenberg, University of Johannesburg, South Africa

113. The assessment of environmental education concepts and skills in Grade 10 Geography
    Khosi N.I. Molala, University of Johannesburg, South Africa
    Professor Johanna G. Ferreira, University of South Africa, South Africa

126. Educators’ perceptions about implementing a road safety education programme in the context of curriculum change
    Dr Martin Combrinck, North-West University, South Africa
    Dr Jeannie Govender, KwaZulu Natal Department of Transport, South Africa

139. Doctoral Corner

148. List of reviewers
Notes on contributors

**Magda Barnard** is the Blended Learning Coordinator of the Faculty of Economic and Management Sciences at Stellenbosch University. She works closely with lecturers to integrate learning technologies in their teaching. Her current research interests are programme renewal in HE and staff development for teaching with technology.

**Dr Samuel Bosire** is the Chief Information Officer at the Nelson Mandela University. In addition to strategic management of Information and Communications Technologies (ICTs) in Higher Education his research focus is on sustainability and use of ICTs in public sector organisations.

**Dr Martin Combrinck** is currently Manager of Quality Assurance at the Unit for Open Distance Learning, North-West University. His interest is in curriculum development, quality assurance and assessment in the classroom.

**Professor Emeritus Jean-Louis Ermine** PhD is a global Knowledge Management authority. He held the position of Department Director, Associate Dean for Research and Innovation at Institut Mines-Telecom and worked for the French Atomic Energy Commission for over 10 years and holds the presidency of the French KM Club since 1999. Professor Ermine has published four books, over 100 peer-reviewed academic publications and is the inventor of the widely practised KM Method MASK. Professor Ermine is active as a KM expert consultant on large private and public projects in Europe, Middle East, Asia, Canada, USA and South America.

**Professor Johanna G. Ferreira** is Professor in Curriculum and Instructional Studies in the College of Education at the University of South Africa. Her research interests lie in the field life sciences and environmental education. She is currently involved in research on the kids-in-parks programme offered by SANParks, which introduces disadvantaged learners and their teachers to national parks.

**Dr Jeannie Govender** is currently Deputy Director for Road Safety at the KZN-Department of Transport. She is responsible for Road Safety Education and Advocacy amongst all road users and her interest is in curriculum development and road safety education programmes.

**Dr Petronella Jonck** completed her PhD in Psychology in 2011 at the University of the Free State and is currently a Deputy Director of Research at the National School of Government. Her research outputs to date include presenting and chairing several national and international conferences as well as more
than 32 published journal articles, including an article on criminal engagement in South Africa that was published in *The International Journal of Educational Development*. She has co-authored two chapters one of which was published by Cambridge Scholarly Publishing on employability skills and has supervised six postgraduate students.

**Khosi N.I. Molala** is an Assistant Director: NQF Advisory at the South African Qualifications Authority. Her research interests are in the field of geography and environmental education. She worked as a geography curriculum specialist at Gauteng Department of Education District, but is currently involved with the implementation of the National Qualifications Framework, which enhances the quality of education and training.

**Dr Hermanus Moolman** is the Head of the Department of Mercantile Law and the Teaching and Learning Manager of the Faculty of Law, University of the Free State. He has more than 23 years’ higher education experience and specialises in curriculum development.

**Darren Morris** MSc is a full time Tutor of Digital Marketing at Bahrain Polytechnic. Instrumental to the strategic direction of the Marketing qualification, Darren has fostered strong relationships with industry and marketing stakeholders building a relevant curriculum for the development of work-ready marketing graduates. Darren holds extensive experience as a marketing practitioner, including five years in the fast moving consumers’ goods industry in New York. With currently over nine years’ experience in higher education, his interest lies in digital and mobile marketing.

**Associate Professor Vincent Ribiére** DSc, PhD is an enthusiastic and creative international consultant and professor with a passion for helping organisations solving their organisational knowledge and innovation management issues. Founder of the Institute for Knowledge and Innovation Southeast Asia (IKI-SEA), of the Asian Symposium of Creativity and Innovation Management (ISPIM), of the KM Global Network and of the Creative Mornings chapter of Bangkok, as well as various innovative academic programmes, he has a strong entrepreneurial spirit and enjoys sharing his knowledge and experiences. Dr Ribiére delivers keynote speeches and workshops at various International Professional and Academic conferences and has authored over 80 publications.

**Dr Erica Dorethea Spangenberg** is a senior lecturer in Mathematics Education at the University of Johannesburg, South Africa. She lectures IT teachers specialising in mathematics and supervising postgraduate students in the field of Mathematics Education. Her research interests are pedagogical content knowledge, affective constructs in the teaching and learning of mathematics and ethno mathematics. [ORCID: orcid.org/0000-0003-3073-9239]

**Dr Sonja Strydom** is a Senior Advisor at the Centre for Learning Technologies and serves as an advisor at the Faculty of Education at Stellenbosch University. She teaches on postgraduate courses and her current research interests are the role of agency in technology-enhanced curriculum development, digital and mobile literacies and the impact of technology in addressing inequalities in HE.

**Dr Philippe Vande Wiele** is currently a full-time tutor of marketing and general business studies at Bahrain Polytechnic. Philippe brings over 10 years of experience in higher education to the table combined with over a decade as a board of directors’ member of Visualantics and consulting expertise in business development. In complement to an active passion for building industry relevant learning experiences, Philippe’s research interest and publications concern the place and role of higher education in preparing people for the 21st Century world.
Editorial

Dolina Dowling

Higher education institutions (HEIs) operate in fast-moving and challenging national and global environments. In many countries they also face unexpected and specific challenges, for instance, Brexit in the UK has implications for HEIs in terms of staffing, student recruitment and research agendas both in terms of funding and collaboration, all of which have wider implications for the continued strong global performance of the UK university sector. The protectionist thrust and the anti-immigration agenda of the US presidency threatens the internationalist agenda of the academic enterprise and is likely to create similar challenges to those in the UK including a lessening of critical interactions with academics from outside the US. HEIs in South Africa face increasing demands not only for access to free higher education but also the transformation of all aspects of the academy whilst struggling with budgetary constraints and dwindling resources.

Unprecedented connectivity and other technological advances allow for information transfer around the globe in seconds creating demand for borderless and time-independent higher education study which, whilst providing opportunities for HEIs, presents them with new and uncharted challenges. Furthermore, HEIs face the continuing demand by governments, students and other stakeholders for accountability through quality assurance and accreditation systems, qualifications frameworks and the need to meet national priorities through producing well-educated, flexible and work-ready graduates who have the knowledge, attributes and skills to meet the constantly changing needs of business and industry. Of course there is more to higher education than serving global and national economies, it is also a private good. Graduates are more likely to lead satisfying and fulfilling lives compared to non-graduates. However, new technologies will make many professions and skills redundant, hence students need to be inculcated with a desire for lifelong learning. Due to all these sometimes conflicting challenges and demands, strategic planning is a necessity for HEIs. Institutions cannot do everything. Strategic planning is the vehicle through which each can determine and give focus to their identity, aspirations and priorities. However, this in itself is not sufficient. HEIs not only need to define their vision, mission and objectives but also develop measurable key performance indicators (KPIs). In short, institutions need to ensure that such plans are ‘lived’ documents. This entails establishing and implementing effective mechanisms including regular monitoring, review, and making interventions when KPIs are in danger of not being achieved.

In the light of the above it is apt that in this second issue of volume 12, the importance of effective strategic planning is evident. It explicitly and implicitly underpins the articles and doctoral abstracts. In the first article the author investigates and confirms identified factors in the literature which contribute to effective strategic planning. The leadership of HEIs would be wise to take cognisance of this research.
Graduate employability is increasingly seen by national governments and quality assurance agencies as a measure of an HEI’s fitness for purpose. HEIs as well as business, industry and students view the achievement thereof as a critical success factor. For many institutions employability is embedded in their vision and mission statements and other components of their strategic plans, which in turn means that graduate employability is an important KPI. The next three articles address this. The first offers a conceptual competence-based framework which can be used to strengthen employability through ensuring that students graduate with the knowledge, skills, attitudes and values to enter the labour market successfully.

The following article takes as its starting point that employability is a key driver in an HEI’s strategic plan. The authors provide a descriptive case study in which project-based learning, a variant of problem-based learning, is the pedagogical tool of choice to achieve this. This pedagogy is used in the capstone course in an undergraduate marketing programme. The study shows how this methodology enhances employability through the students forming a professional identity. Institutions, which place employability as central to their mission, may find it useful to adopt this pedagogy.

The third article in this employability cluster is a quantitative study in which the knowledge and skills of graduates entering the public service in a South African province are assessed by senior government officials. In the findings the author makes a number of recommendations to increase graduate competence as well as for further research.

New models of programme delivery and assessment have emerged in the light of technological advances. This has resulted in many institutions making the strategic decision to establish centres of technology learning and/or to integrate technology in their teaching and learning strategies through offering eLearning or blended learning programmes. In the fourth paper the authors explore through a case study, e-portfolio implementation and its usefulness as a vehicle for reflective learning and the application of knowledge and skills. The opportunities and challenges for successful e-portfolio implementation are identified and recommendations are offered.

The next article is underpinned by the 2011 strategy of the then Ministry of Education regarding teacher education and development. The relationship between the theory that pre-service teachers gain during their higher education studies and the application in practice is explored in a case study through the lens of a three-level model - gestalt, schema and theory. The findings have implications for teacher education.

In the final two articles strategic initiatives by the Department of Basic Education in South Africa are considered as they pertain to the Grade 10 Geography Curriculum Policy and the Road Safety Programme in primary schools.

With regards to the former, the environment and the need for sustainable development is at the top of many government agendas. This can be seen, for instance, in the consensus reached by the 195 members of the United Nations Framework Convention on Climate Change (UNFCCC) and who signed the 2015 Paris Accord including South Africa in April 2016. It has since been ratified by 160 members. It is fitting then the assessment of environmental education as set out in the Grade 10 Geography curriculum policy document is evaluated to determine whether it develops the necessary knowledge and associated skills and competences. The author finds there are gaps in teacher knowledge in environmental education as well as the varied pedagogies that can be used in the classroom. A range of recommendations are made including the need for professional development programmes.

Road safety in South Africa is of paramount concern as there are exceptionally high road accidents in comparison to most other countries. Furthermore, pedestrian fatalities are unacceptably high and continue
to rise; 5410 in 2016 compared to 4870 in 2015 (www.arrivealive.co.za). Many strategic initiatives have been adopted to address this, one of which is the road safety programme in primary schools. In the final article the authors report on research carried out regarding teachers’ perceptions on the implementation of this programme. It was found that while teachers were positive about the benefits in educating learners about road safety, they did not have sufficient support from school principals and colleagues as well as the adequate resources for successful programme delivery. This needs to be addressed so that young people learn how to avoid the hazards presented by traffic and how to use the road environment safely and responsibly.

The issue closes with Doctoral Corner which contains abstracts of recently awarded doctoral degrees regarding the strategic decision-making process in higher education; digital technologies; foundation programmes in higher education; and strengthening teaching and learning in primary schools. These alert researchers and practitioners to cutting edge research in their areas of interest.
Selected factors that influence successful strategic planning in South African higher education

Samuel M. Bosire, Nelson Mandela University, South Africa

ABSTRACT
The objective of this investigation is to examine selected factors that contribute to successful strategic planning in Higher Education Institutions (HEIs) in South Africa. Organisations, including HEIs, that wish to achieve their objectives in the current fast-changing operating environment should formulate and implement strategic plans. The King III Report on corporate governance stresses the need for leaders to take responsibility for defining the strategies of their organisations. Existing literature has identified some factors that influence the success or failure of strategic planning. However, the extent to which these factors influence - if at all - strategic planning in South African HEIs remains unclear. The importance attached to these factors in South African universities is compared with their international counterparts. In carrying out this investigation, online questionnaires were completed and returned by 108 participants comprising Registrars and Information Managers at 23 South African HEIs and Information Managers in selected international higher education institutions. Data analysis entailed both descriptive and inferential statistics. Correlational analysis of the results confirmed that factors such as management buy-in and the availability of Business Intelligence (BI) reports were positively related to effective strategic planning and vice versa. Similarly, a strong correlation was observed between the presence of reporting guidelines and strategic planning. Other factors that strongly emerged as being positively related to successful strategic planning include: consultation during the strategic planning process as well as visible and strong leadership.

Keywords: strategic planning, sustainability reporting, Higher Education Institutions (HEIs), Business Intelligence (BI), monitoring and evaluation, leadership, management

INTRODUCTION
Strategy has been defined by Alfred (2006: 6) as ‘the systematic way of positioning an institution with stakeholders in its environment to create value that differentiates it from competitors and leads to a sustainable advantage’. According to Porter (2011) organisations often mistake operational effectiveness for strategy. Whereas operational effectiveness can be used as a means of achieving an organisation’s strategy, it is not really strategy. The end result of strategy is to ensure that an organisation chooses a distinct position that influences its choice of activities. A further distinction is also made between strategy and tactics. The latter often fail to address the big picture as they tend to be short-term in nature (Alfred, 2006).

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According to Kim and Mauborgne (2011), strategies can be described as being either red ocean or blue ocean with the former representing all aspects of an existing operating environment, while the latter represents new opportunities that an organisation could pursue. Red ocean strategies are based on the structuralist paradigm or environmental determinism, whereby the organisation is at the mercy of external forces. By contrast, blue ocean strategies are based on the reconstructivist viewpoint, whereby actions and beliefs of players in industry determine the boundaries. Therefore, organisations may choose to pursue red ocean strategies, blue ocean strategies or both depending on intended outcomes.

Strategies are a product or outcome of strategic planning. Peng (2009: 10) states that strategy is a combination of an organisation’s intended and emergent activities and concludes that ‘strategy is a firm’s theory about how to compete successfully’. Therefore, strategic planning entails both formulation and implementation of strategy. Grant (2010) adds that, depending on the turbulence of the organisation’s operating environment, strategic planning deals with both design and emergent planning. Through strategic planning, organisations determine their major goals and then develop policies and procedures geared at meeting set objectives (Nickels, McHugh & McHugh, 2008). Sevier (2003) points out that strategic planning in higher education should be about recognising the alignment between the university and its environment and should result in one organising principle around which the institution’s activities should revolve. The essence of strategic planning is to align limited organisational resources with a clear destination (Seymour, 2011).

Ozdem (2011) opines that as a concept, strategic planning is an instrument that allows for the development of long-term plans in view of prevailing risks and opportunities and therefore concludes that strategic planning would breed efficiency. Focusing on the higher education sector, Hayward and Ncayiyana (2003) maintain that the purpose of strategic planning is to provide continuous examination and evaluation of an institution’s strengths, weaknesses and resource requirements with a view to building effectiveness. In addition, strategic planning contributes to the restoration of operational effectiveness in situations characterised by anarchy in management.

Porter (2011) avers that strategy entails making trade-offs, which includes deciding what activities not to undertake and how to integrate and create a fit among the activities in an organisation without which sustainability and distinctiveness cannot be attained. Hayward and Ncayiyana (2003) support this view and conclude that organisations become more focused by making trade-offs. Porter (2011) further states that strategies that revolve around systems of activities are more sustainable than those built on individual activities.

The purpose of strategic planning in higher education is to enhance institutional effectiveness and improve management capability. Richards, O’Shea and Connolly (2004) observe that changes in the higher education landscape due to external influences have triggered a realisation that institutions need to use strategic and scenario-planning techniques to shape and re-think strategy in order to survive. The question that arises, therefore, is which factors influence the success of strategic planning in higher education?

LITERATURE REVIEW

Strategic planning involves a number of steps that are carried out by means of various tasks. These tasks can be classified into key processes that constitute the strategic planning cycle. Strategic planning is an iterative process that requires organisations to develop a vision and set objectives which result in formulating a strategy. Strategies need to be implemented in order for the organisation to derive value. Grant (2010) states that the process is the most important part of strategic planning.
Setting of a vision is one of the first and most important steps in the strategy process. This is underscored by Collins and Porras’s (2011: 78) statement that ‘vision provides guidance about what core to preserve and what future to stimulate’.

Factors that influence success in strategic planning

The strategy making and implementation processes do not happen in a vacuum. A number of internal and external factors have a bearing on the strategy process. Based on results of a study revealing that 75% of employees rate their organisations poorly in execution, Neilson, Martin and Powers (2011) observe that the problem with many organisations lies with poor execution of developed strategies due to unclear decision rights, poor information flows and numerous structural changes. Based on their research, Mankins and Steele (2011) conclude that some organisations have little to show for the great effort put into strategic planning, as is evident from results of a survey which shows that only 63% of the planned financial performance is achieved by organisations.

Supporting literature also suggests that some organisations fail to realise their full potential as a result of poor forecasting. Mankins and Steele (2011) use the analogy of Venetian blinds to illustrate how organisations base their targets and benchmarks on previous years’ performance figures, that are often understated or erroneous, resulting in year-to-year under-performance. Availability and access to information is a key factor in the implementation of strategies. Rational decision making is dependent on the availability of information. In a recent study, only 61% of employees had access to information in an organisation that was considered strong, as opposed to 28% in an organisation that was considered to be weak (Neilson, Martin & Powers, 2011). This view is shared by Mankins and Steele (2011) who warn that without early warning signals, the management in organisations risks making wrong decisions. Although Donaldson and Schoemaker (2013) caution that there are multiple factors associated with an organisation’s ability to spot early warning signals, performance reporting on strategic plans is important to provide early warning signs. To this end, Sevier (2003) asserts that strategic planning should be supported by a monitoring and evaluation system. Communication is an equally important aspect in strategic planning.

Communication is a key ingredient in strategy execution and is closely allied to availability and access to information. Grant (2010) underscores the importance of communication by describing the strategic process as the dialogue that ensures the communication of knowledge and ideas and builds commitment and consensus. Studies support the view that communication is critical in the efficient execution of strategy (Peng & Littlejohn, 2005). Communications should include all stakeholder groups. Cowburn (2005) argues that challenges associated with implementing strategic plans relate to both the formulation and execution of the plans.

Kaplan and Norton (2011) advise that communication breeds commitment and accountability. Adopting an organisational strategic principle – an actionable phrase that summarises the essence of the strategy and communicates it throughout the organisation is advised. Although strategies may change, an organisational principle remains the same (Gadiesh & Gilbert, 2011).

Monitoring and evaluation capacity in the higher education institutions is greatly enhanced by the presence of reliable management information and the practice of continuous review and monitoring of data (Hayward & Ncayiyana, 2003). Kettunen (2010) adds that the capacity of organisations to adjust with agility to changes in the environment is key in their survival. Signals from the environment must pass through three filters – surveillance filter, mentality filter and power filter. The surveillance filter limits information to that which is within the scope of the organisation; the mentality filter introduces the risk of short-sightedness while the power filter introduces the risk of information not flowing through organisational levels and strong cultures.
Strategic plans are formulated and implemented in a world of uncertainties and risks. Enterprise-wide risks or systemic risks result from close interdependencies among various internal and external variables. Donaldson and Schoemaker (2013) state that systemic risks cannot be mitigated by mere internal controls or ex-post legislation and therefore require individuals to have access to information that enables proactive monitoring to detect early warning signs.

Organisational systems and subsystems also play a role in strategy implementation processes. These interdependent subsystems comprise the whole organisational system. Schiefer (2002) summarises the organisational subsystems as being: strategic, technological, human cultural, structural and management. The interplay between the subsystems has a bearing on the attainment of strategic goals. Well-managed organisational systems and subsystems translate to organisational capabilities. Grant’s (2010) model of resources and organisational capabilities describes these categories used to enhance organisational capabilities. The key enablers are strategic intent, organisational structure and management systems. Careful planning for both human and financial resources is key in the strategy process, because resources are limited.

Organisations – independent of human and other resources – have their unique capabilities. Afuah (2009) defines capabilities as the organisation’s ability to convert its resources to benefits, and states that creating and appropriating value from strategies requires resources and capabilities. An organisation’s capability is influenced by three main factors – its resources, its processes and its values. Whereas processes are patterns of interaction, coordination, communication and decision making that employees use to translate resources into value-adding products and services, values relate to the standards by which priorities of what gets done are made (Christensen & Overdorf, 2011). Processes and values relate to organisational factors.

Resources are important factors in the success, or failure of any strategy. Without adequate resources, strategic plans are unlikely to yield results. Strategies require resources to design and implement and monitor. Organisational resources can be classified into four broad categories – human, financial, physical and intangible (David, 2007; Christensen & Overdorf, 2011). Tangible resources ensure that the operations of an organisation are enabled – an important element of strategy execution. Physical resources, also referred to as infrastructure, should be safe, healthy and encourage performance (Kaplan & Norton, 2011). According to David (2007), marketing, facilities, production and Information and Communications Technologies (ICTs) constitute the physical resources. Infrastructure is key in supporting organisational strategy.

The right mix of infrastructure for strategy development should be in place. It is often taken for granted that the available infrastructure is adequate and appropriate for supporting organisational strategy. Infrastructure is closely aligned to financial resources as it comes at a high cost. Higher education provision involves classrooms, seminar rooms, sports fields, common rooms, laboratories, technology and other facilities. It stands to reason, therefore, that HEIs should develop plans for infrastructure aligned to strategic plans. Intangible resources include aspects such as goodwill, intellectual property and the brand name. HEIs exist to create and disseminate knowledge and therefore intangible resources remain critical in the strategy execution processes. Human resources play a monumental role in strategic planning.

Harvey (2004) places the responsibility of ensuring that there is adequate resourcing of functionaries that execute strategy on the management team. Staff required to implement strategic plans should be involved in the strategy process. Rapert, Lynch and Suter (2006) strongly recommend the inclusion of staff in organisational decision-making processes. Olson, Slater and Hult (2005) hold a contrary view and instead propose that top management should be responsible for decision making. This view is shared...
by Watson (1995) who states that although the strategic planning process is a platform for change and improvement, strategic planning, like a map, points to the destination but does not provide the vehicle. Therefore, for the change contained in a strategic plan to succeed, consensus must first be built at the level of execution. The choice of employee involvement and consultation is a management prerogative that should be exercised with wisdom and tact. The level and extent of staff involvement would differ depending on the nature of the organisation.

Capron and Mitchel (2010) underscore the importance of resources for strategy implementation and advise that resources can either be insourced or outsourced by organisations. Johnston, Abader, Brey and Stander (2009) conclude that cost is the most influential factor in determining how to acquire resources. Organisations often outsource with the objectives to access best practices; get exposure to additional skills; improve staffing flexibility; cost control; concern about the core business; in-house expertise; risk management and other legal factors. Insourcing is recommended for creating a pool of employees with a sense of belonging and responsibility who take pride in achieving organisational goals.

Organisations allocate financial resources to priorities during the budgeting process (Salmi & Hauptman, 2006). The management of financial resources as part of the strategy process should entail aligning budgets with strategic priorities. Kaplan and Norton (2011) warn that the misalignment of financial planning, budget allocation and strategy can be a recipe for failure to achieve strategies. Therefore, they advocate the use of the Balanced Score Card as a Business Intelligence (BI) tool whose benefits include helping to align business processes and redirecting an organisation into implementing long-term strategies. Although there are few published reports on the successful application of the Balanced Score Card in higher education, Beard (2009) points to the potential by underscoring the view that financial results alone are insufficient to capture value-creating activities.

Leadership is one critical factor that influences the implementation of strategies. Organisational turbulence can also result from internal sources. The role of leadership comes into the spotlight. Poor leadership hampers good communications and undermines the quality of monitoring and assessment of strategic outcomes (Tromp & Ruben, 2010). Daniell (2006) suggests that a change in leadership introduces turbulence and affects the implementation of existing strategies. Kettunen (2010) points out that strategic dialogue and participation that should be mediated by the leadership are more important than the strategy document.

Leadership shapes and communicates the vision for the organisation as indicated by Pearce and Robinson (2003) who opine that effective implementation of strategy is a function of the role played by the leadership. Studies have shown the important role that a strong leader plays in defining a vision for an organisation (Mintzberg & Quinn, 2005). Studies also show that strategic goals are better achieved whenever an organisation’s leadership support and commit to the transformation agenda (Kotter, 2011).

In higher education, Hayward (2008) states that the participation and support of the university leadership is critical in steering the strategic planning process. Institutions that recognise the diversity of their campus communities achieve better results in strategic planning. A participatory strategic planning process ensures broad input, mobilises support and gives the plan legitimacy. The traditional top-down approach to planning and decision making was not working and therefore stakeholder involvement had to be introduced in democratic South Africa.

The role played by leadership and management in setting the tone on aspects in the life of an organisation, such as communication, culture, team dynamics, commitment and excellence cannot be overemphasised. The interplay of a complex array of intra-organisational systems and subsystems sets the tone of the
culture in an organisation and consequently influences the degree of attainment of organisational goals. The culture of an organisation can influence the efficacy of strategy implementation. Lasher and Sullivan (2004) argue that a positive organisational culture can rally the energies of employees towards strategy attainment. Wheelen and Hunger (2004) warn of failure in strategy implementation if the goals of the strategy and the prevailing organisational culture are not congruent. Grant (2010) summarises the factors needed for success in strategic planning as follows:

- use of goals that are consistent and long-term
- a profound understanding of the operating environment and an objective appraisal of available resources by strategic planners
- effective implementation systems and processes.

Both internal and external factors have a bearing on strategic planning in organisations. In strategic planning for higher education, there is a mutual relationship between external and internal environments. These factors have to be borne in mind, when embarking on strategic planning. A combination of resources (human, financial, tangible and intangible) and systems and subsystems in an organisation contribute to efficacy of strategic planning. Stakeholder involvement and consensus are key in the attainment of strategic planning goals – especially in higher education with a multiplicity of stakeholders.

**Peculiarities in strategic planning in higher education**

As early as 30 years ago, Kotler and Murphy (1981: 470) admonished: ‘If colleges and universities are to survive in the troubled years ahead, a strong emphasis on planning is essential’. Learner (1999) states that universities embark on planning for various reasons, including shrinking funding, growing demand for higher education and changing student demographics. According to a recent Ernst and Young Report (2012) the five megatrends poised to transform higher education include: competition for funding and markets, global mobility, democratisation of knowledge and access to digital technologies as well as integration with industry. Strategic planning is becoming indispensable to organisations that wish to survive in increasingly competitive environments.

A number of challenges face strategic planning in universities. Organisations derive maximum value from strategic planning whenever the plans crafted are implemented. Cowburn (2005) laments the trend by which public sector organisations – including universities – formulate excellent plans, but fall short at the implementation stage. The problem, she argues, can be traced to content as well as structures and management of HEIs. For example, content is grossly undermined whenever objectives are not measurable. This problem is compounded whenever there are incoherent approaches to planning coupled with poor communication within the structures of management. Choban, Choban and Choban (2008) advise against strategic planning without clearly defined outcomes in higher education. They warn against the continued dominance of process variables instead of student learning and the impact on community-level variables as criteria for evaluating the success of strategic plans.

Strategic planning processes should be customised for higher education. Based on lessons learned from strategic planning in developing countries, Hayward (2008) warns that due to resource constraints and existing poor planning traditions at institutional and system levels, strategic planning poses manifold challenges in developing countries. Dooris, Kelley and Trainer (2002: 9) caution that ‘Higher Education Institutions undergo quality assurance in one form or the other’. Birnbaum (2000) advises institutions to measure that which is valuable, lest they value that which is measurable. Furthermore, Birnbaum (2000)
warns of the dangers of neglecting that which cannot be easily measured. Deming (1986) cautions administrators against focusing only on productivity indicators as productivity does not necessarily lead to improvement. Hamaker (2003) concludes that with clear strategy, strong communications, independent review and continuous improvement, the measurement of performance becomes easier.

**RESEARCH METHODOLOGY**

*Data collection methods and procedures*

Four separate self-administered online and paper-based questionnaires were sent out to four different groups of respondents. The questionnaires consisted of open-ended questions, as well as closed-ended questions in which a 5-point Likert scale was applied. The first questionnaire was sent to Registrars of universities in South Africa. Registrars are responsible for processes related to governance in South African HEIs.

The second questionnaire was sent to individuals responsible for the management of information systems at all South African universities. Information management in the form of business intelligence reports on key aspects of an organisation’s sustainability (sustainability reports) is key in strategic planning. A third questionnaire was sent to individuals responsible for information management at some international universities in mainly in North America and Australia. The fourth questionnaire was sent to deans of faculty, directors of school, heads of department and other managers responsible for strategy planning and implementation at the Nelson Mandela Metropolitan University (NMMU). Since this research was carried out, NMMU has had its name changed to Nelson Mandela University.

Ethics clearance for this study was obtained from the NMMU Ethics Committee. As the participation in the research was voluntary, consent to participate in the questionnaire survey was first sought from each participant. The contact with the university participants was easily secured as the researcher is an employee of the university.

*Analytical methods and procedures*

All the captured data were verified. This means the data were checked and edited for logical consistency, for permitted ranges, for reliability on derived variables and for filtering instructions. After the data-cleaning exercise, the filtered data were then analysed. Various inferential statistical techniques were employed to determine relationships and differences between the indicators and demographic variables. A combination of descriptive and inferential statistics was used to analyse the quantitative data from each of the four surveys.

**RESULTS AND DISCUSSION**

The study covered a number of themes, among which was strategic planning in higher education. The questionnaires used in the surveys were designed to address the main research question which is: Which factors contribute to effective strategic planning in HEIs?

*Response rate of sample*

Table 1 shows the assessment the response rate attained in the study.
Table 1:
Response rate assessment

<table>
<thead>
<tr>
<th>Survey and questionnaire Name</th>
<th>Number distributed</th>
<th>Number completed and returned</th>
<th>Response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance practices in SA Higher Education (GPSAHE) Institutions</td>
<td>23</td>
<td>11</td>
<td>48%</td>
</tr>
<tr>
<td>Sustainability Reporting Practices (SRPHESA) in SA Higher Education</td>
<td>23</td>
<td>21</td>
<td>91%</td>
</tr>
<tr>
<td>Sustainability Reporting in International Higher Education (SRIHE)</td>
<td>70</td>
<td>35</td>
<td>50%</td>
</tr>
<tr>
<td>Sustainability Reporting Practices at the Nelson Mandela Metropolitan University (SRPNMMU)</td>
<td>65</td>
<td>41</td>
<td>63%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>181</strong></td>
<td><strong>108</strong></td>
<td></td>
</tr>
</tbody>
</table>

As indicated in Table 1, a combined total of 108 number of respondents completed and returned their questionnaires, that is 63% (n= 108) of the respondents completed and returned the questionnaires. This formed the basis of the analysis presented on strategic planning in higher education.

Planning period and status of strategic plans

The GPSAHE survey showed that South African HEIs use either three-year or five-year cycles for strategic planning purposes. Forty-five percent (45.5%) of institutions use three-year cycles, while 54.5% use a five-year strategic planning cycle. These cycles are shorter than the planning cycle recommended in the reviewed literature. For example, Porter (2011) recommends that strategies should cover a decade, or longer because continuity promotes improvement in singular activities, while allowing an organisation to develop competencies required for its strategy. However, this is in line with the New Funding Formula (NFF) of the South African Department of Higher Education which requires three-year rolling plans.

Respondents in the GPSAHE survey (n=11) were asked to indicate the status, in terms of approval, of Strategic Plans for their institutions. Table 2 shows the findings.

Table 2:
Approval of Strategic Plans and use of a reporting framework for HEI

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Minimum (Min)</th>
<th>Maximum (Max)</th>
<th>Standard deviation (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The University Council has approved the current strategic plan</td>
<td>4.27</td>
<td>2</td>
<td>5</td>
<td>0.90</td>
</tr>
<tr>
<td>There is lack of a sector specific (Higher Education) reporting framework</td>
<td>3.36</td>
<td>1</td>
<td>5</td>
<td>1.21</td>
</tr>
</tbody>
</table>

Table 2 shows the results that the majority of institutions have their strategic plans approved by the University Councils. This is in line with recommendations of governance best practices. One of the functions of a Board is to set the strategic direction of the organisation (Institute of Directors, 2009).
Universities produce a number of plans and reports as part of internal management requirements, or in compliance with regulations. The GPSAHE survey indicated that in addition to Faculty Plans and Academic Plans, universities produce other plans such as the Financial Plan (80%), Human Resources Plan (55%), Infrastructure Plan (73%), and ICT Plan (55%) as indicated in Figure 1.

Figure 1:
Plans produced by South African universities – GPSAHE survey

All respondents indicated that strategic plans are produced by their institutions. However, some universities indicated that they do not have Human Resources and Information Technology plans. This is a matter of concern, especially in light of the significant role that Human Resources and Information Technology play in HEIs.

Financial Management Plans are fairly well established in institutions, and it was not surprising that 80% of participants confirmed this. Infrastructure plans which are required by the Department of Higher Education, as a prerequisite for releasing funds for infrastructure seem to be well established in South African universities. These results may be an indication that there is a lack of, or poor integration of plans resulting in functional units or departments producing plans that do not link with other plans. Although Information Technologies are sometimes mentioned in Infrastructure plans, the focus is not comprehensive enough as intended in recommendations of the King III report (Institute of Directors, 2009).

Respondents in the GPSAHE survey were also required to rate the importance of reports that should be produced by their institutions. The results in Table 3 indicate that respondents consider reports such as the Financial Report, Strategic Plan Performance Report, the Academic Report and the Integrated Sustainability Report to be very important.

Table 3:
Importance of reports produced in South African Universities – GPSAHE survey

<table>
<thead>
<tr>
<th>Name of report</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Report</td>
<td>4.55</td>
<td>4</td>
<td>5</td>
<td>0.52</td>
</tr>
<tr>
<td>Annual Report (containing Strategic Planning)</td>
<td>4.36</td>
<td>3</td>
<td>5</td>
<td>0.67</td>
</tr>
</tbody>
</table>
The results in Table 3 above show that respondents in the GPSAHE survey attach importance to all reports produced. The Financial Report and the Annual Report were rated as most important – perhaps because they should be produced in accordance with regulations. However, it is encouraging to note that respondents attach importance to Integrated Sustainability Reports. In terms of importance, the respondents ranked Integrated Sustainability Reports last out of the four plans. Academic Reporting is second-last. While Financial Reporting is important, this result may point to an over-emphasis on it, while not considering whether the money is spent well on the academic project. The strategic plan could cover all these plans and therefore provide a holistic picture of the institution’s performance.

Mechanisms for Monitoring Strategic Plans at Universities

Respondents were asked to identify the means through which their institutions monitor performance against the targets set in the strategic plan. The surveys show that there are various mechanisms for monitoring progress in the implementation of strategic plans. Respondents in the GPSAHE, SRIHE and SRPNMMU surveys indicated that their institutions use budget monitoring - 85.7% (n = 11) 73.3% (n = 35) and 77.1% (n = 41) respectively. However, unlike in the GPSAHE survey, results in the SRIHE and SRPNMMU surveys show relatively low percentages in the use of employee performance management and monitoring of strategic plans. Unlike the GPSAHE and SRPNMMU surveys, most respondents in the SRIHE survey selected the Annual Report as their means of tracking performance.

From the SRPNMMU survey, 51.4% (n = 41) of respondents agree that there are reports on the performance against targets set in the strategic plan. However, 81% (n = 11) of GPSAHE respondents indicate that institutions report on achievement of targets in strategic plans. This difference could be further evidence that internal communication regarding the implementation of strategic plans is not adequate. Table 4 shows the results.

