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Exploring Student Teachers' Views on Eportfolios as an Empowering Tool to Enhance Self-Directed Learning in an Online Teacher Education Course

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Abstract: This paper explores Economics student teachers' views on ePortfolios as an empowering tool to enhance self-directed learning in an online teacher education course. An interpretive phenomenological research approach was employed for data collection and a purposive convenient sampling technique was selected to collect data. Only Postgraduate Certificate of Education (PGCE) and Bachelor of Education (BEd) Senior Phase/Further Education and Training Economics Subject Methodology (SDEC00N) student teachers registered on myUnisa for the modules were targeted. Multiple sections from the ePortfolios that had been considered for the purpose of this study were taken from their creative writing assignments, a research projects, lesson plans, reflective journal entries, podcasts, blog postings. Data were collected and analysed on a weekly basis to create a plethora of information. Student teachers felt that they were empowered with different subject content knowledge, technological pedagogical content knowledge (TPCK) and other technologies, student-centred methods and techniques through the ePortfolio project.

Introduction

Education is currently experiencing rapid changes and challenges due to an increase in technology-based network communities. In order for the higher education sector to be relevant and compatible in this challenging society, universities are compelled to either commit to the process of continuous change, or become redundant (Bates, 2010, p.15). The current debate at teacher education faculties about including ePortfolios or paper-based portfolios in new or redesigned learning programmes as part of the work-integrated learning (WIL) requirement, has emerged as an imperative for self-directed and lifelong learning approaches (Wray, 2007b; Jones, 2010; Robichaux & Guarino, 2012). Furthermore, Lam and Lee (2014, p.58) are of the view that the emancipation and transformation of teacher education programmes for a quality education system needs creative and innovative strategies to empower student teachers for the classroom of the future. Electronic portfolios (ePortfolio) is an important tool which is currently being used to support and document the personal, professional, and intellectual development of student teachers into self-directed learners. This study investigated the extent to which ePortfolios are being used to enhance student teachers' self-directed learning in a teacher education course which aims to produce competent teachers. To conclude this ultimate purpose, ePortfolios in teacher education programmes are conceptualised in relation to theories that underpin the study, the content, benefits and reasons for student teachers in Economics to compile ePortfolios. The

researcher has attempted to determine in which way ePortfolios as an alternative assessment strategy that simultaneously encourages self-directive learning. This study started in middle November 2015, with Economics Subject Methodology (SDEC00N) student teachers. These student teachers were registered for either the Postgraduate Certificate of Education (PGCE) or Bachelor of Education (BEd) Senior Phase/Further Education and Training in the College of Education, University of South Africa (UNISA). This paper explores Economics student teachers' views on ePortfolios as an empowering tool to enhance self-directed learning in an online teacher education course.

Context of the Study

UNISA's Assessment Systems and Practices Project

A study named Review and Reconfiguration of UNISA Assessment Systems and Practices Project was conducted at the College of Education of University of South Africa (UNISA), the only African open distance e-learning university in the service of humanity. This university has been the custodian of distance education for the past 143 years in South Africa and in Africa. Assessment is part of the technologically integrated open distance learning (ODL) core of teaching and learning business at this university. In light of this, Unisa has undertaken the Review and Reconfiguration of UNISA Assessment Systems and Practices Project to improve the quality of tuition, assessment, research and community engagement so that student teachers may continue to strive to become self-directed learners.

Given the global trend towards e-learning, one of the key institutional imperatives of this project has been to pilot/test a technology-driven, non-venue-based, summative assessment system. This component of the project has become known as an alternative assessment project. A decision was also taken to use higher education quality criteria relating to assessment in order to benchmark the current UNISA assessment practices by asking colleges to evaluate their own practices against this benchmark. The alternative assessment component was rolled out by identifying modules with small student numbers, mostly undergraduate modules, and led by lecturers who were willing to innovate and experiment.

Teaching Economics Education in Senior Phase/Further Education and Training

The module, Economics Subject Methodology (SDEC00N) is yearly module and is part of the alternative assessment project of UNISA (2015-2020). Alternative assessment types identified for the project were: take-home assessments (including timed assessments and MCQs), paper-based portfolios, ePortfolios, webinars, peer review assessment and continuous assessment. With reference to this paper, only student teachers who registered for the Postgraduate Certificate in Education (PGCE/BEd: Senior and Further Education and Training phase) were identified for this study, because the annual module enrolment was less than 300 student teachers per year. The primary lecturer for SEC00N chose ePortfolios as an alternative non-venue based assessment for this article, because SEC00N is a module which has shown a consistent pass rate above 90% but a drop in student enrolments for the past five years. The problem was not the pass rate, but rather how the primary lecturer could empower and support Economics subject methodology student teachers to become competent and effective teachers on their successful completion of the course.

