Implementing Blended Learning at a Developing University: Obstacles in the way

Mswazi Tshabalala[1], Charity Ndeya-Ndereya[2] and Tiana van der Merwe[2]

[1]Centre for Cooperative Education, University of Zululand, KwaDlangezwa, South Africa

[2]Centre for Teaching and Learning, University of the Free State, Bloemfontein, South Africa

TshabalalaM@unizulu.ac.za

NdeyaCN@ufs.ac.za

TvdMerwe@ufs.ac.za

Abstract: Higher Education Institutions (HEIs) are striving to provide effective learning experiences to address the needs of the digitally-oriented generation of learners. Blended learning has emerged as a solution to address these needs and has been adopted by various HEIs. However, not all academic staff members adopt blended learning when it is introduced by their institutions. Although this teaching and learning approach offers various advantages to academic staff, negative perceptions held by academic staff may affect its adoption.The purpose of this case study was to investigate the perceptions academic staff have about blended learning and to identify challenges facing academic staff that affected the adoption of blended learning in a Faculty of Education at a developing university in South Africa. The study employed the Technology Acceptance Model (TAM) developed by Davis (1993) and the Innovation Diffusion Theory (IDT) by Rogers (1983: 246-250) in a qualitative exploratory research design. The investigation made use of focus group interviews with lecturers and individual interviews with heads of academic departments, as well as the dean of the Faculty. Data gathered pointed to various perceptions and practical problems hindering academic staff from adopting blended learning. Amongst these were perceptions pertaining to e-learning or blended learning policy, faculty support by management, computer skills of students and lecturers, as well as inadequate access for students to computers. This research is unique in that it applies known knowledge in the new context of a small South African university, which is a developing community. Lessons learned from this study will make a contribution to knowledge in the field of higher education, and will help developing universities to benefit from the research.

Keywords: blended learning, adoption, academic staff, perceptions, challenges, developing university

1. Introduction

Higher Education Institutions (HEIs) are striving to provide effective, flexible, convenient and accessible learning experiences to address the needs of a new generation of students entering these institutions (Thomas, 2008). This generation of students has a keen interest in using technology and demand to use technology in teaching and learning, in and out of the classroom (De George-Walker and Keeffe, 2010). These students display technology-influenced aptitude, attitudes, beliefs and sensitivities (Oblinger, 2003). They define technology broadly, beyond the computer and the internet, to include the ability to adapt technology to meet individual needs (Roberts, 2005) They thus challenge academic staff members to utilise innovation in their delivery approaches. This has led to various institutions adopting blended learning as one of the approaches used for teaching and learning (De George-Walker and Keeffe, 2010; Dziuban, Moskal and Hartman, 2005). The blended learning approach also offers several advantages to academic staff, such as accessibility of information, universal connectivity, which enables the formation of communities of inquiry, and innovative teaching strategies. However, negative perceptions held by members of academic staff could affect the adoption of blended learning (Davis, 1993; Thomas, 2008; Oh and Park, 2009; Fresen, 2010). Such perceptions relate to attitudes towards innovation and change, time required for implementation, workload, level of institutional support, available technology infrastructure, instructional delivery methods and quality assurance. Using the Technology Acceptance Model (TAM) (Davis, 1993), the researchers explored the

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perceptions of academic staff towards the adoption of blended learning in the Faculty of Education at a developing university in South Africa, herein refered to as University A. The TAM was selected because it is robust and useful for determining how work-related information technology (IT) innovations are adopted by employees for their work (Liu, Li, and Carlsson, 2010).

