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Technology, Work Roles and Competencies of Educators Facilitating Fully or Partially Via a Distance

Jennifer Roberts* and Adéle Bezuidenhout

Institute for Open and Distance Learning, University of South Africa, Pretoria, South Africa
College of Economic and Management Sciences, University of South Africa, Pretoria, South Africa
**E-mail:buckjj@unisa.ac.za*

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ABSTRACT The education sector as a whole is being transformed by changes in funding, fierce competition, the increased use of technology and an increased emphasis on learner-centred education. As a result, the clear divide between learning via a distance and a traditional blackboard context is rapidly disappearing, mainly due to the increased use of technology within and outside of classrooms. The use of tablets in classrooms, the popularity of social media, learner management systems and other emerging technologies have permanently changed the education landscape. Within this highly complex context, educators have to fulfil various work roles, one being a technology expert. This paper considers the various roles of distance educators and the place of being a technology expert within the broader conceptualisation of the roles and competencies required by educators, fully or partially facilitating over a distance. A review of existing literature on the roles and competencies required by distance educators, including both a quantitative content analysis, as well as a qualitative content analysis component is offered, where amongst others the results indicate the importance of the role of educators as technology experts. The information offered through this study may be used to form the basis of a framework for the professional development for educators facilitating fully or partly via a distance.

INTRODUCTION

The centrality of education for national growth and human resource development for all countries, but specifically for developing countries with limited resources is highlighted by Chiyongo (2010:1). He argues that the cost of traditional classroom education is beyond the reach of many within a developing world context and advocates the use of open learning and distance learning via new technologies to improve access to education to "the majority of people".

Olalube (2014) suggests that the global academic landscape is changing from the traditional classroom and face-to-face teaching to a blended approach which is heavily dependent on the use of technologies. With the advent and popularisation of new technologies, the boundaries between "distance education" and the traditional "blackboard classroom scenario" are rapidly disappearing throughout the entire world. Johnson et al. (2016) accredit the rise in the blended learning approached to the flexibility, easy access and integration of sophisticated multimedia technology it affords the learner and the instructor. These hybrid approaches foster independent learning, collaboration and more opportunities for communication between the learner and the instructor. In many countries learners interact with technology via mobile technology such as tablets, I-pads and smartphones (Mayisela 2013) in the classroom, are supported via online learning platforms (for example Moodle, Blackboard); they learn via social media (Twitter, Facebook), open educational resources (OERs) (for example, the Khan Academy) and massive open online courses (MOOCs) that are freely available online. Johnson et al (2016) add the use of virtual laboratories, the flipped classroom and using MOOCs in combination with face-to-face lectures. In addition, they report on a five year study that found that introducing a blended learning approach increased student success rate with up to 12 percent. Mayisela (2013) ascribes the growing popularity of mobile technology that supports education in classrooms to the increased affordability for the masses and the user-friendliness of these handheld devices.

These changes result in learners developing their own personal learning environments (PLEs) through which they collect and assimilate new knowledge. Shaikh and Khoja (2014:202) explain that a PLE is a learner's electronic learning space, premised on the personalisation and

openness offered by Web 2.0 tools and social media, "a workspace which is conceptualised, built and controlled by learners in their quest to become self-reliant, connected and life-long learners". These developments necessitate that educators become the facilitators of these diverse learning experiences. As the primary developer of online material and the manager of the learning management system (for example Blackboard, Moodle), the instructor faces new challenges in the digitised environment (De Kock et al. 2016). In addition to this popularisation of new technologies, the changes in the education system - including the demand for transformation, fierce competition for scarce resources and the drive towards learner-centred education - are combining to transform the roles of educators, teaching with the help of technology (Briggs 2012).

The conflict between advocates for and against technology is noteworthy. A "techno positivist ideology" - as a method to facilitate transformation, increase access and reduce costs in education (Njenga and Fourie 2010:199) - emerged as opposed to a "techno-scepticism" school of thought, viewing some of the benefits ascribed to technology as pure myth. Njenga and Fourie (2010:199) argue for a healthy dose of "techno-scepticism", in order to bridge the gap between what they refer to as "compulsive enthusiasm" of the potential benefits of technology, versus the actual experience of educators and learners in a developing world context.