Objective of the Economics Student Teachers' ePortfolio

The main objective of the SDEC00N as year module is to equip student teachers with economics content knowledge; teaching practical skills; philosophy (values); principles, methods (pedagogy) and procedures to understand and explain the relevant theory of teaching in a problem-based education environment orally and in writing by using and implementing the official Curriculum and Assessment Policy Statement (CAPS) policy to become competent Economics teachers for Grades 10–12 (Department of Basic Education 2011) on completing the module. Team members of the Review and Reconfiguration of UNISA Assessments Systems and Practices Project engaged with primary module lecturers regarding ePortfolio design and asked them to stipulate how, according to the module course, assessment criteria were to be achieved by student teachers prior to submitting ePortfolios. The ePortfolio for SDEC00N must include (1) multiple pieces of evidence indicating aspects of their teaching roles and functions; (2) a reflection on feedback, and changes to their ePortfolio artefacts, if necessary; (3) the formulation of specific goals for future growth; and (4) sharing of information and setting specific goals for the year. During the course of the year student teachers uploaded evidence on the ePortfolio for improvement; and the primary lecturer provides constructive feedback for further corrections and improvements before final submissions. Student teachers uploaded their final ePortfolios on myUnisa as the online learning management platform for student teachers to develop their ePortfolios by means of online collaboration. It was indicated in SDEC00N Tutorial Letter 101/0/2016 that the evidence produced for the final ePortfolio will be put through the Turnitin plagiarism tracking system (UNISA is a product licensee) link to UNISA learning management system, myUnisa. All multiple pieces would be put through the plagiarism tracking system, the *Turnitin Similarity Index* (not be higher than twenty percent of document). This anti-plagiarism tool was used to support student teachers with the production of quality and authentic pieces as a means of enhancing their self-directed learning and not to judge them. It was also stipulated in the Tutorial Letter 101/0/2016 that every week constructive feedback will be provided on uploaded items as per due date (no grading or no marks allocated) by the researcher. To support student teachers, the researcher activated three collaborative tools (eDiscussion forum, an Econblog, and a WhatsApp group) for online collaboration. Each student's ePortfolio on myUnisa was link to the collaborative tools. It is expected that student teachers must collaborate and share ideas with others in the module. For example, the eDiscussion forum on myUnisaⁱ was the first online collaboration tool the researcher started by managing all postings and discussions on a weekly basis and constructive feedback. Each month the researcher posted a different economics topic on the eDiscussion forum, for example, the current youth unemployment rate in South Africa. The researcher (lecturer) or any student uploaded newspaper articles; recorded TV versions or youth unemployment statistics recently released by *StatsSouth Africa*ⁱⁱ on the eDiscussion forum for remarks, comments and suggestions on how to solve the challenge in the South African economy. This online platform is also used for sharing ideas and challenges regarding related topics on course materials (study guide, prescribed textbook and tutorial letter). The other two collaboration tools were simultaneously used but on other course related topics.

For this study, student teachers uploaded the following documents on their ePortfolios all organised into ePortfolio pages, as a requirement for assessment (see Tutorial letter): two written assignments (academic writing rubric); a research project (any economic topic-rubric); five teaching/lesson plans (presented at teaching practice sessions-class observations); reflective journal entries; two podcasts on contemporary economics issues (unemployment and poverty); personal blog postings with three issues relating to macroeconomics); three PowerPoint presentations (business cycles, inflation and business

ethics); five digital video clippings of classroom lessons; and other relevant materials (updated curriculum vitae, workshops/ seminars/first aid course); Individual ePortfolios for assessment were submitted only on the prescribed pieces stated in SDEC00N Tutorial Letter 101/0/2016 before or on the due date on myUnisa.

Literature Review

A Brief Conceptual Frame on Self-Directed Learning (SDL)

In this paper, a brief conceptual frame for understanding theories that put the self-directed learning (SDL) approach in an online environment on the foreground, such as the University of South Africa (UNISA) as an open distance learning university, is discussed. Furthermore, the conceptual model for understanding self-directed learning in online environments is used for contextualising the study (Song & Hill, 2007). Scholars generally argue that online learning creates many possibilities for student teachers (Zimmerman, 2000; Paris & Paris, 2001). In fact, scholars posit the SDL approach as an important endeavour in advancing distance education environments because of the unique characteristics of online environments as a physical and social separated phenomenon (Long, 1998). “SDL” is an overarching concept related to an approach that is oriented to learning and performance achievement. Several theories focus on numerous learning processes related to outcomes-driven, self-controlled learning behaviour (Zimmerman, 2000; Paris & Paris, 2001). Knowles (1975), defines self-directed learning as “a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes” (p.15). Moreover, Zimmerman (2000, p.14) concurs with Knowles and captures the idea that this phenomenon “refers to self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals” (p. 14).

There are various views on the concept of self-directed learning (SDL). Scholars of the SDL view this phenomenon as a process of autonomy of student teachers (Harrison, 1978), a personal attribute (Guglielmino, 1977), and a moral, emotional, and intellectual autonomy (Candy 1991). Emanating from earlier findings, several frameworks have been emerged to understand SDL models developed by Mocker and Spear's *Two Dimensional Model* (1982) and Garrison's *Three Dimensional Model* (1997). Paris and Paris (2001, p. 90) describe the self-regulated learning (SRL) theory as autonomy controlled by the individual who monitors, directs; and regulates actions towards the goals of acquiring information, expanding expertise, and improving oneself. As indicated earlier. The ePortfolio as an empowering strategy can be used for enhancing SDL skills for personal growth and professional development. Furthermore, Song and Hill (2007, p.27) incorporated learning environments as a third component to a revised SDL model, specifically for distance education. This study integrated the components highlighted in the revised SDL conceptual model as a base for discussing student teachers' use of ePortfolios in open distance learning (ODL) environments. Briefly, the revised conceptual SDL online approach is designed on three distinctive components, namely personal attributes, learning process and learning context. Firstly, the personal attributes comprise learners' motivations for taking responsibility for ownership of learning and using cognitive strategies and resources to achieve personal gains. Secondly, the intended learning is enkindled by autonomous learning processes. Finally, the context in SDL approach is a crucial and influenced by two factors: the design features and online support structures as factors in processes toward self-directed learning in an online environment.

By planning, developing and compiling multiple pieces for ePortfolios, Economics education student teachers take full responsibility for their learning. They become directly involved with the what, how and why of specific content. They employ meta-cognitive strategies to design authentic pieces for their ePortfolios. Furthermore, a social network theory foregrounds this study, because there is a need to examine the views of future teachers of Economics who are studying for a teaching qualification at an open distance learning institution, on compiling evidence in an ePortfolio to enhance self-directed learning. In this particular space specific interrelationships among student teachers are framed. In the context of this study, the researcher explores the concepts of social network theory underlying the power and popularity of ePortfolio pedagogy as an e-learning facilitation strategy for the teaching practice of postgraduate certificate of education student teachers in an ODL context. On completion of multiple pieces which demonstrate autonomous learning, student teachers showcase how they have applied in practice their pedagogical knowledge; various teaching methods; the way in which they have developed competence in assessment practices, their understanding of the principles of organising and implementing the Economics curriculum in the online ODL context, PGCE/BEd learning programme, their understanding of the curriculum theory and their enlarged capacity and ability to think critically and holistically as self-directed learners to advance quality education in South African schools.