Table 4:  
Mechanisms for monitoring the implementation of Strategic Plans at Universities

<table>
<thead>
<tr>
<th>Monitoring Mechanism</th>
<th>GPSAHE (n=11)</th>
<th>SRIHE (n=35)</th>
<th>SRPNMMU (n=41)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular reports on performance against targets in institutional plans such as the strategic plan</td>
<td>81.0%</td>
<td>66.7%</td>
<td>51.4%</td>
</tr>
<tr>
<td>Budget monitoring</td>
<td>85.7%</td>
<td>73.3%</td>
<td>77.1%</td>
</tr>
<tr>
<td>Employee performance management</td>
<td>81.0%</td>
<td>40.0%</td>
<td>45.7%</td>
</tr>
<tr>
<td>Achievements contained in the annual report</td>
<td>61.9%</td>
<td>80.0%</td>
<td>71.4%</td>
</tr>
</tbody>
</table>

Participants in three surveys (SRPHESA, SRIHE AND SRPNMMU) were asked to rate their estimation of the importance of information contained in strategic plans to various identified stakeholders. Table 5 reports the results.
Table 5:
Importance of strategic planning information to identified stakeholders

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>SRPHESA</th>
<th>SRIHE</th>
<th>SRPNMMU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean SD</td>
<td>Mean SD</td>
<td>Mean SD</td>
</tr>
<tr>
<td>Current and prospective employees</td>
<td>3.48 1.08</td>
<td>3.96 0.88</td>
<td>3.89 0.90</td>
</tr>
<tr>
<td>Current students</td>
<td>3.05 1.28</td>
<td>3.83 1.03</td>
<td>3.34 1.11</td>
</tr>
<tr>
<td>Prospective students</td>
<td>2.81 1.33</td>
<td>3.61 1.16</td>
<td>3.00 1.06</td>
</tr>
<tr>
<td>Alumni</td>
<td>2.81 1.17</td>
<td>3.30 1.18</td>
<td>3.00 1.14</td>
</tr>
<tr>
<td>Donors</td>
<td>3.33 1.15</td>
<td>3.52 1.34</td>
<td>3.91 0.98</td>
</tr>
<tr>
<td>Local community</td>
<td>2.52 0.98</td>
<td>3.00 1.27</td>
<td>3.09 1.09</td>
</tr>
<tr>
<td>Service providers</td>
<td>2.90 0.83</td>
<td>2.96 1.36</td>
<td>2.83 1.20</td>
</tr>
<tr>
<td>Government regulators</td>
<td>3.48 1.17</td>
<td>3.74 1.32</td>
<td>4.23 0.91</td>
</tr>
</tbody>
</table>

Information contained in the strategic plans was seen to be of importance to all identified stakeholders, albeit at different levels. Current and prospective employees, donors, government regulators and prospective students were identified as the stakeholders most in need of information about institutional Strategic Plans with mean scores of 3.48, 3.96 and 3.89 for the SRPHESA, SRIHE and SRPNMMU surveys respectively. The opportunity to attract prospective students as well as to inform the community could be lost if attention is not given to providing information about the strategic direction of an institution. In the SRIHE survey, service providers were rated as least in need of strategic planning, while current and prospective employees, donors, government regulators and prospective students were identified as the stakeholders most in need of information in strategic plans. This is consistent with the SRPHESA and SRPNMMU scores.

A notable difference is that the SRPHESA survey shows that the local community, prospective students and Alumni are rated low with regard to requiring information on strategic plans. This finding indicates that HEIs are potentially missing opportunities to engage with important stakeholders in the higher education value chain, as indicated by Pathak and Pathak (2010). In addition, the results confirm the work by Merkel and Litten (2007) in which stakeholders in higher education together with their reporting requirements are identified. Strategic Planning is closely linked with Sustainability Reporting. In the GPSAHE, SRIHE and SRPNMMU surveys, respondents rated their agreement with statements on the importance of strategic planning in the Sustainability Reporting (SR) requirements. Table 6 shows the findings.

Table 6:
Linking Strategic Planning and Sustainability Reporting requirements

<table>
<thead>
<tr>
<th>Statements</th>
<th>GPSAHE</th>
<th>SRIHE</th>
<th>SRPNMMU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean SD</td>
<td>Mean SD</td>
<td>Mean SD</td>
</tr>
<tr>
<td>Strategic planning is aligned to the budgeting</td>
<td>3.33 1.20</td>
<td>3.44 0.92</td>
<td>2.85 1.21</td>
</tr>
</tbody>
</table>
The prioritisation of resource allocation is guided by the strategic plan

<table>
<thead>
<tr>
<th>Statements</th>
<th>GPSAHE (n=11)</th>
<th>SRIHE (n=35)</th>
<th>SRPNMMU (n=41)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The prioritisation of resource allocation is guided by the strategic plan</td>
<td>Mean 3.38</td>
<td>Mean 3.44</td>
<td>Mean 3.03</td>
</tr>
<tr>
<td></td>
<td>SD 1.24</td>
<td>SD 0.98</td>
<td>SD 1.03</td>
</tr>
<tr>
<td>The strategic planning process is consultative and relevant stakeholders contribute in the strategy formulation</td>
<td>Mean 3.86</td>
<td>Mean 3.47</td>
<td>Mean 3.03</td>
</tr>
<tr>
<td></td>
<td>SD 1.06</td>
<td>SD 0.80</td>
<td>SD 0.87</td>
</tr>
<tr>
<td>There is lack of a sector specific (Higher Education) reporting framework</td>
<td>Mean 3.60</td>
<td>Mean 3.39</td>
<td>Mean 4.38</td>
</tr>
<tr>
<td></td>
<td>SD 1.10</td>
<td>SD 0.98</td>
<td>SD 0.70</td>
</tr>
<tr>
<td>The university should have reporting tools to monitor the implementation of its strategy plan</td>
<td>Mean 4.10</td>
<td>Mean 4.06</td>
<td>Mean 4.18</td>
</tr>
<tr>
<td></td>
<td>SD 0.94</td>
<td>SD 0.73</td>
<td>SD 0.70</td>
</tr>
<tr>
<td>Sustainability Reporting will greatly be enhanced if reporting is done on the institutional strategy plan</td>
<td>Mean 4.10</td>
<td>Mean 3.82</td>
<td>Mean 3.60</td>
</tr>
<tr>
<td></td>
<td>SD 0.94</td>
<td>SD 1.01</td>
<td>SD 0.88</td>
</tr>
<tr>
<td>The university has identified its information sources and information users for purposes of reporting</td>
<td>Mean 2.86</td>
<td>Mean 3.17</td>
<td>Mean 2.91</td>
</tr>
<tr>
<td></td>
<td>SD 1.01</td>
<td>SD 0.92</td>
<td>SD 1.14</td>
</tr>
</tbody>
</table>

Respondents from the GPSAHE and SRPNMMU surveys with mean scores of 2.86 (Registrars) and 2.91 (Faculty and HODs) respectively, concur with the statement that the university needs to identify information sources and users. This supports the recommendations for data warehousing and BI architecture proposals by Shin (2002) and March and Hevner (2007). Respondents in the SRPNMMU survey indicated that they are familiar with their institutions’ strategic plan better than with the other plans such as the Academic Plan, Research and Equity Plan, Financial Plan, Research Plan, Transformation and Equity Plan and Departmental Annual Plans, developed at the university showing a mean score of 3.60 on familiarity with the strategic plan (NMMU Vision 2020) does not correspond with the low percentage (54%) score on mechanisms for tracking performance using the Annual Report as shown in Table 7. This implies that the NMMU has more challenges in reporting on progress made in implementing its Strategic Plan as opposed to managers being familiar with the Strategic Plan.

Table 7: Extent of familiarity with institutional and departmental plans – SRPNMMU survey

<table>
<thead>
<tr>
<th>Name of Plan</th>
<th>N</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMMU Strategic Plan (Vision 2020)</td>
<td>41</td>
<td>3.60</td>
<td>2</td>
<td>5</td>
<td>0.91</td>
</tr>
<tr>
<td>NMMU Academic Plan</td>
<td>41</td>
<td>3.03</td>
<td>1</td>
<td>5</td>
<td>0.90</td>
</tr>
<tr>
<td>NMMU Research and Innovation Plan</td>
<td>41</td>
<td>2.97</td>
<td>1</td>
<td>5</td>
<td>1.01</td>
</tr>
<tr>
<td>NMMU Financial Plan</td>
<td>41</td>
<td>2.49</td>
<td>1</td>
<td>5</td>
<td>1.09</td>
</tr>
<tr>
<td>NMMU Human Capital Management Plan</td>
<td>41</td>
<td>2.09</td>
<td>1</td>
<td>5</td>
<td>0.84</td>
</tr>
<tr>
<td>NMMU Transformation and Equity Plan</td>
<td>41</td>
<td>2.63</td>
<td>1</td>
<td>5</td>
<td>1.19</td>
</tr>
<tr>
<td>Respondent’s School/Department/Division’s Annual Operational Plan</td>
<td>41</td>
<td>4.51</td>
<td>1</td>
<td>5</td>
<td>0.82</td>
</tr>
</tbody>
</table>
The findings in Table 7 from the SRPNMMU survey indicate that whereas most respondents are familiar with their departmental or divisional annual plans, a sizeable number of managers are not familiar with other important institutional plans such as reflected in the low mean scores for the Financial Plan (2.49), Human Capital Management Plan (2.09), and Transformation and Equity Plan (2.63). Respondents were also asked to rate the perception of the university’s strategic planning process from a number of perspectives.

Respondents in the SRPNMMU survey rated statements regarding their experience with the process of developing and implementing NMMU’s strategic plan (Vision, 2020) and alignment between departmental plans and Vision 2020. Table 8 reports the results.

Table 8:
Perspectives on Vision 2020 – SRPNMMU survey

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>The requirements for reporting on NMMU Vision 2010 are well understood</td>
<td>41</td>
<td>2.34</td>
<td>1</td>
<td>4</td>
<td>1.00</td>
</tr>
<tr>
<td>The process of developing Vision 2020 was consultative and inclusive</td>
<td>41</td>
<td>3.43</td>
<td>1</td>
<td>5</td>
<td>0.92</td>
</tr>
<tr>
<td>Vision 2020 is too high-level for reporting</td>
<td>41</td>
<td>2.71</td>
<td>1</td>
<td>5</td>
<td>1.09</td>
</tr>
<tr>
<td>Department key activities included in Vision 2020</td>
<td>41</td>
<td>2.26</td>
<td>1</td>
<td>4</td>
<td>0.95</td>
</tr>
<tr>
<td>Department on track in meeting Vision 2020 targets</td>
<td>41</td>
<td>3.31</td>
<td>1</td>
<td>5</td>
<td>0.90</td>
</tr>
<tr>
<td>Feedback on progress with implementing Vision 2020 given.</td>
<td>41</td>
<td>2.06</td>
<td>1</td>
<td>5</td>
<td>1.07</td>
</tr>
</tbody>
</table>

The low mean result of 2.34 and 2.06 relating to understanding reporting requirements for and receiving progress reports on Vision 2020 respectively indicate that the requirements for reporting on strategic plans are either not available or have not been communicated. This may account for the perception that there is no feedback on the implementation of the strategic plan of NMMU. This finding agrees with the work of Kaplan and Norton (2011) who identify feedback and learning as one of the processes which ensure that strategic objectives are linked to long-term goals. Hayward and Ncayiyana (2003) also allude to the importance of feedback in strategic planning. In the same SRPNMMU survey respondents identified factors that undermine intentions of reporting against performance of the strategic plan. Table 9 reports the results.

Table 9:
Factors that undermine reporting on performance against strategic plan targets – SRPNMMU survey

<table>
<thead>
<tr>
<th>Factors</th>
<th>N</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of clearly defined reporting metrics and standards for reporting</td>
<td>41</td>
<td>3.71</td>
<td>2</td>
<td>5</td>
<td>0.94</td>
</tr>
<tr>
<td>Use of many reporting sources and lack of information integration</td>
<td>41</td>
<td>4.06</td>
<td>2</td>
<td>5</td>
<td>0.89</td>
</tr>
</tbody>
</table>
Factors | N | Mean | Min | Max | SD
---|---|---|---|---|---
Lack of awareness of Vision 2020 | 41 | 3.97 | 2 | 5 | 1.00
A disconnect between strategy development and implementation | 41 | 4.12 | 1 | 5 | 1.01
Lack of Management buy-in and support | 41 | 3.55 | 1 | 5 | 1.15

The results in Table 9 underscore the importance of the factors that have been identified as having an influence on the implementation of Strategic Plans. These include: presence of clear reporting metrics (Van den Brink & Van der Woerd, 2004); poor strategy implementation (Neilson, Martin & Powers, 2011); and lack of integration of reporting information (Chou, Tripuramallu & Chou, 2005).

Overall, respondents underscored the importance of Sustainability Reporting in the successful implementation of Vision 2020. The availability of a Strategic Planning Framework for implementation of NMMU’s strategic plan could be a factor that contributes to results indicated in Table 10. As is evident from the mean score of 2.56 in Table 10, respondents in the SRPNMMU survey did not agree with the statement that implies that it is not easy to report on strategic plans. This confirms the view shared by Donaldson and Schoemaker (2013) who caution that although there are multiple factors associated with an organisation’s ability to spot early warning signals, performance reporting on strategic plans is important to provide early warning signs. In addition, Sevier (2003) asserts that strategic planning should be supported by a monitoring and evaluation system.

Table 10:  
A case for Sustainability Reporting for the NMMU – SRPNMMU survey

<table>
<thead>
<tr>
<th>Factors</th>
<th>N</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through reporting on Vision 2020, NMMU will achieve targets quicker</td>
<td>41</td>
<td>3.61</td>
<td>2</td>
<td>5</td>
<td>0.99</td>
</tr>
<tr>
<td>Vision 2020, like all strategic plans, is a document that is not easy to report on</td>
<td>41</td>
<td>2.56</td>
<td>1</td>
<td>5</td>
<td>0.91</td>
</tr>
<tr>
<td>Most information that is to be reported on is available, albeit in different format</td>
<td>41</td>
<td>3.61</td>
<td>1</td>
<td>5</td>
<td>0.88</td>
</tr>
<tr>
<td>A framework is needed for Sustainability Reporting at the NMMU</td>
<td>41</td>
<td>4.29</td>
<td>3</td>
<td>5</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Table 11 shows the results of the Analysis of Variance (ANOVA) between the three surveys (SRPHESA, SRIHE and SRPNMMU) that focused on stakeholders that consume information. Questions around this focus area featured in the SRPHESA, SRIHE and SRPNMMU surveys. This covered the following aspects:

- stakeholder information requirements
- role of stakeholders in the strategic planning process
- role of stakeholders in information processing.
Table 11:
ANOVA - Importance of strategic planning information to stakeholders

<table>
<thead>
<tr>
<th>Survey Group</th>
<th>Means</th>
<th>N</th>
<th>SD</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRIHE</td>
<td>3.50</td>
<td>35</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>SRPHESA</td>
<td>3.05</td>
<td>21</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>SRPNMMU</td>
<td>3.41</td>
<td>41</td>
<td>0.74</td>
<td>F</td>
</tr>
<tr>
<td><strong>Combined surveys</strong></td>
<td><strong>3.34</strong></td>
<td><strong>97</strong></td>
<td><strong>0.81</strong></td>
<td>1.97</td>
</tr>
</tbody>
</table>

Table 11 indicates that there is no significant difference (P<0.05) between the three groups in sub-theme T1a in terms of the average score relating to the importance of information on strategic plans to various stakeholders and role players in higher education. All identified stakeholders should be kept abreast with information on the progress with implementing the Strategic Plan. This is in line with the view that organisations are multi-functional value-adding entities that fulfil socio-economic functions on behalf of various stakeholders (Ulrich & Fluri 1995). In addition, Suchman (1995) warns that the information provided to stakeholders influence the outcome of strategies. Responses from the SRPHESA, SRIHE and SRPNMMU groups were analysed. Table 12 shows the results.

Table 12:
ANOVA – Factors that undermine monitoring of strategic plans

<table>
<thead>
<tr>
<th>Survey Group</th>
<th>Means</th>
<th>N</th>
<th>SD</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRIHE</td>
<td>3.24</td>
<td>35</td>
<td>0.82</td>
<td></td>
</tr>
<tr>
<td>SRPHESA</td>
<td>3.45</td>
<td>21</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>SRPNMMU</td>
<td>3.62</td>
<td>41</td>
<td>0.8</td>
<td>F</td>
</tr>
<tr>
<td><strong>Combined surveys</strong></td>
<td><strong>3.47</strong></td>
<td><strong>97</strong></td>
<td><strong>0.77</strong></td>
<td>1.49</td>
</tr>
</tbody>
</table>

The results from this analysis show that there is no significant difference (P<0.05) between the responses obtained from the three surveys on factors that undermine monitoring of strategic planning in the breaking away of the culture of trust to one of performance measurement. Some respondents bemoaned the multiplicity of formats sought for the same information.
Figure 2 shows that the surveyed HEIs have strong functional information cultures. The information discovery culture is low and therefore corroborating the finding that BI capability is low at the presentation level.

CONCLUSION

Factors influencing strategic planning in higher education are not unique to South African HEIs. Strategic planning processes are key in entrenching sustainability reporting practices in HEIs and vice versa. Results from the surveys show that the following factors influence strategic planning in HEIs:

- Monitoring and evaluation of strategic plans key to successful implementation
- Communication, stakeholder consultation and the role of institutional leadership in driving the strategy process
- Setting up reporting standards for monitoring and measuring of performance
- Access to quality and timely information for decision making
- Alignment and harmony between strategies and plans at different levels within a Higher Education Institution
- Reporting on progress made with implementing strategic plans.

Based on the analysed results, the following managerial implications come to the fore:

- HEI should beware not to overemphasise financial reporting and neglect environmental and social dimensions of reporting.
- Other institutional plans at HEIs should be integrated and harmonised with the strategic plans.
- HEIs should investigate the information requirements of all stakeholders and put plans in place to disseminate the same. This entails identifying information sources and users as well as developing acceptable reporting metrics.
- Communication between the different levels of management should be improved in order for information to flow across institutions.
- Stakeholder involvement is key in the success of strategic planning and Sustainability Reporting.
Limitations of the study and recommendations for further work

The scope of the study placed emphasis on the role of Information and Sustainability Reporting. The effectiveness of current monitoring and evaluation of strategic plans in Higher Education Institutions should be further explored. In addition, there is a need to develop criteria to determine success or otherwise in strategic planning in South African Higher Education institutions.

REFERENCES


Learner, A.L. (1999) *A Strategic Planning Primer for Higher Education*. California: College of Business Administration and Economics, California State University, US.


A conceptual competence-based framework for enhancing the employability of graduates

Hermanus Moolman, University of Free State, South Africa

ABSTRACT

Higher education institutions (HEIs) are expected to keep pace with the world of work and produce employable, work-ready graduates. This article develops a conceptual competence-based framework for enhancing graduates’ employability. An overview of current literature on employability, competence and competency is followed by a comparison of different authors and jurisdictions’ views. Extracting the best from both the behavioural and functional approach, a flexible and holistic framework is then constructed for HEIs to equip graduates with appropriate sets of knowledge, skills, attitudes and values for enhanced employability. The study concludes that contemporary HEIs have little choice but to develop competence frameworks pursuing not only generic graduate attributes, but also context-specific competencies to improve graduates’ chances of securing and succeeding in employment. The context in which graduates seek employment is important and implies that the employability of graduates is also reliant on a range of multidimensional and interrelated factors. A person that is employable in a specific context might therefore be regarded as unemployable in another context. The responsibility for enhancing graduates’ employability does not remain solely with HEIs and graduates. Households, employers and the government also need to accept responsibility for enhancing the employability of graduates. Only then can graduates’ employability, as envisaged by a range of reports and policy documents, truly be enhanced.

Keywords: competence, competency, conceptual framework, employability, graduates, higher education

INTRODUCTION

The world we live in is characterised by continuous change in virtually all areas: our relationships, health, financial positions and insights. Indeed, change is the only constant. Higher education (HE) is no exception, having been described as ‘at the heart of the coming changes’ (Panagiotakopoulos, 2012: 141). This demand for responsiveness fundamentally implies that higher education institutions (HEIs) should prepare their graduates for employability – a notion that is described as one of the most significant challenges facing contemporary higher education (Treleaven & Voola, 2008).

Employability is of considerable importance to graduates, employers and HEIs alike. Besides the fact that employable graduates are more likely to gain employment (Yorke, 2006), they will probably also

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experience higher levels of psychological well-being and job satisfaction (Gowan, 2012), be afforded more income and career opportunities (Panagiotakopoulos, 2012), and generally be more successful in their careers than their less employable peers (Yorke, 2006). Enhanced graduate employability benefits employers through innovation, added value and enhanced competitiveness (Jackson, 2009). Employers prefer individuals who can make an immediate contribution to the organisation, even if it is only in the short term. They tend not to employ candidates who still require development to provide long-term stability (Brockman, Clarke & Winch, 2008).

Enhanced employability can benefit governments by providing a better return on public investment (Jackson, 2009). The governments of particularly Australia, Canada and the UK have made public funding dependent on the development of competent, work-ready graduates (Bridgstock, 2009). The Independent Review of Higher Education Funding & Student Finance (2010: 31) in the UK suggests that, ultimately, ‘courses that deliver improved employability will prosper; those that make false promises will disappear’.

The competency and competence concepts are central aspects of employability (Nilsson & Ellström, 2012). However, the concepts ‘employability’, ‘competency’ and ‘competence’ cause a great deal of confusion. Employability is ‘notoriously difficult to define’ (Andrews & Russell, 2012: 35), while the competence and competency concepts lend themselves to multiple interpretations (Boahin, Eggink & Hofman, 2013). The terms ‘competence’ and ‘competency’ are used inconsistently and interchangeably. Lawyers, psychologists, management theorists, human resource managers, educationists and politicians use these concepts for multiple ends, merely adding to the confusion. Unsurprisingly, therefore, Cheetham and Chivers (2005: xv) refer to the conceptualisation of competence and competency as a ‘thorny issue’; Guthrie (2009: 18) calls it a ‘fuzzy concept’, and Westera (2001: 75) equates it to a ‘confusion of tongues’.

Based on the above, this article aims to shed more light on these concepts by, firstly, briefly exploring how various authors and jurisdictions approach them. The key characteristics of competence and competency will then be compared. Finally, the article proposes a flexible conceptual framework that curriculum developers at HEIs may contextualise and apply to enhance graduates’ employability in any field or discipline. For the purposes of this research, the application of the framework is illustrated with an example from the discipline of law.

### CONCEPTUAL APPROACHES TO EMPLOYABILITY

#### Narrow conception of employability

The narrow conception of employability approaches the concept from the supply side of the labour force, namely the graduate. This conception is context-independent (McQuaid & Lindsay, 2005) and focuses on a set of generic attributes/competences/competencies that are required by all employers of graduates in order to be employed (Creighton, 2007).

Policy-makers generally use this narrow concept of employability as a quality measure (Creighton, 2007). Countries such as Australia, the US, UK and South Africa seem to pursue generic, transferable or non-contextualised graduate attributes and have developed generic skills frameworks with attributes that need to be developed in all graduates, irrespective of the discipline being studied. For example, Australian government commissioned frameworks refer to these attributes as key competencies (Mayer, 1992), generic graduate attributes (Australian Qualifications Framework Council, 2011) and employability skills (Employability Skills for the Future Reference Group, 2002), while US frameworks speak of ‘workplace basics’ (Carnevale, Gainer & Meltzer, 1990) and ‘workplace know-how’ (Secretary’s Commission on Achieving Necessary Skills, 1991) that graduates need to master in order to be employable. The South African Qualifications Authority Act 58 of 1995 (RSA, 1995) introduced South Africa to the concept of critical cross-field educational and training outcomes. The word ‘cross-field’ indicates that the outcomes
are applicable to all industries and fields of learning (RSA, 1998). Critical cross-field educational and training outcomes are also referred to as generic skills, essential skills or core skills (SAQA, 2000). All qualifications, including HE qualifications, and regardless of the specific area of learning, should therefore pay attention to the development of the critical outcomes in order to produce employable graduates.

Broader conception of employability

The conception of employability that depends on the development of generic, transferable or non-contextualised graduate attributes can be contested. For example, Jackson (2009) referred to a number of research studies to confirm the importance of subject specific knowledge and skills to employers. Breier (1998: 89) investigated the generic nature and transferability of generic skills from various perspectives and stated that ‘there is nothing intrinsically generic or transferable about the skills commonly labelled as generic or transferable. Most have to be acquired or exercised in specific contexts, with reference to specific knowledge bases’.

Barrie (2012) also acknowledges the interaction between generic graduate attributes and the context in which these are developed and applied by referring to different relationships being created between generic graduate attributes and disciplinary knowledge and skills. Based on these relationships, Barrie (2012) suggested four different conceptions of generic graduate attributes, namely the precursor, complementary, translation, and the enabling conception of attributes.

The precursor conception of graduate attributes perceives graduate attributes as undifferentiated foundation skills, similar to language proficiency and basic numeracy skills. The complementary conception regards generic graduate attributes as higher level outcomes that complement disciplinary knowledge, while the translation conception perceives generic graduate attributes as important university learning outcomes which enable students to use and apply disciplinary knowledge. The enabling conception of graduate attributes views generic graduate attributes as ‘the skeleton for discipline knowledge and are learnt as an integral part of that knowledge’ (Barrie, 2012: 84).

The four conceptions of generic graduate attributes are hierarchical, ranging ‘from precursor and generic foundation skills to contextualised disciplinary abilities and complex human capabilities and aptitudes’ (Barrie, 2012: 91). The ideal, according to Barrie (2012: 84), is therefore to follow a ‘layered’ approach by incorporating all four of the above-mentioned conceptions in the generic graduate attribute concept.

The layered conceptual approach to graduate attributes is also the approach that the researcher adopts to explain the broader conception of employability. This conception focuses on the individual and requires the development of attributes that range from precursor and generic foundation skills to contextualised disciplinary abilities and complex human capabilities. It therefore requires graduates to have disciplinary knowledge and skills in addition to generic graduate attributes. In line with the broader conception of employability, Creighton (2007: 162) describes employability as ‘all the relevant characteristics of an individual, which may include qualifications and vocational skills as well as employability skills’. As a result, employability requirements are perceived to vary between different professions and organisations (Nilsson & Ellström, 2012).

Holistic conception of employability

In terms of the holistic conceptualisation of employability, graduates with appropriate generic graduate attributes, disciplinary knowledge and skills are not necessarily employable. This conception approaches employability from both the supply and demand sides of the labour market. It does not only emphasise the generic graduate attributes and disciplinary knowledge and skills that are solely conceived at the individual’s level (supply side), but also considers the influence of the dynamic environment in which
graduates operate. Changing customer behaviours, competition and labour market conditions could each influence the employability of an individual (McQuaid & Lindsay, 2005).

In line with the holistic conception of employability, the Commission of the European Communities (2008: 148) defines employability as ‘a person’s capability of gaining employment. On the one hand a person’s employability depends on the knowledge, skills and attitudes of this person. On the other hand, labour market rules and institutions have significant impact on the ability of an individual to gain employment’. The Canadian Labour Force Development Board (1994: viii) similarly defines employability as ‘the relative capacity of an individual to achieve meaningful employment given the interaction of personal circumstances and the labour market’.

Building on the work of McQuaid and Lindsay (2005), Green et al. (2013) identified five interrelated factors that can influence an individual’s employability, namely individual factors (e.g. the attributes that individuals need to possess in order to be employable in terms of the narrow conception of employability), individual circumstances (e.g. household circumstances, household work culture, and access to resources), employer/organisational practices (e.g. organisational culture and recruitment and selection processes), local context factors (e.g. the features of local employment, the local work culture), and macro-level factors (e.g. the national regulatory regime, welfare regime and employment policies).

In addition to the five factors that can influence an individual’s employability, Green et al. (2013) identified a range of enabling support factors (e.g. labour market intermediaries and support agencies, trade unions, national and local employer associations/business organisations, and education institutions) that provide assistance to individuals on their path to employability and support employers in facilitating specific aspects of the employment pathway.

It is clear from the discussion above that the different conceptual approaches to employability are not mutually exclusive. All three conceptualisations of employability recognise the important role that a set of competences/competencies/attributes play in rendering a graduate employable. However, the holistic approach to employability does not only focus on the supply side of employability but recognises the multidimensional factors or barriers to work that graduates face when seeking employment. The holistic conceptualisation of employability is adopted for purposes of this article. HEIs therefore need to ensure that they do not only develop an appropriate set of competences/competencies/attributes in graduates but that they also consider the different factors or barriers to work and employment.

Whilst this holistic conceptualisation provides a more accurate and realistic explanation of employability, the competence and competency concepts that manifest in all three conceptualisations of employability do however require clarification.

**CONCEPTUAL APPROACHES TO COMPETENCY AND COMPETENCE**

**The behavioural approach**

The US is the chief proponent of the behavioural approach (Delamare Le Deist & Winterton, 2005). Behaviourists describe competency as the ‘skills, personal characteristics or behaviours’ underlying superior performance, making it ‘input-oriented’ (Cheng, Dainty & Morre, 2003). The behavioural approach paved the way for the development of the iceberg (McClelland, 1973), generic (Boyatzis, 1982) and emotional-intelligence (Goleman, 1998; Salovey & Mayer, 1990) approaches to the competence and competency concepts.
The Iceberg model

In 1973, former Harvard psychologist and behaviourist David McClelland, regarded as the father of the competency movement (Cira & Benjamin, 1998), published the seminal article ‘Testing for competence rather than intelligence’. Although he agreed that intelligence was a valid predictor for success in schools, he argued that traditional tests of intelligence were too far removed from practical outcomes and were not good predictors of job performance or success in life. Instead, McClelland was convinced that the assessment of people’s competence could better predict their job performance.

Although McClelland promoted a competence approach in his earlier works, he introduced the competency approach in 1996 and described competency as the characteristic underlying superior performance. He compared managerial competencies to an iceberg with knowledge and skill at its tip and social role, self-image, trait and motive as underlying elements – the former being easier to identify, measure, train and develop than the latter. The underlying behavioural competencies were considered to be mainly responsible for superior performance in individuals (Hay Group, 2003).

The generic behavioural approach

Based on a study of more than 2,000 managers in 41 different types of positions across 12 organisations, Boyatzis (1982) proposed 21 generic competencies that appeared to have a bearing on managers’ effectiveness, regardless of their specific jobs or employer organisations. He defined competencies as ‘characteristics that are causally related to effective and/or superior performance’ (Boyatzis, 1982: 23). Boyatzis (1982) distinguished between threshold and differentiating competencies. Threshold competencies are those characteristics that any jobholder needs to have to perform effectively, while differentiating competencies represent those characteristics that superior performers have and average performers lack.

Emotional intelligence

Salovey and Mayer (1990: 189) coined the term emotional intelligence (EI) and defined it as ‘the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions’. Goleman, who subsequently popularised the EI concept in his best-seller ‘Emotional Intelligence: Why It Can Matter More Than IQ’, defines emotional competence as ‘learned capability based on emotional intelligence which results in outstanding performance at work’ (Goleman, 1998: 24). Therefore, a person will exhibit EI competence if he or she has those EI competencies that ‘set the star performers apart from the average ones’ (Goleman, 1998: 319).

Contemporary behavioural approaches

Competencies gained considerable popularity in the US in the early 1990s (Garman & Johnson, 2006). Delamare Le Deist and Winterton (2005: 20) state that the contemporary competency concept has a much broader meaning than previously. The researchers support this notion by providing an extensive list of scholars who now include knowledge and skills in combination with the behavioural characteristics of the McClelland tradition.

The functional approach

The UK adopted a competence-based qualifications framework in the 1980s, which led to the establishment of the UK National Council for Vocational Qualifications (UKNCVQ) (Cheng et al., 2003).

The considerable support for the UKNVQ movement gave momentum to the UK competence drive. The UKNVQs were based on occupational standards of competence, which identified the key roles that had to be performed in a wide variety of contexts. These standards consisted mainly of a list of functional competencies, the mastering of which – it was assumed – would lead to overall competent performance (Cheng et al., 2003).
The key problem with the functional approach to competence was its focus on training instead of education (Brundrett, 2000), which resulted from the perceived need to move away from competent performance in an academic setting to competent performance in a work setting (Hoffmann, 1999). Consequently, knowledge and understanding were seriously underrated (Cheetham & Chivers, 1996). The UK competence movement reduced competence to mere skills and Brockmann, Clarke and Winch (2008) suggested that the terms ‘skills’ and ‘competence’ could be used interchangeably. In response, the UK Department of Employment broadened the definition of competence to ‘[t]he ability to apply knowledge, understanding and skills in performing to the standards required in employment’, including ‘problems and meeting changing demand’ (Beaumont, 1996: 34).

Although the UK competence movement was led by employers, it was also criticised by them for not meeting their needs (Delamare Le Deist & Winterton, 2005); for providing mere ‘laundry lists’, which did not offer the opportunity to apply creativity to achieve goals (Edwards, 1993: 125). To Mansfield (2004), this type of competence boiled down to mere compliance with standards, ignoring the need for flexible, adaptable and responsible employees. It was further criticised for not including other dimensions of competence also, such as personal and social competence (Winterton, 2009).

However, despite these various points of criticism, the functional approach to competence remains the principal approach in the UK (Delamare Le Deist & Winterton, 2005). In fact, other Commonwealth countries such as New Zealand and Australia, as well as other European countries such as Ireland and Finland, have since adopted it (Winterton, 2009).

The multidimensional/holistic approach

As the behavioural and functional approaches to competence and competency respectively had their own particular strengths, there was no apparent reason for them to be regarded as mutually exclusive. Therefore, Stuart and Lindsay (1997: 27) suggested an integration of the two, which they called ‘a coherent whole: a model of competence comprising competenc(i)es’.

This holistic approach provides for a variety of stakeholders, including academics, the state, unions, employees and employers, to negotiate competence. Therefore, unlike the functional approach, the competences derived from a holistic model are not disconnected from the curricula of academic institutions, but are in fact aligned with them (Brockmann et al., 2008).

The following sections are devoted to an analysis of the development of the holistic approach to competence, firstly exploring the concept as perceived by Bloom et al. (1956), Cheetham and Chivers (1996) and Delamare Le Deist and Winterton (2005), followed by the French, German, European Union, South African and Australian conceptions.

The taxonomy of Bloom et al. (1956)

More than 50 years ago, Bloom and colleagues (1956) developed a taxonomy of learning outcomes for use by educational institutions. They distinguished between three domains of educational activities, namely cognitive, affective and psychomotor activities. The cognitive activity domain refers to knowledge; the affective activity domain relates to attitudes, feelings and emotions; while the psychomotor activity domain addresses the physical or manual skills that an individual performs.

The professional competence approach of Cheetham and Chivers (1996)

Cheetham and Chivers (1996) used the taxonomy of Bloom et al. (1956) to develop a holistic model of professional competence. A simplified version of their proposed model is depicted in Figure 1.
The model consists of four core components, namely knowledge or cognitive, functional, personal or behavioural, and values or ethical competence. Cheetham and Chivers (1996) perceived functional competence to be similar to the UK’s functional competence approach, while they derived the personal competence component from the US behavioural approach to competency. Ethics and values competence, which they derived from the work of Ozar (1993) and Eraut and colleagues (1994), entails having appropriate personal and professional values and being able to use these to make sound judgements in work-related situations. The core components of the model are interlinked and also interdependent to a certain extent. The relevant importance of each of the four core components varies from one occupation to the next (Cheetham & Chivers, 1996).

Cheetham and Chivers (2005) perceive meta-competencies as those generic graduate attributes which permeate the development of other skills (e.g. creativity, mental agility and communication) or as skills which have to do with learning and the development of other skills (e.g. learning to learn). They, however, reasoned that true meta-competencies are those skills that enable self-monitoring (e.g. analysis, introspection and reflection), since it enables individuals to ‘step out, as it were, beyond themselves, to investigate other competencies’ (Cheetham & Chivers, 2005: 71). This conception of meta-competency corresponds with the reflection concept of Schön (1987).

The tetrahedron of Delamare Le Deist and Winterton (2005)
The holistic professional competence model of Cheetham and Chivers (1996) was further developed by Delamare Le Deist and Winterton (2005). The researchers identified three output competences, namely cognitive competence (knowledge), functional competence (skills) and social competence (behaviour and attitude) which are required to function within particular occupations. Delamare Le Deist and Winterton (2005) presented their holistic competence approach as a tetrahedron, depicted in Figure 2. They presented meta-competence as ‘an over-arching input that facilitates the acquisition of output competences at the base of the tetrahedron’ (Delamare Le Deist & Winterton, 2005: 40).
The French ‘triptyque’ approach

Having originated in organisations in the 1980s, the French compétence movement gained momentum in the 1990s when the state advocated a competence-based approach for its catalogue of occupations (Winterton, 2009). The French approach to competence is often compared to the US approach. Yet, it is more comprehensive, proposing a competence triptyque that includes knowledge (savoir), functional competences (savoir-faire) and behavioural competencies (savoir-être) (Delamare Le Deist & Winterton, 2005: 37).

The German ‘kompetenz’ approach

The German kompetenz concept was initially understood as the capacity or ability to act within a specific occupation (Brockmann et al., 2008). This was changed by the German Qualifications Framework for Lifelong Learning (DQR) that extends across educational areas and acts as a considerable aid to navigation within general, higher and vocational education and training (German Qualifications Framework Working Group, 2011). The DQR distinguishes between two categories of competence, namely professional/subject-related competence (knowledge and skills) and personal competence (social competence and autonomy). The outcomes-based quality of the DQR is expected to make the German approach to education and training more flexible and up-to-date than the occupation-based system (Gehmlich, 2009).