University A is a comprehensive traditional university offering approximately 252 accredited degree, diploma and certificate courses across its Faculties of Arts; Education; Science and Agriculture; and Commerce. It is situated in a rural setting that, although part of the global village, is not highly influenced by technology (University A, 2013). The University's student population is 16 118, comprising 14 819 undergraduates and 1 299 postgraduate students. It draws the majority of its students from southern African countries but also attracts students from Asia, South America and Australasia. With regard to the use of technology in course delivery, an E-learning Implementation Strategy and Plan was approved by the University's senate in 2009 (University A, 2009: 4). This plan identified the following challenges hindering the implementation of e-learning:

- The University lacks comprehensive institutional and organisational mechanisms for facilitating the development and growth of e-learning;
- Lack of a policy that promotes e-learning within teaching and learning;
- Lack of quality management processes to enhance e-learning;
- Limited initiatives for the professional development of staff to integrate e-learning within existing curricula;
- No structures in place for technical and system support;
- Lack of support from leadership for change management; and
- Considerable funding is needed to implement a successful e-learning programme.

University A acquired the learning management system (LMS) Moodle as part of the e-learning implementation plan. However, academic staff members hold the perception that it takes time and effort to develop e-learning activities and, subsequently, they are reluctant to use Moodle (University A, 2009). It is against this background that the research study on which this article is based was conducted.

2. Aim of the study and the research question

The aim of the research study was to explore the perceptions of and to identify challenges facing academic staff that affected the adoption of blended learning in the Faculty of Education at a developing university in South Africa. The study addressed the following research question: What are the academic staff perceptions that affect the adoption of blended learning in the Faculty of Education at University A?

3. Literature review

The concept of blended learning is derived from two words, *blend* and *learning*. The word *blend* means combining things and *learning* denotes an assimilation of new knowledge as explained by Olivier (2011). Blended learning allows students to engage in learning outside the confines of the classroom; with synchronous tools, such as web conferencing, Skype and group chats, and asynchronous tools that include discussion boards, blogs and social networking sites (Singh, 2003). There is no single commonly accepted definition of blended learning, but practitioners "negotiate their own meaning" according to the needs of their contexts of practice (Heinze, 2008: 8). The absence of a universal definition for blended learning allows HEIs to contextualise the concept according to their respective environments. Hence, this study adopted the definition of blended learning used by the university involved in the case study concerned, which is, "the mixture of traditional delivery including: lectures, group discussions, apprenticeships and experiential learning, together

with e-learning methods, which accommodate various learning needs of a diverse audience in a variety of subjects" (University A, 2009: 1 . There are, however, opposing views about delineating the concept of blended learning. For instance, Oliver and Trigwell (2005) caution against the use of the term blended learning primarily because it does not incorporate the perspective of the learner, and because it considers blending from a lecturer's point of view. Another common objection to blending, cited by Jackson (2011), is that aiming for a coherent blend of learning provided through a variety of delivery mediums and instructional techniques is hard—he reckons that it will take some careful thought and planning to achieve this. Moreover, only a handful of learners fully engage with all the elements of blended learning, so it is not worth the effort (Jackson 2011).

Despite the various and sometimes contradictory definitions of blended learning and the different challenges involved in implementing blended learning, HEIs are striving to adopt blended learning because of the potential it has for transforming higher education and engaging students in more meaningful learning experiences (Garrison and Kanuka, 2004). Blended learning is also recognised as a useful approach for improving pedagogical practice (Kenney and Newcombe, 2011).

The advancement of technological innovation in HEIs has necessitated the formulation of new policies, strategies and improvements in infrastructure. Despite all these supporting enterprises instituted by HEIs, the adoption of blended learning depends, in part, on the perceptions an academic staff member has about the use of technology in teaching and learning. Oh and Park (2009), Alebaikan (2010) and Fresen (2010) concur that perceptions held by academic staff can have an impact on the adoption and success of blended learning within institutions. From the literature reviewed, we concluded that some of the barriers to the adoption of blended learning by academic staff are their own adequate or inadequate computer skills, lack of time to prepare new and appropriate teaching and learning materials, students' restricted access to technological resources and, among academic staff members, a lack of innovative teaching strategies to address the digital generation of students (Benson, Anderson and Ooms, 2011; Brown, 2002; Gutteridge 2009; Ocak, 2010; Prinsloo and Van Rooyen, 2007; Thomas, 2008). Fresen (2010) points out that most academic staff members use technology for inter alia, research, academic writing and communication, but few use it for teaching. She concludes that successful technology adoption, therefore, depends on the perception of an individual academic staff member.