Conceptualising and Contextualising Electronic Portfolios (Eportfolios)

Literature refers to the concept of ePortfolios as digital teaching portfolios (DTPs), or online teaching portfolios (OTP), or electronic portfolios (ePortfolios), but the term “ePortfolio” is used throughout this paper. Scholars posit that this type of portfolio is gradually being implemented in teacher education programmes, specifically in teaching practice at most higher education institutions (Wray, 2007b; Jones, 2010; Robichaux & Guarino, 2012; Hoekstra, Jocelyn & Crocker, 2015). These scholars reported that an ePortfolio is compiled for various reasons; and with different objectives, such as assessment and course evaluation. In view of the latter, Bates (2010) posited that “ePortfolios enable faculty to see first-hand not only what student teachers are learning, but how they are learning” and added that “ePortfolios also can play a role in assessing the effectiveness of the courses, curricula, and even institutions” (pp.15-16). It also encourages constructivist and connectivist approaches to teaching and learning. (Wray, 2007b; Rolheiser & Schwartz, 2001) and creates meaningful assessment practices for self-directed learning (Jones, 2010; Robichaux & Guarino, 2012). Therefore, e-Portfolios are critical instruments for managing the academic progress of each student; and can play an important role in managing the performance and progress of an entire education system (Arslam, 2014; Fisher, Cheung, Pickard, Chen, Cheung & Wong, 2011; Wray, 2007a; Trevitt, Macduff & Steed, 2013). Moreover, Quinlan (2002, p.1035) and Garrett (2011, p.187) are of the opinion that ePortfolios provide significant advantages over paper-based alternatives because they are easily accessible online; and the end users (learners, educators, parents and school principals) can view ePortfolios on computers, cellphones or other devices. According to these authors, student teachers can access ePortfolios in order to issue assignments and to access assignments by using an online platform anytime and anywhere. Furthermore, Chappuis, Stiggins, Arter, and Chappuis (2005, p.99) are of the view that an ePortfolio is an effective alternative assessment in that it encourages student teachers and educators to examine skills that may not be assessable through traditional means, such as higher order thinking, communication and collaborative abilities.

ePortfolios is an evidence-based approach and creating documents as “lived learning experiences” by student teachers in teacher education programmes (Quinlan, 2002; Wang, 2009). Additionally, Arslam (2014) posits that ePortfolios serve the purpose of supporting student teachers and faculties in evaluating the progress made with personal growth and academic achievements. Lyons, Hyland and Ryan (2002) indicate that the purpose of using ePortfolios as an alternative assessment tool is to develop pedagogical content knowledge and reflective practice in student teachers. Hoekstra and Crocker (2015, p.61) reported on a study conducted in contact sessions at residential universities and distance education online platforms, using ePortfolios for assessment purposes in teacher education programmes. The findings of these studies revealed that the ePortfolio the student teachers compiled indicates that the student teachers demonstrate knowledge, skills and attitude when compiling specific artefacts for a portfolio (Hoekstra & Crocker, 2015; Robichaux & Guarino, 2012; Zeichner & Wray, 2001). Moreover, Boulton and Hramiak (2012) and several other writers, argue that ePortfolios are about collecting and compiling evidence of work in electronic format which demonstrates knowledge, skills, attitude and constructive feedback of work that the student teacher submit (Trevitt, Macduff & Steed, 2013; Boulton & Hramiak, 2012; FitzPatrick & Spiller, 2010). Emanating from the positive outcomes of the studies conducted in residential university environments, this study which was conducted in an open distance learning environment also envisages positive benefits that hopefully ePortfolios could be used as an empowering tool to enhance student teachers’ self-directed learning in a teacher education course. van Schalkwyk, Leibowitz, Herman and Farmer (2015, p.6) reported in a case study research at eight South African higher education institutions that ePortfolios are used as an empowerment tool in teacher education programmes, and also as a reflection tool to enhance the professional learning of academics as teachers. Garrett (2011) define an ePortfolio as a “compilation of evidence which contains artefacts of curricula in the sense that they contain objects made by human beings which are characteristic of a particular classroom” (p.75). Lyons et al (2002, p.14) state that an ePortfolio is a file of authentic evidence that student teachers produced, which indicate what, why and how they have learned after compiling the evidence in the ePortfolios. Additionally, an ePortfolio is to showcase a student teacher’s personal growth and demonstrate specific knowledge and skills gained during the learning programme. The ePortfolio is an evidence-based strategy currently being introduced in the majority of teacher education programmes at higher education institutions (HEIs) locally and globally (Boulton, 2014, p.375). In these HEIs, ePortfolios are used as an alternative assessment tool for student teacher empowerment.

Currently, teacher education programmes at higher learning institutions require prospective student teachers to compile either a paper-based portfolio or an ePortfolio of evidence as part of a teaching practice qualification (Ben-Jacob & Ben-Jacob, 2014; Groom & Maunonen-Eskelinen, 2006). Student teachers include specific evidence in their ePortfolios during the teaching practice period (Jones, 2010); and several items are uploaded in the ePortfolios for feedback or final assessment. In the context of this paper, it is envisaged that Economics student teachers during the course of the study, use an ePortfolio to reflect, engage, collaborate and enhance active, authentic learning towards self-directed learning. In addition, student teachers develop an ePortfolio for the purpose of self-directed learning (formative assessment), and assessment (summative assessment) (Lam, 2015; Ben-Jacob & Ben-Jacob, 2014). In general and in the broad context of teacher education, the ePortfolio is used to enhance personal growth, professional development, and to produce evidence for daily representations of teaching practice lessons (Trevitt, Macduff & Steed, 2013; Dann, 2014; Lam, 2015; Reeves, 2000)

Advantages for using ePortfolios in Teacher Education

Literature shows that several advantages are associated with the use of ePortfolios in teacher education programmes, such as enhancing lifelong learning (Boulton 2014), reflective teaching skills (Oakley, Pegrum & Johnson, 2014) and increasing pedagogical and technical content knowledge, values, beliefs and positive attitudes, among others (Belgard, 2013; Garrett, 2011). It is envisaged that Economics student teachers have the opportunity to take ownership of their learning process throughout the process of collecting, compiling and reflecting on authentic evidence, because they want to produce the best ePortfolio that reflects their specific identity of becoming a teacher in the teacher education course and not to compete with others. Belgard (2013) argues that when student teachers compile and share evidence in an ePortfolio, they develop their collaborative skills. Additionally, Wolf and Dietz (1998) mention that the benefit of compiling an ePortfolio is to select the best artefacts for a specific purpose as described in a teacher education module or in instructions for compiling an ePortfolio for assessment purposes.