For the purpose of this paper, following the work of Shelton (2014:748) the word "technology" may refer to the use of "core" computer software (for example power point presentations) technologies as well as "marginal technologies". Core technology refers to technology which is used with very high frequency by almost all educators on all levels. Marginal technologies, however may be used with much less frequency, only by early adopters or by a much smaller proportion of educators, possibly at higher or more specialised levels of education, for example blogs and wikis (Shelton 2014). In addition, the term "digital literacy" is used to refer to the ability and capability of a person to live, learn and work in a digital society (Newland and Handley 2016:1). The specific focus of this paper is on the role of academic staff in an increasingly digitised learning environment.

The theoretical framework is based on accepted practice in human resource development which states that employees are expected to fulfil certain predetermined, distinguishable work roles (Biddle 1986) for which they need to have certain competencies comprised of skills, knowledge and attitudes. These roles and competencies are needed in order to produce the required outputs of the workplace, in this case an educational institution.

Clarity in terms of the expected job roles and the consequent development of appropriate competency frameworks are essential for the optimal performance of educators, whether they are involved in teaching wholly or partially via technology (thus supporting learners through technology via distance learning). Studies conducted in overseas universities have indicated that appropriate learning and development programs, underpinned by relevant competency development are essential to equip distance educators with the required skills, knowledge and attitude (Varvel 2007).

Lentell (2003) suggests that educators, and in particular those who teach wholly or partially through technology, online and distance learning methods, have to exhibit the following competencies: they have to be knowledge experts, effective listeners and communicators, coaches, facilitators, mentors, problem solvers, designers, supporters and resource co-ordinators. Cornelius and Higginson (2000) identified 11 clearly defined roles: technologist, manager, co-learner, designer, knowledge expert, researcher, facilitator, assessor, adviser-counsellor, e-tutor and mentor. In addition Varvel (2007) draws attention to distance educator competencies that need to be addressed: professional development, fostering engagement and interaction among students, assessment, learner support, the design of resources and materials and skills in course management. Specifically from an e-learning perspective, Carril et al. (2013) highlight designing the teaching proposal, the course content, learning activities and assessment activities, developing digital materials, organising teacher training and professional development, facilitating student participation, linking content to social and cultural phenomenon and promoting different tutorial methods, as key competencies of distance educators.

When the above roles and competencies are considered, the pervasiveness of work roles dependent on technology cannot be denied; for instance knowledge experts, designers, resource-coordinators (Lentell 2003), technologist, designer, knowledge expert, e-tutor (Cornelius and Higginson 2000), resource designer (Varvel 2007)

and designing course content, learning activities, assessment, learner support and materials. It is acknowledged that all the activities listed above does however to some extent use technology to a lesser or a more advanced degree.

This paper considers the changing roles and competencies required from educators teaching wholly or partially via technology. A content analysis of the existing literature on the transformation from being a traditional educator to becoming a facilitator of distance learning is offered. The main research question guiding this paper was (1) What is the most important work role fulfilled by educators teaching wholly or fully via a distance. The supporting sub-question was formulated as (2) What competencies are needed by educators teaching wholly or fully via a distance to fulfil these roles?

Trends in the Literature

A review of the literature reveals that individuals in a particular environment are seen as having a number of different roles which they perform, and that a number of different competencies are required to fulfil each specific role (Denise et al. 2004). Williams (2003) says that institutions implementing distance education programs would benefit from research defining the necessary roles and competencies. He states further that the initial step in creating a successful professional development program is to identify the competencies needed to perform the functions and outputs of certain major roles.

This section will provide an overview of some of the existing literature on the changing roles performed and competencies required by distance educators.

The Roles Performed by Distance Educators

Almost half a century ago, in 1970, Rizzo et al. (1970) already identified the lack of role clarity as the root cause of many organisational problems. They explain that role clarity gives a sense of belonging, a feeling of personal significance and a sense of continuity. For this reason, role theory is deemed an important theoretical framework, guiding this article and the interpretation of results. Role theory may be studied from a variety of disciplines, but for the purpose of this article, the most relevant would be organisational role theory. From an organisational behaviour viewpoint, the division of labour in general society occurs as a result of heterogeneous specialised positions, referred to as roles (Biddle 1986). Within the broader ambit of role theory, an interactionist view is of specific relevance to this discussion. It leads us to understand that roles evolve through social interaction (Biddle 1986) through which the social actor (in this case the educator) comes to understand and interpret their own and other, for example the learners' conduct. He qualifies this claim by explaining that the details of the roles to be played by various actors involved are played out within the broad parameters of what is considered acceptable behaviour (normative theory) within a specific context (Biddle 1986).

