

## Article 4

### Looking out and looking in: Exploring a case of faculty perceptions during e-learning staff development

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### Abstract

This explorative study captured the perceptions of faculty members new to technology enhanced learning and the longitudinal observations of the e-Learning Manager during dedicated professional development in order to compile a socially transformative emergent learning technology integration framework for open and distance learning at the School of Continuing Teacher Education at North-West University, South Africa. A pragmatic approach guided the bounded case study. The study followed a fully mixed sequential equal status design of mixing sequential qualitative and quantitative findings. Data collection strategies concern a custom-made questionnaire, interviews with faculty members and longitudinal observations by the e-Learning Manager. The first phase uncovered 34 qualitative codes. After quantitating of the data, a t-test indicated significant differences for 17 variables between **Faculty Perceptions and Observations of e-Learning Manager**. Ward's method of Euclidean Distances grouped the variables into five clusters according to the researchers' paradigm of *looking in* en *looking out* from the development context. The clusters formed the basis of a model for faculty development towards socially transformative learning technology integration for open distance learning. The five aspects of the model comprise the (i) environment in which faculty members should gain support from the institution, (ii) the environment in which faculty have to address the realities of adopting TEL; (iii) human factors relating to the adoption of TEL; (iv) concerns and reservations about the use of TEL; and (v) continuing professional development needs, expectations and motivators. The sustainable integration of ICT into higher education institutions remains a major challenge for the adoption of TEL.

### Keywords

Technology Enhanced Learning (TEL); teacher training; professional development; mixed methods research; interactive white boards; developing context; technophobia.

### Introduction

Spotts (1999) identifies five significant e-learning variables: the learner, faculty, technology, environment, and perceived value, in an effort to obtain information beneficial for faculty development of technology enhanced learning (TEL). However, implementing "e-Learning could be a highly disruptive technology for education—if we allow it to be...if there is to be innovation and change in university teaching—as the new technology requires, as the knowledge economy requires, and as students demand—someone has to take responsibility for it. Who should that be, other than the university academic community?" (Laurillard, 2006, p. 5). These statements indicate that the final successes of implementing TEL at higher education institutions (HEIs) are to a great extent in the hands of faculty members. However, in many cases, faculty members require intensive pedagogical, knowledge and skills training to make a real difference in the deposition of their learners. "Utilizing the potential of IT in educational practice often implies that the role of the teacher has to change.

Faculty not only has to learn IT basic knowledge and skills, but more importantly, has to learn appropriate pedagogical skills to be able to integrate IT in a sound way into educational practice” (Voogt & Knezek, 2008, p. xxxiii). More than simple knowledge of technology is required to produce good teaching. Exemplary teaching combines skilful use of technology, embedding key elements into course design (Wilson, 2003). This paper explores the lived experiences of faculty in a developing context while they for the first time engage with TEL.

### **Context of the study**

This paper forms part of a larger investigation to establish a socially transformative emergent learning technology integration framework for open and distance learning (ODL) at the School of Continuing Teacher Education (SCTE) at North-West University (NWU) (Author & Author, 2011; Author, Author, Author, & Els, 2012). It explores with the aim to understand the lived experiences of faculty at a developing ODL unit and subsequently forms part of the cyclic process of data gathering in which emerging themes initiate further data gathering cycles.

The SCTE employs few learning technologies to teach and support students within an ODL model of course delivery. They include compact disc read only memory (CDROM), short message service (SMS) and interactive white boards (IWBs). To enable students’ participation in the information society, teacher training should include use of information communication technology (ICT). Faculty require competence in ICT use to enable their learners to develop their full potential. ICT can be a vehicle to personalise learning, provide access to information, provide flexibility regarding time, place and pace of learning, enable collaboration and continued study even while working full time (Ally, 2009; UNESCO, 2002).

The South African Government’s White Paper on e-Education (Department of Education, 2004) demands a definite outcome of ICT mastery as a matter of urgency in teacher training and teachers should have access to in-service training on how to integrate ICTs into teaching and learning. The e-Education White Paper acknowledges the backlog in its e-learning expectations and calls for development actions in this regard:

Many teachers have grown up in an environment that had less electronic technology available, and thus find the adaptation to working with ICT more difficult than their learners. A programme that urgently addresses the competencies of teachers to use ICT for their personal work, in their classrooms, should be developed. This will require extensive staff development and support. Thus, ICT will be central to the pre-service training of recruits and the on-going professional development of practising teachers (Department of Education, 2004, p. 22).

The perceptions of faculty members as the enablers of adoption are at the heart of this exploration. The SCTE acknowledges the requirement for the advancement of e-learning in the development of a learning technology integration framework. It is necessary for teachers in training at the SCTE to adopt e-learning using ICT. Teachers’ adoption of technology is influenced by both the *quantity* and *quality* of experiences with technology (Moolman & Author, 2008) included in their teacher education programs (Agyei & Voogt, 2011).

The SCTE are in the process of evolving from paper-based distance education delivery to adopting TEL as part of ODL. To advance from physically travelling to lecture at one tuition centre at a time to reaching remote facilitators and students simultaneously at 39 tuition centres across Southern Africa prompted the introduction of synchronous computer mediated conferencing using interactive whiteboards (IWBs) at tuition centres. Faculty training in the use of IWBs necessitates developing faculty competencies *both* in the area of technology use and in managing synchronous computer-mediated communication learning.