Scholars agree that teachers can share and critique information in the ePortfolio collectively by giving constructive feedback to student teachers on the quality and authenticity of evidence that is produced (Lai et al., 2016; Boulton, 2014; Trevitt et al., 2013). Another educational value of an ePortfolio is that student teachers can share information; collaborate to complete group tasks; reflect critically on their writing; and critique one other's work in a collegial manner (Oakley et al., 2014; Robichaux & Guarino, 2012; Zeichner & Wray, 2001). A recent literature review by Bolton (2014) identifies several educational benefits such as self-directed learning, professional development, assessment, job applications, and promotions as key indicators for using ePortfolios. For example, Fisher et al (2011) investigated the use of digital portfolios at the School for Teacher Education, University of Hong Kong. The findings of the study highlighted that digital portfolios are integrated as part of personal growth in order to achieve objectives such as developing personal growth plans; improving and acknowledging measurable standards; and creating self-efficacy among student teachers.

Emanating from this context, the following main research question was formulated for the purpose of this study: How are ePortfolios being used in a teacher education course to enhance student teachers' self-directed learning for them to become competent teachers?

Research Design and Methodology

Research Paradigm

Bricolage as research approach was first introduced in the *SAGE Handbook of Qualitative Research* by Denzin and Lincoln (1999), who adopted Levi-Strauss's bricolage metaphor to describe trends emerging in qualitative research. Denzin and Lincoln (1999) proposes that "the combination of multiple methodological practices, and empirical materials, perspectives, and observers in a single study is best understood, as a strategy that adds rigor, breadth, complexity, richness, and depth to any inquiry" (p.56). These scholars describe several types of bricolage in their chapter such as the interpretive bricoleur as a researcher who "understands that research is an interactive process, shaped by his or her own personal history, biography, gender, social class, race and ethnicity and by those of the people in the setting" (p.67).

Research Design

In view of the latter, the researcher decided to employ an interpretative phenomenology approach (IPA) to investigate how student teachers understand their experiences with regard to planning, compiling and reflecting on their multiple pieces uploaded in the ePortfolio. The phenomenon was therefore explored by means of a bottom-up, inductive approach which aims to explore the meanings Economics subject student teachers attach to their lived learning experiences. These student teachers are considered “lived learning experts with regard to their own learning experiences and can only as themselves tell a better story”, and only IPA affords them the opportunity to tell their own stories, in their own words, compiling evidence to enhance self-directed learning (Robichaux, & Guarino, 2012). The aim of IPA is to negotiate a shared understanding through conversation and intersubjective meaning-making with PGCE/BEed student teachers with the primary focus on the student teacher's subjective experience of using ePortfolios as an alternative assessment strategy. IPA is increasingly recognised as a useful tool in health research studies, but to a lesser degree in teacher education research studies. It is the view of the researcher that IPA has the strengths to recognise contextual factors which may have an impact on how individuals construct meaning from their own experiences; and as such was thought to be an appropriate method for this study.

Ethical Considerations

Before the study could commence, the researcher applied for ethical clearance and the college ethical clearance committee issued a certificate to conduct research (Ref # 2016/04/13/90178912/05/MC). No names or other identifying details of respondents may be revealed, except for research purposes. As a requirement of UNISA’s assessment and ethics policies, the safeguarding of ePortfolios and multiple pieces on the ten unruled newspaper sheets were archived for future quality assurance purposes.

Sampling

Purposive convenient sampling was used for collecting data, namely only PGCE/BEed and Senior Phase/Further Education and Training (SDEC00N) student teachers (n=367 student teachers) registered on myUnisa.

Data Collection Process and Analysis

A breakdown of pieces selected from the ePortfolio pages were as captured in Table 1.

Pieces for inclusion in final ePortfolio	Total number of items	Selection of 10%
Two written assignments	$(367 \times 2 = 734 / 10\% = 73)$	73
A research project	$(367 / 10\% = 37)$	37
Five teaching/lesson plans	$(367 \times 5 = 1835 / 10\% = 184)$	184
Reflective journal entries	$367 \times 10 \text{ months} = 3670 / 10\%$	367
Two podcasts produced	$(367 \times 2 = 734 / 10\% = 73)$	73
Personal blog postings	$367 \times 10 \text{ months} = 3670 / 10\% = 367$	367
Three PowerPoint presentations	$(367 \times 3 = 1101 / 10\% = 110)$	110
Five digital videos clippings	$(367 \times 5 = 1835 / 10\% = 184)$	184

Setting Mid-Year Economics grade 10 examination paper + Memorandum	(367x2=734/10%=37)	73
eDiscussion forum narratives	367x12 months=4404/10%	440
Econblog postings	367x12 months=4404/10%	440
WhatsApp comments	367x12 months=4404/10%	440
Total pieces for data collection		N=2789

Table 1 Selection of ePortfolio multiple pieces

Based on the data in Table 1, multiple pieces were selected for research purpose from ePortfolios. Each of the ten percent of the selected multiple pieces (2789 items) were downloaded, read, evaluated and analysed; and each piece in the ePortfolio was carefully coded. A constant comparison data analysis method (Glaser & Strauss, 1967) was used and various themes were identified. In this instance, the researcher and the two research assistants had to put different pieces together to create a bricolage research – a collage of information from the collected data. This process was painstaking and time-consuming. Each of the 10% of multiple pieces was studied, analysed, recorded and typed by one of the research assistants in various themes and categories. Each theme and category was manually cut from the typed word document which was printed and pasted on white, unruled newspaper sheets (max 120cm x 90cm). These data (unruled newspaper sheets) was archived after completion of the study as per UNISA ethics policy. On completion of the data analysis process, the original pieces were made available to a senior research professor in the department who specialises in qualitative research designs, with a request to validate the trustworthiness and authenticity of content in relation to the themes and categories that emerged from the analysed data. After three weeks of data validation, she reported that she was satisfied that the correct protocol had been followed; and thereby validated the process of data collection for this study. All the data displayed in this paper are inductive and deductive by nature.