When considering the application of role theory to an educational context, the necessity for institutions to clearly define roles and develop competency frameworks to proactively address the development challenges that have been introduced as a result of new and emerging technology, become an important consideration. Briggs (2012) states that the multiple role expectations of teaching via online technology are placing more stress on distance educators. Therefore, plans for capacity building, subject specific training and professional development for distance educators can only be established after a clear definition of these roles and competencies has been established. She also supports the notion that roles need to be proactively defined, rather than allowing them to simply evolve over time.

Numerous studies have been conducted on skills and competencies in distance education. An example is that of Thatch and Murphy (1995) where they used a panel of experts to identify the key roles, outputs and competencies for distance educators and consequently developed a competency model. Williams (2003) replicated that study and concluded among other things that (a) single position may include several roles; and (b) competencies and roles can be used as a framework for capacity development. He recommended that further research should look at (a) the depth of knowledge or mastery that is required for different functional areas (b) knowledge, skills and attitudes as components of competencies.

Egan and Akdere (2005) suspected that experts might have a different view of what com-

prised distance education roles and competencies in comparison to practitioners' perspective of the same thing. Egan and Akdere (2005) asked post graduate students practitioners to rank the distance education roles and competencies that had been ranked by experts in the previous studies. Their findings included a higher ranking of technical expertise than had been the case in all other previous studies. They concluded that competencies are complex to study as they can include motives, traits, self-concepts, attitudes and values, content knowledge or cognitive and behavioural skills. Competencies are therefore underlying characteristics of people, they indicate ways of behaving or thinking that generalize across situations and endure for a reasonably long period. This is in contrast to the dynamic nature of distance education and its need for on-going and continuous development of competencies.

All of these studies had been conducted in the United States of America (USA), Canada and on a smaller proportion including Australia. Similar studies have been done in India. For example, Mishra (2005) identified roles of academic counsellors and the required competencies for each role at Indira Gandhi National Open University (IGNOU). Mishra (2005) concludes by proposing a staff development strategy and distance learning materials for contract counsellors, an approach that is based on the competence framework and accommodates the evident move towards online learning.

Competencies Required by Educators

Research indicates that when educating over a distance, the single most important and accessible learning resource for students is the teacher (Surikova and Baranova 2009). Generally speaking, it has been established that distance educators are well educated, full-time veteran instructors who represent a variety of disciplines (Dillon and Walsh 1992). However, the fact that distance educators are often experienced, well-educated educators does not mean that they automatically have the necessary competencies to perform all the duties assigned to them. The challenging education environment in which distance educators operate, the fast pace of technological change and innovation and the legislative demands put on educators, necessitate a constant re-visiting of the competencies these distance educators need in order to remain highly effective.

Various definitions of "competence" are offered in the literature. Surikova and Baranova (2009:260) define competence as "the capacity to realise 'up to standard' the key occupational tasks that characterise a profession". The European Commission (2006:16) defines competence as "...the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and/or personal development". Specifically in terms of online teaching success, Ragan (2009:3) defines a competency as "the knowledge, skill, attitude or ability that enables the online teacher to effectively perform a function to some standard of success. Carril et al. (2013) focus specifically on the competencies necessary to fulfil the roles related to technology.

Although studies conducted by Adewale et al. (2009), Jamieson (2004) and Ng (2006) provide some insight into the complexities of the distance educator's role, there is an absence of research addressing how to adjust to this role. Furthermore, Phipps and Merisotis (1999) are concerned that researchers ignore the feelings and attitudes of distance learning students and distance educators. As a result, distance educators are unprepared for the demands of the job. Jahanzeb (2010) and Ng (2006) conclude that future research on the roles and competencies of distance educators (that is, to learn about job responsibilities and the institutional culture) within the distance learning context should be receiving priority.