The European Union approach

In 2008, the European Union (EU) parliament formally adopted the European Qualifications Framework for Lifelong Learning (EQF), which aims to support greater labour mobility amongst member states by providing an education framework that would encourage recognition of member states’ qualifications. The eight levels of the EQF each consists of three interrelated components, namely knowledge, skills and competence. The EQF describes knowledge as either theoretical or factual, and skills as either cognitive or practical. Cognitive skills involve logical, intuitive and creative thinking, while practical skills entail the use of materials, methods, instruments and tools. Competence in terms of the EQF is concerned with a person’s exercise of autonomy and responsibility in the work setting (Commission of European Communities, 2008).

The EQF follows the outcomes-based approach to competence. According to Brockmann et al. (2008), the EQF is arguably closest to the UK qualifications framework. It can to some extent also be regarded as an occupational model of competence. However, it is not fully aligned with the continental occupational or holistic model, since it does not include the broader conceptions of social, personal and civic competence.
The South African applied competence approach

The South African National Qualifications Framework (SANQF) is inspired by the competency-based training (CBT) movement in the US, UK and Australia. However, Parker and Walters (2008) postulate that policy-makers were concerned about the behaviourist, atomistic and narrow characteristics often associated with CBT. Therefore, in an attempt to ensure a constructivist and holistic view of learning, policy-makers decided to adopt the term ‘outcomes-based education’ (OBE) rather than CBT. According to the South African Qualifications Authority (SAQA, 2009), the SANQF prescribes the use of the term ‘outcomes’ rather than ‘competencies’ or ‘criteria’, and therefore requires that qualifications and unit standards be described in terms of the learning outcomes that the qualifying learner is expected to demonstrate (SAQA, 2000: 10). These outcomes should state the knowledge, skills, attitudes and behaviours that learners and graduates are expected to acquire. Other proactive measures taken by SAQA to try and safeguard its competence approach against allegations of fragmentation and narrowness included the incorporation of critical cross-field outcomes (including cognitive, social and cultural aspects of competence) and an emphasis on the importance of underpinning knowledge that is assumed to be part of competence (SAQA, 2009).

The SANQF embraces the notion of applied competence, which SAQA defines as the ability to apply knowledge, skills and values in a specific context according to a defined standard of performance (SAQA, 2000). Applied competence suggests that three forms of competence are required, namely foundational competence (the ability to understand what is being done as well as the reason for it), practical competence (the ability to perform a specific task) and reflexive competence (self-evaluation and self-improvement).

SAQA (2000) is satisfied that the concept of applied competence is not susceptible to allegations of narrowness, behaviourism and a lack of critical thinking. Applied competence can therefore be regarded as a broader concept than the behavioural approach to competency. Yet, some do regard the SANQF as a reductionist, mechanistic and fragmented approach to learning, while it may also be criticised for assuming that competence could be described without taking into account its formative grounds and contexts (SAQA, 2009).

The Australian capabilities approach

Although Australia originally adopted the UK’s functional approach to competence (Winterton, 2009), the Finn Committee combined the functional and behavioural approaches to competence and competency respectively by incorporating not only ‘the ability to perform specified tasks, but also the possession of knowledge and understanding, and the ability to transfer skills and knowledge to new situations’ into its competency concept (Finn, 1991: 56-57). Similar to the SANQF, the Australian Qualifications Framework (AQF) also refers to learning outcomes (or capabilities and graduate attributes). A learning outcome is defined as ‘a set of knowledge, skills and the application of knowledge and skills a person has acquired …’ (Australian Qualifications Framework Council, 2011: 95). Although the AQF does not refer to competency and competence, its holistic approach to competence is evident from the dimensions of learning outcomes, namely knowledge, skills and their application. The four broad capabilities/outcomes of the AQF, namely fundamental skills, people skills, personal skills and thinking skills, also support this notion. Thinking skills may be compared to the meta-competency/competence concepts of Cheetham and Chivers (1996) and Delamare Le Deist and Winterton (2005) discussed earlier.

With this outline of the dominant approaches to competency and competence in mind, the following section elucidates these concepts even further. This is then used to construct a proposed competence-based conceptual framework for enhancing graduates’ employability.

Comparing the conceptualisation of competence and competency in the various approaches

It is clear from the discussion above that there is diversity in the different countries’ conception of competency and competence. Each of the competency and competence approaches has its own particular
strengths. The traditional US behavioural approach reveals the important part that a person’s underlying characteristics play in ensuring superior performance, while the UK’s functional approach to competence has proven valuable for its applicability to the workplace. The competence approach followed in France, Germany and South Africa demonstrates the potential of a multidimensional/holistic view of competence, incorporating the strengths of both conceptions. Contemporary developments in Australia, the US and UK also show signs of moving towards a more holistic approach to the concept of competence. Despite the varying conceptions of competency and competence, there seems to be a common set of conclusions that has emerged from the outline of the dominant approaches to competency and competence.

Competence relates to performance and can be described as carrying out a task successfully or effectively. It is a noun that indicates how well people perform or how good they are in what they do. The possession of competence is demonstrated when people use or display their knowledge, skills, attitudes and values effectively. Competence therefore consists of integrated pieces of knowledge, skills, attitudes and values that a person needs to use in order to carry out a professional task successfully. The emphasis is on demonstrated efficiency and people will be described as competent when they meet the required level of performance in each of the competence components (knowledge, skills, attitudes and values). Each of these competence components consists of a number of competencies that are evaluated. The functional competence approach from the UK refers to the educational evaluation of learners using a scale of competent or not competent. This competence approach does not require excellence, expertise or superior performance but sufficient performance up to the required standard required. The labour market typically sets the standard/benchmark and what is regarded as competent in one context may not imply competence in another. This notion of competence aligns well with the holistic employability conceptualisation that acknowledges a full range of factors or barriers that could impact on the employability of job seekers.

From the review above, three distinctive dimensions of competence can be identified, namely the cognitive, functional and social dimensions. The distinctive dimensions of competence in terms of the behavioural, functional and multidimensional/holistic approaches are compared in the table below.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Input or output</th>
<th>Cognitive dimension</th>
<th>Functional dimension</th>
<th>Social dimension</th>
<th>Other dimensions</th>
</tr>
</thead>
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<tr>
<td>Behavioural</td>
<td>Input</td>
<td>Limited knowledge</td>
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<td>Behaviours</td>
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<tr>
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<td>Output</td>
<td>Limited knowledge</td>
<td>Functional competence</td>
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<tr>
<td>Bloom et al. (1956)</td>
<td>Output</td>
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<td>Psychomotor domain or skills</td>
<td>Affective domain or attitudes</td>
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<tr>
<td>Cheetham and Chivers (1996)</td>
<td>Output</td>
<td>Cognitive competence or knowledge</td>
<td>Functional competence</td>
<td>Personal/behavioural competence</td>
<td>Values/Ethical competency</td>
</tr>
<tr>
<td>Le Deist and Winterton (2005)</td>
<td>Output</td>
<td>Cognitive competence</td>
<td>Functional competence</td>
<td>Social competence</td>
<td>Meta-competence</td>
</tr>
<tr>
<td>Compétence triptyque</td>
<td>Output</td>
<td>Savoir</td>
<td>Savoir-faire</td>
<td>Savoir-être</td>
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### Approach Input or Output Cognitive dimension Functional dimension Social dimension Other dimensions

<table>
<thead>
<tr>
<th>Approach</th>
<th>Input or output</th>
<th>Cognitive dimension</th>
<th>Functional dimension</th>
<th>Social dimension</th>
<th>Other dimensions</th>
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<td>EQF</td>
<td>Output</td>
<td>Theoretical or factual knowledge</td>
<td>Cognitive or practical skills</td>
<td>Competence</td>
<td>Autonomy</td>
</tr>
<tr>
<td>DQR</td>
<td>Output</td>
<td>Professional/subject-related competence</td>
<td>Personal competence</td>
<td>Knowledge</td>
<td>Skills</td>
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<tr>
<td>SANQF</td>
<td>Output</td>
<td>Foundational competence</td>
<td>Practical competence</td>
<td>Attitudes and values</td>
<td>Reflexive competence and critical outcomes</td>
</tr>
<tr>
<td>AQF</td>
<td>Output</td>
<td>Knowledge and understanding</td>
<td>Fundamental skills</td>
<td>People and personal skills</td>
<td>Thinking skills</td>
</tr>
</tbody>
</table>

**Adapted from Winterton (2009: 690).**

From the above, it emerges that cognitive competence corresponds with the knowledge concept of Bloom et al. (1956), Delamare Le Deist and Winterton (2005), Cheetham and Chivers (1996) and the DQR; savoir of the French compétence triptyque; the EQF’s theoretical or factual knowledge; and the SANQF’s foundational competence.

Functional competence, which has been derived from the UK’s functional approach to competence, seems to correspond particularly well with the skills concept of Bloom et al. (1956) and the DQR; savoir-faire of the French compétence triptyque; and practical competence of the SANQF.

Social competence, which relates to the US behavioural approach to competency, is fairly consistent with the attitudes concept of Bloom et al. (1956); the personal and ethical competence of Cheetham and Chivers (1996); savoir-être of the French compétence triptyque; the DQR’s social competence and autonomy; the EQF’s autonomy and responsibility; and the SANQF’s values and attitudes.

The multidimensional/holistic competence concepts of Cheetham and Chivers (1996) and Delamare Le Deist and Winterton (2005) also include meta-competencies – overarching competencies required to develop, or able to enhance or reinforce, other competences. As the multidimensional/holistic approach incorporates the strengths of both the behavioural and functional approaches, provides for the knowledge, skills, attitudes and values dimensions of competence and competency, and is also in line with the intentions of the SANQF, it is the preferred model for the purposes of this study.

### A CONCEPTUAL FRAMEWORK FOR ENHANCED GRADUATE EMPLOYABILITY

Having drawn on the in-depth analysis presented above, a proposed conceptual competence-based framework was constructed to enhance graduates’ employability. This framework is depicted in Figure 3 and is based on the holistic conceptualisation of employability adopted as the preferred option earlier in this article. Although the framework may be used in any discipline, its implementation is illustrated here in respect of the employability of law graduates.
Figure 3: Conceptual framework for enhanced graduate employability

Graduates have an appropriate set of generic and discipline specific knowledge, skills, attitudes and values that will make them more likely to gain employment and succeed in their chosen occupations (broader conceptualisation of employability).

Knowledge (G)* Knowledge (D)**
Skills (G)* Skills (D)**
Attitudes (G)* Attitudes (D)**
Values (G)* Values (D)**

Meta-competencies

Graduates have an appropriate set of generic and discipline specific knowledge, skills, attitudes and values that will make them more likely to gain employment and succeed in their chosen occupations (broader conceptualisation of employability).

Individual factors
Individual circumstances

Employability
(holistic conceptualisation of employability)

HEIs
Employers’ practices

Macro level factors factors

*G = generic
**D = disciplinary

The broader competence concept is represented by the grey area in Figure 3 and shows that competence consists of integrated pieces of knowledge, skills and attitudes that a person needs to use or display in order to be regarded as competent or employable in terms of the broader conceptualisation of employability.

Applying this to the discipline of law, an LLB graduate would for example require a thorough understanding of the theories, concepts, principles, perspectives, methodologies and procedures of the discipline. Such a graduate should have a comprehensive and sound understanding of the different fields of law, comparative aspects of law, perspectives on law as well as the legal profession (CHE, 2015: 7-8).

However, mere knowledge of the law will not enhance law graduates’ employability. A number of generic skills, such as reading, writing, numerical skills and teamwork are also to be expected of them and refers to the narrow conceptualisation of employability. These skills can be found in the various generic skills frameworks of different countries. In addition, law graduates are required to have disciplinary skills. The dotted line dividing the competence domains in Figure 3 indicates that each of these domains could potentially represent non-contextualised (generic) competencies as well as contextualised (disciplinary) competencies. The dotted line furthermore indicates that the importance of the generic and disciplinary
The skills that ought to be developed in law graduates strongly relate to the functional approach, while the attitudes expected of them show close links with the behavioural approach to competency. Some of the emotional intelligence competencies that could be required of law graduates include, for example, self-awareness, an achievement orientation, a positive outlook and empathy. They may also be expected to display social and vocational competence (e.g. stamina and self-confidence) and intra-professional competence (e.g. collegiality) (Cheetham & Chivers, 1996).

Ethics and integrity (values) play an important part in law. Therefore, law graduates need to conduct themselves ethically and with integrity in their relations with clients, the courts, fellow lawyers and members of the public (CHE, 2015: 8). However, law graduates will not be able to act ethically if they lack knowledge of the relevant ethical considerations in law. This illustrates the interrelatedness between the values competence domain and the domains of knowledge and skills. All the competence domains are in fact interlinked and also, to a certain extent, interdependent. In order to advise a client, for example, a law graduate requires knowledge of the law, skills to apply appropriately his disciplinary knowledge to the context, integrity (values domain) and self-confidence (attitudes component).

The broken lines around each of the four competence domains indicate that the relevant importance of the knowledge, skills, attitudes and values domains varies from one occupation/discipline to the next.

Meta-competencies are not perceived as a separate competence domain, but rather as a collection of competencies from the skills domain (e.g. communication, self-development, creativity, analysis and problem-solving). These competencies play an important part in developing, enhancing or reinforcing other competencies, and therefore overarch them.

HEIS need to ensure that they instil appropriate sets of knowledge, skills, attitudes and values in their graduates in order to render them employable. It is important that HEIs continuously consult with the employment environments they aim to serve in order to align curriculum efforts with the actual demands of the various professions. Sadly, this is lacking in some instances and, as far as the discipline of law is concerned, Pickett (2010: 370) believes that ‘it appears that universities are better able to prepare their students in the knowledge fields, but not as effective in preparing students with the necessary skills sets to succeed in a career in law’. Importantly, therefore, the significance that HEIs attach to each of the competence domains needs to be aligned with the needs of the profession to enhance graduates’ employability. Graduates need to know the purpose of what they are learning and how they could apply their acquired competencies in a range of complex situations (Lim & Johnson, 2002).

The conceptual framework for enhanced employability shows that the employability of graduates is not only dependent on the development of the right sets of knowledge, skills, attitudes and values but also on a full range of barriers/factors that affects the ability of graduates to attain employability, namely: individual factors, individual circumstances, employer practices, local contextual factors and macro-level factors (Green et al., 2013). The full range of barriers to employability and employment need to be addressed in an integrated way and continued research is required into the full range of factors that could inhibit graduates from being employable (McQuaid & Lindsay, 2005: 215).
Upon exploring the dominant conceptual approaches to competency and competence, one is struck by the diversity of conceptions and the limited progress that has been made towards the development of a commonly accepted understanding of employability, competence and competency.

As it incorporates both the behavioural and functional approaches to competence and competency, I would argue for a holistic conception of competence. This conception perceives competence as an aggregate evaluation of a person’s competencies. Competencies are viewed as descriptions of the knowledge, skills, attitudes and values that are being performed and measured in order to determine whether an individual is competent.

The proposed conceptual framework or map unravels the holistic conceptualisation of employability adopted in this study. This conceptualisation of employability requires, as a minimum, compliance to the supply-side criterion of the broader conceptualisation of employability. Graduates therefore need to possess an appropriate set of the generic and discipline-specific knowledge, skills, attitudes and values that will make them more likely to gain employment and succeed in their chosen occupations. This will ultimately yield benefits for graduates, the workforce, society and the economy.

The holistic conceptualisation of employability requires more than the supply-side requirement of employability and acknowledges that employability is influenced by a range of multidimensional and interrelated factors. A person that is employable in a specific context might therefore be regarded as unemployable in another context.

HEIs can achieve the employability ideal in a number of ways. HEIs could embed the concept of employability in the learning programme design process and in learning, teaching and assessment practices. Employability could furthermore be enhanced by incorporating work experience in the curriculum, by building an institutional culture that promotes employability and by inviting employers as guest lecturers.

Graduates and their employers will however only benefit from academic education if academic institutions develop, as a starting point, competence frameworks or graduate profiles that identify the generic graduate attributes and context-specific or disciplinary competencies that could improve their graduates’ chances of securing and succeeding in employment. The competence-based framework for enhanced employability proposed in this study can be used for the development of such competence frameworks or graduate profiles. HEIs need to consult with employers in order to determine the competencies that they require from graduates and employers need to be consistent and clear when communicating their requirements. Graduates in turn, need to be aware of the competencies that HEIs aim to develop and how they can apply the competencies in a range of work-related situations.

It is recommended that the layered process towards the development of generic graduate attributes, as proposed by Barrie (2012: 84), is adopted. An additional remedial curriculum, in the form of additional courses or workshops, can be offered to students who do not have the required foundation skills (e.g. language proficiency and basic numeracy skills). In order to develop the generic graduate attributes that complement disciplinary competencies, an additional graduate attribute curriculum can be presented to all students as part of their normal course curriculum. The generic graduate attributes that enable students to use and apply disciplinary competencies, could be developed during normal classes and through students’ engagement in the course. The generic graduate attributes that are regarded as the ‘skeleton for discipline knowledge’ can be learnt as an integral element of students’ experience of courses, or through students’ engagement in the broader experience of participation in the university community. The layered
process towards the development of generic graduate attributes should be supplemented by scaffolding strategies for parallel sequential development of disciplinary competencies.

The responsibility for enhancing graduates’ employability does not remain solely with HE and graduates. Employability is a collective attempt. Households, employers and the government also reap the benefits of enhanced employability and should address the factors or barriers that could inhibit or enhance the employability of graduates. Only then can graduates’ employability, as envisaged by a range of reports and policy documents, truly be enhanced.

REFERENCES


Assuming that higher educational institutions give credence to the goal of employability of its graduates, the adoption of effective Teaching & Learning methodologies towards such an objective is vital to its purposefulness. Problem Based Learning (PBL) has been proposed as an effective option in this regard, yet the literature is divided around whether this effectiveness carries through in terms of transitioning learners of business degrees into the workplace. This paper outlines a detailed case study describing the Associate Consultant (AC) approach used in the capstone course of an undergraduate Marketing qualification. The AC approach shows that it triggers and develops professional behaviours and self-reflection towards the formation of professional identity (PI) by embedding it in the curriculum through an appropriately benchmarked expectation around engagement and the use of a consulting firm as the overarching context to the PBL capstone course. An address of the whole self, collective dialogue, challenging self-perception, abandonment of performance for grades and high interaction with a real client are found to be highly conducive to PI formation. The findings of this paper strengthen the use of a PBL methodology in capstone business courses and it recommends the AC approach as a viable option to transition learners effectively into the world of work.

**Keywords:** Problem Based Learning (PBL), higher education, capstone, employability, professional identity

**INTRODUCTION**

The debate around the fitness for purpose of Higher Education Institutions (HEIs) and the *raison d’être* of Higher Education (HE) is highly prevalent against the backdrop of the emergent 21st century (Tomlinson, 2012). The tension of this global debate has resulted in the search for effective HE mechanisms that address new socio-economic realities (Oliver, 2015). Employability is often used as the overarching theme in conversations of this nature as evidenced by a plethora of work around employability, its place in an HE context and the various ways to tackle it (Ho, 2016; Vande Wiele, Ribière & Ermine, 2017; Oliver, 2015; Tomlinson, 2012).

Jackson (2016) points at professional identity (PI) and its formation as an integral part of employability as a result of engagement in HE. Without dismissing the value of other HE activities, this paper posits Teaching
and Learning (T&L) as a primary angle that an HEI can review towards more effective transformation from student into an employable professional (Vande Wiele, Khalid, Morris, Ribière & Ermine, 2015) through heightened attention to the formation of PI. While various employability conducive attributes of T&L have been identified (DEST, 2006; Oliver, 2015), McNamara et al. (2011) draw particular interest to HEIs’ ability to transition graduates into the workplace. Given the importance of PI in an employability context further exploration in this regard is valuable.

While the use of Problem Based Learning (PBL) has shown to be effective for the development of PI and scenario-based learning is strongly advocated towards the development of PI (Errington, 2011), the literature is divided around the effectiveness of PBL as a capstone T&L-approach to transition business graduates into the professional world (McNamara et al., 2011). This paper aims to support the potential of a Project Based Learning methodology as a variant of PBL to address effectively the formation of PI by outlining the approach used in a capstone course of an undergraduate marketing programme and thereby strengthen the argument in favour of PBL in the scholarly divide.

After a concise literature review of PI, its place in HE and appropriate T&L for PI, the paper builds its argument through a single case study of which the methodology is clearly outlined. The descriptive case introduces the place of the capstone project in the degree, describes the fundamentals of the Associate Consultant (AC) approach, discusses the manner in which projects are selected and scoped, outlines the process the learners follow, gives a detailed discussion of the assessment dimension of the course and finally discusses the overall transformation and career orientation that is observed as a result of the approach. The paper is closed by a concise conclusion and acknowledgement of limitations to the study.

**PROFESSIONAL IDENTITY**

Trede (2012) highlights the remaining ambiguous nature of PI formation in an HE context. A common starting point to operationalise PI is the work of Giddens (1991) around ‘Self-Identity’ which views it as an existential construct whereby one knows the ‘what’ and ‘why’ of one’s doing suggesting the importance of reflexivity and articulation of actions and their purpose. Trede (2012) presents three broad concepts around identity: the conscious self, the power of relations, and the power of articulation. The conscious self is constantly transforming through critical learning experiences placed in a socio-cultural sphere and articulated by means of discourse about oneself and others. This results in position taking by the individual in their environment, or in the case of PI, locating themselves within a professional community. Trede, Macklin and Bridges (2012: 374) operationalise PI as both a ‘a way of being’ as well as ‘a lens to evaluate, learn and make sense of practice’, whereas its formation is presented as ‘becoming aware of what matters most in practice, what values and interests shape decision making …’. (Trede, 2012: 163), suggests an evolutionary pathway towards PI. Tomlinson (2012: 409) refers to pre-PI as ‘work-related disposition and identity’ while Paterson, Higgs, Wilcox and Villenuve (2002: 6) simply state it to be the ‘sense of being a professional’. Bauman (2005) indirectly suggests that the process leading up to PI and its actual existence is in fact one and the same and asserts its formation as everlasting. In light of the disruptive nature of the economy of today, Oliver (2015) argues for the consideration of discerning, adapting and continually enhancing that which is necessary in an employability context instead of the reliance on a one-time acquisition thereof. Even though the literature contends a difference between becoming and being a professional (Trede, 2012), the assertion of PI being in constant formation is arguably sensible against the need for flexibility in the highly dynamic economic and societal realities of the 21st century.

**HIGHER EDUCATION AND PROFESSIONAL IDENTITY**

The work of Trede et al. (2012) highlights the ambiguity around the role of HE in the development of PI in the sense that it is at best only segmentally addressed. The question whether it is the role of HE to address
PI is prevalent in the literature (West & Chur-Hansen, 2004) and if not specifically addressed in those terms, is embodied in the wider debate around the purpose of HE in an employability context (Boulton & Lucas, 2011). The literature around how HE addresses employability is often limited to the acquisition of knowledge and the development of non-technical skills (Daniels & Brooker, 2014) without clear evaluation of its impact on PI. Trede (2012) concludes from a literature review on the topic that currently more often than not the formation of PI in HE is typically expected to emerge ‘naturally’ within learners as they progress through an HE programme. The work of Good and Adams (2008), for example, suggests an assisting capacity of academic achievement and positive learning objectives in the formation of identity. The literature nevertheless equally points at the value of specific curricular attention to the professional component in a learner’s formal educational journey (Daniels and Brooker, 2014; Tomlinson, 2012) yet without suggesting appropriate pedagogical approaches. Freudenberg, Brimble and Cameron (2009) assert the importance of such to avoid a situation of incongeniality when the learner transitions into the world of work. Harvey (2000: 3) states that HE’s primary role is to ‘transform students by enhancing their knowledge, skills, attitudes and abilities while simultaneously empowering them as life-long critical, reflective learners’. An address of professionalisation therefore arguably complements the noble purpose of ‘schooling the mind’ if the construct is approached ‘beyond a single focus on an educated workforce for future economic competitiveness’ (Harvey, 2000: 12) but instead as a necessity for a sustainably prosperous society as a whole inclusive of its economic, innovative, social, and political dimension (Harvey, 2000). Such a perspective of the transformational role of HE and the notion of ‘ever-becoming’ through lifelong learning clearly connects with the everlasting nature of PI formation.

The continuous rhetoric of mismatch between HE output and labour market requirements in a broad sense undeniably challenges the natural formation of PI. Jackson (2016) argues for such a formation in an HE context to be a valuable re-conceptualisation of graduate employability that holistically intertwines the vast array of competencies sought after by industry in the realm of knowing, doing and being. In the same vein, Galvin & Todres (2007) argue the importance of addressing the whole self (i.e. hand, head and heart) instead of focusing on mere hard and soft skills. In pursuit of an effective approach to addressing PI, the pivotal conduciveness of engagement and non-engagement - with peripheral or insider contexts - as well as the reconciliation of different social identities in one person (Wenger, 2010) are important to highlight. Jackson (2016) further notes a series of influencing factors spanning the professional, the personal and the contextual.

The world of work is asserted as a prime environment where individuals truly craft their PI (West & Chur-Hansen, 2004) yet using this consideration to ignore its formation would sell a truly meaningful HE value-offering short in its purpose. Instead, the notion of having learners engage in Wenger’s (2006) ‘landscape of practice’ may provide a fresh perspective on how HE can tackle the student-professional transformation through offering a multidimensional learning setting. Reflective practice and self-awareness (Brookfield, 2012), appropriately benchmarked assessment (Barrow, 2006), experiential learning and practical work experience (Cornellissen & Van Wyk, 2007), self-directed learning (Grow, 1991), transformative learning (Bramming, 2007) and critical incident learning (Clouder, 2005) are all suggested to influence positively PI formation. Engagement is pivotal in this (Wenger, 2010) whereby the learner actively participates in meaning-making from what is experienced, gives it purpose towards the emergence of their professional stance (Billet & Somerville, 2004) and holds a central role in the construction of PI with the HEI providing a conducive environment to do so (Crebert, Bates, Bell, Patrick & Cragnolini, 2004).

The practice of Work Integrated Learning (WIL) in its various forms (placement, internship, apprenticeships, client-based projects, mentoring or simulated learning environments), undoubtedly holds opportunities to address PI in complement to the development of general, technical and career competencies (Oliver, 2015;
Trede, 2012). Authenticity (closeness to the professional level requirement) and proximity (closeness to the professional environment) are key components in this regard (Oliver, 2015). Trede (2012) argues WIL to be a context where self and professional meet. A caveat is the advice to mindfulness for the possibility of unquestioning affiliation with identified practice or unknowingly adopting bad habits (Brookfield, 2012). Eraut (2000) argues for the need to explicate possible non-conscious learning by means of reflection through collective dialogue. Based on the ever fluid nature of PI and in particular its contextual dependence, educators must be mindful of a too narrow focus on an ‘ideal’ PI since ‘a one mould’ arguably does not exist (Bauman, 2005). Bauman (2005) further argues the value of learner self-becoming, which follows the view of Fish and de Cossart (2006) that professionalism (as a behavioural result of PI), should be viewed as a natural disposition of responsible judgement and action in a work context.

The PBL approach, ranging from guided discovery to fully-fledged independent knowledge acquisition through problem solving, has been presented in the literature to be conducive to PI development in engineering education (e.g. Johnson & Ulseth, 2016), medical training (e.g. Marañón & Pera, 2015), ICT education (e.g. Dunlap, 2005) and teacher training (e.g. MacDonald & Isaacs, 2001). Tan, Van der Molen and Schmidt (2016) describe the impact of PBL on PI in a study that spans various fields of study at diploma level yet in a limited context of authenticity and proximity. Their work highlights the complementary value of PBL towards preparing people to start engaging with the workplace, but equally indicates value around stronger inclusion of experiences in the real workplace. The practice of Project Based Learning as a variant of PBL would be an arguably meaningful avenue to pursue since the literature suggests the capstone course of a degree to be a pivotal moment for learners to transition from their student identity into their PI (Holdsworth, Watty & Davies, 2009). The remainder of this paper presents the approach of Project Based Learning in a capstone course of an undergraduate Marketing qualification. Through outlining its design, delivery and assessment in connection to PI this paper makes an argument around how its PBL approach builds a meaningful bridge to the world of work in a business education context in response to the reservations in this regard (McNamara et al., 2011).

**CASE STUDY METHOD**

For this study, since it concerns the evaluation of a phenomenon in its contextual setting, the authors have opted to use a descriptive single case study (Yin, 2012; Stake, 2005). Its object concerns the curricular and T&L environment of the capstone course of the Bachelor of Business Marketing (BBM) programme at Bahrain Polytechnic (BP), an HEI in the Arabian Gulf that places employability at the heart of its existence. With a primary mandate to develop work-ready graduates and driven by labour market intelligence that highlighted the lack of generic transferable competencies in Bahraini graduates, BP translated the goal of employability into a set of eight ‘employability skills’ to be embedded into its curriculum (Bahrain Polytechnic, n.d.). As part of an institutional framework for employability the institution has adopted a PBL-oriented T&L philosophy towards realising its mission of producing ‘professional and enterprising graduates with the 21st century skills necessary for the needs of the community locally, regionally, and internationally’ (Bahrain Polytechnic, n.d).

A previously conducted study on the T&L approach deployed at BP’s BBM programme reported its employability conduciveness (Vande Wiele et al., 2015) yet little attention was given to the construct of PI. The BBM runs as its capstone course a full semester collaborative industry project following a fully-fledged Project Based Learning approach.

Through a combination of qualitative and quantitative data from four data sources (Table 1) this paper aims to be a semi-empiric contribution to the body of knowledge. The case study is developed based on institutional documentation of course design, the deployed T&L approach and various other curricular documents that make up the course in complement with impressions from all primary participants in the learning experience. Table 1 outlines the data sources and collection mechanisms.
Table 1: Data Sources and Collection Mechanisms

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Data</th>
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<td>Curricular approach</td>
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<td>documentation</td>
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<tr>
<td>Academic Supervisor</td>
<td>Impressions in context</td>
<td>Review of meeting summaries, focus group, anecdotal evidence</td>
</tr>
<tr>
<td>Industry Supervisor / Client</td>
<td>Impressions in context</td>
<td>Review of formal evaluation of learners and relevant content shared in project closing meetings</td>
</tr>
<tr>
<td>Learners</td>
<td>Impressions in context</td>
<td>Survey adapted from Freudenberg, Brimble and Cameron (2009), reflective statements, project closing discussions and anecdotal evidence.</td>
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</table>

THE CAPSTONE COLLABORATIVE INDUSTRY PROJECT

Overview

The final semester collaborative industry project is a WIL experience that follows a highly authentic and highly proximal format whereby the learners assume the role of Associate Consultants pro bono contracted by a real company to address an ill-structured marketing issue. The BBM represents the ‘Consulting Firm’ that contracts the Associate Consultants and the relevant faculty members operate as a team of senior consultants that sources the projects and supervises two-people teams that are assigned a unique project. Over a period of approximately four months, the teams operate on site in close contact with the client. The final deliverable of the project consists of a substantial consulting report and the project is closed through a client-focused presentation pitch of the solution. For the remainder of the paper qualitative statements that reflect impressions of the learners, participating faculty and collaborating companies will be referred to respectively as Associate Consultants (AC), Senior Consultants of the ‘Firm’ (SC) and Clients (C). A description of the AC approach outlines the context in which the learning takes place. A next section addresses the sourcing of the projects, the crafting of the project scopes and the manner in which teams are formed. The third section of this case study gives attention to how performance is being assessed and outlines in the fourth and fifth sections the overall learning experience impact on PI formation and career orientation.

The Associate Consultant approach

From the very first communication engagement with the qualifying cohort, the learners are addressed as Associate Consultants in a professional modus operandi. The consultant context spans communication, dress code, evaluation, information exchange and interpersonal relations. A three-day, off-campus orientation addresses the Firm’s expectations in terms of personal, interpersonal and practical aspects of this professional engagement.

We focus most of our time (of the orientation) on behavioural aspects … concepts such as attitude, tenacity, punctuality, personal excellence and commitment are key success factors for any project (SC).

The orientation draws extensively on past experiences from previous iterations of the course, inclusive of participation of past graduates, to highlight success enablers and disablers.
Involving recent graduates of the programme makes a big difference since they are fresh out of the experience … they have a very honest and open conversation with the new cohort … to create a sense of freedom and trust (SC).

The learners report the heightened sense of seriousness around expectation to be rather intimidating at first but equally highly motivational and positively challenging.

At the start of the project everything is very overwhelming. Focusing on the role as a consultant and following a process that a consultant would follow guides us in the project … at the beginning I had doubts that I could do this, it seemed so big and the expectation was so high … the positivity from our tutors and from the graduates is very motivating (AC).

The orientation marks the abandonment of thinking in ‘evaluation by grades’ by introducing a hypothetical pay scale for evaluation to trigger a professional mindset.

The introduction of the pay scale evaluation is truly the bottom line in terms of work versus reward and helps to more meaningfully distinguish exceptional work from satisfactory work … it gives us negotiation power around quality of work (SC).

The evaluation system that uses salary and bonus to measure our work changes our thinking about what is good enough and motivates us to go beyond expectation … it is much clearer and (more) real than grades … I do not think about grades in this project anymore (AC).

When engaging with clients the faculty maintains the consulting approach, which sheds a very different light on the type of engagement.

We are not running an internship because we want to have clear oversight of what the learners are engaging with so that we can truly grow them as professionals in their field and build their expertise … throughout the projects we consistently observe a moment where the teams gain trust from the client and are perceived as a true value-add to the company (SC).

At first we felt treated like interns, but after a few weeks, when we started showing the plan outline of what we were going to do, the atmosphere at work totally changed … showing key findings of our starting research to evidence our understanding of the project really impressed the client and changed his view of us (AC).

Over time we do not see the difference anymore between our employees and the students, they are truly part of the team and we treat them like that (C).

All SCs are available to each team for consultation to widen the perspective of the learners.

Each member of the marketing faculty brings a distinct contribution to the programme … this is necessary since the projects are always multidimensional from a technical point of view and warrant consideration of various contextual factors (SC).

Asking other tutors than our supervisor for advice can be very useful, but at times also confusing because they sometimes bring a very different point of view to the project … It is up to us to decide what we do with the information we gather, there are many solutions possible for a problem, and that is ok, as long as we can justify our choice (AC).
Overall, the AC approach can be argued to set a meaningful scene to thinking and behaving like a professional in the field by providing a context that mirrors the professional contracting.

**The consulting projects**

In a Project Based Learning approach the ‘project’ is central to the learning making sourcing and scoping of the project’s key essentials to craft a meaningfully challenging learning endeavour in constructive alignment with its objectives.

**Sourcing the projects**

Both faculty’s personal networks and the institutional industry liaisons are the starting point to identify companies that may have marketing projects that are suitable for the capstone course.

80% of the projects have been with micro and medium sized companies and 20% with medium and large size companies … smaller companies often offer greater opportunity for the teams to make substantial impact and interface with seniors in the Firm regular occasions (SC).

Introducing the AC approach to the potential clients shifts their mindset from an internship towards a win-win collaboration.

The focus of the project is really good, because it helps us to get work done that we sometimes cannot get to … the outside view on things helps us to re-evaluate what we do (C).

The growing reputation of the graduates in the market has allowed the programme to become more selective of its partners.

Since a few semesters we have included client commitment to graduate employment opportunity as a standing selection criterion for all our projects … over 50% of the partner companies have extended offers to our graduates and 30% of our currently employed graduates are working at companies we have partnered with for projects (SC).

These projects are a great way for us to have a clear insight in the talent out there. We get to know them in a professional and personal capacity, which is far more effective than typical recruitment practice (C).

**Crafting the scopes**

A critical requirement for the success of the capstone course is a clear agreement between the Firm and the Client on the project scope.

It makes most sense for us (the faculty) to take initiative on guiding the scopes, because we know best what type of projects fit our learning objectives … scopes may change somewhat throughout the project, but never to an extent that they become entirely different from what was agreed at the outset (SC).

Scopes include clear end deliverables with bottom-line performance indicators and targets that link with organisational objectives.

Having clear targets focuses the teams towards client satisfaction but equally helps them understand the true value of marketing solutions (SC).
Project types span various marketing sub-disciplines and deliverables span detailed marketing intelligence, marketing plans and implementation of marketing activities. Project scopes typically have an implementation dimension that pushes proposals towards actualisation rather than carefully argued recommendations.

Not every company is comfortable to have young outsiders implement ideas on their behalf, but once the trust is formed … clients start realising the benefit they can get out of taking action (SC).