For a better understanding of barriers to and perceptions about the adoption of blended learning, the Technology Acceptance Model (TAM) (Davis, 1993) was employed to explore the perceptions of academic staff that affect the adoption of blended learning in the Faculty of Education at University A. Additionally, the Innovation Diffusion Theory (IDT) (Rogers, 1983) was utilised to categorise academic staff members according to their rate of blended learning adoption.

3.1 Technology Acceptance Model (TAM)

The TAM was developed by Davis (1993) to explain the acceptance of a technology. Although blended learning is not a technology per se, technology forms an integral part of this teaching and learning approach. This study utilised the TAM for its investigation because it was deemed an appropriate tool for enabling the researchers to determine the factors that influence academic staff in their acceptance of a technology (blended learning) that was new to them (Almobarraz, 2007). The TAM has continually been found to be useful, as many researchers, such as Ifinedo (2006), Wahid (2007), Van der Linde (2009), Chuttur (2009), Liu, Li and Carlsson (2010) and Liu, Chen, Sun, Wible and Kuo (2010), use it. The aspects of the TAM are illustrated in Figure 1.

According to Davis (1993), the receptiveness of an individual to accepting and adopting technology can be divided into two distinct categories, namely, the perceived ease of use (PEOU) and the perceived usefulness (PU) of the technology. Although each of these two categories can influence someone's attitude towards using technology separately, they are also interrelated and the PEOU of technology can directly affect the PU, and vice versa. The PEOU and the PU of technology are also influenced by external factors (Davis, 1993) and the

external factors in turn influence the attitude towards using technology, thereby leading to the actual use of technology or the decision not to use technology. External factors include system features, situational constraints, user characteristics (Vishwanath and Goldhaber, 2003) and organisational job category, such as staff's support (Hubona and Geitz, 1997).

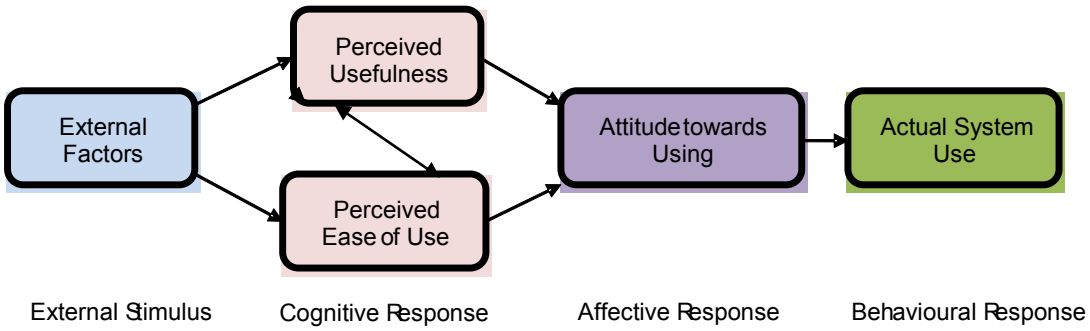

Figure 1: Technology acceptance model (Adapted from Davis, 1993:476)

3.2 Innovation Diffusion Theory (IDT)

Another theory that was used in this study, along with the TAM, to enhance the understanding of the adoption of technology innovation by members of academic staff in their teaching, is the IDT (Rogers, Singhal and Quinlan, 1999). The researchers chose the IDT as an instrument to explore the rate at which academic staff in the Faculty of Education adopted blended learning (Thomas, 2008). It has been established that the TAM and the IDT complement each other in explaining the acceptance or rejection of technology (Almobarraz, 2007). Rogers (1983) proposes that individuals are categorised according to the rate at which they adopt innovation, as shown in Table 1.

Table 1: Innovation adoption categories

Category	**Description**
Innovators (2.5%)	Risk takers who take the initiative to try something new
Early Adopters (13.5%)	Respected group leaders who encourage adoption by the whole group
Early majority (34%)	Careful and unwilling to take risks
Late Majority (34%)	Always suspicious of or resistant to change and are difficult to influence
Laggards (16%)	Adamant in resisting change

Adapted from Rogers (1983:246)

The preceding section provides information regarding the adoption of technology or innovation by means of the TAM and the IDT. In this research study the two theories were applied to blended learning, an innovation in a teaching and learning context. The models informed and guided the research design and methodology of the research study.