METHODOLOGY

When evaluating textual data, content analysis is judged to be an appropriate approach (Hsieh and Shannon 2005). According to Stemler (2001), content analysis is an useful tool to examine trends and patterns that are present in documents and other media. Krippendorf (2004:18) defines content analysis as "a research technique for making replicable and valid inferences from texts to the contexts of their use". According to Krippendorf (2004), there are two independent constructs in content analysis which are the texts themselves and secondly, the context, and researchers use inference to move from the texts to answer the actual research question(s). Tesch (1990) asserts that content analysis is an useful tool to interpret the content or contextual meaning of the text data interrogated in a specific study. Busch et al. (1994-2012) further state that content analysis can be

either quantitative or qualitative. White and Marsh (2006) suggest that a hybrid approach can also be used where elements of both quantitative and qualitative content analysis are employed. In order to use this benefit of the content analysis research method, a hybrid content analysis approach was chosen as the most appropriate to address the research question.

The context for this study is the roles and competencies that are required by online and distance educators. The researchers are part of a larger project aimed at assessing current and future roles and competencies of educators in online and distance education contexts. The study also aims at determining the importance of these roles and specifically the importance of technology as a game-changer in the future direction of education. The starting point of this research project was to identify roles and competencies that have been established in literature in order to use these identified roles and competencies as the basis for the research on the importance and staff perceptions of these various roles. In order to do this, the researchers needed to analyse what has already been written in the literature regarding roles and competencies. It was important that the role of technology expert was not automatically assumed to be the most important one particularly in the light of move towards traditional models of education to online delivery methods.

The specific steps in content analysis, as outlined by Tesch (1990) and Bush et al. (1994-2012) were used to establish what the literature on the roles and competencies of distance educators was stating. Firstly the text (content) for analysis had to be selected. Bush et al. (1994-2012) state that it is often impossible to carry out a comprehensive content analysis on all text available and therefore a sample should be selected. Barbour (2001) advocates the use of a purposive (theoretical) sampling technique in order to allow researchers a degree of control and the inclusion of "outliers" conventionally discounted in random sampling techniques. The researchers purposively selected the articles included in the content analysis to be as representative of time and place as possible, guided by the research question. Influential texts from the beginning 1990s were considered, the reason being to track the development of the role of technology in education over the last three decades. The researchers believed this to be necessary to allow a holistic picture of the role of technology to emerge. Secondly it was deemed important to select texts that would provide a global perspective from international authors, as well as to allow the voice of local authors to provide a South African perspective to the study. Therefore care was taken to include local content in the content analysis.

The researchers coded and categorised data and developed themes that characterised the roles and competencies of educators teaching fully or partially online. In order to improve the rigour of the research, various strategies were employed as described by Barbour (2001). These included multiple coding. The two researchers independently coded the selected texts before comparing their analyses in order to explore alternative interpretations of texts. This enabled both researchers to immerse themselves in the data and encouraged a thorough and systematic exploration of all possible interpretations. It is believed that this process helped to improve the trustworthiness of the research by providing inter-rater reliability, improving the coding framework and facilitating interpretations.

In quantitative content analysis the text is coded into categories and the frequency of occurrence of identified terms is computed. Busch et al. (1994-2012) state that quantitative content analysis is a deductive process where texts are collected under different circumstances whereas qualitative content analysis is an inductive process where the researcher reads through the texts in order to identify concepts and patterns.

Table 1 summarises eight articles which discuss the changing roles of distance educators and are spread over a period of 13 years, starting from the work of Beaudoin in 1990 to that of Porto in 2011. Table 1 simply presents the roles that each author identified. The researchers then coded these roles into broad themes and allocated a theme to each of these roles. The themes allocated to the roles are as follows in Table 1. Furthermore, a review of the roles required by distance educators is offered in Table 2.

Analysis of Role Themes

Table 3 is a frequency table indicating the frequency of each of the themes that were allocated to the various roles. From this table it can be seen that the role of technology expert is by far the most frequent one and is listed in all eight of the articles reviewed.