Findings and Discussions

There are a number of reasons why ePortfolios are increasingly used in teacher education programmes as a driver towards self-directed learning. The selected multiple pieces were analysed and various themes were identified from numerous blog postings, reflective journal entries, WhatsApp responses, podcasts uploads, and eDiscussion forums remarks / comments. For coding or

Theme: Advancing Professionalism by Enhancing Teaching Philosophies and Professional Identities

Under this theme, three specific extracts were identified from a plethora of reflective journal postings as expressed by student teachers regarding teaching philosophy and professional identity. The two issues, teaching philosophy and professional identity, were also captured in student teachers' *eDiscussion forum narratives*, *Econblog postings* and *WhatsApp group comments* and therefore found it appropriate to be included under this theme as important phenomena of student teacher experiences regarding the usefulness of ePortfolios to enhance self-directed learning. These phenomena were not part of the literature view nor included in the purpose of the study but emerged as very important constructs in student teachers learning experiences. Student teachers felt their teaching philosophies and professional identities were enhanced through the ePortfolio project. One of the PCGE student teacher stated in a *reflective journal entry* that her teaching philosophy is as follows:

It is easy to talk about what, why, when and how regarding enhancing your teaching philosophy, but when you start reflecting about your daily teaching and learning, you want to make an educational contribution as a change agent in the lives of those entrusted in your care.

Another female student responded to the issue of teaching philosophy on her *personal blog*:

My philosophy of teaching is embedded in the notion of gratitude. I am grateful and thankful for starting my career as student teacher on how to support my learners to become good citizens one day. For me teaching is a calling and that's why I choose to become a professional.

Her sentiments were supported by another male student who made the following remark (*podcast*):

My ePortfolio helps me to grow my philosophy and it is an effective learning tool in supporting my personal growth and the development of professional practice becoming a professional. I love my subject and teaching children.

Several positive outcomes echoed by student teachers surely highlighted in advancing their professionalism during the course. This theme was identified and retrieved from the student teachers' multiple pieces in their ePortfolios; positive experiences were reported from the evidence for enhancing teaching philosophies and professional identities throughout the course. In this study, the majority of student teachers believed and experienced that evidence produced over time negates and enhances their specific philosophy of teaching. It was evident from the lesson plans produced for their ePortfolios that when planning and presenting lessons on a topic, student teachers are expected to collect, compile and reflect on their own praxis by creating powerful learning environments to accommodate diverse learner populations in their classes. In doing so, student teachers set personal goals and specific objectives to be achieved over time when developing an ePortfolio. FitzPatrick and Spiller (2010) posit that the reason for using ePortfolios in teacher education programmes is to enhance professional identity. In addition, Quinlan (2002) conducted a study on evaluating portfolios for the purpose of promotion in teacher education programmes. The findings reported by Quinlan revealed that portfolios as a promotional tool provide insightful information on student teachers' teaching philosophy, professional development, teaching methods, and career pathing. Garrett (2011, p.189) and Arslam (2014, p.145) argue that ePortfolios can be used as a means of enhancing a student's professional identity and personality. Another study conducted by Schonwetter, Sokal, Friesen, and Taylor (2002, p.88) revealed how student teachers develop teaching philosophies at institutions of higher learning. The authors made a valuable epistemological contribution to a conceptual model for developing teaching philosophy statements for student teachers, which could be used to enhance this phenomenon in teacher education programmes. The ultimate purpose of this module is to develop a teaching philosophy and professional identity. In their responses, student teachers wrote about how they love to teach children; and how they grew in the subject, becoming specialists over time.

Theme: Subject Content Knowledge by Applying Economics CAPS Content Knowledge

The objective of the SDEC00N module is to equip student teachers with economics content knowledge, teaching skills, and teaching methods (pedagogy) to plan quality lessons and implement the official CAPS policy for teaching economics as a subject to Grade 10–12 learners as prescribed by National Department of Basic Education for South African schools. Twice a year, student teachers were placed at different high schools for ten weeks for teaching practice sessions. These student teachers were allocated an experienced subject

teacher who acted as mentor as required by UNISA's College of Education, Teaching Practice Office. Student teachers felt their subject content knowledge by applying Economics CAPS content knowledge were enhanced through the ePortfolio project. One of the PCGE student teacher stated in a *reflective journal entry* that her teaching philosophy is as follows:

My mentor teacher at my placement school was supportive by helping to use CAPS, plan my lessons. Over the teaching practice sessions I had the opportunity to teach my lessons and learn how important it is to plan good lessons and prepare my topics in advance, any topic. We learned how to use CAPS and develop lessons. This was a huge learning experience starting at the beginning of the year and completing my teaching practice. I have learned how to teach the subject. I feel confident to do an efficient job.

Several student teachers agreed that you must put into practice what you have learned in the course. For the majority of them, it was a great lived experienced to teach a real class. They also posted a couple of good ideas on the personal blogs and on the eDiscussion forum regarding the role of a school subject mentor during the teaching practice sessions. Student teachers felt that the school subject mentor is a very crucial companion as a soundboard for their learning process. Many student teachers indicated that they leverage on sound subject content knowledge and pedagogy of mentors during school visits. The following extracts from the *personal blog postings and reflective journal* of two male student teachers highlighted the role their school mentors played:

In our one on one session with my mentor teacher at my placement school, I received very helpful and constructive feedback on my lesson presentations during the ten week teaching practice. This empowered me to grow and become more effective in my teaching. I really enjoyed and loved the idea of exchanging insights of teaching the subject, especially in relation to the CAPS curriculum for Economics.