I have learned that ideas are nothing more than ideas until they are proven to work … nothing is more powerful to argue a proposal than having proof that it works … knowing that something does not work is far more valuable than recommending something that you are not sure about (AC).

Compiling the teams

Based on the importance of teamwork as a 21st century competency, the allocation of teams is crucial for the learning opportunity to become meaningful and worthwhile. The faculty allocates teams on the basis of personality fit with the client/work environment, generic competencies based on the behaviours the learners have shown throughout their academic journey and academic acumen. The learners are paired where possible with a team member with whom they have never worked.

The objective is to first and foremost make them forge a relationship with their team member and client that is based on professional expectations … there is no magic formula that we use but our discussions give consideration to the type of the project and what it will take for them to be successful (SC).

Relationship formation is observed as an integral part of the success from a learning perspective particularly towards PI formation. Various personal developments are based on who is involved rather than the technical nature of the scope.

I was teamed up with someone who could not be more different from me, but we found our mutual respect and professional position and we even became friends over time (AC).

Our interest in the project is very much about personal and professional growth of the learners … personal conflict, leadership, peer learning and seeing different ways of doing things are all part of that (SC).

Not knowing my team member well at the start created an extra level of anxiety, but after this project I now am confident to work with strangers, stand up for my point of view and negotiate towards compromise (AC).

Up to date not a single case has been reported where teams had to be dissolved. In case dysfunctional team dynamics are identified, the Firm steps in to provide counselling sessions where the team members are given a platform to resolve the conflict with a constructive outlook. Focus on the project, mutual respect, professionalism and explicit articulation of strengths and weakness are recurring themes of such conversation.

Teams that go through personal conflict often conclude the project with heightened self-awareness … it is almost as if we should engineer the teams to have a certain level of personal conflict, because it opens up a whole new realm of learning about what it is to be a professional (SC).
Giving clear attention to project partners, the scopes and the teams, evidences substantial opportunity to awaken a professional mindset in the learners and subsequent positioning in their project and assumingly at the start of their career.

**The process**
The solution development process spans 17-18 weeks with structured stages (Figure 1) that keep the teams aware of where they are at in their project and where they are going.

![Figure 1: Project Sequence Outline](image)

The teams check in weekly with their SC to give a progress update which typically happens at the Clients’ office or at a venue that holds professional context. The weekly meetings are run by the teams requiring evidence of a minimum of 40 hours of work per team member per week which is scrutinised by the SC. The key driver of the conversations is the constant demand for justification of choices based on facts.

My supervisor kept asking me ‘why’ … so I changed my approach to the meetings by giving him reasons before he even asked (AC).

We try to emulate conversations we have experienced when we were working in industry … so we ask the same questions (SC).

Teams are encouraged to have regular progress update meetings with their clients in order to grow the relationship and this often results in increased client involvement beyond the expectation of the teams, fostering a sense of importance and ownership over the project. Early on the teams are asked to produce a highly detailed plan that outlines the process towards the solution they believe will address the project supported by research and a timed activities list for the remaining time in form of a Gantt chart.
The Gantt chart is truly the backbone for focused project progression. It is a living document that changes as the project evolves, but has proven to be the master plan that keeps it all together (SC).

Planning and Organising is one of the skills that is truly put to the test … the project is so large and there is so much going on that the project plan was really helpful to keep track of things and make us believe we would be ok by the end (AC).

Throughout the project the Firm organises two events where all teams convene to exchange experiences and update each other on the current state of their project.

The Industry Experience Exchange (IEX) is one of those moments where you can see the individuals stepping up as professionals to give each other feedback and advice based on their experience … we are able to truly observe the professionals at work (SC).

IEX is great because it allows us to talk to our colleagues about our experience, share ideas and learn from each other. It also gives us a sense of where we are in our project compared to where the others are … it shows how serious each of the projects is and how much we all know about marketing (AC).

Mid semester, the Firm calls each of the ACs in for a formal individual HR appraisal meeting prior to which they submit a self and peer appraisal document. The purpose of the meeting is to evaluate the learners on their knowledge of, and contribution to, the project inclusive of team dynamics.

The viva is a good barometer to see where the learners are in terms of their ability to concisely articulate their understanding of the project and their reasoning behind theory in practice… It is a self-reflective exercise that reveals their position in the project and allows probing for critical appraisal of themselves and their team … it is another key moment where we see proof that professional transformation takes place (SC).

The viva is much easier than I thought, because we end up honestly talking about what we are doing and how things are going … you need to bring depth to your answers, surface level conversations are not good enough (AC).

After this the teams are presented with an opportunity to consult formally with another expert of the senior consulting team of their choice to present their current state of affairs.

It is good to have someone who is not intimately involved in formative project evaluation … a second pair of eyes can give a very different perspective to sharpen up the solution (SC).

It is really useful to have another tutor to look at our work and what they see is missing or wrong (AC).

Towards week 12-13 the teams submit the final consulting report to the Firm outlining their solution to which the Firm provides feedback that informs the final presentation to the client.

The consulting report is very comparable to a thesis document in the sense that it is expected to include a high level of research, considerable theoretical argumentation of used constructs and a clear outline of relevant and viable solutions in a business context (SC).
At first 10000 words seems like a lot to write, but at the end you realise that it is not enough and the challenge is to cut things out that are maybe not as important as others (AC).

During the time between report submission and the presentation, the teams typically continue to work on their project, e.g. further implementation or testing of solutions, creation of additional marketing materials and preparation of presentation support documents. In a final one hour meeting the teams are to pitch their solution to the client, answer questions around the information they have presented and hand over a ‘client appropriate’ version of the consulting report.

The presentation is not at all a regurgitation of the report; it would be impossible to do that in the time frame. The teams learn to distil what is truly important to present and how to present it in a way that makes sense to their client based on their way of thinking and their context … the teams typically want to keep something hidden from the client that they pull out on the presentation as a ‘wow’ factor (SC).

Even though we have been doing a lot of presentations throughout our degree, this presentation is far more intense but at the same time super exciting, because we get to explain our solution in one go and defend our points of view … it is truly where it all comes together … … I walked away with an enormous feeling of accomplishment and confidence in myself (AC).

The process that structures the project keeps progress going and focuses very much on client relevant justification for actions and choices. Learners operate with a high level of autonomy and are constantly encouraged to self-reflect and engage with feedback opportunities to move forward towards success. This process is chosen to expose the learners to various aspects of performance in a real-life work project (e.g. planning, autonomy, justification, consultation with externals, awareness of interpersonal as well as technical aspects of the project). This is supported by a corpus of various assessment methods discussed in the next section in terms of its approach and the way it is structured.

**The assessments**

**Assessment approach**

The capstone course uses a set of assessments that mirrors performance evaluations in industry towards oversight of project progression and quality control for success. Performance evaluation involves both the Firm and the Client with the largest participation by the Firm to avoid ‘compassionate’ grading.

Our clients take this very seriously, but we also see that they are very impressed with our learners compared to the common denominator graduate across the labour market … our grades and the client grades can at times be at odds but we expect an academic agenda to be met for which clients show understandably less concern (SC).

The Firm’s ethos to evaluation is one of expectation vs pay of which Table 2 presents the overall spirit in which this is being presented to the consultants. All assessment rubrics are written with similar heuristics in the professional context of expectations from a consultant.
### Table 2:
Project level qualifying evaluation statements mapped to traditional grades

<table>
<thead>
<tr>
<th>Evaluation category</th>
<th>You deserve promotion</th>
<th>You deserve a bonus</th>
<th>You have earned your salary (pass grade)</th>
<th>We need to talk ...</th>
<th>Pack your bags ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualifying statement</td>
<td>Your delivery against what is expected has been consistently exceptional. You are earmarked as management material by your supervisor due to your exceptional expertise, consistent professionalism and your proven leadership capabilities.</td>
<td>Your delivery against what is required has consistently exceeded expectation. You have been identified as a member of the team that deserves financial promotion. Your supervisor is willing to argue for a financial bonus on top of the pay you receive for your work.</td>
<td>You have satisfied the client and fulfilled your contractual agreement to provide an impactful solution that is credible and meaningful for the organisation on the basis of the scope and the context of the project. You will get paid your salary.</td>
<td>The work you have delivered is subject to doubt in terms of its professional calibre as a consultant. The company is not comfortable to charge the client the consulting fee that was agreed. This type of performance threatens the professional relationship between you and the Firm.</td>
<td>The work you have delivered is below standard and does not meet the expectations for our contractual agreement. This equates to grounds for immediate discontinuation of your contract with us.</td>
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<tr>
<td>Equivalent Letter Grade</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>F</td>
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<tr>
<td>Equivalent Nominal Grade</td>
<td>100 - 86</td>
<td>85 - 70</td>
<td>69 - 60</td>
<td>59 - 45</td>
<td>44 - 0</td>
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</table>

The chosen qualifying statements aim to reflect the reality of work by equating satisfactory behaviours and performance to those that meet ‘contractual’ agreements at the start of a professional engagement.

The evaluation descriptions at project level are highly effective in setting the tone of what is expected from the consultants and what they can expect. From the start it grounds them into a sense of reality and clearly indicates what it takes to be deserving of higher compensation than contractually agreed (SC).

The use of pay scales instead of grades makes everything much more real … it makes it simple and to the point … we are clear that we need to push for extra outputs if we want to score more than a pass (AC).

Some learners do not meet the expectation and are held back for another semester, but those learners are engaged in a reflective conversation towards helping them to realise and articulate where they went wrong and what commitments they will make towards change.

… if this project were a guaranteed pass for everyone, it would be an unnecessary component of the programme … each repeater that has graduated has done so on the basis of a strong change in their behaviour in particular towards taking ownership of their work and unconditional commitment to the project (CS).
I used to make excuses why my work was not done, but after the first time at industry projects I realised that only I am responsible for my work … in the second round of industry projects I felt an obsession to prove myself to myself and to my tutors (AC).

Evaluation by the Client uses the institutional ‘8 employability skills’ in the form of a scorecard of 46 specific behavioural descriptions. At the end of the project, the Client indicates through a confidence scale whether the learner has exhibited these behaviours throughout the course of the project. A final question item asks the Client to appraise the learner on their work-readiness using a four-category grade point with qualifying descriptions (Table 3).

The average evaluation of over 170 graduates sits at 84% (SC).

Commitment, positive attitude and professionalism are highly recurring themes in debriefing sessions with the Clients.

The graduates have proven to be effectively ready for the workplace … their sense of ownership of their solution and their ability to effectively operate as associate consultants … they exceed our expectation … the type of graduates that can add value to an organisation as soon as they enter the workplace (C).

Table 3: Evaluation qualifiers for Client Appraisal

| Professional Entry Standard (5) | The learner has continuously evidenced professional entry level work standards throughout the project. The learner’s performance was consistently high, and has shown great potential for future career development. Overall I would rate this as ‘exemplary’ for entry level employees in terms of attitude, commitment and performance. What has been evidenced exceeds the average standard of entry level work. |
| Very Good Entry Standard (4) | The learner has consistently evidenced very good entry level standard of work throughout the project. Overall the learner was able to rise to the challenge and has shown good ability and strong willingness to learn. What has been evidenced is in line with reasonably high expectations of entry level work standard. |
| Work ready with some reservations (3) | The learner has evidenced many instances of good entry level work standard, but did not do so in a consistent manner. The positive performance shows clear ability and potential however the lack of consistency needs to be addressed. Overall the learner has evidenced performance that would meet basic expectations of entry level work standard. |
| Not yet work ready (0) | Even though some of the learner’s performance may have been promising overall, the learner has not evidenced to possess or the ability to apply the basics for employability at a satisfactory level. On the basis of what has been evidenced during this project, the learner has not been able to prove work readiness in a satisfactory manner. The learner needs to reflect carefully upon his/her competencies in order to set a plan for improvement. |

Assessment structure and criteria

The evaluative corpus of this course is highly varied and covers a multitude of aspects of PI by addressing marketing acumen as well as generic competencies in a professional context. Table 4 outlines the evaluation mechanism types, their attributes and the address of the ‘8 employability skills’.
The Independent Journal of Teaching and Learning - Volume 12 (2) / 2017

Table 4:
Evaluation mechanisms and relevant attributes

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<thead>
<tr>
<th>Assessment Title</th>
<th>Assessment Focus (Process / Output)</th>
<th>Deliverable / Event</th>
<th>Timing (Week)</th>
<th>Weighting % of final grade</th>
<th>Unit of Evaluation (Individual / Group)</th>
<th>Marketing Acumen</th>
<th>Generic Employability Competencies (Explicit or Implicit assessment)</th>
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The assessment corpus evidences a scaffolding approach through assessing both process and final outputs with a clear progression throughout the semester.

We have observed that the evaluation of the weekly meetings gives a good indication of the eventual final result the learners achieve (SC).

Even though the assessments seem like a lot at the start of the semester, they all make sense and they all have a clear place in the project … most of the assessments don’t feel like assessments, more like moments of showing what we know, will do or what we have done (AC).

Table 4 further evidences the pervasive provision of feedback, the individual as a primary unit of evaluation and clear attention to both generic competencies and marketing acumen.

Feedback is truly a cornerstone of this project and that is what the role of the facilitator in PBL is all about … by questioning their decisions and critically discussing what is going on … feedback on the behaviour is at least as important as feedback on outputs (SC).

At the start I did not always realise that the discussions were a form of feedback … the questions of the supervisors can be frustrating, but they help us to think further (AC).

Seventy percent of the graduates report on the enhancing effect of the industry project on their ability to engage with feedback mechanism and self-reflection. The focus on the individual as the unit of evaluation is to conform to the institutional policy and is highly relevant to PI.
As much as they are working in teams, they need to find themselves as individuals in the project … there is plenty of independent work to be done … only two members in the team leaves no room for social loafing (SC).

We work as a team … but it is good that we are evaluated as individuals in some cases, because if I do something well I should get recognised for that (AC).

Assessment of the generic competencies can take place explicitly or implicitly. Competencies such as Planning & Organising, Communication, Teamwork or Problem Solving are intuitively more easily assessed explicitly compared to Self-Management, Learning or Initiative & Enterprise. The weekly meetings are found to be good mechanisms to address the latter because the team evidences its work, how theory applies in practice and the commitment devoted to the project.

The employability skills are often evident out of what the learners have done, how they came to the realisation of certain things and to what extent they take charge of the project (SC).

The employability skills are all constantly present in the project and are what is similar between the projects … we become confident in the skills and recognise our strengths and weaknesses … we improve as the project goes forward (AC).

Using professional expectations as assessment criteria shifts learners’ perception of the place of evaluation. Process evaluation scaffolds PI formation with particular attention to feedback and individual awareness of the value of generic skills.

**The transformation**

The production of employable graduates is at the heart of BP’s institutional mission.

If we want to truly live up to our mission we must ensure that our programme provides our learners with a pathway to become young marketers who are confident in their ability, have a clear sense of professional self-worth and understand how to effectively navigate the world of work (SC).

The graduates report their learning experience to be highly meaningful towards the field of study (85%), very relevant to becoming a professional marketer (90%) and highly constructive towards building their confidence to operate effectively in industry (70%). The constant demanding of relevant business etiquette places the learners in a very different paradigm around how they are to operate.

We are not treated like students, we don’t feel like students, we don’t come to class anymore and that makes us behave differently and learn who we are and who our team members are in a work situation (AC).

Based on their industry project experience, graduates confirm the importance of employability skills (90%) and an appetite towards further enhancing them (85%). The associate-senior relationship generates a very different dynamic and demands the learners to find their professional stance in solving a business problem which results in a deep sense of ownership over their work.

It is very rewarding to see learners step out of their shell as students and find their feet as professional problem solvers … for each of them this happens at different times throughout the project … it is hard to identify when exactly it happens but you know when it has happened (SC).
During the first IEX I truly felt that I was behaving like a professional marketer … the first meeting with the client without the supervisor was the moment I felt I brought value to the table that was appreciated by someone in the workplace … I realised after the VIVA that I was a different person compared to previous assessments in the programme … the presentation was the moment where I felt I had really made my mark as a professional (AC).

Throughout the project the learners gain enormous confidence in their ability by not only experiencing their tutors treating them as peer professionals but more importantly by a third-party professional endorsing the value of their ability and knowledge.

Positive feedback from our tutors is great, but a genuine thank you from the client for hard work is a whole other level of satisfaction (AC).

The capacity as an internal consultant gives learners a good understanding of what is required from them in the workplace. Seventy-five percent of the graduates report that the industry project experience gave them a very clear understanding of industry expectations. Being a consultant equally maintains a reasonable level of independence around what they believe is an appropriate course of action hence triggering a personal conception PI. The graduates report on the positive effect of the industry project towards self-awareness around what type of contribution they can and want to make as a professional (80%) yet to a lesser extent towards realising what they would like to do in the future (65%).

Our approach allows them to immerse in the business without being an employee. They need to understand the company in order to navigate their ideas effectively but are at the same time representing the Firm which has its own articulation around what professionalism means (SC).

We only see our academic supervisor two hours a week, the other 40 hours or more we are working with our team mate and with the people from the company. We can be who we chose to be and that is a great sense of freedom to find our own way of being a consultant (AC).

The development of a viable and relevant marketing solution does not get priority over the objective of the professional transformation.

The conversations we have among the faculty during the course of the project are more about their behaviours, their commitment, their attitude and their relationship with the client than about the quality of the solution they produce because we have realised that if the personal stance of the learner in the project is that of a professional, all else falls in place (SC).

**Career competencies**

As much as the programme shows highly promising uptake in the labour market, the graduate survey revealed an area for improvement around entering the labour market after graduation. Only 60% of the graduates report the effect of the industry project experience on their ability to be more effective at job interviews and equally only 60% see the experience as a value add to their CV.

These findings make it clear that we need to more clearly impress on them that this project counts as real industry experience and should appear on their CV and be used in a job interview (SC).

The graduates do however report on the capstone course to help them with presenting their match with a company or a position (75%) and increased confidence in making career choices (75%).
Further exploration around how the project can connect with career competencies is something we assumed the immersion in the role would trigger naturally, but it seems that we have a gap to close there (SC).

CONCLUSION AND LIMITATIONS

The Project Based Learning approach of the collaborative industry project shows great potential towards supporting PBL as an effective methodology for the development of PI in a business education context. The active involvement of industry in the creation of the learning environment is fundamental to its success in context by providing high authenticity and proximity in which learning takes place. The case asserts the importance of carefully crafted scopes and clear understanding of the role of all participants involved in the project.

The AC approach triggers and develops professional behaviours and self-reflection towards PI formation for the learners addressing the self in a social learning context inclusive of articulation thereof by setting a conducive scene that embeds PI in the curriculum. The setting of an appropriately benchmarked expectation induces a paradigm shift from operating as a student of a field of study to becoming and behaving like a practitioner in that field clearly pointing at the value of engagement. The culture of the Firm, the immersion in the business context and high autonomous interaction with the project stakeholders effectively allow the learners to find themselves as professionals through an address of the whole self. The case further shows the value of collective dialogue and meaning making towards challenging self-perception and perception of others and clearer insight in the world of work and the application of their field of study. The learners report on a sense of personal liberation when fully surrendering to the experience by breaking free from performance for grades and pursuing professional recognition. The process that structures the capstone course shows the value of independence of the learner to craft their solution supported by the faculty as mentors and critics to their approach and outputs. The case points at the pertinence of fundamental consideration to how both process and outputs are being assessed. Formalised criteria for professional behaviour under the form of employability skills prove to be highly effective as does clear attention to feedback through careful dialectic. From what is observed, it is the totality of the carefully constructed Project Based Learning approach that is found to transform learners whereby the AC approach forms a logical context to address PI formation.

The authors recognise the limitations inherent to a descriptive case study in particular the likelihood that what is described does not capture the full extent of all influencing factors as part of a wider context that is both institutional and socio-economic perhaps due to selective observation and potential bias of the researchers. It is hoped that the triangulation of various data sources brings - albeit limited - solace to this concern. It is however felt that this study is a useful starting point towards further exploration of the subject under study in particular by a first codification of practice and findings towards more longitudinal evaluation of the programme and its impact. This single case study is part of a context that is highly conducive to the success of the approach and it would be worthwhile to explore whether the suggested T&L approach would work in different fields of study, different professional fields and can withstand an HEI culture that may be less employability oriented. The case is further set in an environment that enjoys institutional commitment to having a low student/faculty ratio and may be more challenging to realise when dealing with a large number of learners. The presented case study is highly qualitative and cannot assert significance of causal relationships between enablers and the development of PI nor does it explore the effects of demographic or other contextual factors towards PI. Further research through either multiple case studies or statistically significant approaches can explore generalisability of the findings and investigate causality between conceptual T&L concepts for PI and its actual formation considering socio-demographic and other contextual factors. The authors of the paper, however, hope to have presented a starting point for further exploration of T&L for PI formation and a strengthening of the proposition for PBL.
as an effective methodology to address PI in a capstone business course as set out to be the objective of this paper.

REFERENCES


Graduate employability skills within the public service: A South African case

Petronella Jonck, The National School of Government, South Africa

ABSTRACT

The article reports on an evaluation of graduate employability skills as determined by public service officials within the Free State Province of South Africa. The sample included human resource management officers, directors and chief directors (n=253). A quantitative research methodology was implemented using an unabridged measuring instrument, with a reliability coefficient of 0.97 and inter-item correlation of 0.41. Results indicated that macro-vision skills are the skill set with which respondents were least satisfied followed by research skills as well as technological and environmental literacy. The graduate attributes respondents were least satisfied with were academic skills. Furthermore, the model predicted graduate employability 100%. Pursuant to the results, it is recommended that the study be extended nationally, and that results should be used to inform skills development interventions especially related to public service training.

Keywords: Employability, public service, graduate attributes, critical cross-field outcomes

1. INTRODUCTION

Research has indicated that there was no statistically significant association between skills development in higher education institutions and increased probability of employment (Hinchliffe & Jolly, 2011 cited in Cranmer, 2006; Jonck & Van der Walt, 2015). Hence, graduate employability has become a highly topical and contested theme as employers are of the opinion that graduates are not suitably prepared for the labour market (Tran, 2015: VI). International debates emphasise graduate employability against the backdrop of educational policy. Accordingly, higher education is implored to prepare graduates for the world of work centred on the basic assumption that higher education ought to play a decisive role in society and contribute to sustainable growth and job creation (Schomburg & Teichler, 2011 cited in Suleman, 2016: 170). The aforementioned arose as a result of global skill shortages and governments internationally expressing concern as the quality of human capital can be perceived as the cornerstone to national well-being (Su & Zhang, 2015). Thus, from a governmental policy perspective employability is mainly concerned with ensuring that employees meaningfully contribute to economic competitiveness (Chiu & Chuang, 2016).

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Date of acceptance: 20 September 2017
Apart from the policy perspective government, also referred to as the public service, can correspondently be deemed an employer (Abas, 2016) and within the South African context the public service is the largest employer (Sing, 2012) representing 20.8% of the labour market (Department of Research and Information, 2016). The mandate of aforesaid subsume the implementation of regulatory legislation and service delivery to citizenry within a constitutional framework (Jonck & Van der Walt, 2016). Burger (2005) asserts that service delivery is crucial due to the central role it plays in poverty alleviation and the redistribution of historical segregated privileges. Despite the emphasis on service delivery, Naidoo (2017) indicated that protests relating thereto have been rampant. As such, skills shortages have been cited as a contributory factor impeding service provision within the South African context (Republic of South Africa, 2012). This premise supports that of Burger (2005) which concluded that capacity constraints hinder the responsiveness of service provision. The question arises what would hypothetically be adequate skills and knowledge within the context of the public service which is principally the purpose of the study.

Generic skills, attitudes and behaviours employers require can be defined under the umbrella term ‘employability skills’ (Knight and Yorke, 2004 as mentioned in Su and Zhang, 2015). Employability skills according to Lees (2002) focuses on two main aspects, namely the ability to get a job as well as the educational concept related to being equipped for a job and being capable of employment. Chiu and Chuang (2016) noted that a high quality labour force should be equipped with professional knowledge as well as work-related capacities, skills, attitudes and characteristics. Hence, employability most often refers to work-readiness. According to Mason, Williams and Cranmer (2009) corroborated by Omar, Manaf, Mohd, Kassim and Aziz (2012) work-readiness includes the skills, knowledge, attitudes and commercial understanding that will enable new entrants to make a contribution to the achievement of organisational objectives. The Public Service Regulations (Republic of South Africa, 2001) defined work-related knowledge, skills and attitudes which are indicative of an employee’s ability to meet the inherent requirements of a specific post as competence.

Despite extensive literature review on employability skills, a paucity of studies has investigated the aforesaid in government agencies (Abas, 2016). The current study attempts to address the lacuna by developing and testing a statistical model to predict graduate employability skills within the public service. The investigation is based on the following research question: ‘What skills do the public service as employer require from graduates?’ The significance and contribution of the study are related to the public service training expenditure which was extrapolated to the amount of R2.8 billion in the 2017/2018 financial year (National Treasury, 2015). As value for money is a Batho Pele principle premised on the understanding that service delivery improvements (of which skills development is one) should strive to be done with the same amount of resources or less (Krajnc, 2007). It stands to reason that to develop skills cost effectively would require knowing which skills are keystone.

2. CONTEXTUALISATION OF THE STUDY

Netshitenzhe (2011: 5) quoting Weiss (2010) noted that ‘South Africa has set itself the unusual and challenging goal of becoming a developmental state’. One characteristic of a developmental state that is pivotal to employability skills would be the creation of a highly educated and efficient bureaucracy that facilitates growth and development (Njiru, 2008). Evans (2010) as cited in Burger (2014: 3) argued that the ‘public service within the construct of a 21st century developmental state should underscore human capabilities and therefore increase capability-expanding services’. Intrinsically, the two main aspects that are related to employability skills when taking into account the National Development Plan (NDP) which is the articulation of South Africa’s long-term vision would be the resource intensive economy vis-à-vis a knowledge economy and service delivery constraints.
As such, the NDP stated that irregular public service performance could be attributed to amongst other skills discrepancies and inappropriate staffing. More importantly, the state lacks a clear vision for where the next generation of public servants will emanate from and how specialist skills will be reproduced (Republic of South Africa, 2012). However, an aspect that is not touched on would be the hypothetical skills that would be required by the next generation of public servants. The Medium Term Strategic Framework (MTSF) refers to employability skills specifically, graduate employability skills under the heading ‘A skilled and capable workforce to support an inclusive growth path’ (Republic of South Africa, 2014: 22). Per se, the MTSF stated that graduates of the post-school system should have adequate skills and knowledge to meet the current and future needs of the economy and society at large (Republic of South Africa, 2014).

3. LITERATURE REVIEW

Knight and Yorke (2004) according to Su and Zhang (2015: 3) perceived employability as a ‘set of achievements, namely skills, understandings, and personal attributes that would ideally make graduates more likely to gain employment and be successful in their chosen occupations’ (Su & Zhang, 2015: 3). Yorke and Knight (2006) went on to describe employability as a construct that encompasses four broad interconnected facets, namely: skillful practices, domain specific specialisation, effectual views about personal identity and self-worth as well as meta-cognition. Hence, graduates should not only have subject-related knowledge but also be able to apply what they have assimilated in the educational process (Selvadurai, Choy & Maros, 2012). The organisational return of investment linked to quality employability skills encompass increased job performance, better working conditions and or status for entrants as well as adhering to the expectations of the employer (Abas, 2016). Chiu and Chuang (2016) furthermore elaborated by indicating that employability skills could also reduce monitoring costs and increase profitability.

As labour is seen as a factor of production from an employer’s perspective representing the demand side (Jonck & Van der Walt, 2015) two theoretical frameworks can be utilised to underpin the study, namely the Human Capital Theory and the Job-Matching Theory (Verecio, 2016). Bridgstock (2009) as indicated by Jonck (2014: 266) noted that the Human Capital Theory underscores education as a primary economic enabler and essential for participation in the global economy. More specifically, an income-based Human Capital Theory (viz. the quality of the labour force in terms of skills and knowledge) was utilised which emphasise the value of expected returns of a country’s human capital in terms of the output it can generate. These outputs subsume increased employability, decreased unemployment, increasing the income-based gross domestic product (viz. tax, wages and salaries), as well as the knowledge and skill endowment (Jonck, 2014).

The Job-matching Theory argues that the primary aim of education and training is to prepare graduates for job-related tasks (Verecio, 2016). The theory furthermore suggests that a mismatch between employer expectations and actual skills levels significantly influence productivity, wages and the ability to gain meaningful employment. Hence, the skill requirements of employers must be comparable to graduates’ skills. Job-matching can also be seen as the degree to which graduates are able to utilise knowledge and skills within the work context (Barnard, Veldhuis & Rooij, 2001).

Against this background, graduate employability hinges on the question of what do graduates need to know and the application of knowledge to be competent at their chosen profession? Graduate attributes (GA) and critical cross field outcomes (CCFO) are the two broad classifications under the ambit of graduate employability skills (Jonck & Minnaar, 2017; De Jager, 2004). Graduate attributes are an umbrella terms used to incorporate phrases such as ‘key skills’, ‘generic attributes’, ‘basic skills’, ‘key competences’, and ‘transferable skills’ (Du Preez & Fossey, 2012). The term ‘graduate attributes’ is intended to embrace a
broad range of generic personal and professional qualities, skills and dispositions, coupled with the ability to understand discipline-related knowledge (Thompson, Treleaven, Kamvounias, Beem & Hill, 2008). Critical cross field outcomes on the other hand are the basic generic outcomes, which underscore all teaching and learning (De Jager, 2004). Thus, what should the graduate be able to do (Jonck, 2014: 267)? Within the context of the South African Government, GAs and CCFOs are referred to as critical skills (Public Service Sector Education and Training Authority, n.d.).

4. METHODOLOGY

The primary null hypothesis was:

Employability skills including graduate attributes and critical cross field outcomes do not statistically significantly predict the employability of graduates as determined by public service employers in the Free State Province.

This was further expounded to ascertain how much variance in employability skills can be explained by each graduate attribute in isolation.

4.1 Research design

An embedded mixed-method research design was implemented although only the quantitative results were elaborated on for the purpose of this article. The rationale is aligned to the objective of the study which was to develop a statistical model based on quantitative data. Cresswell and Plano Clark (2011) explain that in a mixed-method design quantitative and qualitative data are collected within a traditional single design. Furthermore, the research design can be classified as a cross-sectional and an Ex Post Facto research design. In terms of the first mentioned, data collection took place at a single point in time, without repeat measures. The research design could be classified as Ex Post Facto by virtue of the fact that respondents belonged to the different independent variables prior to the commencement of the study.

4.2 Sample and procedure

Data were gathered from a sample of 253 respondents representing a population of 75 825 consisting out of 60 355 provincial (Free State Department of Treasury, 2016) and 15 470 municipal public servants (Statistics South Africa, 2016). By virtue of the fact that employers’ views were solicited the designation of respondents were critical and care was taken to ensure that only those respondents in management positions or responsible for recruitment be included in the sample which influenced the population size. The sample included human resource management officers (n = 59; 23.6%), directors (n =171; 68.4%), and chief directors (n = 20; 8%) from the Free State Province, Mangaung area which is the capital of the province. Note that three respondents did not answer this question. A total of 142 (56.8%) respondents were male and 108 (43.2%) female. In terms of the age of participants, 11.2% (n = 28) was in their twenties, 45.6% (n = 114) in their thirties, 35.2% (n = 88) in their forties, 6.8% (n = 17) in their fifties and 1.2% equaling three respondents were 60 years and above. The majority of the sample had some form of tertiary education, as such 6.4% (n = 16) had only an upper secondary school education. While, 56.8% (n = 142) of the sample held either a diploma or degree, 23.6% (n = 59) had an honours’ degree, 11.6% (n = 29) had a masters’ degree and 1.6% (n = 4) was in possession of a doctoral qualification.

The procedure entailed requesting postgraduate students from a Research Methodology class at a local higher education institution to distribute the measuring instruments. It is assumed that non-random convenient sampling was used to compile the sample. To ensure the rigour of this process each questionnaire had to be validated (i.e. stamped) by the department, although the specific respondents remained anonymous. Without the signed validation form the questionnaire was eliminated from further analysis. All ethical
protocols were observed. Participation was voluntary, and all responses kept confidential. Anonymity was assured especially as fieldworkers were utilised and the main researcher did not have direct contact with respondents.

4.3 Measuring instrument

Data were gathered by means of an unabridged questionnaire based on an employability skills model that was developed as part of a doctoral study, with a reliability of 0.97 and an inter-item correlation of 0.405340 as reported by De Jager (2004). The target population of the study included industry partners associated with a Faculty of Management Sciences at a university. The self-administered survey consisted of three sections, including a section that dealt with demographic variables. Sections two and three focused on CCFOs and GAs respectively. The CCFOs appraised, for example problem-solving skills, teamwork, self-responsibility, research skills, communication, technological and environmental literacy, as well as the development of macro-vision skills. GAs that were evaluated included job-seeking skills, academic skills, personal and career management, interpersonal skills, work ethic, and computer literacy. A 4-point Likert scale was used, where a score of 1 represented 'complete disagreement' and 5 'complete agreement'. A sample item from Section B is:

Are you satisfied with graduates’ teamwork skills which can be defined as the capability to work effectively with others as a member of a team, group, organisation and community?

A sample item from Section C is:

Do graduates possess the competency and or ability to apply theoretical knowledge in work-related situations?

The measuring instrument was validated by means of factor analysis which can be seen as an efficient tool to ascertain the underlying construct of a measurement and consisted both exploratory and confirmatory analysis (Lu, 2014). Results were indicative of four factors responsible for the majority of the variance. The four underlying factors subsumed interpersonal skills, CCFOs, job-related activities and academic skills which accounted for 42.297% of the variance in graduates’ employability skills. The total questionnaire accounted for 61.745% of the variance. The four underlying factors could be clustered into CCFOs and GAs (of which interpersonal skills, academic acumen and job-related activities are foremost elements). Cronbach alpha estimates for the subscales ranged from 0.863 to 0.922 (Jonck & Minnaar, 2015).

4.4 Data analysis

Descriptively, measures of central tendency were utilised to calculate the norm score to describe the evaluation of employability skills (Abas, 2016). Inferentially, coefficient of correlation and regression analysis were performed with a study conducted by Jain and Jain (2013) on graduate employability. Specifically, Pearson’s product moment correlation was used to measure the strength and direction of the relationship between constructs (Holton, Bates, Booker & Yamkovenko, 2007). While, multiple regression analysis was performed to determine the variance in employability skills as a result of the CCFOs and the GAs. Pursuant, hierarchical regression analysis was performed to determine the individual contribution of each GA.

5. RESULTS AND DISCUSSION

The evaluation of public service employers in terms of the CCFOs and GAs measured are tabulated in Table 1 below.
As can be seen from the table above, respondents were satisfied with most of the CCFOs. Respondents were least satisfied with macro-vision skills followed by research skills as well as technological and environmental literacy. Macro-vision skills can be defined as the demonstration and understanding of the world as a set of related systems cognizant of the fact that problem-solving does not take place in a silo. Similarly, research skills can be seen as the ability to gather, analyse, organise and critically evaluate data. While, technological and environmental literacy underscore the ability to utilise science and technology effectively, with an underlying element of social responsibility (De Jager, 2004). Only the academic skills of graduates were evaluated as dissatisfactory.

To determine the correlation between the seven CCFOs and six GAs a Pearson product moment correlation was performed with results depicted in Table 2 overleaf. As can be seen from Table 2 all the facets measured correlated with each other on the 99th percentile. The strength of the correlations ranges from 0.237 to 0.787. The strength of the majority of the correlations were medium to large as can be deduced from an R-value ranging between 0.3 and 1.

* Note: STD = Standard deviation; Range of means: 1.00 – 1.99 (not satisfied); 2.00 – 2.99 (somewhat satisfied); 3.00 – 3.99 (reasonable satisfied); 4.00 – 4.99 (satisfied)
To determine the influence of the CCFOs and GAs on graduate employability skills a standard multiple regression analysis was performed. The analysis was prompted to test the primary research hypothesis which stated: ‘Employability skills including GAs and CCFOs statistically significantly predict the employability of graduates as determined by public service employers in the Mangaung area’. Results are illustrated in Table 3 overleaf.