4. Research design and methodology

In addressing the research question, a qualitative exploratory case study research design (McMillan and Schumacher, 2010) was employed. The use of this design was grounded within the interpretivist epistemology in an effort to understand the perceptions of the academic staff regarding the adoption of blended learning, through the meanings and importance that these academics assigned to it (Maree, 2010).

The study used a purposive and complete sample wherein the entire population of 41 academic staff members in the Faculty of Education were invited to participate in the study (Cohen, Manion and Morrison, 2010). In the end 25 academic staff members participated in the research study; 16 lecturers participated in a survey and in focus group interviews, while all eight heads of departments and the dean took part in individual interviews.

Data were collected separately from each of the three professional levels of the Faculty, in order to give freedom of expression to lower-level members. A one-to-one informal conversation interview (McMillan and Schumacher, 2006) strategy was employed with the dean of the Faculty. Semi-structured interviews were conducted with each head of department (HOD) while lecturers participated in semi-structured focus group interviews. Lecturers also responded to a questionnaire that was designed to elicit information on selected characteristics of the lecturers who participated in the study.

5. Findings

The questionnaire provided the study with pertinent data regarding selected characteristics of the 16 lecturers who participated. Six of the interviewees were female and 10 were male. The majority (12) of the participants were lecturers. Three were junior lecturers and only one was a senior lecturer. Most (12) of the participants were mature and aged between 31 and 50 years of age. Of the 16 participants 11 reported that they had been teaching at university level for a period of three to six years; two participants had been teaching for seven to 10 years and two for more than 10 years. In their self-rating of computer literacy skills, 14 academic staff members indicated that they had adequate computer literacy skills that met the requirements for implementing blended learning. Two junior lecturers who had taught at university for less than two years indicated that they had less than adequate computer skills. In the group, only two lecturers reported that they had used Moodle or another LMS for a period of three to five years and another two admitted having used an LMS but for less than two years. The remaining 12 had never used an LMS. In addition, only two lecturers reported teaching modules that were currently using Moodle. These two lecturers reported that they had posted learning and assessment activities and discussion forums on Moodle of their own volition, hence they may be categorised as innovators according to Table 1 (Rogers, 1983). They took the risk of being trailblazers in using Moodle at University A. It is important to note that only one HOD reported teaching a course through Moodle.

The IDT was employed to categorise the academic staff in the faculty according to the rate of adoption of blended learning. The study identified and classified the three participants who indicated that they were using blended learning in their courses as innovators. Based on the innovation adoption categories described by Rogers (1983), there were no other clear categories. Hence, the conclusion is that there is a blended learning adoption gap between the three participants and the other 22 academic staff participants. Therefore, it can be deduced that, according to the IDT, there were only three innovators; no other categories had emerged over the 5-year period since the introduction of Moodle at University A. Despite the continued use of computers in research and in communication, participants seemed to be slow adopters of blended learning, a behaviour that had also been observed by Fresen (2010) with regards to the acceptance of computer technology for learning.

The discussion that follows is informed by the themes and interview responses relating to the TAM, as summarised in Table 2. The table provides the summaries of interview discussions as responses according to

the predetermined themes and interview questions based on the TAM. These responses have been organised to form sub-themes.