This is the view of one of the male student reflected in the *reflective journal entry*:

I appreciated the fact that all of us during our school visits and placements... really learnt how to teach the subject. I decided to live my teacher vision to achieve specific outcomes for my teaching practice. I really enjoyed the ten weeks at the school where I was placed. It was the real thing in practice. You felt that the real journey as a professional had been started. It was an eye-opener to stand in front of grade 11 classes. I was scared at the beginning but after spending time in a real classroom on how to teach Economics as a school subject, I was really delighted and satisfied with the real life experience. This makes it special to me.

Lim and Lee (2014, p.57) posit that it is important that faculties support student teachers during their initial teacher education programmes. Student teachers reported that the best part of receiving continual support and monitoring from mentors during their school placements was the constructive feedback and exchange of insights on teaching the subject. There was sufficient time for exchanging ideas in order to improve the lessons presented before, during and after the ten weeks of teaching practice.

The literature indicates that ePortfolios can be used as a means to reveal the student teacher's personal values and intended goal; and to formulate a vision to be achieved over time. Garrett (2011, p.190) views the developing of the ePortfolio over time as a transformative learning process, entailing three distinctive issues: using metacognitive learning strategies, engaging diverse approaches; and evaluating one's own learning process. The author is of the view that the compilation of evidence shows that transformative learning is continuously taking place which helps student teachers to share evidence with other student teachers, and to express their ideas for self-enrichment and self-efficacy. Student teachers'

multiple pieces indicated that it encouraged the integration of personal, peer and expert views on how to build relationships with others; support one another; and give advice during teaching practice. Student teachers remarked that they were learning to teach Economics in a real, practical manner. Emanating from these sentiments, the evidence provided in the ePortfolio shows the identities of the student teachers, and demonstrate each student teacher's knowledge and skills, and evidence of authentic artefacts compiled over a period of learning. Most student teachers display their learning process and experiences through their ePortfolios. In this module course, student teachers use the Economics CAPS policy and study guide to prepare their lesson plans. To pass this module course, it is required and expected of student teachers to demonstrate sound subject content knowledge to become subject specialists. Furthermore, scholars of ePortfolios concur with the latter view that peer discussion of ePortfolios creates excellent opportunities for authentic learning as a critical endeavour for transformative learning (Fisher, et al., 2011; FitzPatrick & Spiller, 2010).

Theme: Developing Self-Directed Learning and Reflective Practices

In the SDEC00N course, student teachers wrote their learning goals, do self-study on reflection as a compulsory learning unit in the study guide link to watch an online video on reflection as a topic. It is expected of student teachers to diarise experiences in the reflective journal towards building evidence for the final ePortfolio assessment. Student teachers are expected to record teaching reflective practice moments. The reflective journal is used to capture lived experiences (positive and negative experiences) during teaching practice sessions at placement schools. For this study reflective journal entries are required of student teachers in order to reflect on their teaching practice sessions in subject practice, which they found to be beneficial. Student teachers felt their self-directed learning and reflective practices were enhanced through the ePortfolio project. One of the female Bed student teacher stated:

The course helps me to take responsibility for the course. I initiated a research project, with the help of others project members. I wrote my learning needs and formulating my learning goals for the course. I was forced to rethink how I will teach a specific topic to a large class. This means I have to plan and decide how I will approach my class. So I was forced to reflect on my objectives to be achieved...no doubt it forces me to budget for time out, to stop and think of how I will approach my next lesson.

Another PCGE student teacher wrote the following *reflective journal* entry:

I think it is a mirror of my performance which gives me a clear picture of what happened on my teaching day. Therefore, I could reflect on my classroom experiences. It helps me modify my teaching practice.

It emerged from the journal entries that student teachers are positive towards this empowering tool as an excellent way of reflecting on praxis. Reflection is important for successful learning; and a teacher is always a reflector – reimagining his or her teaching daily. Belgard (2013) and Jones (2010) agree that reflection remains a crucial part of the repertoire of a good teacher; and student teachers can develop this skill by consistently reflecting on their teaching practice sessions before, during and after planning, developing and presenting evidence for the ePortfolio. A research study revealed that ePortfolios support student teachers by creating learning opportunities to make a connection between theory and practice (Boulton, & Hramiak, 2012; Ndamba, 2007). Additionally, Boulton (2014) conducted a study on the use of ePortfolios beyond pre-service teacher education. The findings revealed that ePortfolios are being used for alternative assessment in that they enhance authentic, self-

directed learning (lifelong learning and life wide learning) and promote student self-reflection. When compiling evidence in the ePortfolio, student teachers first reflect and then make informative decisions about what they want to include as quality evidence in their ePortfolios. Dymont and O'Connell (2011, p.83) conducted a study on the quality of reflection in student journals and found that the levels of reflection in student portfolios were not that high; although most student teachers in this study consistently reflect on comments and remarks in their reflective journals.

Literature shows that there are several advantages for using ePortfolios in teacher education programmes. These advantages are enhanced lifelong learning, reflective teaching skills, increased pedagogical and technical content knowledge, values, beliefs, and positive attitudes, among others (Minott, 2008; Groom & Maunonen-Eskelinen, 2006; Schonwetter et al., 2002). Throughout the process of collecting, compiling and reflecting on authentic evidence, student teachers take ownership of their learning process, because they want to produce the best ePortfolios.

In conclusion, scholars agreed that student teachers must have opportunities to reflect on planning, and compiling an ePortfolio. The purpose of compiling an ePortfolio is to enable student teachers to rethink and critically reflect on their practice while becoming professionals (Zeichner & Wray, 2001; Ayan & Seferoğlu, 2011).