From Table 3 it can be seen that the most mentioned role in the literature reviewed was that as the distance educator as a technology

Table 1: Review of roles required by distance educators with allocated themes

Source	*Roles*	*Theme*
Beaudoin	Instructional technology and design	1
-1990	Content knowledge	2
	Student-centredness:	3
	Teacher is not an exclusive resource – one of several resources;	4
	Intermediary between student and resources:	5
	Integrating technology with pedagogy and curricula;	6
	Increase learner's self-direction through student support	7
	Diagnose learner's readiness;	
	Monitor student progress;	
	Recognise learning difficulties;	
	Stimulating students to further efforts;	
	Evaluation.	8
Thatch and Murphy	Instructor	9
-1995	Instructional designer	1
	Technology expert	6
	Technician	6
	Administrator	10
	Site Facilitator	11
	Support staff	12
	Editor	13
	Librarian	14
	Evaluation	8
	Graphic designer	6
Berge and Collins	Administrator	10
-1995	Instructor	9
	Instructional design	1
	Technology expert	6
	Site facilitator	11
	Support	7
	Librarian	14
	Technician	6
	Evaluator	8
	Graphic designer	6
	Trainer	9
	Media publisher/editor	13
	Leader/Change agent	10
CHE	Engagement and interaction	15
-2004	Facilitators and managers of learning where they are no longer the source of all knowledge	4
	Integration of learning	17
	Interaction through a variety of media	6
	Video conferencing	6
	Computer based record keeping	10
	Team members where they will only contribute some of the expertise	4
Whaymand	Shift from teacher-centric to learner-centric	3
-2010	Team approach	4
	Awareness of diversity and demographics of student population	7
	Separation of content creator from course deliverer (Tutors)	4
	Instructional designer	1
	Formative assessor	1
	Manager	10
	Mentor	16
Lentell	Knowledge experts	2
-2003	Effective listeners	18
	Communicators	18
	Coach	16
	Facilitator	11
	Mentor	16
	Problem solver	19
	Designer	1
	Supporter	7
	Resource co-ordinator	17

Table 1: Contd....

Source	*Roles*	*Theme*
Cornelius and Higginson -2000	Technologist	6
	Manager	10
	Co-learner	17
	Designer	1
	Knowledge expert	2
	Researcher	13
	Facilitator	11
	Assessor	8
	Adviser/counsellor	15
	E-tutor	11
	Mentor	16
Porto -2011	Instructional designer	1
	Administrator/manager	10
	Consultant/researcher	13
	Mentor	16
	Assessor	8
	Instructor	9
	IT specialist	6

Table 2: Themes identified for distance educator roles

Theme	*Unit for analysis*
Instructional designer	1
Knowledge expert	2
Student-centred approach	3
Team member and player	4
Intermediary	5
Technology expert	6
Student support	7
Evaluator/assessor	8
Instructor	9
Administrator/management	10
Facilitator	11
Staff support	12
Editor/researcher	13
Librarian	14
Engagement and interaction	15
Mentor	16
Integration of learning	17
Communicator	18
Problem solver	19

Table 3: Frequency of roles

Rank	*Role*	*Frequency*
Technology Expert	11	1
Instructional designer	8	2
Management/Administration	7	3
Assessor/Evaluator	6	4
Mentor	5	5
Team Member	5	6
Facilitator	5	7
Student Support	4	8
Instructor	4	9
Content Knowledge	3	10
Editor/researcher	4	11
Integration of Learning	3	12
Engagement and Interaction	3	13
Student-centredness	2	14
Librarian	2	15
Communicator	2	16
Intermediary	1	17
Staff Support	1	18
Problem Solver	1	19

expert. The theme of technology expert in the context of this article incorporates the integration of technology with sound pedagogy; curriculum design which makes use of the latest technologies; the educator as a technician; video and podcasts as well as student/educator interaction through learning management systems. The other important roles that were identified are the management and administration roles which also incorporate the use of technology, assessment and evaluation (which once again is moving to using online tools), as well as the distance educator as an instructional designer.

Flowing from the identification of the *technology expert* as the most important work role, the next phase of the research aimed to identify the competencies needed by educators in terms of being in command of relevant and applicable technology. Once again eight prominent articles were chosen for the analysis, based on their applicability to the research question.