Table 2: Themes, related interview questions and responses

Theme	Interview question		Response/Sub-theme
Understanding of Blended Learning (UOBL)	1.	What is your understanding of blended learning?	• Never heard of blended learning • Mixed teaching methods • Use of computers in teaching and learning
External Factors (EF)	2.	Do you think your level of technology knowledge is sufficient for teaching a blended course? Why or why not? *(Lecturers)*	• Inadequate technology knowledge, need training • Adequate, holding an ICDL (International Computing Driving Licence)
	3.	How has the introduction and implementation of blended learning in the Faculty of Education influenced your decision to engage or not to engage in blended learning?	• Not influenced, using blended learning out of personal interest • Not realised any implementation • Discouraged by inadequate technological resources
	4.	Do you think that the Faculty of Education has an enabling structure for the implementation of blended learning? Why or why not?	• No blended learning structure in place • No guiding policy for blended learning implementation
Perceived Usefulness (PU)	5.	What do you perceive to be the benefits of using blended learning in higher education?	• Time saving and benefiting large classes–reaching a large group in a short time • Easy access to electronic resources • Flexibility–accessibility of learning resources at all times • Promoting student independence • Creating opportunities for networking
Perceived Ease of Use (PEOU)	6.	What is your perceived level of difficulty of using blended learning?	• Uncertain • Difficult without support • Not doable
Attitude Towards Using Blended Learning (ATUBL)	7.	Are you currently using blended learning as a teaching mode? Why or why not?	• Not using blended learning due to a lack of knowledge • No, students have very limited access to computers • Yes, out of personal interest
	8a.	What are your views on the barriers that impede lecturers from engaging in blended learning?	• Lack of a policy on blended learning • Large class size • Computer illiteracy of students and lecturers • Inadequate technological resources • Lack of institutional support
	8b.	What are your recommendations for the introduction or improvement of the implementation of blended learning in the Faculty of Education? (HODs and Dean)	• Incorporate blended learning into the curriculum • Provide e-learning infrastructure in the Faculty • Develop e-learning skills of staff and students • Monitor and evaluate the implementation of blended learning

This table provides evidence that the academic staff had a variety of opinions regarding the adoption of blended learning in their faculty

6. Discussion

In addressing the research question, five themes and their respective sub-themes were identified with regard to various perceptions that academics had towards the adoption of blended learning. Some lecturers and HODs displayed little or no understanding of the concept of blended learning, to the extent that the interviewing researcher had to describe blended learning to the interviewees in order to ensure that everyone had a common understanding of the concept. The researcher deemed it essential that academic staff display a contextually correct understanding of the concept of blended learning in order to perform related duties accordingly.

Even though most of the participants reported that they used computers for some activities, such as research and in-class face-to-face presentations, they perceived that they could not adopt blended learning because of the lack of an enabling environment. External factors mentioned as contributing to the environment included the absence of policy on blended learning; inadequate training for staff; and limited access to the computer laboratory for students. These factors were perceived as constraining the implementation of blended learning. In this study it became apparent that the external factors indirectly influenced the participants' decisions not to use blended learning. Even the staff members who indicated that they were comfortable using computers did not have the confidence to engage in blended learning due to a lack of adequate knowledge of blended learning; hence they recommended staff training.

The challenges relating to blended learning implementation clearly centred around the absence of a policy on blended learning. The absence of a unit to promote the implementation of blended learning also posed a serious challenge, hence the uncoordinated implementation of blended learning by a few lecturers. Other factors mentioned as contributing to non-adoption of blended learning include inadequate computer equipment, large classes and lack of staff training to integrate online learning and face-to-face learning. In addition, poor means of disseminating information in the Faculty of Education further reduced the chances of lecturers implementing blended learning. Thus, some academic staff members were unaware that blended learning was being practised by their colleagues. All this information confirmed that the Faculty of Education lacked an enabling structure for the implementation of blended learning in terms of infrastructure, policy and support.

With regard to perceived usefulness, all the participants indicated that they realised the potential benefits of blended learning, ranging from flexibility to accessibility of learning. However, the perception that blended learning required effort raised fear of failure in some participants while others literally admitted that they suffered from technophobia. The fear that blended learning might introduce digitalisation in the Faculty aroused fears of becoming redundant. Lack of confidence seemed to dampen the spirits of the lecturers, who perceived themselves as having basic computer skills but not the necessary expertise to use blended learning. They conceded that they would need extensive staff development in order to implement blended learning.