Theme: Using Technological Pedagogical Content Knowledge (TPCK) and Other Technologies

At the heart of good teaching is including technology as advancing driver in planning and executing lessons. Therefore, teachers need to include technological pedagogical content knowledge (TPCK) and other educational technologies (social media tools) into their teaching to accelerate optimal learning. To achieve this, TPCK is based on subject matter, pedagogy and technology in accommodate the Net Generation. In the last decade, UNISA's faculty of education has been introduced TPCK as part of the undergraduate learning program to expose student teachers to experiment more with technologies. This technological change compels student teachers to have a solid understanding of digital pedagogy for using it to upload, design and assess evident produced for the ePortfolio. With reference to the SDEC00N course as stipulated in the official CAPS policy for teaching economics, ICT is highlighted as integrated part of planning quality lessons to accommodate diverse learners in the classroom. Student teachers view the use of ICT and Web 2.0 technologies (social media) in the classroom as educational value-added tools to increase enjoyment and optimal learning. It emerged as one of the stand outpoints expressed by student teachers in lesson plans, personal blogs, reflective journals, eDiscussion forums and written assignments. Student teachers felt that they were empowered to use technological pedagogical content knowledge (TPCK) and other technologies through the ePortfolio project. One of the PGCE male student indicated the following:

"compiling evidence for my ePortfolio, I have the chance to using different types of social media tools and other ICT tools such our blog, podcasts, PowerPoint presentations and e-discussion forum. We were exposed to different kinds of ICT and other technologies in our learning unit. After submitting eight activities into the ePortfolio, I reflected on them and my lecturer gave constant constructive feedback".

Another, PGCE female student teacher also posted the following on the WhatsApp:

"My WhatsApp group really helped me to plan lessons on challenging topics such as poverty and business cycles. On the WhatsApp group we were brainstorming ideas, sharing and communicating".

PGCE and Bed student teachers also start to use social media platforms to connect and communicate; and one of the student teachers commented on the ICT programme for tracking plagiarism:

“We were also provided with an article on plagiarism. It also made clear to us that all submitted evidence produced by student teachers will be put through a plagiarism detecting programme”.

Another PGCE male student teacher responded as follows:

“Subsequently, I can read back over my experiences and observe my progress critically. This rereading could help me deepen my understanding of learning to teach purposefully as well as avoid the mistakes. I used blogs postings and reflective journal entries in all my other related activities as a method of assessing my professional development. It serves as valuable feedback on all of my teaching experiences”.

The 21st century came with possibilities and opportunities for using ICT in the classroom, especially Web 2.0 technologies. Schools and specifically the Economics teacher have been exposed through different media such as TV, DVDs and films to advance education locally and globally. Van Wyk (2014, p.371) is of the view that using social media to support educational endeavours will align the benefits of in-person learning communities with the benefits of using technology to support student engagement. During the eDiscussion forums student teachers started a WhatsApp group on subject-related matters. The student teachers were warned not to cut and paste from the work of fellow student teachers without acknowledgement. The work of student teachers is subjected to a plagiarism detection program, the Turnitin similarity test, which checks student teachers' assignments for possible plagiarism. This process helps student teachers to improve their writing skills and is not judgmental, but rather developmental by nature. As a category, the analysis revealed that the ePortfolio activities were viewed as a successful monitoring and assessment method. The learning unit 'ICT and social media in the classroom' in the *Study Guide for SDEC00N* encourages student teachers to explore these technologies during teaching practice sessions. Student teachers are compelled to employ ICT and other technologies in their teaching plans. During teaching practice assessment visits by faculty lecturers these student teachers must show planning for integrating ICT in their lesson plans. Seldin, Miller, and Seldin (2010) concurred that the teaching portfolio is an important piece of evidence that shows improved teaching performance and can be used for promotional purposes. It seems that student teachers are using ICT and social media platforms, such as Facebook and WhatsApp, as teaching and learning e-tools to support learners (van Wyk 2014). A study conducted by Condy, Chigona, Gachago and Ivala (2012, p.34) reported that most teachers lack TPCK competencies and recommended that they be “equipped with technological pedagogical skills which will enable them to competently integrate the new technologies in their teaching and learning”. A competent teacher will ultimately create powerful learning environments for optimal learning experiences for the learners. With these technologies at their disposal, teachers can now more than ever create powerful learning spaces to accommodate the diverse learning styles of the digitally oriented youth. Teachers can create and employ innovative types of TPCK and other technologies to accelerate learning. Scholars are of the view that teachers must be equipped to plan, design and use information technologies at maximum level in education in the digital age in order to increase the interest and attendance of student teachers and to achieve student learning outcomes (Belgard, 2013; Seldin, Miller & Seldin, 2010). With reference to this study, in most instances, student teachers use metacognitive strategies to produce quality authentic multiple pieces and artefacts for their ePortfolios. Furthermore, it was evident that there are specific reasons why teacher education programmes force student teachers to plan and compile an ePortfolio.

Theme: Professional Values and Relationships with Mentor Teachers and Fellow Student Teachers

With reference to the eDiscussion forums, many student teachers indicated that they share information about good teaching practices. They also mentioned that collaboration and social interaction lead to the development of positive relationships. Student teachers felt that they were empowered with professional values and building good relationships with mentor teachers and fellow student teachers through the ePortfolio project. Most of the student teachers responded positively in their *personal blog* entries:

“I realised how effective and helpful in terms of my self-development the ePortfolio is, because I could see myself as learner and teacher. It is completely different ... it helps me promote a self-exploration of my personal views about learning and Economics teaching. These views will exceptionally affect my personality. It made me strong and proud of myself. I have learned a lot about myself and how to develop an ePortfolio. Most of the eight activities in the ePortfolio have definitely developed my level of self-confidence. It enabled me to document my own professional development.... Writing about my professional practice helped in promoting my personal values”.

Some student teachers stated that they are able to build up trust in the group, although there are a few student teachers who avoided ‘deep’ comments and kept things very superficial. One of them stated as follows:

“Your reflective journal is a personal endeavour, a real experience over time in a classroom. A personal journey to be more sensitive to learners’ needs as well your own shortcomings. We during this course tried very hard to build good relationships through trust, collaboration and social interaction, either as student teachers or between learners and teacher mentors. You write this personal stuff in your own journal – you tended to focus on more professional vs. personal stuff. I love people and that’s why I have chosen teaching as a career. I love to socialise and work together with other people”.