Table 2:

Pearson product moment correlation results for the various dimensions of employability skills

| CCFO 1 | CCFO 2 | CCFO 3 | CCFO 4 | CCFO 5 | CCFO 6 | CCFO 7 | GA 1 | GA 2 | GA 3 | GA 4 | GA 5 |
|--------|--------|--------|--------|--------|--------|--------|------|------|------|------|------|------|
| CCFO 1 | r 1    |        |        |        |        |        |      |      |      |      |      |      |
|        | p      |        |        |        |        |        |      |      |      |      |      |      |
| CCFO 2 | r .482** | 1      |        |        |        |        |      |      |      |      |      |      |
|        | p .000 |        |        |        |        |        |      |      |      |      |      |      |
| CCFO 3 | r .550** | .439** | 1      |        |        |        |      |      |      |      |      |      |
|        | p .000 | .000   |        |        |        |        |      |      |      |      |      |      |
| CCFO 4 | r .579** | .507** | .415** | 1      |        |        |      |      |      |      |      |      |
|        | p .000 | .000   | .000   |        |        |        |      |      |      |      |      |      |
| CCFO 5 | r .547** | .545** | .421** | .577** | 1      |        |      |      |      |      |      |      |
|        | p .000 | .000   | .000   | .000   |        |        |      |      |      |      |      |      |
| CCFO 6 | r .394** | .442** | .237** | .453** | .456** | 1      |      |      |      |      |      |      |
|        | p .000 | .000   | .000   | .000   | .000   |        |      |      |      |      |      |      |
| CCFO 7 | r .547** | .524** | .486** | .550** | .564** | .568** | 1      |      |      |      |      |      |
|        | p .000 | .000   | .000   | .000   | .000   | .000   |        |      |      |      |      |      |
| GA 1   | r .457** | .390** | .434** | .472** | .474** | .416** | .523** | 1      |      |      |      |      |
|        | p .000 | .000   | .000   | .000   | .000   | .000   | .000   |        |      |      |      |      |
| GA 2   | r .610** | .463** | .517** | .564** | .515** | .519** | .630** | .695** | 1      |      |      |      |
|        | p .000 | .000   | .000   | .000   | .000   | .000   | .000   | .000   |        |      |      |      |
| GA 3   | r .491** | .412** | .452** | .442** | .460** | .425** | .548** | .736** | .787** | 1      |      |      |
|        | p .000 | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |        |      |      |
| GA 4   | r .548** | .457** | .516** | .468** | .468** | .413** | .528** | .594** | .772** | .766** | 1      |      |
|        | p .000 | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |        |      |
| GA 5   | r .393** | .388** | .465** | .365** | .343** | .285** | .423** | .619** | .677** | .715** | .763** | 1      |
|        | p .000 | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |        |

Note: R = Pearson Correlation value; p = statistical significance; CCFO = Critical Cross Field Outcome; GA = Graduate Attribute; *p ≤ 0.05; **p ≤ 0.01
Table 3:
Standard multiple regression analysis for perceived employability

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<td>Standard error</td>
<td>ß</td>
<td></td>
</tr>
<tr>
<td>CCFO</td>
<td>1</td>
<td>0.000</td>
<td>0.177</td>
<td>77676260.248</td>
</tr>
<tr>
<td>GA</td>
<td>1</td>
<td>0.000</td>
<td>0.866</td>
<td>379322311.997</td>
</tr>
<tr>
<td>R²</td>
<td>1</td>
<td>0.000</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>R² adjusted</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum of square</td>
<td>137816.900</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean square</td>
<td>68908.450</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DF</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: CCFO = Critical Cross Field Outcome; GA = Graduate attributes; DF = Degree of Freedom; *p ≤ 0.05; **p ≤ 0.01

As can be seen from Table 3, the variance in perceived employability as evaluated by public service employers can be 100% explained by the CCFOs and GAs (R² = 1.00; R² adjusted = 1.00) included in the model. To determine the individual influence of the independent variables the partial correlation results indicated that GAs contributed to a greater extent to the aggregated model (ß = 0.866; p ≤ 0.000**). Specifically, GAs contributed 75% to the model, followed by the CCFOs which contributed 3.13%.

To explore further the model presented above, hierarchical multiple regression analysis was used to determine the individual contribution of each GA with results displayed in Table 4.

Table 4:
Hierarchical Regression Analysis assessing Graduate Attributes as predictor of employability skills

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ß</td>
<td>p</td>
<td>ß</td>
<td>p</td>
<td>ß</td>
<td>p</td>
</tr>
<tr>
<td>GA 1 – Job seeking</td>
<td>0.808</td>
<td>0.000**</td>
<td>0.343</td>
<td>0.000**</td>
<td>0.191</td>
<td>0.000**</td>
</tr>
<tr>
<td>GA 2 – Academic Skills</td>
<td>0.670</td>
<td>0.000**</td>
<td>0.449</td>
<td>0.000**</td>
<td>0.286</td>
<td>0.000**</td>
</tr>
<tr>
<td>GA 3 – Personal/Career Management</td>
<td>0.415</td>
<td>0.000**</td>
<td>0.259</td>
<td>0.000**</td>
<td>0.237</td>
<td>0.000**</td>
</tr>
<tr>
<td>GA 4 – Interpersonal skills</td>
<td>0.354</td>
<td>0.000**</td>
<td>0.297</td>
<td>0.000**</td>
<td>0.288</td>
<td>0.000**</td>
</tr>
<tr>
<td>GA 5 – Work ethics</td>
<td>0.115</td>
<td>0.000**</td>
<td>0.114</td>
<td>0.000**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GA 6 – Computer literacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6
--- | --- | --- | --- | --- | --- | ---
**ß** | **ß** | **ß** | **ß** | **ß** | **ß** | **ß**
p | 0.653 | 0.885 | 0.939 | 0.981 | 0.986 | 0.987
Adjusted **ß** | 0.652 | 0.884 | 0.938 | 0.981 | 0.985 | 0.986
**ß** change | 0.653 | 0.232 | 0.054 | 0.042 | 0.005 | 0.001
**F** for change in **ß** | 467.192 | 498.994 | 215.593 | 544.192 | 81.661 | 15.917
**p** for **F** change | 0.000** | 0.000** | 0.000** | 0.000** | 0.000** | 0.001**

*p ≤ 0.05; **p ≤ 0.01

As can be deduced from Table 4, job seeking was entered which explained 65.3% of the variance in perceived graduate employability. After entry of academic skills in the second step the model as a whole explained 88.5% (**f = 498.994; p change = 0.000**). Academic skills individually explained 23.2% of the variance. In the third step personal and or career management was added which explained 93.9% of the variance in perceived employability (**f = 215.593; p change = 0.000**). The additional change as a result of personal and or career management was 5.4%. In the fourth step, interpersonal skills were included after which the model explained 98.1% (**f = 544.192; p change = 0.000**). The R-squared change as a result of personal or career management was 4.2%. In the fifth step work ethics was added to the model which explained 98.6% of perceived graduate employability with an individual influence of 0.5%. Lastly, in step 6 computer literacy was included which explained 98.7% (**f = 15.917; p change = 0.001**) with a 0.1% change.

The results were partially confirmed by Olivier, Freeman, Young, Yu and Verma (2014) who synthesised graduate employability skills into five categories subsuming foundational skills, IT skills, adaptive capacity, and technical/domain specific skills. Most of the aforementioned could be categorised as CCFOs which in the current study did statistically significantly contribute to graduate employability but to a lesser extent than the GAs. Suleman (2016) reported a general consensus in literature underscoring relational skills, namely communication (CCFO), interpersonal skills (GA), and teamwork skills (CCFO). Tymon (2013) as mentioned by Suleman (2016: 171) confirmed that these skills are cited in most articles and by internationally dispersed employers. Ravan (2016) who indicated that the critical skills required by employers subsume problem solving (CCFO), decision making skills (GA), communication (CCFO), domain specific knowledge (GA), and leadership (GA). Chiu and Chuang (2016) pointed out that employability skills comprised academic skills (GA), personal management (GA), and teamwork skills (CCFO). Harvey, Locke and Morey (2002) added self-promotional skills and career management as important additional skills. There appears to be a general consensus as to the fact that a mixture of graduate attributes and critical cross field outcomes would hypothetically predict graduate employability skills. Based on the results obtained the null hypothesis was rejected.

However, employability skills are both occupational and contextual specific which is indicative of the fact that different occupations would intrinsically have a unique set of employability skills and would also vary according to country of origin (Chiu & Chuang, 2016). Employability skills (also referred to as competency or critical skills) within the context of the South African public service consist currently out of two streams, namely senior or middle management competencies (Public Service Sector Education and Training Authority, n.d.: 49). A summary of the link between the competency and the corresponding employability skill are tabulated in Table 5 below.
Table 5:  
Summary of the link between public service competency and employability skills

<table>
<thead>
<tr>
<th>Stream</th>
<th>Competency</th>
<th>Employability skill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Management</td>
<td>Strategic capability and leadership</td>
<td>Macro-vision skill (CCFO 7)</td>
</tr>
<tr>
<td></td>
<td>Programme and project management</td>
<td>Career management (GA 3)</td>
</tr>
<tr>
<td></td>
<td>Financial management</td>
<td>Academic skills (GA 2)</td>
</tr>
<tr>
<td></td>
<td>Change management</td>
<td>Environmental literacy (CCFO 6)</td>
</tr>
<tr>
<td></td>
<td>Knowledge management</td>
<td>Research skills (CCFO 4)</td>
</tr>
<tr>
<td></td>
<td>Service delivery innovation</td>
<td>Problem Solving (CCFO 1)</td>
</tr>
<tr>
<td></td>
<td>Problem solving and analysis</td>
<td>Problem Solving (CCFO 1)</td>
</tr>
<tr>
<td></td>
<td>People management and empowerment</td>
<td>Interpersonal skills (GA 4)</td>
</tr>
<tr>
<td></td>
<td>Client orientation and customer focus</td>
<td>Interpersonal skills (GA 4)</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>Communication (CCFO 5)</td>
</tr>
<tr>
<td></td>
<td>Honesty and integrity</td>
<td>Work ethics (GA 5)</td>
</tr>
<tr>
<td>Middle Management</td>
<td>Concern for others</td>
<td>Interpersonal skills (GA 4)</td>
</tr>
<tr>
<td></td>
<td>Creative thinking</td>
<td>Problem Solving (CCFO 1)</td>
</tr>
<tr>
<td></td>
<td>Customer service orientation</td>
<td>Problem Solving (CCFO 1)</td>
</tr>
<tr>
<td></td>
<td>Decision making</td>
<td>Self-responsibility (CCFO 3)</td>
</tr>
<tr>
<td></td>
<td>Diversity Citizenship</td>
<td>Interpersonal skills (GA 4)</td>
</tr>
<tr>
<td></td>
<td>Communication</td>
<td>Communication (CCFO 5)</td>
</tr>
<tr>
<td></td>
<td>Problem analysis</td>
<td>Problem solving (CCFO 1)</td>
</tr>
<tr>
<td></td>
<td>Self-management</td>
<td>Personal management (GA 3)</td>
</tr>
<tr>
<td></td>
<td>Team membership</td>
<td>Team work (CCFO 2)</td>
</tr>
<tr>
<td></td>
<td>Technical proficiency</td>
<td>Technological literacy (CCFO 6)</td>
</tr>
</tbody>
</table>

Despite the aforementioned it should be noted that graduate employability skills would be applicable to levels 5 to 8 within the context of the public service (viz. new entrants) and presently a competency framework for levels 5 to 8 is absent.

6. CONCLUSIONS AND RECOMMENDATIONS

The knowledge economy in conjunction with globalisation has resulted in an increasing emphasis on employability skills. Moreover, South Africa’s vision of a democratic developmental state requires a highly educated and efficient bureaucracy highlighting human capabilities. Despite this, articulation of the employability skills of the ideal public service cadre to respond to the requirements of a developmental state has been lacking. The current research attempts to address the lacuna by testing an employability skills model that was originally developed at an institution of higher education. Results indicated that the model predicted 100% of graduate employability as determined by public service respondents. Furthermore, it was found that graduate attributes were responsible for the majority of the variance.
Knowledge of the skill requirements integral to the next generation of public servants is pivotal especially since public service training institutions require appropriate evidence to inform course design. Likewise, the study responds to the call in the MTSF that the relationship between the supply and demand of knowledge and skills must be better aligned. Hence, if the public service scientifically identified skills required by public servants, higher education institutions would be better positioned to develop programmes (i.e. Bachelors in Public Administration) to meet governmental expectations. Furthermore, the MTSF pointed out that research should be expanded to articulate better the knowledge and skill requirements of the country. Additionally, the results of the study could be used to validate the senior and middle management competency frameworks currently utilised in the public service.

Future research could include a national study extending to the three spheres of government underscoring graduate employability. The findings from the proposed national study could be used in research endeavours to determine how to integrate employability skills into current higher education programmes effectively as well as the course material of public service training institutions. Furthermore, it is recommended that the employability skills model be bridged and validated for public service employees in general and not specifically graduates. Results of the present study could also be utilised to inform a competency framework for levels 5 to 8.

The following caveats are acknowledged. Firstly, since fieldworkers were utilised to gather the questionnaire data non-random sampling might have adversely influenced the external validity of the results. Secondly, the research was demarcated to a particular province in South Africa. Subsequently, results cannot be generalised to the larger population of public servants. Therefore, it is recommended that random sampling be used to generate a nationwide sample.

REFERENCES


A tale of two faculties: Exploring student experiences of e-portfolio implementation as a vehicle of reflective learning at Stellenbosch University¹

Sonja Strydom, Stellenbosch University, South Africa
Magda Barnard, Stellenbosch University, South Africa

ABSTRACT
This paper explores two cases within the Faculty of Education and Faculty of Economic and Management Sciences at Stellenbosch University with the aim of highlighting the opportunities and challenges associated with e-portfolio implementation. The two cases represent a pilot group of postgraduate education students and a first-year industrial psychology student cohort. While differing in the selection of platform and training and support provided, in both cases e-portfolios were implemented to enhance student reflective practices and an application of knowledge and skills. By adopting a qualitative approach, data were collected by means of two focus group interviews with students in the Faculty of Education and open-ended questions with students in the Faculty of Economic and Management Sciences. The findings suggest that the choice of platform, the establishment of an online community of practice and the derived value students place on the use of e-portfolios should be considered during e-portfolio implementation. Despite the value in demonstrating learning and to showcase achievements and skills development, it is clear that role players should pay attention and develop a deeper understanding to underlying aspects within the South African context that contribute to the successful implementation of such initiatives.

Keywords: e-portfolios, reflective learning, digital literacy, implementation, community of practice

INTRODUCTION
Higher education interest in the utilisation of e-portfolios as learning tools has increased in recent years (Yusuf & Tuisawau, 2011) by, for instance, adopting these to contribute to the enhancement of an authentic learning experience (Herrington, Reeves & Oliver, 2010), to assist in personal and continuous professional development (Von Konsky & Oliver, 2012) and in the development of graduate attributes whereby students demonstrate attributes associated with 21st century learning (Housego & Parker, 2009).

Although numerous definitions of e-portfolios exist, it seems as if an explanation usually includes reference to a collection of digital artefacts, evidence of learning progress and achievements inclusive of formal and informal learning opportunities. This collection could be used for reflection, assessment, showcasing achievements and standards achieved or as a demonstration of continuous development. The e-portfolio is

¹ Date of submission: 3 April 2017
Date of acceptance: 24 August 2017
managed and owned by the student whereby they normally have the right to invite other interested parties such as awarding bodies, lecturers and peers to access such a portfolio for particular purposes (Barrett, 2012; Beetham, 2005). Mapped against above-mentioned characteristics, e-portfolios are usually related to an authentic learning experience whereby information-driven practices are replaced with approaches whereby students are actively and authentically involved in the learning process. In order for a task to be authentic of nature, it is expected of students to be actively involved in an innovative and realistic task that paves the way for active engagement and multifaceted collaborative opportunities (Herrington, Reeves, & Oliver, 2010). In terms of educational approaches, it is therefore clear that e-portfolios could be used for either learning (i.e. for developmental or reflection purposes) or assessment purposes (i.e. showcasing standards achieved).

Although personal development planning, employability, and lifelong and life-wide learning agendas contributed to the escalation of the international use of e-portfolios (Joyes & Smallwood, 2012; Jenkins, Mash & Derese, 2013), uptake in higher education institutions in South Africa seems patchy. For instance, recent research into e-portfolio practices in the Western Cape highlight, but are not limited to, e-portfolio initiatives in Economic and Management Sciences, Education, Health, Architecture, Art and work-integrated learning (Koch, 2010; Pallitt, Strydom & Ivala, 2015). Within health education, colleges of medicine in South Africa formally implemented the use of learning portfolios as a requirement for all postgraduate training in family medicine in South Africa (Jenkins et al., 2013). In some cases, emphasis was placed on the nature and process of collaboration and engagement during the utilisation of e-portfolios. For instance, Edwards (2016) reported on the process by which students managed collaboration in a Design and Technology project where it is suggested that groups of students manage their respective collaborative approaches differently despite some commonalities. As expected, inter-relationships between group members as well as value placed on the importance of each group contributed to the quality and level of engagement within these groups. Within the context of distance education, this notion was further explored where it was suggested that students create their own communities of practice during their engagement with e-portfolios in order to assist each other and learn from each other (Van Staden, 2016).

Despite these pockets of good practice, it seems as if the South African higher educational context is mainly in the exploration phase of the use of e-portfolios as a possible learning and/or assessment approach in selected programmes.

The purpose of the study on which this paper is based is to explore the approaches towards implementation and learner experiences related to two pilot e-portfolio initiatives in the faculties of Education and Economic and Management Sciences. Although these initiatives are different in purpose, common features exist in terms of student preparation, support and feedback. Due to the increase in learner access to a variety of devices and the common use of a learning management system (LMS) in higher education programmes (Von Konsky & Oliver, 2012), it is argued that especially in the South African context, lessons learnt from these two pilot initiatives could contribute to the consideration, deeper understanding and sensible implementation of an alternative learning approach to formal and informal learning experiences in a variety of programmes.

Whilst the introduction provides a general overview of the use of e-portfolios in higher education, it remains imperative to highlight those key aspects associated with e-portfolio use. The next section highlights the developmental process, role of reflection, collaboration and feedback. This is followed by the methodology and an outline of the two cases. The paper closes with the results, discussion and recommendations and concluding remarks.
Development of an e-portfolio

The e-portfolio development process consists of purpose, content and process whereby students provide evidence of learning interaction through the selection of artefacts and consequent reflections on the choice and reason for inclusion into the portfolio. Also important is the approach the student uses in the format of the portfolio, the choice of sequencing activities and resources, the specific guidelines provided and applied by the educational institution, the assessment rubric, and the collaborative aspects, which include peer conversations and subsequent editing and reworking of the portfolio (Barrett, 2005; Jimoyiannis, 2012). Overall, all of abovementioned practices create the opportunity for students to synthesise learning experiences when developing the portfolio, to develop meta-cognitive and self-evaluative skills by means of critical reflection, to enhance the level of communication and discourse through presenting and sharing and to respond to different levels of feedback (Barbera, 2009; Buzzetto-More, 2010).

Reflection

The notion of reflection and its associated educational value is well documented and is viewed concomitantly with learning (Ng’ambi, 2008) whereby the practice of reflection provides the foundation for the development of further growth and knowledge. As an approach to learning, the creation of an e-portfolio could be rooted in the notion of constructive alignment (Biggs, 2003) due to the importance of the body of content (selection of artefacts and subsequent reflections) which should be closely aligned with the intended learning outcomes and assessments (where appropriate). Students are then provided with the opportunity to self-assess how they are meeting the outcomes or particular standards by means of constructive feedback from both peers and lecturers (Jimoyiannis, 2012). Framed within the social-constructivist approach which makes the case for learning where the students are actively engaged in discovering new knowledge and forming opinions, the emphasis remains on reflective practices and collaboration with peers in the e-portfolio development process (Buzzetto-More, 2010; Barbera, 2009). Reflection therefore supplements the process and product, and provides students with the opportunity to construct meaning in a social context based on particular experiences (Buzzetto-More, 2010; Jimoyiannis, 2012). These higher-order skills are developed through continuous cognitive attempts to re-evaluate and reflect on choices and associated content (Barbera, 2009). Jimoyiannis (2012: 111) argues that ‘reflection is a way of thinking about learning and helping individual students to understand what, how and why they learn. It is a form of mental processing, a form of thinking, that people use to fulfil a purpose or to achieve an anticipated outcome’. Quality reflections are characterised by the support of appropriate evidence to back particular assumptions but they also provide the opportunity for students to consider alternatives to their claims and critically question their assumptions (Pitts & Ruggirello, 2012).

This approach to reflection could be prospective (for planning) or retrospective (for review and analysis) (Barrett, 2011). For instance, a prospective reflective approach could include the decision on choice of artefacts for inclusion, or planning the layout of the portfolio for a particular audience or outcome and so forth. Reacting on the feedback from peers and lecturers in terms of artefact selection and sharing of the learning experience could be retrospective by nature. Critics of reflective practices argue that student reflections often have the potential to be unstructured, demonstrate a lack of academic conscientiousness and are reminiscent of ‘journal-like’ summaries of informal thoughts about certain learning experiences (Carl & Strydom 2017; Pitts & Ruggirello, 2012). It is evident that students need targeted support in reflection writing and also developmental strategies during the learning process due to the particular emphasis placed on either showcasing (product) or learning development (process).

Collaboration and feedback

In addition to the importance of reflection in e-portfolio development, collaboration and feedback remain central to the learning process. Not only does this reflective process contribute to new knowledge structures,
but the interaction and communication between learner, peers and lecturers also provide opportunity for new knowledge structures within a particular social context (Barbera, 2009). Collaborating in these ‘online communities of practice’ provides students with an authentic experience related to the selection and discussion of appropriate artefacts, but also real-time feedback and contributions from all relevant role players that contribute to the opportunity to connect, clarify and communicate as and where needed (Jimoyiannis, 2012). In essence, at a conceptual level, e-portfolios could be viewed as multimedia virtual environments where students are given the opportunity to demonstrate their learning and participate in the discourse relating to learning experiences within an online community of practice (Buzzetto-More, 2010; Pitts & Ruggirello, 2012). Within such a community, there is the potential to develop a network of evidence to demonstrate learning and growth by means of the conceptualisation of future actions based on feedback and community interaction. In a sense, past, present and future actions become interconnected through the utilisation of the discursive and social spaces (Pitts & Ruggirello, 2012).

METHODOLOGY

The paper reports on the opportunities and challenges of two separate initiatives which took place in the Faculty of Education and the Faculty of Economic and Management Sciences, where e-portfolios were implemented as vehicles for reflective learning. A qualitative approach was employed in order to make meaning and attempting to understand the lived worlds of students within the two respective projects (Elliot & Timulak, 2005; Silverman, 2005) whereby an ‘insider perspective’ was deemed important to explore fully and understand these experiences (Babbie & Mouton, 2012).

In terms of sampling, 11 self-selected students from the Post-Graduate Diploma in Education (PGCE) programme of the Faculty of Education voluntarily participated in the pilot project while opportunity sampling was employed for 300 first-year students in Industrial Psychology (Career Psychology Module) in the Faculty of Economic and Management Sciences participating in a compulsory e-portfolio initiative. In terms of gender both were represented approximately equally while the age of the majority of participants was between 20-25 years. Ethical guidelines were followed and students provided consent for their involvement in the study and had the right to withdraw at any stage of the investigation. The PGCE students were invited to participate in the pilot project in order to investigate the use of e-portfolios as a vehicle for reflective practice during school visits (Carl & Strydom, 2017) while the Industrial Psychology students used e-portfolios as part of their first-year course in their career psychology module.

Data were gathered by means of two focus group interviews for the education students while questionnaires consisting of open-ended questions provided the data for the Industrial Psychology students. An inductive analysis approach was adopted whereby data were analysed via axial coding (Strauss & Corbin, 1990). Connections between different categories that emerged from the coding process resulted in the identification of main themes and sub-themes. The details of the two initiatives are outlined below.

DESCRIPTION OF TWO EXAMPLES

Example 1: Faculty of Education

Context

Within the PGCE programme in the Faculty of Education, it is expected of pre-service teachers to complete a term’s in-service training in an allocated school in order to prepare them for the work demands within a school context. It is required of such students to reflect regularly on their experiences in schools, to participate in school-related co-curricular activities and to teach a minimum number of lessons that are observed by a teacher and/or a lecturer from the faculty. Such reflections and associated evidence are normally paper-based and handed in as a folder of evidence at the end of the school practicum.
A number of variables contributed to the consideration of exploring the affordances of an e-portfolio in this particular course: administratively, it is a challenge to manage high numbers of student reflection folders, students do not have access to each other’s folders for formative feedback, lecturers cannot be actively involved during the school practicum period and can therefore not provide students with just-in-time feedback on opportunities and challenges arising from in-service training. In addition, due to the emphasis placed on the development of graduate attributes in the faculty, such an approach could also contribute to the further development of such attributes and associated lifelong learning skills.

Mapped against and funded by a broader institutional teaching development grant project, students were provided with a tablet and data bundles to be able to develop their portfolios during their normal school day. Apart from the weekly reflections, students were encouraged to collect artefacts during curricular and extra-curricular activities.

Implementation

It was decided to make use of Web 2.0 technologies in selecting an e-portfolio platform and therefore students attended an induction session on how to create a blog before their practicum period. Time was also spent on introducing students to the main principles of reflective practice and how to be a critical friend when commenting on each other’s blogs. It was expected of students to invite peers in the pilot group as well as three facilitators to their respective blogs and to post a weekly reflection on their blog. All invitees were requested to comment on their blogs.

In terms of the platforms and tools used for this particular project, the Google suite was deemed suitable. Blogger was used for the creation of the blog, Google drive to store artefacts, Google+ to share resources and communicate with students, and Google hangouts for two formal online discussion sessions.

Example 2: Economic and Management Sciences

Context

Three hundred first-year students were enrolled in the Career Psychology module in Industrial Psychology. In order to avoid mere memorisation of facts, lecturers sought to engage students at a more meaningful level to encourage deeper learning. In using the e-portfolios as a learning approach to critical engagement, students were encouraged to reflect actively on the module content, engage in critical thinking as well as in the application of theory. Student reflections were guided by questions posed by the lecturers. These questions were based on the module content discussed during the lesson. The students were encouraged to integrate references to personal strengths and weaknesses, abilities, skills and the influence of personal experiences in their reflective pieces.

Students made use of Mahara, an e-portfolio platform integrated with the institutional LMS. An institutionally owned platform was chosen since it eliminated potential administrative issues that could have proved challenging in a large class scenario. The e-portfolio project served as a formative assessment opportunity and therefore it was compulsory for the whole cohort to participate.

Implementation

Students received a short training session during class on how to create e-portfolio reflections. The purpose of the use of the e-portfolio was also explained to them. Since this was the first year e-portfolios were being utilised, the lecturer did not want peers to view each other’s portfolios since some entries contained

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2 Stellenbosch University adopted the following graduate attributes in their Teaching and Learning Strategy 2014-2018: An enquiring mind; an engaged citizen; a dynamic professional and a well-rounded individual.
reflections of a personal nature. Honours students acted as assessors. They made use of a rubric to assess student e-portfolios and provided them with feedback on their reflections. The lecturer and faculty blended learning coordinator provided the students with technical and reflection-based support. It quickly became apparent that even an institutional platform has challenges. The most common support issues were related to the sharing of e-portfolio entries with assessors.

Based on these two initiatives, the common themes emerging from the data and feedback are discussed in more depth.

RESULTS

The main themes and sub-themes that emerged from the data are reflected in Table 1.

**Table 1:**

<table>
<thead>
<tr>
<th>Main theme</th>
<th>Sub-theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform choice</td>
<td>Student-centred learning</td>
</tr>
<tr>
<td></td>
<td>Digital literacy skills</td>
</tr>
<tr>
<td>Online community of practice</td>
<td>Reflections and social learning</td>
</tr>
<tr>
<td></td>
<td>Role of other key role players</td>
</tr>
<tr>
<td>Value of e-portfolios for learning</td>
<td>Authentic learning</td>
</tr>
</tbody>
</table>

**Theme 1: Platform choice**

The first theme highlights the importance of choice of platform for such an e-portfolio based intervention. It was clear that role players had to consider a platform central to meeting student needs in terms of support and access to knowledge. A second sub-theme related to the choice of platform speaks to the level of digital literacy of students and how this should be taken into consideration by not making assumptions of technological skills of students during e-portfolio implementation.

**Sub-theme: Student-centred learning**

Numerous factors contribute to the choice of platform in developing an e-portfolio. In this particular instance, both the size of the participatory group and the level of technical support available during the intervention guided the particular decision. A larger group, such as the Industrial Psychology students, presented unique challenges regarding support; therefore, it made operational sense to make use of a platform linked to the institution’s LMS (Moodle). Through Mahara, support was ensured from not only the lecturer but also the official LMS support team. The Faculty of Education opted for a Web 2.0 platform and engaged various Google Tools (Blogger, Drive, Hangouts, Google+). The case was made that PGCE students would be entering the world of work the following year and therefore should have immediate access to their portfolios as continuous professional development tools:

SUNLearn [Moodle] is a portal for us, as students, to obtain course information, and not a social sphere … (Industrial Psychology student).

So I’d like to do it for my first or maybe first two years as a new teacher at a school and see how that goes and I’d maybe even give my students access to it, so they can read it as well and even comment on it and make their own blogs … (Education student).
In this particular study, the choice of platform was mainly motivated by the size of the group as well as additional support offered, but choosing the appropriate platform does require that lecturers also need to develop a working understanding of e-portfolios (technical and pedagogical) in order to comprehend fully the potential of such an approach as experienced by students. This includes the ability to appreciate the learning experiences of students which could ultimately contribute to the authenticity of such an intervention (Challis, 2005).

**Sub-theme: Digital literacy**

There are numerous definitions of digital literacy which mainly relate to the ability of users to use digital devices effectively in different domains (e.g. cognitive, social-emotional and technical) within formal and informal learning contexts (Beetham, 2005; Ng, 2012). For instance, the cognitive domain requires users to have a working knowledge and understanding of information practices associated with the internet; the social-emotional makes reference to social attributes and skills associated with online behaviour and the technical domain highlights the ability to demonstrate a working knowledge regarding functions and technical aspects of devices (Ng, 2013). However, despite engaging with so-called ‘millennials’, it was clear that the assumption could not be made that all the students were comfortable with the required technologies and that they knew how to utilise them as expected. In terms of digital literacy, students did not experience the training provided as sufficient. Although only 4% of the Industrial Psychology students stated that they saw their own computer skills as poor, most of the cohort asked for a more hands-on training experience related to multimedia skills (e.g. adding images, videos and sound clips) and granting access to their respective portfolios at the start of the project:

“A compulsory tutorial class should be organised in the beginning of the module where students are shown how to create interesting posts on the e-portfolio. The range of abilities of the e-portfolio must be made clear to the students (Industrial Psychology student).

Initially I struggled to reach my assessor and to share my page with her. Assessors need to be more accessible … (Industrial Psychology student).

Similarly, some of the education students commented on the difficulties they experienced in terms of sharing their blogs, using Google Hangouts and uploading of certain artefacts:

“I struggled a lot … I’m quite technologically advanced and then one night I just had this experience where I felt that I wanted to say something on my blog. So then I recorded a video … I just couldn’t upload it … I just couldn’t figure it out (Education student).

**Theme 2: Online community of practice**

A second theme emerging speaks to the value and challenges of online interaction between the different role players. Whilst the notion of an online community of practice and its associated benefits were confirmed in the study, it was clear that students still needed guidance in terms of what exactly reflection entails and how to comment on peers’ contributions. Of note is also the fact that in both cases students preferred regular feedback from facilitators as well.

**Sub-theme: Reflections and social learning**

Having access to peers’ e-portfolio entries provided the education students with a network and community of practice with which they could share their experiences. However, such an online community could only evolve through training and scaffolding in order to guide students in the associated and required practices of an online community. This approach increased the breadth and depth of their social interaction in the learning process. Of interest, however, was the fact that a number of students suggested that they
felt uncomfortable commenting on posts of peers for fear of offending them or not knowing what the appropriate response should be.

Yes, I think it would have been nice if we had a session after the first three weeks as well ... to recap on what it means to be a critical friend ... I know my blog was very based on emotion ... whereas hers might be more clinical, you know, facts, what happened that day, how she experienced it. It's not always easy, but it would have been nice to have another session to just remind us about what the goal is eventually (Education student).

... and then also I feel like how do you really comment on someone's personal experience? Like if you say you've had a bad day, it's hard to say well, maybe if you did this and this and this and this and this, you will have a better day. You just want to be like okay, she's reflecting ... (Education student).

The Industrial Psychology students did not have access to their peers' e-portfolios, but in the project evaluation questionnaires a large number of students suggested that access to their peers' e-portfolio entries would be valuable. The questions supplied to students guided them in their reflective practices, but they often regarded this as 'answering a question' as opposed to developing true reflective practices. Many students also preferred more engaged comments from their assessors and emphasised the need to collaborate and communicate with peers virtually to improve their reflections.

I expected the assessors to give me guidance and be more interactive ... (Industrial Psychology student).

The reflections were also a good point of discussion between classmates as we did bounce off ideas from one another. This improved learning and interest through peer-to-peer interaction... (Industrial Psychology student).

Sub-theme: Role of other key role players
The value of feedback resonated not only with peers, but also with lecturers and facilitators involved in the project. In this particular case, students indicated that they needed more regular and detailed feedback from facilitators. Interestingly, this was not necessarily due to a need to improve and respond to suggestions, but often also an affirmation that reflective posts are 'correct' and aligned with the particular assignment. Those students who received feedback from facilitators appreciated it and integrated suggestions into their daily practice but without editing their original post. Despite some challenges associated with the reflective process, students overwhelmingly supported it as integral to the developmental process.

... but maybe a little bit more feedback would have been helpful because I didn't get any comments for like the first three weeks, I don't think and by then I had already written so much and I was like I'm assuming what I'm doing is right and no-one has told me it's wrong ... (Education student).

I really liked the comments. I really liked the questions that you asked but more of that would also be great. I think because then you just, like it lets you also know, I'm not just typing this for nothing. There is someone out there reading it ... (Education student).

The Industrial Psychology student number was much larger and therefore the lecturer needed help with assessing the entries. Honours students acted as assessors to assist with the marking.

The assessor didn't always give me enough feedback. He just gave a mark. I wanted more constructive feedback so that I know how and what to improve ... (Industrial Psychology student).
Theme 3: Value of e-portfolios for learning

A final theme that emerged in both cases was the value students placed on the authentic nature of the projects by applying new knowledge and skills not only to academic content, but also work-related skills and attributes.

Sub-theme: Authentic learning

In terms of the application of knowledge when being exposed to an authentic learning experience, the initiatives were deemed useful in both cases. It was suggested that reflective entries enhanced the understanding of the module content, helped to improve writing and comprehension skills and provided the opportunity to enhance personal development. The nature of the module content (Industrial Psychology) also prompted students to reflect on their career path and future:

... not only have these reflections been helpful in learning the course material, but have been a life-changing tool allowing me to explore my skills and abilities ... (Industrial Psychology student).

The reflections have taught me how to apply the work I have learnt in the week in everyday situations. I often find myself sitting in a lecture wondering to myself, ‘Where will I ever use this?’ and by doing these reflections I have managed to apply the knowledge to practical situations (Industrial Psychology student).

For the Education students, the opportunity to reflect during work experience contributed to a deeper level of understanding of the world of work and approaches that were more useful within a particular teaching context:

I could see where I started at school – like my first week and how I evolved as a person and in my teaching and what the teachers taught me there. And I’m like interested in what they’re teaching. So, it was seeing what methods they use and everything. So it made me see the process how I grew. That was good about doing weekly reflections (Education student).

DISCUSSION

Despite the existence of a plethora of guidelines regarding the use of e-portfolios, it is clear that particularly in the South African context, a deeper level of understanding and consequent response are needed for e-portfolio implementation and use to be truly of value in the learning experience. At a meta-level, ownership of the e-portfolio remains challenging due to lifelong learning needs as opposed to security in terms of verification, assessment and so forth (Brown, 2015). It requires institutions and role players to assess continuously and debate the level of institutional control over student e-portfolios while still providing a space for students to remain the owners of their work (Roder & Brown, 2009). In essence the flexibility of an e-portfolio and its associated benefits whereby the student becomes the owner, creator and administrator, provides agency to the student and contributes to the notion of student-centred and self-directed learning (Edwards, 2016; Van Staden, 2016). This could only be of optimal value if students not only understand the pedagogical value of such an intervention, but also have the necessary digital skills to make use fully of all the potential benefits of an online platform and its associated technical functionalities. It is often assumed that students attending higher education have sophisticated technological skills and have access to a variety of tools (Kennedy, Judd, Churchward, Gray & Krause, 2008) but it is evident that differences are observed in the digital skills levels of many students (Ng, 2012). Lecturers and other role players should therefore understand the required digital skills necessary for the development of an e-portfolio. Appropriate training and support opportunities should be provided for all students so that they may have rightful access and the skills needed for the development and design of e-portfolios. However,
it is suggested that lecturers themselves also engage with the expected online activities of students in order to grasp fully the level of skills and understanding students require during e-portfolio development (Tshabalala, Ndeya-Ndereya & van der Merwe, 2014).