These eight prominent research articles were analysed in order to explore the competencies needed to fulfil the role of technology expert. Table 4 summarises the findings of the eight articles which discuss the competencies required to fulfil the role of technology expert in distance

Table 4: Review of technological competencies required by distance educators

Lentell (2003)	Knowledge experts; Listeners and communicators; Coaches; Facilitators; Mentors; Problem solvers; Designers; Supporters; Resource co-ordinators.
Aydin (2005)	Competency in terms of technology, communication, time, online education and content
Mishra and Koehler (2006)	TPACK - framework: Technological Knowledge; Content Knowledge; Pedagogical Knowledge
Bawane and Spector (2009)	Design instructional strategies; Develop appropriate learning resources; Implement instructional strategies; Facilitate participation among students; Sustain students' motivation
Surikova and Baranova (2009)	Acquisition of Professional Identity; Choice and organisation of scientific content; Language competence; Tutorial competence; Development of methodological strategies; Design and implementation of didactic materials; Evaluation of teaching-learning processes; Application of principles oriented to the model of didactic innovations; Construction of approaches to educational research; The challenges of information and knowledge
Educational Technology Committee (Coordinating Committee of Vice Presidents Academic) (2010)	Professional Development; Engagement and Interaction; Assessment; Learner support; Resources and Materials; Course Management
Arinto (2013)	Content development; Design of learning activities; Teaching strategies; Assessment
Carril et al. (2013)	Technologist role: select the appropriate resource for learningAwareness of the technological procedures to develop multimedia content and to adapt them to e-learning environments, resource provider, continually learning about new soft ware, Awareness of main platforms, resources and virtual tools; being able to manage both synchronous and asynchronous tools.

educators and are spread over a period of 11 years, starting from the work of Lentell in 2003 to that of Arinto in 2013. Table 4 summarises the competencies that each author identified.

In terms of the competencies required by distance educators to perform the above roles, a wide variety of opinions on what is required emerges from the literature search. When the above table is studied, it becomes evident that there are similarities in the results obtained by different authors. Certain "themes" clearly emerged as is illustrated in Table 5.

Table 5: Themes identified for distance educator competencies

Competency 1	Information technology
Competency 2	Written communication
Competency 3	Subject knowledge
Competency 4	Pedagogical knowledge
Competency 5	Social support and interaction

DISCUSSION

This paper attempted to determine (1) what the most important work role fulfilled by educators teaching wholly or fully via a distance was; as well as (2) what competencies are needed by educators teaching wholly or fully via a distance to fulfil the role of technology expert. The lens of a meta-analysis of existing research results were used to explore possible answers to these two questions. The most relevant findings from the exploration are discussed below:

Role clarity is a prerequisite for the development of appropriate competency frameworks to guide the professional development of educators. Even though it was evident from the existing literature that there are a variety of opinions on the roles and competencies needed by educators from different corners of the world, the pervasive role played by technology was reiterated from the earliest work by Beaudoin (1990) to the most recent work done by Carril et al. (2013). The seminal role theory of Biddle (1986) used as the theoretical framework for this article guided the identification of themes or patterns that emerged from the existing body of knowledge. The over-riding work role theme emerging from existing literature was *being able to act as a technology expert* (refer to Tables 1, 2 and 3 for empirical support). Reflecting on the lack of confidence shared by many academics regarding the use of educational technology in general and the possible negative user experience of the learning management systems for lecturers in particular, this finding is cause for concern

(De Kock et al. 2016). Linking the findings back to role theory, this important finding implies that educators need to prepare systematically and thoroughly for the technological challenges inherent in their facilitation role. This finding is in accordance with the previous research findings on the importance of preparing for the integration of technology into teaching and learning practice (Engelbrecht et al. 2007; Mayisela 2013; Chigona et al. 2014).

There is still a prevailing fallacy in some circles, especially in countries less developed in terms of technology, that teaching online simply means designing a website or turning one's lectures and class material into written format and publishing these materials online (Easton 2005). However, previous research indicates that such a "paper-behind screen approach" is an oversimplification and unlikely to yield successful learning experiences (Berge and Collins 1995: 6). Based on several years of teaching online, Palloff and Pratt (1999: 8) suggest that once educators create online courses, they have to consciously change roles. The dominant "instructor" role needs to make way for a "gently guiding" role. When performing the guiding role, the facilitator is merely monitoring the discussion and may only enter the discussion in order to stimulate new debate and critical thinking or to gently steer the conversation back on course. Many educators find it difficult to change from being "the sage on the stage" to facilitating for the learner's own learning process by using technology.