A few student teachers felt that they had come to trust one another during the course; and that it naturally flowed into the group eDiscussion forums. Student teachers consider building good relationships through collaboration and social interaction as a very important attribute of a professional teacher, since it encourages social interaction and collaboration among student teachers. In conclusion, student teachers indicated that they had learned about many aspects of the teaching profession and valued the contributions of mentor teachers and the interactions with mentor teachers, learners and lecturers. Student teachers mentioned that mentor teachers and fellow student teachers were very supportive in sharing excellent subject information. Student teachers indicated that good relationships developed and that there was positive social interaction. Scholars are of the view that it is critical for student teachers to reflect on their practices (Quinlan, 2002; Wray, 2007; Bates, 2010). The latter argues that to build good classroom relationships between student teachers, electronic forums could be used as a starting point, but also to promote ongoing dialogical opportunities and further collaboration among student teachers (Arslam, 2014; Groom & Maunonen-Eskelinen, 2006; Xu, 2003).

Theme: Using Different Student-Centred Methods and Techniques

Literature indicates that an ePortfolio is an effective e-learning tool for improving the ability of student teachers to become professionals. Student teachers emphasised that eDiscussion forums, blogs and reflective journal writing help them to select teaching methods

and strategies for specific lessons. Student teachers felt that they were empowered with different student-centred methods and techniques through the ePortfolio project. Most of them responded favourably in their *reflective journals*:

“You need to plan carefully what and how to apply your teaching methods, especially when you teach large classes. What the curriculum policy indicated is totally different from the real classroom situation. During my teaching practice weeks, I have learned new things in a real classroom situation. Every class is different. So your teaching approach is also different. Most of my classes I implement the student-centred approach. There is no one size fits all because you deal with diverse learning contexts. This is authentic learning at its best”.

Another student responded as follows in the *eDiscussion forum* entries:

“In our study guide there are different teaching approaches. During my school placement, I started to experiment with the think-pair-share teaching technique as explained in our study guide. After using it in my class, it gave me a new perspective about how learners learn. When I planned my lesson on business cycles for grade 10, I grouped learners in the think-pair-share technique. I explained to them the reasons for using this technique. I instructed learners first to read the article on business cycles individually and then group to share what they read with their partner. Lastly, each small group presented their ideas to the rest of the class for further comments. This was really fun and I realised the importance of student-centred approaches for teaching the subject”.

Student teachers revealed that they are using different student-centred methods and techniques when planning Economics lessons. One of the student teachers wrote the following in a *blog* posting:

“For most of my lessons I carefully planned active participative learning environments. I want my learners to participate in my classroom activities. One particular learner-centred approach I really like is the teams-games-tournaments method. This method is where learners are grouped as a team to play an Economics game. Each group named their own team. Most teams preferred soccer team names and specific players such as Manchester United, Barcelona, Real Madrid, Chelsea, Liverpool etc”.

Different teaching approaches, such as teacher and learner-centred approaches are discussed in the SDEC00N study guide. Student teachers can experiment with these approaches during their school placements. Judging by the responses in the reflective journal entries, eDiscussion postings and blog postings, it seems that the majority of student teachers experimented with different student-centred methods and techniques. Scholars are of the view that teaching portfolios permit student teachers to file and share their teaching and learning practices; reflect on their pedagogical practices; engage in ongoing dialogues with fellow student teachers; improve their teaching and showcase their professional capacity for appraisal, promotion and job searches (Barrett & Carney, 2005; Seldin et al., 2010; Wright, Knight, & Pomerleau, 1999).

Conclusion

In this paper the researcher has attempted to outline that the use of ePortfolios is an empowering and attractive way of fostering self-directed learning and providing evidence of achievement; particularly in the context of a teacher education course at an open distance learning university. Student teachers felt that they were empowered with different subject content knowledge, technological pedagogical content knowledge (TPCK) and other

technologies, student-centred methods and techniques through the ePortfolio project. It would appear that self-directed learning occurs through the positive responses of student teachers reflecting on their personal values, learning styles and strategies of learning to enhance self-efficacy through the ePortfolio project. Important self-management skills, such as, formulating specific goals and short-term objectives and setting high standards to achieve excellent results or performance in the course were developed in the process of compiling artefacts for an ePortfolio. The student teachers in their reflective journals showed increased self-reflection on artefacts by assessing themselves against various sets of assessment criteria as prescribed in modular course. The assessment of submitted evidence indicated whether self-directed learning took place.

The evidence that the student teachers produced indicated that ePortfolios as an empowering tool that enhances student teachers' self-directed development into competent beginner teachers who are well-grounded in the knowledge, skills, values, principles, methods and procedures relevant to teaching Economics in Senior and Further Education and Training phase (FET). The ultimate purpose of this study was to show that student teachers were empowered by this module course. The most important phenomena that emerged from the various multiple selected pieces were teaching philosophy and professional identity. According to the majority of student teachers they love to teach children and they have developed into subject specialists that can teach in any context. The findings further revealed that the student teachers applied sound subject content knowledge during the teaching practice sessions. Specific lesson plans with applicable activities were provided as evidence in the majority of submitted ePortfolios. With reference to the matter of reflection, it emerged that most student teachers made use of the time to reflect on 'what, how and why' they compiled evidence in their ePortfolios. This is an important aspect of a teacher's self-directed learning process on his/her way to become a professional. Reflection is an enabling means for student teachers to ponder and critically reflect on their practice. Student teachers demonstrated that they explored ICT and other relevant Web 2.0 technologies during the teaching practice sessions. It is evident that student teachers, mentor teachers and learners built good relationships and became involved in social interaction during the teaching practise periods. Furthermore, the student teachers implemented various types of teacher and learner-centred teaching approaches, but they seemed to prefer student-centred methods and techniques, such as cooperative learning techniques. The findings of this investigation could not be generalised because only a small sample was employed in a teacher education course.

In summary, the researcher expect that the findings will guide teacher education programmes to intentionally embrace and realise ePortfolios as a self-directed learning strategy. It is suggested that higher education institutions (HEI) will be able to use the findings of this exploratory study to inform and classify formal approaches, programme delivery structures, and online support to student teachers; and to assess their progress in implementing ePortfolios for any teacher education course and programme. Finally, further investigation is needed to compare similar modules for PGCE/BEEd (Senior and FET phase) student teachers over time.

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ⁱ myUnisa is the University of South Africa online learning management system located as the webpage.

ⁱⁱ StasSA is the official South African Statistics