Despite the importance of reflections, it often remains challenging to staff members who need to identify appropriate methodologies to recognise and develop reflective skills in students (Challis, 2005). Both lecturer and student should adopt a cognitive paradigm by which it is made clear what the particular expected outcomes associated with student reflections are (Jimoyiannis, 2012). The characteristics of a mature e-portfolio requires a learning process demonstrated in terms of the appropriate responses of students to feedback on their reflective posts (Challis, 2005) and therefore supporting students in not only writing reflective posts, but also appropriately responding to peers and their own feedback (Van Staden, 2016). The social interaction does, however, not only reside between students and peers, but it was evident that students do value the feedback from lecturers and facilitators (Van Wyk, 2017). It is often a challenge to access all student portfolios if the classes are very large, but during the planning phase clear roles should be established by which students are allocated to lecturers, facilitators or assessors that could also provide them with appropriate feedback during e-portfolio development. We argue that the online relationship that is established through commenting on reflections and consequent student responses to such comments remains of value. However, in order to sustain such a relationship, a particular time commitment is required from such role players (Islam, Beer & Slack, 2015) whereby online rules of engagement are clearly communicated between the different users and facilitators.

The pedagogical model of authentic learning suggests nine elements that are linked to authentic learning experiences (Herrington, Parker & Jelinek, 2014):

1. a curriculum resembling a real-world context
2. tasks being complex and having to be completed over a longer period of time
3. learning from other experts
4. the ability to approach challenges from various perspectives and roles
5. the opportunity for collaborative construction of knowledge
6. an opportunity for reflection to enable abstractions
7. the ability and opportunity to articulate tacit knowledge to be explicit
8. scaffolding and coaching opportunities
9. authentic assessments for authentic tasks (Herrington et al., 2010).

Such requirements for authentic learning once again place the responsibility on lecturers to consider carefully the desired outcomes of an e-portfolio initiative and the particular context wherein the initiative will reside. Attention regarding such a design could contribute to the value students place on participating and developing an e-portfolio (Herrington et al., 2014). Herrington et al. (2010), however caution lecturers not to misconstrue authentic learning as an approach whereby students are left unaided in a setting that could not be related to in-class activities.

RECOMMENDATIONS

The implementation of e-portfolios as a learning and/or assessment approach within the South African context poses various opportunities and challenges. In order for such approaches to be sustainable and appropriate over time, we suggest a number of key considerations in guiding the e-portfolio implementation process. Firstly, the purpose of the e-portfolio should be clearly conceptualised in terms of learning...
outcomes as well as the expected learning processes involved in the creation of such evidence of learning and skills (Jimoyiannis, 2012). An e-portfolio should be used primarily to assist in addressing a particular learning challenge and should drive the motivation for the utilisation of e-portfolios in a given context. The choice of platform, however, is crucial in terms of user-friendliness, learner-centredness and ease of access during the initial project as well as further studies in terms of lifelong learning (Challis, 2005). A thorough investigation should precede the implementation phase and role players should highlight clearly what is expected in terms of a chosen electronic platform. Technical and pedagogical support for both staff and learners should be continuous and accessible where and when needed (Goldsmith, 2007). Initial training on the use of the platform as well as the pedagogical practices associated with an e-portfolio is important, but both lecturers and learners should have regular access to support during any phase of the initiative. It is evident from our experience that learners still struggle with the notion of reflection and often confuse it with diary entries and ‘blogging’ (Majid & Adnan, 2011). It is important that the required digital literacy skills of both staff and learners involved in the initiative be assessed beforehand and appropriate differential training be available according to the needs of the participants (Ng, 2012, 2013). Developing an online community of practice does not evolve organically and therefore careful consideration should be given to supporting learners on where, when and how to respond to peers’ reflective posts and the feedback they receive. Finally, it is suggested that the e-portfolio be linked explicitly to an authentic learning experience in order to enhance student motivation (Tosh & Werdmuller, 2004) and to encourage students to develop their e-portfolios. In many instances students will question the rationale for an e-portfolio and therefore it is essential to communicate it clearly and to align it as closely as possible with a real-life experience (Herrington et al., 2010).

CONCLUSION

We conclude that the consideration of e-portfolios in any discipline can be sensibly used to demonstrate learning and to showcase achievements and skills developed. Not only is such a learning approach confined to the in-classroom experience but it also provides an opportunity to bridge the gap between informal and formal learning. However, it is imperative to note that the choice to integrate e-portfolios into learning and teaching activities requires a response to a particular educational challenge and should not be driven by the choice of particular technologies and an electronic platform. Facilitators considering such an approach will be required to be involved in the process by fully understanding and experiencing the different aspects of e-portfolio development as well as being committed to participate actively in the online learning experience of students.

REFERENCES


The interplay between theory and practice: Mathematics pre-service teachers’ learning experiences at a teaching school

Erica Dorethea Spangenberg, University of Johannesburg, South Africa

ABSTRACT

South Africa has insufficient pedagogies in teacher education that integrate pre-service teachers’ experiences of theory at universities with their practical experiences in teaching schools (TSs). This paper examines mathematics pre-service teachers’ learning experiences at a TS converging on the interplay between theory and practice. A three-level model proposed by Korthagen (2010), consisting of a gestalt-, schema- and theory-level, which built on the situative perspective, was used to frame the study. A case study using a qualitative research design was adopted with two data collection methods, namely, interviews and reflection reports. A sample of five mathematics pre-service teachers (PTs) enrolled for a Postgraduate Certificate in Education (PGCE) qualification, was purposefully selected. The results indicate most PTs could act and reflect on gestalt-driven experiences, however, an appropriate theory-level was not reached. At the gestalt-level most PTs viewed mathematics as abstract, theoretical and complex, and considered the teaching and learning of mathematics to be skill-driven. At the schema-level three PTs applied mathematics to real-life activities and reflected and acted intentionally in the teaching-and-learning process. At the theory-level all PTs coherently arranged some of their knowledge and considered the impact of their teaching on learners. The study contributes by providing a context to investigate the interchange between theory and practice.

Keywords: Mathematics, pre-service teachers (PTs), teaching school (TS), learning, theory, practice

INTRODUCTION

Worldwide there is a plea for reforming curricula focusing on teacher development (Ball & Forzani, 2009; Darling-Hammond, 2016; Department of Education (DoE), 2011; Furlong, Campbell, Howson, Lewis & McNamara, 2006; Lynch, Smith & Menter, 2016). In April 2011, the South African DoE released a technical report, Integrated Strategic Planning Framework for Teacher Education and Development in South Africa for 2011-2025, which highlighted challenges being experienced in teacher education. A lack of opportunities for prospective teachers and the failure of the system to achieve dramatic improvement in the quality of teaching and learning in schools were stressed. To meet these challenges, the report aimed to make ‘institutional arrangements for the delivery of key components of teacher development … such as a network of viable, accessible Teacher Education Institutions (TEIs) [and] Teaching Schools’ (DoE, 2011:

1 Date of submission: 8 May 2017
Date of acceptance: 1 September 2017
3). Against this background, a particular university was approached by the DoE to conduct a study on the establishment of Teaching Schools (TSs).

In South Africa and in particular at the university under investigation, the teacher education programme for the Postgraduate Certificate in Education (PGCE) qualification is delivered predominantly in a theoretical mode consisting of formal lectures for 19 weeks. Practice, in the form of work integrated learning (WIL), is offered at schools only for short blocks of time during the year, namely three weeks in the first semester (March) and seven weeks in the second (August-September). However, theory and practice are offered as separate entities with limited integration, and theory-taught mathematics competencies do not contribute to better teaching practices (Lave, 1988). An integrated course has one curriculum that includes both theory and practice, which is jointly designed by the university and the TS. Furthermore, the course is delivered cohesively at one site, namely the TS. The course is also regulated by a specific set of guidelines determined by both partners.

The university has a responsibility for ensuring that its teacher education programme for mathematics pre-service teachers (PTs) is of high quality. The programmes should also lead to meaningful learning in the teaching of the subject. However, several PTs have informally complained that theory offered in the mathematics methodology modules is not relevant to what is expected in practice. Therefore, the university needs to ‘implement innovative mechanisms to strengthen the work integrated learning component of the teacher education programme through the effective use … of teaching schools’ (DoE, 2011: 3).

There have been investigations into the role TSs could play in the preparation of teachers for practice (Furlong et al., 2006; Tuovinen, 2008). Furlong et al. (2006) analysed formal partnerships between Higher Education Institutes and local schools in England, while Tuovinen (2008) examined the Finnish education system. However, none of these were devoted to the training of mathematics teachers within a South African context.

The study contributes to research on the training of mathematics PTs at higher education institutes. The exposure of mathematics PTs to practices in TSs may close the gap between theory and practice. The utilisation of TSs could lead to further changes in policy pertaining to the delivery of PGCE qualification programmes. Changed teacher education policies may, in turn, improve the quality of teaching and learning of mathematics in schools.

This paper reports on a pilot study that contributes to a broader study on the establishment of TSs to prepare secondary school PTs in various school subject specialisations for the profession. It specifically focuses on mathematics students’ learning experiences displaying an interplay between theory and practice at a TS. The question arising from the above was thus: What learning experiences of PGCE mathematics PTs at a TS display an interplay between theory and practice?

Pre-service teacher (PT) education with specific reference to teaching schools in other countries is examined through a literature survey. The interplay between theory and practice in learning will be explored by means of a three-level model conceptualised by Korthagen (2010). Thereafter, the research methodology, which uses an exploratory qualitative case study, is discussed. Results follow from the data analysis process and the findings are discussed.

**PRE-SERVICE TEACHER (PT) EDUCATION IN OTHER COUNTRIES**

There is a need for innovative approaches to improve the quality of teacher education in South Africa (DoE, 2011), especially in preparing mathematics PTs for the profession. One therefore needs to draw on the successes in teacher education of other countries with similar programmes.
Historically, PT teacher education in England was theory-driven and mostly offered by universities (Hodkinson, 2008). From the mid-1980s the control of teacher education moved to the central government’s Department for Education, which established stronger partnerships between universities and schools to ensure better alignment between theory and practice. From 1992 it has been a requirement that teacher education be conducted through formal partnership arrangements between individual Higher Education Institutes (HEIs) and local schools (Furlong et al., 2006). England uses three ideal models of partnership in practice (Furlong et al., 2006). First, *complementary* partners see the university and schools having separate and complementary responsibilities, not necessarily integrated in the teaching programme. Second, *collaborative* partners focus on an educational programme developed together by teachers from schools and lecturers from HEIs to align theories and practices in teaching. Third, *resource* partners have education programmes led by HEIs with inputs by a small number of teachers, acting as consultants. While there is substantial international interest in such partnerships by countries, such as the United States of America, Australia and New Zealand, they have only become institutional at a national level in England and Wales (Furlong et al., 2006).

Successes were also drawn from the Finnish education system. According to the Programme for International Student Assessment (PISA) this system had a ranking of two in a mathematics literacy test in 2006 (Tuovinen, 2008). As in England, universities in Finland utilise *collaborative* partners. Pedagogies and practice teaching are conducted throughout the entire duration of the teacher education programme within TSs, as ‘schools in which a major part of student pedagogical practice is conducted are linked organically with the departments of education’ (Moon, Vlasceanu, & Barrows, 2003: 89). These are local schools consisting of supervising teachers contracted by universities to specialise in the supervision of PTs, by guiding teaching practice, developing pedagogy and assisting with curriculum planning. TSs integrate teaching practice into all levels of teacher education, from the beginning to the end of the studies. Thus, TSs are teaching laboratories, where PTs can engage in learning-from-practice, such as observing best practice, participating in micro-teaching exercises and taking subject methodology courses.

### THE INTERPLAY BETWEEN THEORY AND PRACTICE IN LEARNING: A THREE-LEVEL MODEL

Learning in any situation, including TSs, is multifaceted. Learning to become mathematics teachers not only happens when knowledge is transferred in a theoretical mode by teacher-educators. Learning also occurs during practical situations, as PTs interact with mentor teachers. Several researchers (Lave & Wenger, 1991; Greeno, 1998; Brodie & Sanni, 2014) agree that learning is located in the context in which it transpires, is communally created and emerges from a person’s own actions in relation to those of others. PTs memorise, symbolise and develop mathematical concepts in relation to each other while situated in a social world. These concepts are ‘strongly informed by and even bounded by their practice… [and] constrained and afforded by practice’ (Brodie & Sanni, 2014: 188).

PTs learn to become mathematics teachers not only by learning educational theories and complex concepts. They also have to act in the teaching-and-learning process. In particular, they become skilled through a process of participation and enculturation in social practices in schools (Lave & Wenger, 1991). Learning further happens through experiences and role modelling of teacher-educators who can explain and transfer knowledge well. A challenge is to merge learning via traditional cognitive theory and situated learning. Cognitive theory refers to the unfolding of the features of ‘knowledge and knowledge development’, while ‘situated learning explain the role of embodied social learning’ (Korthagen, 2010: 99).

There are reservations about the effectiveness of teacher education that could be ascribed to a division between theory and practice (Korthagen, 2010). Universities often perceive teacher education from the outside, unaware of the inner dynamics or expectations within the school context. PTs’ work integrated
learning at schools occurs in a short time and they seldom get the opportunity to enculturate within the community of practice at schools where much learning is taking place.

Korthagen (2010) proposes a three-level model (Figure 1), built on the situtative perspective. This viewpoint aims to analyse the conflict between teacher approaches in practice and the grounding of teachers’ practices into theory. The model shows that knowledge has its origins ‘in practical situations and is socially constructed, but that there is a difference in how knowledge can be used’ (Korthagen, 2010: 102).

**Figure 1:**
The three-level model and the accompanying learning process

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<tr>
<th>Gestalt</th>
<th>Schema</th>
<th>Theory</th>
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<td>Intentionally</td>
<td>Coherent arrangement of knowledge</td>
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<td>• Internal processes</td>
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<td>Unconsciously</td>
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(Adapted from Korthagen, 2010: 100)

In the gestalt, which is the first level, PTs’ previous experiences, prior knowledge and internal processes of learning are intertwined. A gestalt refers to the ‘intrapersonal and psychological counterpart of the social process of situated learning’ (Korthagen, 2010: 100). A gestalt or percept is formed in the mind, which has ‘properties that are different from those of its parts’ and cannot be described as a sum of its parts or ‘defined only by some isolated features’ (Hamburger & Röser, 2011: 363). The mind recognises complete pictures visually, instead of merely sets of unconnected features such as lines, borders and curves. PTs sometimes instinctively project their way of learning mathematics onto their learners without being aware of it and are unconscious ‘of the effects of their behavior and its underlying causes’ (Korthagen, 2010: 101). Unintentional, temporary responses generate ‘images, feelings, notions, values, needs or behavioral inclinations, and often ... combinations of these factors’, which are interwoven and form a whole, called a gestalt (Korthagen, 2010: 101). The concept relates to a person as an individual in totality (Lave & Wenger, 1991), intertwined with the social contexts in which gestalts are produced. The implied learning happening during the process of gestalt formation is known as the development of awareness of learning and is not so much considered as conceptual development (Korthagen, 2010).

PTs may become aware of some parts of their gestalt after reflecting. This awareness could lead to certain conclusions, and form the second level, namely the schema. Procedures, ideas and/or theories become interconnected during the reflection process and actions may be taken. PTs may link their teaching with prior cognitive schemes, such as prior knowledge or experiences of learning. An earlier unintentional gestalt develops itself into a conscious cognitive schema at this time, which is an important next level in the learning process. When PTs reflect on a situation and actions are taken in the particular or similar situation, they may develop a schema, which consists of a mindful network of ideas, features and values assisting in explaining practice. The ‘transition from the gestalt to the schema-level is one of de-situating the knowledge derived from specific situations, [namely] situated generalisation’ (Korthagen, 2010: 102).
The last level, namely the theory, is characterised by the development of a more theoretical understanding of a variety of related circumstances. This is the level on which a coherent arrangement is created in the knowledge built previously. The theory-level aims to establish a profound and broad understanding of a range of related situations (Korthagen, 2010). Numerous schemata are linked into one comprehensible theory.

**RESEARCH METHODOLOGY**

A situative perspective was adopted to highlight the interplay between theory-driven lectures on mathematics teaching at the university and real-life contexts in the TS (Anderson, Reder & Simon, 1996). A situative perspective provides a view to analyse teaching and learning practices in any setting (Greeno, 1998). An exploratory qualitative case study approach was chosen, allowing for investigating a complexed phenomenon within a specific context using various forms of data (Baxter & Jack, 2008). This study situated in a TS envisages to gain rich insights into the interplay between theory and practice by exploring PGCE mathematics PTs’ learning experiences.

A purposeful sampling technique (Creswell, 2014) was used. Five mathematics PTs from a population of 15 enrolled for a PGCE mathematics qualification at the selected university participated voluntarily. The TS was chosen for its proximity of about five kilometres from the university and easy access for students between the university and the TS. All participants enrolled full-time for the qualification and had no prior teaching experience. There were three males and two females.

One-on-one semi-structured interviews were conducted with PTs before, during and after the project and 11 written reflection reports were submitted over a period of 25 weeks. The interplay between theory and practice cannot be established within a short period of time, therefore, the pilot study’s duration was spread over a period of five-and-a-half months. The broader study envisages to expose PTs specialising in various subjects to a TS for their full period of study, namely one year. PTs’ responses were elicited by means of the following questions:

- What are your views pertaining to the teaching and learning of mathematics? Why? (Interviews 1–3; Reflections 1, 6, 11)
- What, if any, learning experiences have you encountered at the TS so far pertaining to your development as a teacher? Explain. (Interviews 2–3; Reflections 2–11)
- What, if any, challenges have you experienced so far at the TS? How did you address them? (Interviews 2–3; Reflections 2–11)
- How have you developed professionally as a teacher? Elaborate. (Interviews 3; Reflections 11)
- How do you see the interplay between theory offered at the university and your teaching practices at the TS? (Interviews 1, 3; Reflections 1, 11)

To ensure trustworthiness, the researcher adhered to scholarly rigour, transparency and professional ethics (Rule & John, 2011). The research question, as outlined in the introduction of the study, was used to frame the development of the interview questions. Critical peer checks were conducted by showing interview questions and interpretation of data to colleagues for comment and suggestions to ensure clear conceptualisation. Member checking with participants confirmed the accuracy and completeness of the emerging findings and contributed to the credibility of the study. An audit trail allowed for the findings to be traced back to the data. Thick descriptions of the case, direct quotations from the data and literature support guaranteed a level of transferability of the findings. Triangulation was employed to control the data obtained from the interviews with that attained from the reflection reports for accuracy.
were repeated in both the pre-, middle and post-interviews and the reflection reports until data saturation was obtained. Triangulation by using multiple sources also allowed for new facets to emerge (DePoy & Gitlin, 2011), thus crystallisation. Dependability was addressed by ‘employing rigour and coherence towards generating findings’ (Rule & John, 2011: 107). To minimise researcher’s bias, the limitations of the study were stated. Ethical measures were also taken into account ensuring confirmability.

Participation was voluntary, consent obtained and the anonymity of the participants protected (Mouton, 2001). The Research Ethical Committee of the Faculty of Education granted clearance for the study. Furthermore, informed consent was obtained from the participating TS. The TS is an affiliated high school to the Faculty of Education of the university. GDE has rendered the university authorisation to conduct research at the school.

RESULTS

The interviews were audio-recorded and transcribed and the data analysed by reading the transcriptions and reflection reports thoroughly in order to obtain a holistic perspective. Thereafter irrelevant data were removed. Words and short phrases were coded qualitatively using open coding (Saldana, 2009). Sub-categories were derived and grouped into specific categories. Thereafter, recurring themes of views about the nature of mathematics and pedagogical content knowledge (PCK) were identified. The development within the themes from the gestalt to the schema and finally to the theory-level (Korthagen, 2010) was deductively analysed.

The results of the analysis are presented firstly with regard to views about the nature of mathematics, then pertaining to PCK. For each of these two themes a summary table is provided that indicates the number of participant utterances in the interviews and the reflection reports across Korthagen’s (2010) three levels. The first five columns of figures in each table indicate the frequency (f) of utterances for each participant, while the last column (N) refers to the number of participants (out of 5) who referred to the category. After the tables, qualitative analyses of the participants’ responses follow structured by the identified sub-categories and Korthagen’s (2010) three levels. Participants are referred to by alphabetical letters to protect their anonymity.

DISCUSSION

Results of the analysis with regard to views about the nature of mathematics

Ernest (1991) advocates three beliefs about the nature of mathematics. A Platonist views mathematics as minds-on and theoretical. An instrumentalist believes the subject is hands-on and skills-orientated, while an experimentalist embraces mathematics to be hearts-on and human-focused. Beswick (2012) elaborated by classifying these beliefs in terms of mathematics teaching and learning. Platonists teach abstract mathematics content focusing on learners’ understanding. Instrumentalists teach procedural mathematics emphasising the execution of mathematics. Experimentalists teach real-life mathematics for all people to succeed. The researcher used these three views to analyse PTs’ levels of development of their beliefs about the nature of mathematics in terms of the subject, teaching and learning.

All PTs noted beliefs about the nature of mathematics, which contributed to 51 comments across the development levels. However, 64.7% (33) of the comments were made at the gestalt-level, 15.7% (8) at the schema-level and 19.6% (10) at the theory-level. The beliefs also varied in terms of the subject, the teaching and the learning. Almost a third of the comments (31.4% (16)) focuses on the subject, a half (47.1% (24)) on teaching and the rest (21.5% (11)) on learning.
Table 1:
Categories and sub-categories on views about the nature of mathematics

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(a) The subject

Initially, four PTs referred to the difficulty of mathematics. Three viewed mathematics as easy, but acknowledged that people perceive it as difficult because of their previous experiences with the subject. The other acknowledged the difficulty of the subject could change by putting more effort into it. Although three PTs had thoughts about the nature of mathematics in terms of the subject at the gestalt-level, only one developed at the schema-level. The PT who originally upheld an instrumental belief, arguing mathematics is not only theory but about doing something, developed an experimental belief:

that it’s very important that teachers make abstract ideas to everyday reality (A, Interview 1, Aug).

This belief is in agreement with Ernest’s (1991) experimental belief considering mathematics as a practical subject allowing for real-life applications. Mathematics becomes more meaningful if it is related to real-life applications, even though it is not always easy. PTs would be better equipped if they understand the nature of the subject.

(b) Teaching

With regard to the teaching of mathematics, all five PTs had initial thoughts on teaching, which they could eventually link with theory. Originally they held a Platonist belief about the teaching of mathematics at the gestalt-level focusing on teaching theory for understanding (Ernest, 1991).

All PTs changed their beliefs at the theory-level to an experimental belief by adopting a heuristic approach towards the teaching of mathematics. They could have arranged subject content to real-life applications.
and involved learners in their teaching. However, only three PTs could act on their beliefs at the schema-level:

...something that can be worked on, the matter of communicating (A, Interview 2, May).

It made me realise it is all about you must think on the spot, it is very challenging (B, Interview 2, May).

You do it step by step according to a lesson plan, it is not all at once (D, Interview 2, May). According to Beswick (2012: 128) PTs’ beliefs about the nature of mathematics should combine mathematics knowledge and mathematical pedagogy, known as ‘mathematical knowledge for teaching’. Once PTs can align their content knowledge with their teaching practices they will develop a coherent understanding of the nature of mathematics. Experience in teaching has the greatest influence on change of beliefs about the nature of mathematics (Beswick, 2012).

(c) Learning
Four PTs were oblivious to ideas about the learning of mathematics at the gestalt-level. One had a mix between Platonist and experimental beliefs but had not developed further. One held an instrumental belief but developed to an experimentalist at the theory-level, admitting people should learn from each other. The other two had experimental beliefs which continued respectively at the schema-level and at the theory-level by relating their beliefs to a constructivist learning theory. The PT without any initial thoughts could however intentionally act at the schema-level:

I ask students to verbally repeat the information as a whole-class. These types of activity help students [to] process information in working memory (B, Reflection 9, Jul).

This engagement concurs with Beswick’s (2012: 130) instrumental belief about mathematics learning, namely, ‘skill mastery, passive reception of knowledge’. The same PT changed to become an experimentalist at the theory-level emphasising learner involvement:

Anything that captures students' attention and engages their mind has the potential to produce learning. Of course, the opposite is also true: No attention, no engagement, no learning (B, Reflection 9, Jul).

Yet, none of the PTs developed through all three developmental phases. From the above it is evident that the gestalt-level includes PTs’ existing views and thoughts about teaching mathematics before reflection and action (Lave & Wenger, 1991). Once being exposed to the TS, some PTs began to verbalise their experiences, intentionally acted in the teaching-and-learning process and even started to provide reasons for their actions.

Results of the analysis concerning pedagogical content knowledge (PCK)
Shulman (1986) coined the concept of pedagogical content knowledge (PCK), comprising a mixture of subject matter knowledge and pedagogical knowledge. PCK also implies knowledge of teaching methods, assessment, classroom management, lesson planning and knowledge of learners influencing teaching and learning (Akhtar, Shaheen & Bibi, 2016). Pino-Fan, Assis, and Castro (2015) add additional dimensions to PCK, namely mediated facets including resources, ecological facets comprising contexts and a meta-didactic mathematical facet embracing teachers’ reflections on their teaching. The researcher utilised all these elements of PCK to analyse PTs’ levels of development in this regard.

All PTs indicated PCK elements (142 utterance) across the development levels (Table 2). The weightings of the utterances were 4.2% (6) at the gestalt-level, 63.4% (90) at the schema-level and 32.4% (46) at the
theory-level. The majority of the utterances focused on pedagogy (44.4% (63)), followed by professionalism (17.6% (25)) and knowledge of learners (10.5% (15)). Other PCK elements with smaller weightings were resources, assessment, classroom environment, content and reflection.

Table 2:
Categories and sub-categories on views concerning PCK

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(a) Pedagogy

Only one PT developed through all three levels pertaining to knowledge of teaching methods. At the gestalt-level, the following thought was shared:

you have to teach it … your learners should be able to understand what you talking about … probably they can relate to it in terms of applying (A, Interview 1, Feb).

Conversely, all five PTs could provide ideas based on reflection on how to teach mathematics at the schema-level. Some of the suggestions to teach for understanding were:

asking them questions in relations to their day to day activities … I explain to the learners’ basic method … they quickly started to guide me through the steps … they could now do problems themselves (A, Reflection 9, Jul).

let the learner do it themselves (A, Interview 3, Aug).

linked new information to the student’s prior knowledge … to verbally repeat the information as a whole-class (B, Reflection 9, Jul).

[teach] with the end in mind (D, Reflection 9, Jul).

you’ll do an example first … you will do the exercise and practise (D, Interview 3, Aug).

The findings are in agreement with Wilson, Cooney and Stinson’s (2005: 91) four characteristics of good teaching, namely ‘the importance of prerequisite teacher knowledge, promoting mathematical understanding, engaging students, and effectively managing the classroom environment’. All PTs could also align their practices with theory at the theory-level. One PT pertinently referred to a learning theory:

I apply [a] constructivist learning theory … I allow him to focus in thinking about learning and understanding mathematics. I also allow him to give a sensory input and to construct meaning out of it
which encourage him to use active techniques, real world problem solving to create more knowledge and reflect on it (E, Reflection 9, Jul).

Theory plays an important role in the teaching and learning of mathematics, especially between transitioning from the schema-level to the theory-level. However, Korthagen (2010) warns that theory should only be introduced when a need for deeper understanding evolves.

No PT originally had views about lesson planning and presentation at the gestalt-level. However, four PTs could reflect on it at the schema-level after being exposed for a while to a TS. Some remarks were:

I need to be ready for anything and questions from the learners … I prepared … only to realise that I had to add other ways and methods which were not part of my plan to help students who did not understand (B, Reflection 3, Apr).

The lessons must be short, relevant and understanding to the learners … The teacher must give an activity in the class relating to the topic … and homework must also be given (E, Reflection 4, May).

A detailed lesson plan … made me visualise each class before I taught it. I imagined the flow from one activity to the next, made sure there was a balance of skills and types of activities, and anticipated places where we might detour from the lesson (B, Reflection 10, Aug).

This last utterance corresponds with Cavanagh and McMaster’s (2015: 259) claim that PTs tend to plan a lesson as a linear sequence of unrelated events. Although the PTs knew what they wanted to achieve in their lesson presentation they did not incorporate learners’ thinking. This finding is in agreement with Masingila and Doerr’s (2002) observation that PTs encounter difficulty ‘when trying to use student thinking and to follow their own mathematical goals in a lesson’. The same four PTs could also give advice on how to prepare and present lessons at the theory-level. Some suggestions were:

[to] sequence and do the activities, move logically and learners are progressively building on what they already know (B, Reflection 10, Aug).

Make sure the material and equipment you are going to use are available and in good working order a day before. Make a list of things you want to cover on a lesson. Allocate time that will be spend on each item in your list. Seating arrangements should also be noted … with the description of the class and learners … goals and objectives of the lesson should be listed and explained to the learners … When engaging with a new topic it’s important to find the existing knowledge of the learners … make sure you summarise your lesson at the end to find out whether the learners did understand and whether the goals and objectives were reached (C, Reflection 6, May).

The first section will be introduction of the lesson. The middle section will give all of the important facts of the lesson. The last section will reinforce the main ideas, and the conclusion of the lesson (E, Reflection 5, May).

The four PTs could in addition logically provide the purpose of a lesson plan and the essence of lesson preparation. Examples of a few utterances are:

it acted as a road map for the presentation and sharing the objectives (B, Reflection 10, Aug).

A lesson plan … help you … to reflect in your teaching … know what to do and when to do what, it’s a reminder of your goals and objectives of your lesson … It is also a record of what has been done in class … it also help to control class time affectively (C, Reflection 6, May).
Planning and preparing is necessary and helps greatly in the conducting of the lesson (D, Reflection 5, May).

This finding is in agreement with Cavanagh and McMaster’s (2015) discovery that through reflective practices PTs could progress in lesson planning in terms of the achievement of learning objectives and the measurement of the impact of their teaching.

(b) Content knowledge

Very few utterance (4) were made pertaining to content knowledge of which one was made at the gestalt-level, namely:

their knowledge in class … this learners they don’t get zero when you give them tasks (A, Interview A, Feb).

Examples of two reflections on content knowledge at the schema-level are:

My role as a student-teacher in a subject like mathematics is to ensure that I remain up to date with developments in my areas of expertise, and possibly to extend these (B, Reflection 2, Apr).

I have to know my content, must have a good content knowledge, so that I can pass it to learners … I must get their current knowledge and link it with the new knowledge that I am going to give them and again to make it more interesting for the learners to understand (C, Interview 3, Aug).

No PTs could coherently arrange their content knowledge at the theory-level. This finding is a concern, especially in the light of Wilson et al.’s (2005) claim that effective teaching is based on mathematical construction. However, one PT confessed:

When your PCK is very good, your lesson presentation will work out smooth and aims/objectives of the lesson can be easily achieved (C, Reflection 11, Aug).

The above-mentioned findings on pedagogy and content knowledge concur with Lim-Teo, Chua, Cheang and Yeo’s (2007) observation that PTs are more concerned about teaching methods than correct mathematical content knowledge.

(c) Knowledge of learners

Two PTs unconsciously noted learners are unable to do mathematics. This thought was only evident at the gestalt-level. They claimed:

you also want your child also to learn maths but he does not have the intellectualism of mathematics (B, Interview 1, Feb).

the lack of understanding of the learners … a problem for them, to understand that Mathematics (E, Interview 1, Feb).

The other three PTs identified the importance of knowledge of learners in teaching at the schema-level. Some reflections provided are:

know those kids … individually by their names and what their problems might be and the barriers that they have (A, Interview 2, May).
you must be knowledgeable about the learners you are going to teach. You have to know their background (C, Reflection 11, Aug).

After reflecting, communication skills of learners were indicated as challenging:

There is a barrier … with the language: the way students talk, the way they write, and when they have to now read a concept, and when they have to grasp it (D, Interview 3, Aug).

Participant A developed her knowledge of learners at the theory-level. She maintained a cognitive constructivist learning theory believing learners develop according to age:

the age group I think sometimes makes a difference … that plays a bigger role try and get it to the level of the learner (A, Interview 3, Aug).

Wilson et al. (2005) agree that mathematics teachers should have an extensive knowledge of their learners. They added the importance of subject knowledge to teach effectively.

(d) Classroom environment
No PT had any thoughts about the classroom context at the gestalt-level or developed at the theory-level. However, four of them could reflect on it after exposure to a TS. One remark made is:

Even someone who is not doing mathematics they should know this is a mathematics class, [a] stimulating environment (A, Interview 2, May).

Although Walshaw (2004: 75) argues that ‘each classroom has its particular regime of truth that legitimises and sanctions a discursive space for certain practices and social arrangements’, Wilson et al. (2005) emphasise that managing the classroom environment effectively is an aspect of good teaching.

(e) Assessment
At the gestalt-level no thoughts were shared about assessment. At the schema-level three PTs could reflect on how to conduct assessment. One PT reflected as follows on how her assessment practices had changed since her exposure to the TS:

if I… test the learners the way I was tested, such assessment will encourage surface learning rather than deep or meaningful learning … there are some general principles teachers should keep in mind … like fairness, reliable valid … the assessment task need to be linked to the learning outcomes and does it give all learners equal opportunity to succeed … methods include peer assessment, self-assessment, and group assessment (B, Reflection 7, May).

However, the finding does not indicate that the PTs ‘understand the reasoning that [a] teacher uses when eliciting student responses, asking probing questions, deciding on instructional materials, and assessing the quality of student work’ (Masingila & Doerr, 2002: 236). At the theory-level, two PTs could intelligibly order the process of assessment and checked for compliance with assessment principles:

Before the assessment can take place, the assessor has to plan, design and prepare assessments. This includes making decisions about the method of assessment, the instruments to be used, the activities to be structured and the extent to which more than one learning outcome can be assessed simultaneously (B, Reflection 10, Aug).
See if the task conforms to set assessment principles which are as follows: Does the assessment task clearly align with the curriculum? If the assessment is relevance to course learning to take place and if it has been made explicit to learners? Is the assessment task appropriate? Is the weighting of the task proportionate to the workload and level of complexity? (E, Reflection 7, May).

The finding indicates that PTs are more concerned about how assessment should be structured than ‘assessing students’ understanding as a means of shaping their instruction’ (Wilson et al., 2005: 104).

(f) Resources
Initially, no thoughts pertaining to resources were conveyed at the gestalt-level. After exposure to the TS, four PTs realised they should use a range of resources to assist their teaching at the schema-level:

The teacher must have a library of textbooks (A, Reflection 10, Aug).

some of the teaching materials like the white boards … it needs a lot of practice there (C, Interview 3, Aug).

It was not easy … using the textbook only … also do have access to other resources (D, Reflection 3, Apr).

the textbook is not enough. It does not give enough theory (E, Reflection 3, Apr).

In addition, Wong, Chong, Choy, and Lim (2012) observed that PTs should know how to select appropriate resources to achieve lesson outcomes. Unfortunately, none of the PTs developed at the theory-level.

(g) Reflection
No PT had thoughts about reflection at the gestalt-level. At the schema-level three PTs realised the importance of reflection after gaining some teaching experience, but found it challenging:

I have realised … that teaching does not always proceed smoothly … it requires a teacher that think and reflect (B, Reflection 2, Apr).

it is a positive setting in which I can reflect on my practice (C, Reflection 2, Apr).

it appears as though it is easy … one is lacking the milestone travelled from the beginning of learning the practical experience, ability to reflect on delivery of content [pedagogy] and knowledge of actual content (A, Reflection 5, May).

PTs, however, could not theorise the role of reflection at the theory-level. Cavanagh and McMaster (2015) argue that reflection on teaching practices connects teacher actions with students’ learning, which was regrettably not the case in this study.

(h) Professionalism
At the gestalt-level PTs had no initial ideas about professionalism. At the schema-level some PTs started acting and reflecting on different aspects of professionalism. Though classroom management was found to be challenging, three PTs could act on misbehaviour by taking action:

to be firm in my class and to tell the learners what I want … to send the learners out of the class (B, Interview 3, Aug).
when you are well prepared you feel confident in front of the learners and when you are confident it’s easy to manage your class (C, Reflection 10, Aug).