In order to address the second question, further exploration into the competencies necessary to fulfil the role of technology expert was undertaken. The importance of mastering the various competencies, in order to perform the roles of the distance educator successfully, requires further interrogation. To return to Shelton's (2014:748) use of "core" and "marginal" technologies, from the analysis it was clear that some technologies are used much more often and more widespread than others. For the purpose of this study competencies needed to cope with "core" technologies may be as general as using various hardware and software computer applications in order to design learning material. Skill in graphic design, being familiar with and using social media and knowing how to use various mobile technologies are essential to meet the basic role expectations of distance educators.

Marginal technologies may demand more complex skills and knowledge. These competencies may include for example managing a learner support or learner management system, using blogs and wikis (Shelton 2014). Moreover, educators still need to master the ability to design instructional material, develop instructional strategies and assessment plans that will engage their learners, encapsulate their attention, intrigue them and inspire them to become passionate about the subject and its contents, through using the tool of innovative technology. In addition, through constant engagement with their subject field, interaction with other experts and subject-related research projects, educators are required to develop and deepen their own knowledge continuously. Similar to learners, educators need to develop their own PLEs to ensure that they remain lifelong learners, proactively keeping abreast of new developments in the subject, pedagogy and learning related technology. It is thus evident that globally educators are facing a major challenge in terms of mastering the competencies required for successful technology enhanced online teaching.

The demands of the virtual platform are much different from that of the traditional classroom. Educators familiar with more formal and restricted communication used in a lecture now need to master the art of communicating in a less formal, engaging manner in order to entice learners to participate in on-line discussion forums and social media learning sites. It requires a different skill set to motivate and encourage learners to engage in on-line discussions. While maintaining a professional demeanour, educators teaching via technology need to learn how to create social platforms where students feel at ease to participate and share their viewpoints. In creating a friendly and accessible platform, the educator can act as coach, mentor, problem solver and group leader.

Williams (2003) reiterates that the initial step in creating a successful professional development program is to research and identify the competencies needed to perform the functions and outputs of the major work roles defining a specific position. From the analysis and overview provided by this article, it is clear that existing research provides an appropriate understanding of the roles and competencies needed by educators using technology in their teach-

ing practice. This knowledge base should therefore be used as the foundation of human resource development interventions to empower educators to use the technology that is available to improve access, quality and success. It is however acknowledged that participation in digital literacy interventions are often seen as an additional demand on the time of academic staff. Newland and Handley (2016) therefore suggest that participation in digital literacy programs be built into the quality assurance process of curriculum development and new course approval. As student success is increasingly prioritised, this stance is supported in this paper. The importance of digital literacy has been confirmed in the findings of this paper and institutionalising the implementation of digital literacy interventions are no longer a choice, but a necessity in distance learning universities. It is strongly recommended that this information also be used to design a "Continuing Professional Development (CPD) program" to ensure that distance educators are equipped with the necessary technological skills, knowledge and attitudes to perform their jobs successfully.

CONCLUSION

Strong economies are characterized by a high number of well-paying jobs, and in most cases these jobs are held by people who have obtained their knowledge and skills through a sound education. A comprehensive education is dependent on well trained educators with up to date knowledge and skills.

This paper highlighted the importance of supporting educators with pro-active, appropriate training in terms of educational technology and digital literacy. It is accepted human resource development practice that certain competencies are needed in order to produce the required outputs of the workplace and that these competencies can be organised into distinguishable roles. The information obtained from this study will therefore provide information which can be utilised by educational institutions teaching via a range of different modes, be it fully online via a distance or partially online by supporting learners through electronic learning management systems, mobile technologies or social networks. Therefore the research documented and analysed in this paper could potentially be used as a foundation for developing capacity building initiatives and designing training interventions at a range of public and private educational institutions to improve educator's digital literacy. These findings may be specifically useful to developing and newly industrialized countries, where human and technological resources are limited and where technology is a valuable tool to improve access to education and improve the quality of education in rural and disadvantaged communities.

RECOMMENDATIONS

Future research should investigate the curriculum design of a continuous professional development program for educators using technology. Technology may ensure access to this kind of development programs to educators in disadvantaged communities, without necessarily taking them out of the classroom. As technology is constantly changing, the only certainty is that the ability to use technology to the benefit of learners will become an ever more important work role for educators.

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