A few positive perceptions about the perceived ease of use, such as the following, were noted:

> *I have been using a computer for more than 10 years and blended learning will not be a problem for me.*
>
> *I think my advantage is that I hold an ICDL and can easily manoeuvre the system. I do everything online, like keeping class register, tests, assignments and discussions.*

Negative attitudes towards using blended learning were revealed by statements such as:

> *My problem is being an IT dwarf ... My [computer knowledge] level is not sufficient. I need to be upgraded.*
>
> *Fear of learning what is new. I wonder if at this age I still want to try new things and fail.*
>
> *We are not all technologically intelligent. Some people think there is complexity and complications in these computer-related gadgets.*
>
> *Personally, due to ignorance, I am not a technology person; I am somehow a traditionalist.*

Some paricipants reported basic problems that hindered the adoption of blended learning in the Faculty of Education at University A:

> *The idea is there in the Faculty, but the challenge is a lack of resources.*
>
> *I have never seen or heard about policy on blended learning in the Faculty.*

Thus, it can be deduced that the members of academic staff faced obstacles in adopting blended learning. In summary, serious challenges that hindered the adoption of blended learning were perceived to include the following aspects:

- Lack of policy−Policy is critical for providing the guiding principles for implementation;
- Lack of faculty support–To ensure effective implementation of a newly introduced approach;
- Lack of technological and computer skills−These skills are essential for the use of blended learning by both students and academic staff;
- Large class size−Considering the limited computer-related resources available, it seems a daunting task to introduce blended learning; and
- Inadequate technological resources−The lack of adequate computers for use by students makes the proper practice of blended learning elusive.

Consequently, academic staff members were unanimous in advocating for the establishment of a policy on blended learning, upgrading of computer laboratories for students and the establishment of a unit to coordinate blended learning and all related activities. Most of the participants were keen to develop their own skills related to the implementation of blended learning through staff development workshops. One recommendation articulated by most participants was that all academic staff members should undergo training in the use of Moodle. They expressed a deep desire for the faculty to set processes in motion for the implementation of blended learning.

7. Conclusion

Despite the good intentions of University A to introduce blended learning by acquiring Moodle, the Faculty of Education staff were not utilising the facility that could have been instrumental in the use of blended learning. Findings indicate that this was a result of a failure to plan properly for the implementation, monitoring and evaluation of blended learning. Furthermore, it seems that the LMS (Moodle) is not assisting students, who are supposed to be the primary beneficiaries, probably due to uncoordinated efforts to implement blended learning in the Faculty of Education.

As a way forward, it seems clear that new injections of creative innovation and active management of teaching and learning programmes are necessary at University A. Since computer-related resources were found to be inadequate, a fresh look at other technologies, such as mobile phone technologies, might open avenues for promoting blended learning. The use of mobile phones in blended learning is recommended because South Africa, for instance, has mobile phone coverage of 100.48% (some users have multiple subscriptions) (Beger and Sinha, 2012). Adolescents and young people have been identified as the first adopters of mobile

technology, with 72 per cent of 15 to 24 year-olds reported as "having a cell phone" in a national survey in 2007 conducted by The Kaiser Family Foundation and the South African Broadcasting Corporation (Beger and Sinha, 2012: 11-12). This percentage is believed to have increased over the years. Students' use of mobile phones for learning would enhance face-to-face tuition, improve learning, stimulate learning and improve student engagement. In addition, strong leadership at middle managerial level is required to ensure that a blended learning policy is in place, implementation is monitored and adequate digital and pedagogical support is available to staff and students.

Moreover, the preceding findings and discussions indicate a need for further research on the formulation of guidelines for implementing blended learning at the Faculty of Education. For further research, a thorough analysis and evaluation of aspects hindering adoption is needed. This should also include an investigation among students. This case study could also be extended to other faculties, although lecturers in education are expected to be the frontrunners in teaching and learning practices.

Although this study might have covered known knowledge at some levels of research in higher education, it is unique in the sense that it applied known knowledge in a new context, that of a South African developing university in a rural community. Therefore, it is hoped that the research findings will make a contribution to the implementation of blended learning in newly established universities.

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