Planning of my lessons has also helped me in the classroom management, it makes my learners to be discipline in the class when I am presenting my lessons (E, Reflection 10, Aug).

Three PTs realised they had to conduct themselves professionally in order to deserve respect. Some reflections shared are:

know the boundaries in the school environment and dress accordingly (A, Reflection 4, May).

Professionalism needs to be maintained at all times. A set of healthy boundaries needs to be established with the learners. A sense of decorum is required from the teacher (D, Reflection 5, May).

To be professional, three PTs acknowledged they should manage their time properly when teaching. A few utterances made are:

It is the responsibility of every teacher to adhere to due date (B, Reflection 5, May).

It is important to come early in the class so that you just go through your lesson plan again (C, Reflection 4, Apr).

Only one PT viewed good administration as an important aspect of professionalism, but found the execution of it tedious:

Administration is very important … it should be done correctly in a professional way … because it puts everything in order … If is not done at the beginning of the year it will pile up and becomes difficult to do (B, Reflection 4, May).

Lastly, two PTs realised to be professional, they should take accountability. One PT reflected:

Teachers are responsible for the change that takes place in learners and their role as change agents (B, Reflection 1, Feb).

As a teacher I have so much responsibility, for the learning to be effective … I realised this it’s up to me whether the class is going to be effective or not (B, Interview 3, Aug)

At the theory-level, three PTs could develop a mindful network of ideas, features and values pertaining to professionalism, which assisted in explaining their practice. One PT acknowledged a convergence of interplay between theory and practice:

One can now assess exactly the theoretical side of learning in practice and how do they meet, this enable student teachers to develop necessary skills when they go to schools (A, Reflection 10, Aug)

Cavanagh and McMaster (2015: 487) support PTs’ realisation of the important role professionalism plays. They note that ‘the ability to effectively manage student behaviour is often regarded by PTs as an indicator of their success as a teacher’. Wilson et al. (2005) agree good mathematics teaching requires effective classroom management to achieve learning goals, which includes time management, discipline, record keeping and lesson planning.
From the above discussion, it can be deduced that PTs developed ‘from an initial pre-occupation with self to a focus on tasks and teaching situations, and finally to consideration of the impact of their teaching on their students’ (Wong et al., 2012: 113). PTs could coherently organise some of their previous knowledge on teaching and learning of mathematics. The knowledge was built from PTs’ own experiences and actions executed at the TS (Korthagen, 2010). They also developed a reflective understanding of a range of related situations. If measured against the five criteria of a good theory (Kuhn, 1977 as cited in Korthagen, 2010: 102), PTs have partially developed at the theory-level. Even though the data is accurate it is not complete. A wide range of data is elicited. In most cases it is internally consistent with other known theories, however, the findings are modest and the study has only produced a few new results. PTs cannot be forced to learn to become good mathematics teachers. They can only build understanding if they want to structure or change new knowledge into their current practices (Lave & Wenger, 1991).

The evidence from the results indicates that PTs tend to view mathematics more in terms of content knowledge and skills than acknowledging learner engagement in the teaching and learning of mathematics. Therefore, there are implications for practice within a TS.

First, the interaction between mathematics content knowledge, pedagogy and knowledge of learners should be blended. Beliefs about the nature of mathematics should be emphasised during teacher training. Mathematics content knowledge should be linked to real-life problems. PTs should receive formal training in communicative English with a focus on mathematics terminology. Furthermore, PTs should be exposed to teaching strategies involving learner-centred and problem-solving approaches where learners autonomously explore phenomena.

Secondly, PTs should start teaching several mathematics lessons as early as possible. In particular, they should be guided on how to choose applicable resources to accomplish lesson objectives. PTs should be sensitised that assessment of learners’ understanding informs teaching practices. PTs should reflect on their lesson presentation in terms of the achievement of learning objectives. They should also incorporate learners’ thinking and measure the impact of their teaching. Reflection should include collaborative approaches by including discussions with professional learning communities on thinking about teaching.

Lastly, PTs need to be trained on classroom management. In particular, the creation of conducive classroom environments, discipline, time management and administration may be included.

**CONCLUSION**

Worldwide there are requests to transform teacher education, yet many teacher training institutes fail to provide mathematics PTs with sufficient rich experiences to link theory and practice, which is essential to improve the quality of teaching and learning in mathematics at schools. To address this challenge, this study examined mathematics PTs’ learning experiences at a TS.

Results indicated that some PTs could act and reflect on gestalt-driven experiences. However, an appropriate theory-level was not reached. At the gestalt-level PTs maintained, on the one hand, a Platonist belief viewing mathematics as abstract, theoretical and complex. On the other hand, an instrumental belief was upheld considering mathematics teaching and learning to be skills-driven.

At the schema-level most PTs shifted to an experimental belief by applying mathematics to real-life activities. They started to reflect on their teaching practices and to seek assistance from more knowledgeable others. All PTs could arrange some of their knowledge coherently and consider the impact of their teaching on learners at the theory-level. Nonetheless, there was some misalignment between theory and practice in
terms of lesson planning and teaching methods, although PTs acknowledged a convergence of interplay between theory and practice.

This study contributes to research on TSs by providing a context to investigate the interchange between theory and practice. Within TSs mathematics PTs gain learning experiences about teaching and learning of the subject from experienced mathematics teachers. PTs’ unconscious thoughts about teaching and learning of mathematics may evolve smoothly to intentional actions and reflection practices. These intentions could lead to the development of a mindful network of coherently arranged knowledge, skills and values.

PTs’ development at three levels was explored. To discover the magnitude of such development, recommendations are to lengthen the project to more than one year, and to include PTs from various subject disciplines. Concrete implications for the methodology of mathematics different from the theory-based programmes in teacher education, as well as guidelines for a mentor-programme are also suggested.

One limitation of this paper is that only the learning experiences of mathematics PTs were taken into consideration. The experiences of the mentor-teachers could have contributed to a more holistic understanding. The study was a pilot project, which was implemented for a period of five-and-a-half months.

In conclusion, there is a need for pedagogies in teacher education which integrate PTs’ experiences at a gestalt-level at universities with practical experiences at TSs. A focus on reflection approaches to develop a more theoretical understanding on teaching and learning of mathematics is needed. However, theory can only be constructive if PTs themselves develop the desire for a deeper understanding.

REFERENCES


The assessment of environmental education concepts and skills in Grade 10 Geography

Johanna G. Ferreira, University of South Africa, South Africa
Khosi N.I. Molala, University of Johannesburg, South Africa

ABSTRACT
Sustainable development and environmental crises have been recognised globally as relevant to education and teaching. This research explores opportunities and challenges to assess environmental education content, skills and values in the latest Grade 10 Geography curriculum policy document in South Africa. Geography has been lauded as the ideal vehicle to raise awareness and to sensitise learners to environmental issues. The subject’s curriculum contains the best opportunities to address environmental and sustainability issues. However, it is unclear whether teachers develop and assess the skills and values needed by learners to identify environmental issues and to solve them. Qualitative research was undertaken with data collected through document analysis and interviews were held with purposively selected participants. The findings reveal that though there are ideal opportunities to develop environmental skills and competences through assessment, these are not realised in practice. The teachers involved in the research have inadequate knowledge of the concept ‘environment’ and limited familiarity with appropriate pedagogical approaches. Recommendations are made to address the identified shortcomings.

Keywords: assessment of environmental education, assessing education for sustainable development, environmental skills assessment, geography curriculum

INTRODUCTION
Environmental crises and sustainable development challenges are recognised globally as important and relevant to education and schooling (Anderson & Strecker, 2012). Claims have been made about the contribution of geography education to environmental education (EE). Tilbury (1997: 108) argues that geography

which studies the interactions between humans and the physical environment, contributes to an understanding of processes affecting the environment and encourages an interest in the management and protection of the environment. Most significantly, environmental problems have a spatial dimension, which makes a geographical understanding crucial to environmental education.

This claim is informed by the International Geographical Union Commission on Geographical Education (IGU-CGE), which regards geography as an important vehicle through which EE can be taught (IGU-CGE,...

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Raselimo (2017) concurs stating that the subject is also appropriate for Education for Sustainable Development (ESD) given its interdisciplinary nature, which entails integrating natural and social sciences. Gritzner (2007) describes geography as the study of ‘what is where, why it is there and why people should care’. According to Al Mamun, Jackson and White (2015: 28) the implication of Gritzner’s description of geography is that it is ‘a methodology, a unique way of organising and analysing information pertaining to the location, distribution, pattern, and interactions of the varied physical and human features of Earth’s surface’. The reference to human interaction and physical and human features reflects the further specialisation in geography, namely ‘environmental’ or ‘human-environment geography’, which is an emerging science that uses geography’s perspective and knowledge to study environmental issues (Leng, Lin, Yang et al., 2017). In sum, geography is a science that investigates the mutual interaction between humans and their environment.

The themes of the United Nations Decade of Education for Sustainable Development (UNDESD) 2005-2014 (UNESCO, 2005) are similar to geography’s intentions and are related to major issues in the contemporary world. Haubrich, Reinfried and Schleicher (2007: 246) elaborate further, referring to issues concerning humankind and nature that are important for life, for appropriate spatial behaviour and sustainable behaviour. Themes such as global warming, energy depletion, overuse of non-renewable resources, population change, and global disparities can be used. Consideration of conflicts resulting from contradictory targets concerning environmental, economic and social sustainability is appropriate.

As far as geography education is concerned, nearly all themes highlighted by UNDESD are relevant. Consequently ‘the paradigm of sustainable development should be integrated into the teaching of geography at all levels and in all regions of the world’ (Haubrich, Reinfried & Schleicher, 2007: 243). Accordingly, the South African Geography curriculum policy document provides an enabling framework to implement EE and sustainable development through the geography curriculum for the Further Education and Training (FET) band. This band provides learners, generally aged between 15 and 18 years, with vocational education and training in the South African context. EE and sustainability are reflected in the geography curriculum policy document by one of the goals in this particular band, namely to teach knowledge, skills, attitudes and values required for more sustainable lifestyles (Department of Basic Education, 2011). This is substantiated by Dube (2012) who identified sustainable development as a central theme in secondary school geography and that it incorporates inquiry learning and issue-based approaches to implement ESD. For example, Grade 10 learners (15-16 year-olds) are expected to identify, plan and provide strategies for solving various environmental issues, such as ways to reduce ozone depletion; attitudes to migrants and refugees; strategies for managing the world’s oceans; strategies to reduce the impact of earthquakes and the sustainable use of water, acknowledging the role of government and of each individual (Department of Basic Education, 2011).

Given the enabling curriculum policy framework to teach EE and ESD knowledge, skills and attitudes, the following questions arise: Do teachers create opportunities to assess EE and ESD when teaching geography? If so, does this assessment relate to the mastery of the skills needed by learners to solve the environmental issues referred to earlier? The subsequent discussion focuses on EE and ESD and the geography curriculum document.

**EE AND ESD IN THE GEOGRAPHY CURRICULUM POLICY DOCUMENT**

As mentioned previously, the geography curriculum aims to develop in learners a commitment towards sustainable development by enabling them to make informed decisions about social and environmental
issues (Department of Basic Education, 2011). The curriculum policy document therefore encourages teachers to develop the values and ethics needed for a more just and sustainable world. However, teaching about the environment can be challenging as the issues are complex and environmental information is often contested. For instance, the Grade 10 Geography curriculum expects teachers to teach and assess environmental topics such as global warming, focusing on evidence, causes and consequences with reference to Africa, and the impact of climate and climate change on Africa’s environment and people (Department of Basic Education, 2011). It is uncertain whether South African teachers have the required knowledge and skills to address these environmental topics in their teaching. This concern, particularly as regards climate change literacy, stimulated Anyanwu and Le Grange (2017) to research teacher variables on the climate change literacy of geography teachers. Their findings reflected that characteristics such as gender, age, teaching experience and teaching grade significantly influence the climate change literacy of geography teachers. The authors recommended continuing professional development programmes to enhance literacy because through climate change education, learners could be empowered to contribute to the sustainable development goals. A study by Yavetz, Goldman & Pe’er (2014) on the perceptions of pre-service teachers of the environment and its relevance to their teaching revealed that the prospective teachers had an inadequate understanding of the concept ‘environment’. Though all acknowledged the importance of EE and ESD as part of their future function as teachers, they did not consider humans as part of the environment, nor did they view the environment as a complex web of interactions between people, man-made systems or natural ecosystems. The uncertain or inadequate mastery of knowledge of environmental topics pose a challenge, as teachers may not necessarily know how to go about teaching these topics. Furthermore, as the environment is constantly changing; the knowledge about it also changes. This implies that environmental knowledge is not static but dynamic - what is true today about the environment may not be true tomorrow. As Blyth and Meiring (2017: 4) point out ‘even seasoned climate change scientists cannot claim complete knowledge of the complex systems at work’. Teachers may not be adequately prepared if they are not empowered to interpret and implement the curriculum due to inadequate pedagogical content knowledge, reiterating the importance of professional development programmes.

Dube (2012) asserts that research on the implementation of EE and ESD in the FET band, appears to have been neglected, despite the fact that ‘environment’ and ‘sustainability’ feature prominently in the geography curriculum. Most recent research focuses on the implementation of EE in the General Education Training band (learners aged between 5-15 years), particularly in the Foundation Phase (learners aged 5-9 years) (Blyth & Meiring, 2017) and the Intermediate and Senior Phases (learners aged 10-15 years) (Schudel, 2014). The FET band was the last to implement the latest curriculum, which contains environmental content and requires that learners engage actively with complex social and ecological concepts, issues and risks relating to local and global contexts. Learners are required to develop an understanding of social and ecological change processes, and therefore need actively to conceptualise and prepare themselves for action, or engage in action-oriented learning processes (Fundisa for Change, 2013; Tal, 2005). Geography can play a leading role in providing knowledge, skills, attitudes and values required to address environmental sustainability through a subject-based curriculum (Catling, Willy & Butler, 2013). However, because of the holistic nature of EE, it is important not only to focus on the content mastery of EE, but to consider all domains of learning (Gayford, 1998; Marques, Vilches, Gil-Pérez, Praia & Thompson, 2008; Tal, 2005), namely, the cognitive, psychomotor and affective domains to be discussed in the next section.

The content, learning environments and teaching methods used in EE to reach cognitive, affective, and behavioural goals require an appropriate assessment framework (Tal, 2005). The teaching methods include classroom-based and outdoor learning, project-based learning using multiple resources and learning about socio-scientific controversies. For valid assessment of these methods, a suitable assessment programme
that reflects and acknowledges the various settings and learning situations is required. Research on the assessment of EE and ESD skills and competences as offered in the geography curriculum have not been extensively researched in South Africa. Though there is ample literature available on EE assessment (Hsu & Roth, 1998; Stern, Powell & Hill, 2014; Stevenson, Brody, Dillon & Wals, 2014) and of assessment of geography teaching and learning (Bradford & O’Connell, 1998; Butt, 2016; Leat, 2016), little is available on the assessment of skills that could be mastered through the latest geography curriculum in a particular grade to determine whether learners have acquired the knowledge and action skills ‘that enable successful task performance and problem solving with respect to real-world sustainability problems, challenges and opportunities’ (Azeiteiro, Bacelar-Nicolau & Caetano, 2015: 310).

**ASSESSMENT OF DOMAINS OF LEARNING IN GEOGRAPHY**

Geography incorporates exploring and acquiring knowledge, skills, values and attitudes that may be used to recognise the interrelationship between people and their environment (Komane, 2005). EE should therefore address the cognitive, ethics/value and affective domains of students (Åhlberg, Åänismaa & Dillon, 2005). As mentioned earlier, EE is holistic and as such includes all domains of learning. The cognitive domain is the most commonly taught and assessed by educational objectives and includes a range of intellectual activities such as memorising, interpreting, applying knowledge, solving problems, reasoning, analysing, thinking critically and evaluating. Virtually all tests that learners write in school are intended to measure one or more of these abilities. Learners may achieve varying levels of cognition in learning about the environment from basic knowledge about an environmental issue to more complex levels such as analysing causes and sources of the particular environmental issue and developing a strategy to solve the problem.

The geography curriculum document suggests that examinations and tests should cater for a range of cognitive levels ranging from lower to higher order (Department of Basic Education, 2011) and weighs cognitive levels in the Grade 10 Geography curriculum as follows: 40% lower order (knowledge and remembering); 40% middle order (understanding and applying) and 20% higher order (analysing, synthesising and evaluating). Consideration should be given to each level during assessment and evaluation practices. For Marcinkowski (1997: 168), cognitive skills include ‘skills for investigating environmental problems and issues, including identification, analysis, and evaluation; and skills for dealing with action strategies, including their appropriate selection and planning, implementation, and evaluation of discrete action’. The latter reference to action strategies and implementation seem to link more with the psychomotor domain, which involves motor skills, coordination and physical action skills, but as cognitive abilities are required, the distinction between the various domains of learning becomes diffuse. Teaching and learning strategies that focus on the development of higher order thinking skills should involve learners in activities that result in caring for the environment through participation in ESD projects that require learning in all domains.

The psychomotor domain is the learning domain that focuses on physical and manipulative activities, and as mentioned in the preceding discussion, links closely with those in the cognitive domain. These activities include drawing maps, taking measurements in the field and conducting interviews. A further combination of the cognitive and psychomotor domains, where research and communication skills are intertwined is proposed by Corney and Middleton (1996) who suggest that learners can give presentations to different groups of people on important local environmental issues. Learners can be encouraged to write letters to the press about their environmental concerns, or contact environmental groups. A further possibility is direct local action such as improving the school environment, initiating more sustainable practices in school or cleaning a polluted area near the school. This is best assessed subjectively through observation, but presentations and the results of psychomotor activities can be assessed objectively. Involvement with real problems or issues is one of the most effective ways to develop action skills needed to investigate, evaluate
and implement solutions to problems (Tilbury, 1995). This suggests that it is not enough to encourage learners to make judgements; they have to be equipped with a variety of action skills to participate in the resolution of these problems. It is not merely about discussing solutions in order to enhance awareness, but it is also about an active exploration of issues that necessitates identifying potential solutions and acting upon them (Oulton & Scott, 1992). Accordingly, ‘action-orientated’ refers to both the various modes of environmental participation developed by EE and ESD as well as the active learning styles employed in the study of environmental and development problems.

The affective domain involves feelings, attitudes, interests, preferences, values and emotions and according to the geography curriculum, the affective domain constitutes a 20% weighting of assessment practices in the FET (Department of Basic Education, 2011). Marcinkowski (1997: 168) recognises affective skills as reflective of ‘valuing, organising values into systems, integrating values into a worldview of ethics, and acting according to these’. EE is committed to involving learners actively in the resolution of environmental and development issues to enable them to develop the awareness and moral commitment to ensure sustainability (Tilbury, 1995). Issue investigation is used as a context for the exploration of moral, social and political values required for the development of an environmental ethic. Through issue-based learning for example, learners can acquire EE knowledge, skills and abilities to address environmental problems and values.

The intention of the latest curriculum policy document is to produce learners that are able to identify and solve problems and make decisions using critical and creative thinking through ‘active and critical learning: encouraging an active and critical approach to learning, rather than rote and uncritical learning of given truths’ (Department of Basic Education, 2011: 4). Being informed about the environment and having a positive attitude towards the environment is not enough to resolve environmental problems. For people to be able to act upon their knowledge and awareness they need to become active in constructing knowledge and become acquainted with a variety of action skills to carry out a solution. Wilmot (2017) reports on recent research on how to integrate ESD in school geography using issue-based enquiry, which facilitates the development of action skills. Through professional development initiatives the teachers involved in the research managed to acquire the necessary knowledge and abilities to integrate ESD in the classroom through an enquiry-based approach. Focusing on the action perspective implies that as part of the learning process learners prepare and take action together with their teachers to solve or counteract the environmental problems with which they are faced (Wals, 1990). This action-oriented approach focuses on the development of learners’ ability to act and bring about changes, which is especially important in ESD and cannot only be assessed through tests and examinations.

**RESEARCH PROBLEM**

The discussion thus far focused on the value of geography to teach EE and ESD knowledge, skills and attitudes and relevant assessment to determine the mastery of these. This research aims to determine whether selected teachers create opportunities to assess EE and ESD domains present in the Grade 10 Geography curriculum and to examine opportunities and methods that teachers use to enhance ESD through assessment.

**METHODOLOGY**

A qualitative research approach was followed within the interpretivist paradigm to understand assessment practices of teacher participants. Maree (2011: 60) asserts that an interpretivist research paradigm in qualitative research enables one to ‘offer a perspective of a situation and to analyse the situation under study to provide insights into the way in which a particular group of people makes sense of their situation or the phenomena they encounter’.
The research context is Grade 10, the first year in the FET band. Three secondary schools in a particular district in Gauteng Province in South Africa constitute the case study. The schools selected through purposeful sampling, were representative of the socio-economic and the socio-cultural context of public schools in the district. The selected participants, two from each school, had taught Grade 10 Geography and had more than ten years’ teaching experience. The six participants were the most experienced geography teachers in the district and taught in diverse schools, meeting the needs of this preliminary study.

Data were generated through document analysis of the geography curriculum policy document, and of formal assessment instruments (tests and examinations) developed by the selected teachers. Semi-structured face-to-face interviews were held with each of the teachers. The interviews focused on the teachers’ knowledge of EE and ESD and of assessment strategies; teachers’ efforts to integrate ESD skills in teaching; preferred assessment strategies; possible constraining factors that prevent authentic assessment and assessment support structures that assist the teachers. The interview data offered contrasting and interesting lived experiences and nuanced perspectives of the environmental concerns in the curriculum, especially of assessment practices in geography. Interview data were analysed manually using Colaizzi’s (1978) method of analysis, an acknowledged method of data analysis (Sanders, 2014). This entailed reading and re-reading the transcripts, highlighting significant phrases and sentences from which meanings were formulated. From these meanings common themes were identified. Each of the themes were discussed and substantiated by verbatim quotes. The participants were given pseudonyms to observe the ethical consideration of anonymity and, for the same reason, the identity of the schools is not revealed.

MAIN FINDINGS

The findings of the document analysis of the geography curriculum policy document and assessment instruments (such as tests, examinations and projects) are reported first, followed by a discussion of the themes that were identified from the data analysis of the face-to-face interviews with the participants.

Document analyses

Keeping the discussion of the literature in mind, the FET Geography curriculum policy document was analysed in terms of integration of EE and ESD. The document provides an enabling policy framework with many opportunities to incorporate EE and ESD and to determine learners’ skills and abilities through assessment. It suggests strategies that are useful to implement EE and ESD, such as the issues-based approach, the development of critical thinking skills and enquiry-based teaching and learning. The issue-based approach is encouraged in the geography curriculum policy document as the term ‘issues’ is used in its preamble: Geographical learning aims at ‘developing a commitment towards sustainable development’ and ‘making and justifying informed decisions and judgments about social and environmental issues’ (Department of Basic Education, 2011: 8) and geographical skills for ‘identifying questions and issues’; processing, interpreting and evaluating collected data; ‘making decisions and judgements’ and ‘suggesting solutions to problems’ (Department of Basic Education, 2011: 9). Furthermore, issues and challenges are frequently referred to in the content of Grades 10 to 12. ‘Issues’ or ‘questions’ refer to environmental problems: problems affecting the biophysical environment, issues with democracy, human rights and social justice that result from human-environmental interactions, values, action and personal responsibility. Fieldwork, which is recommended in the geography curriculum, can be used as part of the enquiry learning process (Department of Basic Education, 2011). The document also suggests strategies to assess ESD by means of data handling tasks, map work tasks, tests, examinations, case studies and issue-based research projects.

The preceding analysis of the geography curriculum policy document shows that environmental concerns are incorporated in the aims, skills, attitudes and values of the document. The orientation to ‘environment’ and ‘sustainability’ is described in the explanation on what geography is and this section emphasises the
practise of specific skills to identify issues, make decisions and work either co-operatively or independently to solve problems.

**Analysis of instruments teachers use to assess learners**

The analysis of examples of assessment instruments used by teachers revealed that the assessment tasks mostly expect learners to define terms and label diagrams, thus focusing on lower order cognitive learning. The majority of the assessment questions do not prepare learners for analysing and evaluating information as required by the curriculum policy document. For example, the curriculum requires that learners should be able to write a paragraph of 10-12 lines, but there was no evidence in any of the tests or examinations that learners were expected to write a paragraph about any issue in preparation for summative assessment. The questions in the assessment instruments should offer learners more exposure to assessment on all levels of all the domains of learning. There are questions about sustainable use of resources related to population structure, growth and movement, as required by the curriculum. One question, for example, requires learners to discuss possible measures that may be implemented to decrease India’s population growth rate and to outline the challenges that would likely be faced in doing so. This question encourages learners to find solutions to address a particular issue, but there is no evidence of questions or activities that address other cognitive abilities such as analysis, synthesis and evaluation. According to the curriculum document, the suggested weighting of high order skills should form 20% of assessment tasks, but this was not evident in the documents that were analysed.

Though the curriculum document mentions values specifically for inclusion in questions, the analysis of assessment instruments revealed that the teachers provide few opportunities for the assessment of environmental values and attitudes. Values compatible with a sustainable way of living are a set of values, the implementation of which promote the shift towards a sustainable future as contained in the Earth Charter and Caring for the Earth (IUCN, UNEP & WWF, 1991). A lack of emphasis on the assessment of values in these assessment instruments suggests a focus on cognitive aspects of learning as opposed to affective learning. It is not enough to acquire concepts; it is necessary to learn to put them into action, integrate them and use them adequately under different real-life circumstances. From the analysis of the assessment instruments it appears as though the teachers do not know how to formulate questions that assess values and attitudes because these had not been assessed in previous curricula. The teachers may be unsure about how to assess learners’ viewpoints, which highlights a further need for professional development initiatives.

**Interview findings**

*Teachers’ perceptions of the concept ‘environment’*

The interview analysis revealed that most of the participants are of the opinion that the environment only consists of the biophysical component that excludes the human dimension (social, political and economic dimensions).

Environment is an area around us - that’s my understanding of the concept of environment (P1C).

That is your immediate surroundings, yes, your immediate surroundings, everywhere, that’s your environment (P2B).

However, one participant had a more holistic, balanced concept of the environment.

[O]ur subject geography is actually the best in ‘environment’ because I always tell my learners that the best textbook is the environment; we cannot teach geography away from the environment be it physical, social, economic, and so on (P1A).
The fact that most of the participants consider only the biophysical dimension as the environment is disconcerting. They consider EE as synonymous with conservation education, which mainly focuses on the teaching of knowledge and protection of the physical environment. The general perception is that assessment determines knowledge of environmental issues so learners should know about environmental issues. The participants seem to focus on ‘fostering awareness by communicating information about environmental issues’ (O’Donoghue, 1993: 29) as key to EE and ESD. This view has implications on the pedagogical approach that is likely to be used by the participants.

**Teachers’ perceptions of EE and ESD assessment**

The interview data analysis revealed that the majority of participants consider using fieldwork research projects as the most appropriate method to assess whether learners have mastered ESD competences in geography. All the participant teachers described how they teach ESD and EE topics by referring to experiential learning (practical work) in which learners are taken outside the classroom to observe environmental issues in their immediate and natural surroundings.

Three of the six participants strongly support the use of research projects to assess EE. One participant indicated that learners can be involved…in different types of projects where they can show their skills, understanding and values, which concern the environment or they can be involved in a number of programmes that are run by the municipality or the school as a whole (P1A).

A second participant mentioned taking learners outside to focus their attention on areas where waste is dumped and to take pictures.

The pictures will serve to see (sic) the extent to which the environment is being polluted…they describe the pictures that will serve as evidence (P1B).

Neither of these participants focused on problem-solving skills when doing the projects, but the third one did.

Learners can go out and find the solution of a problem…they can ask questions (like) what is the major cause of an environmental problem in my area and can find a solution to the problem (P2A).

Fieldwork is an integral part of the enquiry method because it enables learners to go out and find information on questions that relate to particular environmental issues. According to the interview data, case studies or scenarios are also popular for the assessment. This is substantiated by Participant 2B who considers case studies and research as appropriate assessment methods because learners ‘do fieldwork and gain real life experience’. A second participant uses the question-and-answer method to introduce learners to a case study followed by a possible research project

…so we’re looking at three different types of assessment to make learners aware and to educate them (P2B).

ESD was pronounced in the comment of another participant:

I’d like to give an example. Maybe you look at lifestyle in rural areas where women are the ones who have to take care of the land; they have to make sure that kids go to school; and they collect water like in the past…and then questions will be based on (the case study) specifically…let’s say development (P1C).
The interview data analyses suggest that participants are of the opinion that EE requires hands-on or practical assessment even though it is particularly suited to 'process' assessment when it is concerned with awareness, skills and the formation of attitudes and values.

**Assessment strategies**

Further discussions with the teachers revealed that they are not adequately equipped with the necessary pedagogical skills to assist their learners to engage in making and substantiating decisions about social and environmental issues. Only two participants consider using creative assessment activities with learners such as debates to argue and provide their own points of view about topical issues such as water pollution.

Remember we spoke about conflicting issues that leave a lot of room for debate, and this is good to use in class, but it's a bit difficult if learners don't have much information (P2C).

As I said before, learners need to do more projects…recycling, vegetable farming and they can also maybe do debates (P1A).

According to the geography curriculum policy document, assessment tasks need to include the ability to evaluate arguments and express and support a particular point of view. Debates would be ideal to develop these higher order skills. In addition, the research task that forms part of the assessment programme for Grade 10 learners (as prescribed by the curriculum), could also be used in ‘applying communication, thinking, practical and social skills’ (Department of Basic Education, 2011: 9). When asked about the research task, the participants indicated that they have an option to choose their own research topic.

They are optional but we use the exemplars…maybe they should just be examples. We can write our own but it must be on the same standard or better and this is difficult (P1C).

All the teachers in the three participating schools opted for the same research project on refugees, which is developed by the provincial team of subject advisors. The research project on refugees is issue-based and it is designed so that learners can obtain factual information from library books, newspapers and the internet. It provides learners with an opportunity to identify and investigate an issue and suggest solutions to the issue. The participants could not provide evidence that their learners are ‘[e]valuating arguments, expressing and/or supporting or disagreeing with a point of view with substantiation’ (Department of Basic Education, 2011: 54). The research or essays are implemented in a teacher-centred way and assesses knowledge at the expense of action competence, attitudes and values required for responsible environmental behaviour as stipulated in the curriculum.

**Perceived barriers**

While the policy provides an enabling framework, the participants indicated that they face a number of challenges or barriers. These include difficulties in developing the assessment tasks that assess affective skills. The standardised assessment tasks aim to enhance the regulation of assessment and provide exemplars of best practices to be used in the schools to improve the quality of assessment, but teachers are disempowered as they are unable to develop their own assessment tasks blaming their workload.

I think it's because of these great changes in the curriculum over the last 9 years…we don’t have time to develop our own assessment tasks because of time (P1B).

The (curriculum) document is strong on content and leaves little time for us to be creative and get learners to embark on projects (P2A).
The deduction from the comments of the participants is that they tend to focus on covering the prescribed content and only assess environmental knowledge in examinations. Consequently, there is not enough time to focus on the development of skills, attitudes and values. The participants also highlighted barriers that hinder assessing fieldwork activities such as large classes and inadequate financial support to purchase learning and teaching support materials that could promote environmental learning and assessment.

**RECOMMENDATIONS**

As environmental concerns are often complex and contested, teachers need to be trained to design and develop assessment tasks that encourage critical thinking and analysis of topics at different cognitive levels and in different contexts. Only if the teachers have the know-how will learners be able to engage critically in using geographical skills to address environmental issues.

Secondly, the geography curriculum document should provide exemplary assessment practice resources that could expand teachers’ current practices. The assessment resources should include various alternative assessment tools, such as observation, recording and learner diaries that could be used to evaluate changes in attitudes and values.

Thirdly, since fieldwork is part of the geography curriculum requirements, it is recommended that the fieldwork activities should be formally assessed. The assessment of values requires enough time for learners to be exposed to the environment and embark on environmental activities. In support of this recommendation an extensive practical fieldwork research project is proposed, which should be carried out in stages throughout the year. This would allow for the development of environmental values and research skills such as working with primary data; exploration of biophysical, geographical fieldwork; experience in the natural environment and community problem-solving that form the essence of EE and ESD at all levels.

Finally, partnership with environmental education stakeholders such as environmental centres should be strengthened to provide professional support and continuous professional development opportunities for teachers.

**CONCLUSION**

The inclusion of the environmental and social justice principles as well as the sustainable development concepts in the geography curriculum policy document provides an enabling framework for environmental assessment. However, this research has shown that the assessment of the required skills and values is not successful because of a number of concerns. These include teachers’ inadequate knowledge of the concept ‘environment’ and limited familiarity with appropriate pedagogical approaches. Unless this is rectified, the gap between the intended and the enacted curriculum will remain. Teachers should use a variety of assessment instruments such as encouraging learners to write reports or reflections of what they learn to ascertain whether learners have developed the commitment and ability to get involved in addressing environmental issues. It is apparent that in-service as well as pre-service teacher training programmes should focus on ‘how’ to teach and assess EE and ESD and not merely on the ‘what’ referring to content knowledge.

The lack of emphasis on assessing affective skills and action competences is attributed to a shortcoming in the conceptualisation of environmental learning in curriculum, and needs to be considered critically in teacher development programmes. Professional development for geography teachers should include current environmental issues and assessment of EE-related action competence and values. It remains a challenge to implement a curriculum that will facilitate the holistic assessment of EE.


Educators’ perceptions about implementing a road safety education programme in the context of curriculum change

Martin Combrinck, North-West University, South Africa
Jeannie Govender, KwaZulu Natal Department of Transport, South Africa

ABSTRACT
This study’s aim was to explore the perceptions of the teachers to the implementation of the road safety education programme in five primary schools in the Pietermaritzburg Region, South Africa. The Department of Transport in collaboration with the Department of Basic Education implemented a road safety programme in primary schools. The study was done by using a qualitative research methodology framed by an interpretive paradigm. Through semi-structured teacher interviews, the researchers were able to answer the two critical questions of the study. Five teachers from five different schools were selected for the study. The data were qualitatively analysed and six themes identified. The findings indicated that teachers were positive about the road safety education programme but that they did not always have the necessary support from colleagues and resources necessary for implementing the programme successfully. They also did not have any feedback/reflections on the programme from management, colleagues or learners to help them improve the implementation process. It is recommended that schools provide resources for the implementation of the programme. The Principals must also provide an environment where discussion and reflection on the implementation process is encouraged.

Keywords: curriculum, road safety education programme, teachers’ perceptions, qualitative study, interpretive paradigm

INTRODUCTION
The purpose of the study is to explore the perceptions of teachers with regard to the implementation of a road safety education programme in five selected schools in KwaZulu-Natal, South Africa. This study was conducted in five selected primary schools in the Pietermaritzburg Region, South Africa. The need to incorporate a road safety education programme in the South African school curriculum arose as a consequence of the high fatality rates on South African roads. The statistics from the Automobile Association (AA) indicated that every 48 minutes, a person is killed on South African roads (AA, 2014). The cost of traffic collisions in South Africa is about R16 billion per year. Using the roads is difficult and risky, especially for children. Children are particularly at risk when walking, riding bicycles, playing and/or travelling in vehicles (Joubert, Fraser & Sentsho, 2012). A number of academics suggest that many road accidents can be prevented if children from a young age are taught the correct knowledge, skills and attitudes about road safety (Gulbrandson & Bremberg, 2004; Jacobs & Aeron-Thomas, 2000).
Fokides and Tsolakidis (2012) refer to road safety competence as all the skills, attitudes and knowledge a person needs in order to be safe in the road environment. According to Joubert, Fraser and Sentsho (2012) there is an apparent lack of empirical research to prove that road safety education programmes improve road safety in general but the literature also does not suggest an alternative that can be used to improve road safety. In the light of this lack of an alternative, a road safety education programme in schools seems a good option to prepare children for a safer road environment.

Like all learning, road safety education needs to start at an early age and must be appropriate to the child’s age. Children need to be familiar with the general road safety rules of their country. They need to be aware of the dangers on the road and learn safe ways to cope with them. Often children do not know what is safety on the road. Children need ongoing road safety education from an early age to help them develop a thorough understanding of road safety so that when they become drivers they already have a good foundation with regard to road safety. Therefore, the role of the school extends to educate children on road safety. According to research carried out by the Queensland Department of Transport, Australia (2008), road safety concepts should be taught to children from an early age and through continual exposure in the regular school curriculum (Queensland Department of Transport, 2008). Odero (2004) supports the notion of road safety education programmes when he stated that road safety education programmes have been part of many school programmes. Schools, therefore must strive to include a comprehensive road safety education programme in their curriculum.

The National Department of Transport and the Department of Basic Education in South Africa have emphasised the need for a long-term road safety strategy that includes a road safety education programme in the schools. When a new curriculum was implemented in 1994, road safety became part of the official curriculum in South African schools. One assessment standard within the Life Orientation learning area was directly related to road safety. This, however, lacks some depth and the Department of Transport then embarked on their own extensive educational road safety programme for schools (Govender, 2012). The Department of Transport developed a road safety strategy based on four pillars. The four pillars are: Enforcement of the traffic laws; Education about road safety; Engineering and road design; and Evaluation of all the interventions. The Education pillar is important for this article because the road safety programme referred to in this research is one of the four pillars (Govender, 2012).

This road safety education programme is a comprehensive programme, which is currently being used to teach road safety education in primary schools in South Africa. The programme is part of the Road Traffic Management Corporation’s (RTMC) national strategy that was implemented in all primary schools across South Africa. The programme was developed in consultation with the National Department of Basic Education. Representatives of the National Department of Basic Education contributed to the improvement of the Learner Support Material. Resource materials have been developed, tested, produced and distributed to the provinces. The RTMC has also proposed that research be carried out to evaluate the effectiveness of this project.

Lovat and Smith (2003) stated that if teachers are positive towards new programmes it will benefit the implementation of any intervention programme. Researchers (e.g. Govender, 2012) suggest that if a road safety education programme is compatible with the teachers’ belief system, then the teachers will accept and promote the programme more readily. This confirms Martin’s statement (1993) that programme implementation approaches that do not consider teachers’ beliefs have a temporary life. Handal and Herrington (2003) elaborated on this point and stated that if the teachers do not see the value or the merits of a new programme, then they will become negative towards the implementation of the programme.

In the context of this study, the implementation of the road safety education programme will depend fundamentally on the individual teacher’s perception of the road safety education programme and its
value. A road safety programme cannot be implemented successfully if teachers are not positive towards the programme. The study therefore explores the perceptions of teachers regarding the implementation of a road safety programme in primary schools in South Africa.

**PURPOSE OF THE STUDY**

The researchers’ purpose for undertaking this research was to explore the perceptions of teachers regarding the implementation of the road safety education programme in five selected primary schools in the Pietermaritzburg Region, South Africa.

**LITERATURE REVIEW**

The implementation of a new programme such as the road safety education programme will be realised through the broad curriculum of a school system. This section provides a brief review of the literature on road safety programmes in selected countries.

There is a substantial body of literature which examines road safety education in schools. This literature indicates that there is a wide range of road safety education programmes which fall in the continuum of content focus on more general road safety issues to more in-depth knowledge of specific road safety issues. Across these differences, they tend to focus either on the transmission of information or on the development of more practical skills or a combination of both. There is also a number of education programmes that aim to develop positive attitudes of children with regard to road safety (Cooke & Sheeran, 2004).

Curriculum-based approaches of road safety education involve the inclusion of road safety specific subjects or the integration of road safety themes within existing subjects such as Mathematics, Science, and English. Incorporating road safety education in school subjects is known as the cross-curricular approach. Raftery and Wundersitz (2011) state that curriculum-based approaches enable the delivery of developmentally appropriate road safety education to students of all ages and usually involve multiple sessions delivered over the course of a term, semester or school year. However, they (2011) state that the main problem associated with the addition of road safety subjects to any school curriculum is that of space, because the school curriculum is already overloaded with core subjects (Govender, 2012).

Researchers worldwide are striving to find solutions for high fatality rates on roads (Christie, 2002, Cairney, 2003, Buckley, 2008). Many countries developed and implemented road safety programmes but for this article we selected the following countries; England, New Zealand, Norway, Scotland, Australia and Ghana to explore their road safety education programmes in more detail.

The revised curriculum in England addressed road safety education in primary and secondary schools. Road safety education is not necessarily about isolating children and young people from all potential hazards but is about equipping them to deal with situations safely (Department for Transport, 2004). Using the information and experience from the English programmes, Massey University in New Zealand was contracted to conduct research on the road safety education programmes in England. The research confirmed:

- A measurable and significant increase in both the amount and quality of road safety education is taking place in schools that were part of the programme.
- There is evidence that schools were beginning to incorporate road safety education into their curricula in underlying policies and programmes.
- Road safety was becoming institutionalised within the curriculum of each school and also in the schools’ administration (RoadSense, 2003). Pentecost and Murray (2003) agreed with this finding that being part of RoadSense increased the awareness of road safety with the children.
In Norway, two local councils carried out a project aimed at integrating road safety into the curriculum. This project was evaluated and the results show that the project has led to an increased understanding of road safety issues by the children involved with the programme (Elvik, 2000).

The Scottish Government and the Scottish Road Safety Campaign (SRSC) commissioned research to assess the current state of road safety education in Scottish schools, the key stakeholders’ views on road safety education and the factors that affect its delivery (Graham, 2000). The results of the research assisted in the development of a strategy for the SRSC to provide a more equitable and consistent promotion and delivery of road safety education within Scottish schools (Dragutinovic & Twisk, 2006).

In one of the states of Australia, Victoria, an evaluation was done on the Safe Roads to School programme. The main focus of this evaluation was to determine the perceptions of the key stakeholders with regard to the implementation of the programme. Couch, McCutcheon and Ciocco (2001) found that most schools which implemented the programme reported that children show an improvement of road safety knowledge. In another state of Australia, New South Wales, an evaluation was done about their project, Road Zone. Road Zone was a more interactive road safety programme for children. Gray (2003) found that the interactive nature of the programme improved the majority of learners’ understanding of road safety.

In contrast to developed countries, children in developing countries spend more of their time as pedestrians and are extremely vulnerable to be injured in road accidents on the roads. In Ghana, child casualties are mostly in the 6 to 10-year-old age group (Sayer, Palmer, Murray & Guy, 1997). Ghana’s Ministry of Transport and Communications acknowledge this fact and indicated that it is also a concern for them as government. They are consequently using education as a means of addressing the problem (Accra Declaration Ministerial Round Table, 2007). For road safety education to be effective there needs to be a national commitment at all levels. Ghana is fortunate to have the benefit of a national road safety committee (National Road Safety Committee) as its official body. Yet the literature also revealed that road safety in Ghana is more on a conceptual level and less on the implementation of the programmes in schools (Joubert, Fraser & Sentsho, 2012).

Although countries around the world are implementing good road safety programmes, there are also critics of the road safety education programmes that are being implemented in schools. Dragutinovic and Twisk (2006) conducted a comprehensive evaluation study of road safety education programmes in several countries. Some of their important findings were that most road safety programmes focused on primary school children which were implemented in developed countries. They found that although many countries implement road safety programmes there is a lack of a systematic evaluation to determine the success of the programme. They established that effective programmes were those that focus more on the individual instead of the group. They also found that computer-supported practical training in a road safety programme was very successful. Christie (2002), however, stated that sometimes road safety education and training programmes may cause more harm than good depending on the content and the way it was delivered. This is important for this study because we want to find out if the road safety programme introduced in schools contributes to general road safety.

Schrieber and Vegega (2002) concurred with Christie when they said that no single road safety education programme has demonstrated sufficient impact on the majority of students to merit endorsement and widespread dissemination and that road safety education programmes have modest and limited benefits. This is an important statement for this study because the data gathered for this study will help to support or dismiss this statement.

In a South African context, the abovementioned road safety education programme is a relatively new education programme which was only introduced to the schools after the new post-apartheid curriculum in
1994. This study could contribute to the debate and knowledge of road safety education programmes and their implementation in South Africa. Raftery and Wundersitz (2011) state that for road safety education to be effective it must be presented on a continued basis and across all learning areas in the curriculum. Evidence-based evaluations must be conducted to determine what works and what does not work. This could assist ineffective programmes to be discontinued and new effective programmes being developed to replace those (Raftery & Wundersitz, 2011).

There is general consensus in the literature and among practitioners that ad hoc activities such as visits from experts and road safety enthusiasts may have mass appeal but are relatively unsuccessful because road safety education should be planned continuously and progressively (Bailey, 1995; ITF, 2011). The Organisation of Economic and Cooperation Development (OECD) promotes and supports road safety education programmes worldwide that are integrated into several curriculum areas (ITF, 2011). They also recommend that road safety professionals must support teachers continuously in delivering a progressive programme of road safety education in schools rather than the occasional talks on road safety.

As stated earlier the researchers’ purpose for undertaking this research is to explore the perceptions of teachers regarding the implementation of the road safety education programme in five selected primary schools in the Pietermaritzburg Region, South Africa. This purpose leads to the following research questions:

1. What are the teachers’ perceptions with regard to the implementation of the road safety education programme in selected primary schools?
2. What are the teaching and learning constraints experienced by the teachers during the implementation of this programme?

**RESEARCH DESIGN AND METHODOLOGY**

As the central aim of this research is to explore the perceptions of teachers with regard to the implementation of a road safety programme, the researcher identified an interpretive paradigm as the most suitable for this study. Joubert, Hartell and Lombard (2015) prefer this paradigm because it gives the teacher the opportunity as participant to describe his/her interpretation of the implementation of the road safety programme. Joubert, Hartell and Lombard (2015) explain that the methodological paradigm can either be qualitative, quantitative or a combination of both called mixed mode. The researchers decided to use a qualitative approach because this paradigm focuses on the perceptions of people in their environment (Joubert, Hartell & Lombard, 2015). This fits neatly into this study which attempts to gather teachers’ perceptions with regard to the implementation of a road safety programme. Qualitative research according to Cohen, Manion and Morrison (2011) provides an in-depth, intricate and detailed understanding of meanings, actions, observable as well as non-observable phenomena, attitudes, intentions and behaviours. It gives voice to participants, and probes issues that are beneath the surface. Qualitative research often highlights the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Researchers working in a qualitative paradigm also emphasise the value-laden nature of inquiry. Qualitative research generally attempts to study human action from their own perspective.

All ethical issues with regard to the participation of the participants were followed as prescribed by the university’s ethical policy (North-West University, 2014).

**Sample and sampling procedures**

For the purpose of this research, five teachers from the five different schools were selected for the interviews. This represented one teacher from each school. Two teachers from the Foundation Phase
and three teachers from the Intermediate Phase were interviewed. The researchers selected these schools because they were easily accessible and the schools took part in other road safety programmes such as the regional scholar patrol programme. This is referred to as purposive sampling where the participants are intentionally selected. Purposive sampling is also referred to as judgement sampling (Gay, Mills & Airasian, 2009). Three schools from the rural areas and two schools from the urban areas were chosen.

Data collection
Cohen et al. (2011) refers to the interview as a distinctive research technique which may serve three purposes. It can be used as the principal means of gathering information because it relates directly to the research objectives. Secondly, it may be used to test hypotheses and thirdly, it may be used in conjunction with other methods.

The researchers use the interview as the principal means of gathering data from the teachers who implemented the road safety programmes in their classrooms. Punch (2009) describes an interview as a data gathering technique of people’s perceptions and their understanding of reality. A topic guide is used to steer the discussion and ensure that the important concepts as identified in the literature are covered in each interview. However, it will not be so restrictive that it will discourage the interviewee from raising issues that may not have occurred to the researcher.

Data analysis
The analysis of the data is important to give answers to the research question (Joubert, Hartell & Lombard, 2015). The data analysis is a critical process where the researcher interprets the data to get insight into the phenomenon, in this case how teachers perceive the implementation of the road safety programme. Data analysis can consist of various cycles of analysing and coding. The process of analysing and coding can lead to the identifying of themes. Mouton (1996) explains data analysis as the process when the researcher is breaking up the data into smaller units and then see if themes can be identified.

PRESENTATION OF RESULTS
The following interpretive themes were extrapolated from the data:

- Teachers are positive towards the implementation of the road safety education programme
- The significance of the road safety education programme
- A lack of feedback sessions for teachers
- Availability of resources when implementing the road safety programme
- Support from the Principal when implementing the road safety programme
- Support from colleagues when implementing the road safety programme.

Teachers are positive towards the implementation of the road safety education programme
All participants agreed that the implementation of a road safety education programme is a positive step in view of the extremely high fatality rate in South Africa, and that is important that learners are taught about road safety from the foundation phase upwards. Hopefully, this will ensure that the future generation of road users, are responsible road users. It is also extremely important that the learners develop the right attitude to road safety.

Teacher A said:

It is easy and user friendly. It is important for learners to learn about road safety, because it impacts on their everyday lives.
Innovations are often implemented in classrooms if teachers realise the importance of the innovation. Smith and Lovat (2003) support this notion when they state that a teacher will implement an innovation if they perceive it as positive.

**The significance of the road safety education programme**

All five teachers interviewed agreed that this was a valuable programme.

Teacher A confirmed this notion when she said:

> It is good for the children to learn about road safety in a formal school environment, because some children do not learn anything at home, because of their home circumstances. The children from this area are extremely poor; their parents are uneducated and are unable to assist with any school work. These children will become safer road users for now and also as adults.

Teacher C agreed:

> It is extremely important that children learn about road safety as early as possible. I have noticed a change in behaviour when I am at duty at the gate, after doing the lesson on road safety.

Teacher E supports the above view:

> Road safety education is important for all road users, these children will also be responsible road users as adults.

If people have a deep understanding of the value and purpose of an innovation, then implementation becomes easy. This research indicated that teachers will embrace a new programme if they perceive the value of such an innovation. Fullan (2003) states that the value of an innovation in the school curriculum, such as a road safety programme in this case, will be realised if teachers anticipate that the programme will make a tangible difference in the lives of the learners.

This research indicated that readiness for the implementation of road safety education programme occurs when teachers perceive the inherent value of this programme. Teachers are more likely to engage with the change if they realise that by doing so, they will be responding to the changing social context of their work and especially to the needs of the learner. Change will more likely occur if the teachers acknowledge that the road safety education programme has the potential to develop a generation of road users that will help to reduce road fatalities.

**A lack of feedback sessions for teachers**

Reflection and feedback are mechanisms for identifying problems encountered during the implementation of new programmes. Govender (2012) mentions that the absence of feedback during an implementation of a new programme is problematic. It is also important that such feedback sessions occur between peers and between staff and management. All participants indicated that there was a lack of reflection and feedback during the implementation of the road safety programme between peers and between staff and management.

Teacher A said:

> When I returned to school, I discussed this with the Principal. The Principal requested me to distribute the packs to other staff members. We did not have any discussions and feedback sessions regarding the implementation of the programme.
Feedback mechanisms are a means for identifying problems encountered during implementation and providing support to address implementation problems. According to Fullan and Pomfret (1977), the absence of feedback mechanisms during implementation of a programme is a major problem. They further state that feedback among peers, teachers and principals, are essential for encountering and finding solutions to problems encountered during implementation (Fullan & Pomfret 1977). Teachers iterated that there was no such platform at their schools during the implementation of the road safety education programme. They did not discuss the implementation of the programme nor discuss any problems that they were experiencing. Regular staff meetings were held, but the implementation of the road safety education programme was mentioned in a cursory way. Communication is essential in implementing new programmes. It is important for teachers to share ideas and to discuss the strengths and weaknesses of any new programme.

Availability of resources when implementing the road safety education programme

The provision and availability of resources for the implementation of the road safety education programme was an issue of concern for all five teachers that were interviewed. Teachers expressed the view that not enough resources, such as learning material, space, equipment and human capital were available to support the implementation. They had, for example, to resort to making copies of learning material themselves because there were not enough learning materials for each learner.

Teacher B said the following:

If we run short of paper for photocopying, I usually do the exercises on chart paper and paste them up on the board. It would be easier to implement the lessons if every teacher and learner was issued with their own course packs. This will save time and effort.

This process of copying also depended on the vagaries of the photocopying machine as well as the availability of paper for copying. This impacted on costs which were not funded.

Physical structures and resources play an important role in the implementation of new programmes. Although the lack of resources is symptomatic of socio-economic circumstances, it leads to serious conditions that may impact negatively on the effective implementation of new programmes. This view confirms that of Mahomed (2004) that primary school teachers are especially dissatisfied with the physical environment of the schools. All five participants agreed that the road safety course packs were excellent packs but to implement excellent materials one needs to have adequate resources. Bennie and Newstead (1999) support this view when they said that even if teachers are highly motivated, a constant lack of resources will impede implementation. Another factor that can hinder implementation is overcrowded classrooms. This phenomenon is evident in many South African rural schools.

Support from the Principal when implementing the road safety education programme

All the participants agree that support from the Principal is vital for the successful implementation of a new programme in a school and they all agree that their principals were very positive towards the new road safety programme.

Teacher B said:

The Principal supports all the Department of Education road safety initiatives. She has acknowledged that the road safety education programme is a good programme and that it is important for all children to learn about road safety.
Teacher C confirmed this notion when she said:

All correspondence concerning the workshops is addressed to the school principal. He informs us about the workshops and allows us to attend the workshops. He also makes time available for cascading information when we return to school. He is aware of the road safety education programme, he has also read through the course packs. He has indicated that it is extremely important that all children learn about road safety.

According to Tanner and Tanner (2007), it is the Principal's job to lead. In order to meet the school’s leadership needs, the Principal has to know the curriculum and any new innovations and programmes for implementation. From the above interviews it is clear that principals have an important role to play in implementing any innovation. All the participants felt that the Principals did try to implement the road safety programmes successfully.

Principals that become actively involved in the implementation of new programmes have a strong influence on how well the change progresses or the innovation is implemented. Implementing a new programme such as the road safety programme will require the support of the Principal who sets the pace, assumes directions and encourages his subordinate staff to keep forging ahead despite obstacles and resistance to change (Tanner & Tanner, 2007).

Smith and Lovat (2003) also agree by stating that the most important factor in successful programme implementation is the explicit commitment of the leadership of the school. Teachers in this study viewed the support from the Principal as a positive contribution to the implementation of the road safety programme.

Support from colleagues when implementing the road safety education programme
This theme is closely related to the previous theme about support but in this case the research identified a lack of support from colleagues during the implementation of the road safety programme. All five teachers interviewed stated that they work on their own when they implement the road safety education programme and did not get support from their colleagues.

Teacher A put it as follows:

We do not have time to engage in discussions or to share ideas with our colleagues about the implementation of new programmes. Each teacher basically does his or her own thing in their classrooms. I have shared the course packs with the other teachers, but we did not subsequently have any discussions about how or when we were going to implement the new programme.

Teacher E elaborated further on this point:

We sometimes mention the new programme casually during breaks in the staff room. We do not discuss how we can help each other with the implementation of new programmes because we do not have time to do so.

From the data analysis it is evident that teachers did not make time to reflect together or support each other on the implementation of the road safety programme. Research has revealed that school cultures are traditionally individualistic in which teachers keep to themselves rather than work together (Fullan, 2001). Teachers also do not willingly allow other teachers in their classroom. In South Africa as a result of the intervention by the trade union movement, SADTU, teachers were not allowed to be critiqued in their classrooms by anyone for evaluation purposes (Govender, 2012). From the data analysis it is also evident
that teachers do not generally support other teachers. This is due to the culture of the school, the demands of the classroom, and the usual way in which change is introduced does not facilitate teacher involvement in exploring or developing more significant changes in classroom practice.

**DISCUSSION AND RECOMMENDATIONS**

The implementation of a road safety education programme is worthwhile but the implementation of the road safety education in South African schools highlighted some limitations. The study was a qualitative study and therefore it is not possible to generalise these findings to the rest of the schools which implemented this road safety education programme but the data from this study are important enough that schools can take cognisance of the findings and which are, in many cases, transferable to other schools. Transferability in qualitative studies is according to Lichtman (2010) the possibility to transfer findings from a small scale qualitative studies to a larger population.

The success of the implementation of the road safety programme depends on teachers’ positive attitudes towards the programme. The literature (Smith & Lovat, 2003) clearly states that teachers will be positive to implement new programmes if they see the benefit of such a programme. Schools and Road Safety organisations must make sure that teachers understand the importance of such programmes so that they are positive to implement such programmes in their classrooms.

Teachers also need to understand the importance and value of road safety programmes and therefore schools and road safety organisations must inform Departments of Education, schools and teachers on how such programmes enhance road safety. The participants of this study were quite positive about such programmes but it is important that all teachers be motivated over a period of time to understand the importance of such programmes.

The participants felt that there was not enough reflection and feedback regarding the implementation of the programme. As the literature (Tanner & Tanner, 2007) suggests it is important that principals and schools establish these communication routes and reflection sessions so that teachers can learn from each other.

The participants generally agreed that they need more resources to implement such new programmes. It is important that the Department of Educations, Schools and Road Safety organisations ensure that all the resources are available when the programmes are implemented. It is also important that schools know what is expected from them and what they must have available when such programmes are implemented. It is especially difficult for schools in rural areas and in low socio-economic areas to provide extra resources for the implementation of the road safety programmes.

The data indicated that principals were quite positive towards the implementation of the road safety programmes but the teachers felt that their peers were not so supporting. It is therefore necessary that principals and schools encourage teachers to support each other when new programmes, such as the road safety education programme, are implemented. It is well-known that people learn and have more success if they support each other and assist if they realise people experience some difficulty with the implementation of the programme.

**CONCLUSION**

Road safety education programmes are playing an important part to prepare young people to be more aware of road safety. The development of this road safety programme which was implemented in South African schools was a good initiative and has the potential to contribute to road safety. The problem,
however, is that a good programme does not automatically mean successful implementation. Successful programme implementation requires highly qualified experts to lead the implementation process, skilled competent people to motivate teachers, schools to strive for educational excellence and committed teachers with good support and adequate resources. The data indicated that generally the teachers and principals are positive regarding the road safety programme. It is important that the implementation of any new programmes need substantial support and resources. These were identified in this study as important components for the successful implementation of the road safety programme.

REFERENCES


North-West University. (2014) *Rules of the Research Ethics Regulatory Committee (RERC) and the Research Ethics Committees (RECs)*. North-West University, South Africa.


RESEARCH TITLE

Study of the Strategic Decision Making Process in Higher Education Institutions

Name: Dr Esra Saleh Fares AlDhaen
Supervisors: Professor David Gallear
Dr Tillal ElDabi
Institution: Brunel University, UK
Date of Award: 2017
Qualification: PhD

ABSTRACT

The strategic decision making process (SDMP) is a major issue in organisations. It is part of the larger topic of strategic management and related to strategic planning. Achievement of strategic objectives outlined in the strategic plan of an organisation depends on the decisions taken through the process. Yet the literature shows that the concept of SDMP is not well understood and organisations find it difficult to develop and implement an SDMP, particularly Higher Education Institutions (HEIs). The literature indicates that decisions are taken in organisations in different ways for example using intuition, data, collaboration and ad-hoc considerations. In addition, contextual factors are argued to affect the SDMP although very little research has been conducted to explain how contextual factors affect SDMP in HEIs. Some examples of contextual factors namely decision process characteristics have been identified and discussed as part of the SDMP literature in industry. However, lack of knowledge about SDMP and how contextual factors influence SDMP is regarded as a major obstacle for HEIs in taking decisions and choosing the best alternative amongst available decisions. This research seeks to contribute to address this important issue.

Whilst there are many strategic decision characteristics (contextual factors) identified in the literature, this research focuses on decision importance. The rationale for choosing decision importance was that there is always some concern in the minds of the decision makers in the HEIs on what constitutes an important decision. What is considered as important decision while the decision is being taken may prove to be less important after implementation if there is no clear understanding of how to assign importance to a decision. Even in the industrial sector, Elbanna and Child (2007), it has been argued that decision importance has not been studied well.

Relying upon the theoretical model developed by Elbanna and Child and other arguments found in the literature, this research argued that the SDMP is a combination of relationships between decision characteristics, SDMP characteristics and decision outcomes that are influenced by environmental factors.
As far as environmental factors were concerned environmental uncertainty was chosen as an external environment factor while organisational performance was chosen as the internal contextual factor. These two factors were argued to moderate the relationship between SDMP characteristics and SDMP outcomes and theoretical support for this conceptualisation was taken from the model developed by Elbanna and Child.

A research model was developed to address the research questions, and the aim of the study was ‘to examine the different decision specific characteristic, SDMP characteristic and SDMP process outcome variables and develop a relationship amongst them in the context of HEIs in a changing environment’. The research was conducted in the United States of America and data were gathered from faculty members involved in decision making at the department level and higher. A positivist epistemological and objective ontological stance was adopted and a deductive approach was used. The research model was tested using the data collected from 485 valid responses to a survey questionnaire. Linear regression was the primary analysis approach and supplemented by path analysis.

Results from the regression analysis showed that decision importance exerts influence on decision effectiveness through the mediators, rationality in decision making, intuition and decentralisation in decision making. However, the outcome of path analysis showed that only rationality in decision making and intuition are important while decentralisation was not found to be statistically significant. Similarly, environmental factors exerted pressure only on the relationship between rationality in decision making and decision effectiveness. The contradicting SDMP factors rationality in decision making and intuition were both found to be necessary to SDMP in the HEI context.

This research has contributed to knowledge in terms of establishing a relationship between decision importance and decision process effectiveness mediated by rationality in decision making and intuition and development of the model. Theoretically the findings of this research show that the modification imposed on the model developed by Elbanna and Child was found to be statistically significant and found support from the literature. Environmental factors affected the relationship between rationality in decision making and decision effectiveness.

This research has provided a model that can be used to help decision makers in HEIs to implement SDMP practically in the organisation, to guide the process towards more robust decisions. The findings of this research find application in supporting policy makers to increase the likelihood of more effective decisions so that the decisions taken are more effective.

The full thesis can be found at http://bura.brunel.ac.uk/handle/2438/14981
RESEARCH TITLE

A social realist analysis of participation in professional development for the integration of digital technologies in higher education

Name: Dr Gitanjali, Mistri

Supervisors: Professor Lynn Quinn
Professor Brenda Leboiwitz

Institution: Rhodes University, South Africa

Date of Award: 2016

Qualification: PhD

ABSTRACT

The introduction of digital technologies at the Durban University of Technology (DUT), in keeping with higher education institutions globally, has had a significant impact on the learning environment at the institution. Despite this the anticipated demand for academic professional development (APD) did not materialise at DUT. Using Margaret Archer’s Realist Social Theory (1995) this single-institution case study offers a critical examination of cultural, structural and agential conditions that enable and constrain academic professional development (APD) for the integration of digital technologies in teaching–learning interactions at a higher education institution in South Africa. Archer’s (1995) morphogenetic approach enabled an investigation of the interface between the conditions encountered by the academics (at macro, meso and micro levels), in order to theorise about the material, ideational and agential conditions that obtained and which in turn influenced the decision to participate or not participate in the APD programmes.

This longitudinal study from 2012 until 2016 traced the APD related changes following the decision to promote the implementation of digital technologies in teaching–learning interactions as an institutional imperative. The theoretical framework allowed for an examination of the interpretation of the conditions experienced by academics, either as compatible or contradictory to their individual or collective concerns. It further provided an insight into their evaluation of the legitimacy and value of the APD programmes. The study examined the impact of the provision of resources for APD on the nature of the use of digital technologies in teaching–learning interactions at the site of the case study, the Durban University of Technology in South Africa.

The analysis of academic reactions to the changes instituted at both the meso (institutional) and micro (academic professional development) levels revealed that the changes produced conditions that resulted in limited morphogenesis. In particular, it seems that the disruption brought about by the introduction of the technology imperative was accompanied by conditions resulting in further diversification of academic
capacities at the institution. This study advances concrete propositions about the conditions that influenced the APD related responses of the academics to the institutionalisation of e-Learning.

The research adds to knowledge through insights into the process theory approach to causation, which recognises that structures, mechanisms and events produce unique effects and that the same mechanisms at times produce different events. This study argues that understanding what underlies a certain course of events may enable informed interventions to create better correspondences between APD and the introduction of digital technologies in higher education. Further, this study has generated insights into the importance of taking into consideration the discipline-related knowledge structures in the design and provision of academic development programmes. It is proposed that the incorporation of organising principles of knowledge practices within the academic professional development programme design would earn value and legitimacy for the programme, and promote participation by academics in digital technology-related academic professional development. In summary, the research contributes to an understanding of why it has been that, even with many first order barriers – such as digital access and infrastructural limitations – reduced, the uptake of digital technologies and participation in related academic professional development programmes by academics in higher education has yet to initiate a move beyond doing what is familiar in a digitally-mediated learning environment.

The full thesis can be found at http://www.ru.ac.za/teachingandlearning/highereducationstudies/doctoralprogramme/phdgraduates/
RESEARCH TITLE

Implementability of inquiry-based science education in the Foundation Phase classroom

Name: Dr Linda Bosman
Supervisors: Professor Ronél Ferreira
            Professor Albine Coudent
Institution: University of Pretoria, South Africa
Date of Award: 2017
Qualification: PhD

ABSTRACT

The study investigated the implementability of the French La main à la pâte (LAMAP) inquiry-based science education (IBSE) programme in the South African context. An interpretative, qualitative multiple-case study design was utilised to elicit the voices of both young children-as-scientists engaged in scientific inquiry and student teachers who facilitated science education following the LAMAP approach. The conceptual framework that was constructed for the study integrated contemporary perspectives on childhood, theory (a theory of mind) and constructivist theory concepts and IBSE. Three conveniently sampled schools in an urban setting was purposively selected as case studies, with 70 Grade 1 to Grade 3 children and three student teachers as participants. Data were collected and documented by means of direct interactive observation, whole class reflection sessions, focus group discussions, document analysis, field notes and a research journal.

The findings of the study indicated that the children engaged in IBSE as natural scientists, displaying the cognitive capacity to think, act and learn like real scientists in the context of their classrooms. Engaging in science within a community of scientists, and being physically and mentally active in the knowledge construction process furthermore shaped children’s sense of agency and identity as scientists. The findings furthermore indicated that implementing IBSE contributed to shaping student teachers’ professional identity as science teachers for young children. As young scientists-in-waiting, children are, however, dependent on researchers, higher education institutions concerned with teacher training, decision-makers and the broader education community to mobilise and sustain their potential for being and becoming scientists. Based on the results, a framework was designed proposing guidelines on multi-levels for IBSE implementation in the South African Foundation Phase classroom context.

The full thesis can be found at http://hdl.handle.net/2263/61365
RESEARCH TITLE

Analysis of a foundational biomedical curriculum: exploring knowledge-building in the rehabilitative health professions

Name: Dr Gabi de Bie  
Supervisor: Professor Sioux McKenna  
Institution: Rhodes University, South Africa  
Date of Award: 2017  
Qualification: PhD

ABSTRACT

This study was motivated by the researcher’s experience that students in the rehabilitative health professional programmes were finding it difficult to access fundamental knowledge upon which their professional practices and clinical contexts are based. An important focus of the research was the extent to which cumulative knowledge-building was impacted after the foundational biomedical curriculum became an interdisciplinary programme. The study explored whether the organisation of the interdisciplinary foundational curriculum served the fundamental needs of the professions, and whether, as a matter of social justice, students’ access to powerful knowledge was enabled by the form that the fundamental curriculum assumed.

This curriculum study at a particular Faculty of Health Sciences foregrounds the structuring, organisation and differentiation of disciplinary knowledge, and reflects a twenty-year period that included not only transitions in professional education but also extensive transformation in, and a different approach to, health delivery. At the institution, physiology and anatomy, the biomedical sciences basic to the health professions, underwent disciplinary merging and subsequent altered positioning in curricula. Medicine opted for a problem-based learning approach whereas the rehabilitation health sciences did not. Legitimation Code Theory (LCT) provided the means for analysis of the extent to which interdisciplinary organisation in the foundational curriculum for Physiotherapy and Occupational Therapy enabled integrative, cumulative building of knowledge for professional and clinical contexts.

Specialisation and Semantics dimensions of Legitimation Code Theory were used to reveal the principles underpinning practices, contexts and dispositions of Anatomy and Physiology at the Faculty of Health Sciences over a twenty-year period post democratisation in South Africa (1994 – 2013). Disciplinary positioning in curriculum prior- and post-merger, were compared and contrasted. LCT was used to characterise the distinctiveness of Physiotherapy and Occupational Therapy at the university including the kind of knowledge and the kind of knower that specialises the different professions, and what is valorised and legitimated for each kind of professional.
Semantic gravity was used to explore the expected knowledge recontextualisations in diverse and complex clinical settings for each of the professions. Registered professionals who are clinical educators as well as curriculum designers for clinical studies were interviewed. Profession-specific course outlines were further data sources.

The biomedical disciplines Anatomy and Physiology were characterised for their measures of distinction and their respective knowledge-knower structures. Analysis traced each discipline from its strongly classified form in autonomous curricula when there were separate learner-cohorts for physiotherapists and occupational therapists, to post-merger when the disciplines were framed as human biology in an integrated foundational curriculum for a joint cohort of students.

Curricular documents for the twenty-year period were analysed quantitatively and qualitatively to establish the positioning of Physiology and Anatomy before and after the disciplines merged to a single course of Human Biology. Teaching staff were interviewed for their understanding of what specialises the physiological and anatomical components of the Human Biology curriculum, what they considered as powerful knowledge for the professions, and who they envisaged as the ideal student-knower exiting the basic sciences platform to enter more advanced clinical studies. The degree of context-dependence for meaning-making in the different disciplinary domains and the condensation of meanings inherent in the respective practices and contexts, were analysed.

The thesis argues that following the merger, Anatomy is preferentially legitimated as powerful knowledge at the expense of Physiology; that the ideal of disciplinary integration is not reached, and that the segmental organisation and structuring of the curriculum negatively impacted on cumulative knowledge-building and application of professional knowledge in the clinical arena. After the merger the disciplines lost their shape, and in particular the hierarchical knowledge structure of Physiology collapsed. By not having access to the necessary disciplinary knowledge structures and their associated practices, students’ ability for scaffolding and integrating knowledge into the clinical arena was constrained. The organisation of the current Human Biology curriculum does not facilitate cumulative learning, and in so doing may not contribute to the envisaged graduate professional who is required to practise within a complex and demanding healthcare work environment.

The significance of this study conveys that interdisciplinary programmes should be carefully considered, and there is an added imperative in the health professions which ultimately realise treatment of patients. If, aside from interdisciplinary teaching, there are also merged cohorts of participant students, then a sound understanding of the epistemic requirements of each profession is required. Those involved in curriculum development in various fields need to take these recommendations into account to enable cumulative learning and enable epistemological access to powerful knowledge for an increasingly diverse student body.

The full thesis can be found at http://www.ru.ac.za/teachingandlearning/highereducationstudies/dottocall/
RESEARCH TITLE

A Guideline for Improving the Quality of Teaching and Learning in Primary Schools in the Erongo Region of Namibian

Name: Dr Brenda Dolores Mouton
Supervisor: Professor R.J. Botha
Institution: University of South Africa, South Africa
Date of Award: 2015
Qualification: DEd

ABSTRACT

The aim of this study was to find ways of improving the quality of teaching and learning in the Erongo primary schools in Namibia. The study focused on the numerous education reforms that Namibia underwent since independence in 1990 and how these have assisted in providing quality education to all its inhabitants. The need for quality in schools is seen as a major challenge and places huge demands on educational institutions.

In this study, the researcher looked at the inputs, processes, outputs and outcomes of education in schools, tried to define the term ‘quality’ in education, and also focused on both the human and material resources that influence education. Through this, focus was placed on the school as a unit that could provide change.

The study also focused on the education systems in four Sub-Saharan countries: Tanzania, Zimbabwe, Kenya and Malawi and three European countries: Germany, Belgium and Finland. These countries were selected to find ways that could assist Namibia’s quest to provide quality teaching and learning in schools. The strengths and weaknesses of the countries selected for this study could serve as essentially vital lessons to the challenges the Namibian government is still faced with in respect of the teaching and learning process.

This study used the mixed method for data collection. Both questionnaires and interviews were used and the findings of this study indicated that schools are still faced with many challenges in realising the ultimate goal of Vision 2030, whereby all citizens would receive quality education and meet the challenges of an industrialised country.

The study has thus arrived at the conclusion that stakeholders, namely teachers, principals and heads of departments are attempting to improve the quality of teaching and learning at their schools but are however hampered by the lack of quality human and material resources. The need for improved quality
teaching and learning is a challenge at schools and support is needed from the Ministry of Education to reach the ultimate goal of the Government of the Republic of Namibia in providing quality teaching and learning to all its learners.

The full thesis can be found at http://hdl.handle.net/10500/19151
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