### **Literature Review**

Distance education endeavours to expand access to education through the mass production of teaching and course materials, often largely based upon one-way transmission of information with little chance for sustained interaction. The face-to-face lecture is still viewed as the efficient and dominant medium of instruction in higher education. However, “communications technology that supports sustained interaction is having a significant impact in higher education—both on-campus and at a distance” (Anderson & Garrison, 1998, p. 97). Wilson (2003) indicates that some of the reasons for using technology in teaching and learning are that it could improve student learning, benefit students in their research and communication, foster independent learning, provide access to worldwide resources, and improve career choices. Schneckenberg, Ehlers and Adelsberger (2011) indicate that, in many cases, faculty concerns for their students motivate them to walk the extra mile of implementing TEL for the benefit of their students—a concern often more powerful than personal financial considerations.

Faculty unaccustomed to using technology in their teaching and learning—because they did not grow up with the technology, or have not personally tried out the technology—cannot draw from their lived experiences, or from their recent introduction to the technology. Faculty has to first-hand experience the affordances of learning technologies to effectively use them during teaching and learning. Faculty professional development is essential to introduce them to new technologies, ensure smooth adoption, and provide experience with the technology. However, successful faculty development interventions (i.e. ones that encourage faculty to adopt new technologies), should not focus on only the mechanical and technical aspects of TEL, but place emphasis on appropriate pedagogy, address individual teaching beliefs, provide real life interaction as their online students would, and contextualize the professional development in terms of the local needs of the faculty. By focusing first on pedagogy, and then on technology, is pertinent when training faculty, as well as when faculty adopt technology for student learning (Simpson, 2002).

As front-line enablers of adoption, faculty should experience the affordances of e-learning personally. This will enable them to convincingly adopt technology for teaching and learning of teacher-students at SCTE, and to adopt the concept of personal learning environments (PLEs)—learning environments like learning management systems (LMSs) (Attwell, 2007). To promote development of PLEs for faculty and student benefit, prevailing faculty perceptions on gainful e-learning should be explored. Faculty pedagogical practices should align with the needs of students.

Faculties of in-service settings have to adapt their pedagogical approaches to learn how TEL could be used to facilitate pedagogical approaches across different contexts. Knezek and Christensen (2008) have shown that faculty's attitudes towards ICT, their ICT competencies, and their access to ICT tools affect their use of technology. TEL competency is not limited to basic TEL knowledge and skills, but especially faculty's ability to combine content knowledge with TEL pedagogy.

The emerging pedagogical consensus is that constructivism is the most preferred and effective way of using online learning technology in order to support students during collaboration, authentic tasks, reflection and dialogue (Mayes, 2001). Faculty that employ traditional teaching and learning styles may view learning technology less appropriate and feel less positive about using TEL than those who believe in student-centered approaches. In an effort to supplement or replace live contact teaching and learning, technology-mediated distance learning frequently replicates the activities of face-to-face classrooms. Interactive technologies, like IWBs, are consequently employed to present one-way presentations to students in remote locations, thus furthering instructivist pedagogy. The most valuable activity in a classroom of any kind is the opportunity for students to work and learn together (Jonassen, Davidson, Collins, Campbell, & Haag, 1995).

Anderson and Garrison (1998) are of the opinion that education depends on acts of communication, but communication should be reciprocal, consensual and collaborative to fully qualify as being educational. Collaboration implies shared control—not only one-way transmission of information without considering the process of constructing meaningful and worthwhile knowledge. Educational communication should explain why a concept makes sense or does not, and not simply state that it is right or wrong. It should be explanatory and not just confirmatory. Adopting a learner-centered pedagogy during the use of TEL often represents a radical paradigm shift when faculty members are accustomed to instructivist teaching styles. Poorly managed adoption of constructivist online learning may result in faculty and students feeling threatened. Transformation to TEL adoption should therefore be based on professional development with approaches to provide faculty with experience of using technology first hand (Ehlers & Schneckenberg, 2008). Anderson and Van Weert (2002) identify four broad and continuous approaches through which educational systems proceed in their adoption and use of ICT: emerging, applying, infusing, and transforming. In the process of transforming from traditional distance education, adopting constructivist pedagogy to cultivate e-learning methods involves interaction and collaboration, and cultivating the perceptions of faculty on the value of electronic learning technologies and their usefulness for collaboration are essential for developing appropriate strategies and training approaches: “Academic development is most likely to succeed when the teacher's own beliefs about teaching and learning provide the starting point” (Errington, 2001, p. xx).

Implementing TEL is complex, often ill-structured, and requires faculty to adopt alternate ways of grasping and acting on the complexity. At the heart of good TEL lie three core components: *content, pedagogy, and technology*, as well as the relationships amongst and between them. These three core components form the core of the technology, pedagogy, and content knowledge (TPACK) framework (Koehler & Mishra, 2009). Interacting with these components and the relationships

between them, across different diverse contexts, account for wide variations in the extent and quality of TEL integration (Hinojosa, Labbé, López, & ost, 2008). Although TPACK is not enough for the integration of TEL, it determines faculty outlook towards educational change (Law, 2008). A learning-by-design approach requires faculty to navigate the complex interface between tools, authentic learning tasks, students, and learning contexts. Faculty can thereby explore TEL and develop ways of thinking about technology, design learning, and develop TPACK (Koehler & Mishra, 2005). Traditional methods of TEL training—mainly workshops and face-to-face courses—are ill-suited to produce the deep understanding required for faculty to become knowledgeable users of TEL.

It is not only faculty who should change their attitude towards the integration of TEL in their courses. Institutional organizational structures and contexts should allow faculty to experiment and adopt new pedagogical approaches. Leadership at HEIs should make provision in their strategic planning to integrate TEL across their institutions, providing facilities for faculty to develop a vision on why and how to integrate TEL into teaching and learning, and in providing support across all administrative, technical and pedagogical areas (Elton, 1999; Riel & Becker, 2008). Leadership at HEIs should therefore:

...exert some influence over the way in which e-learning is used in universities, and direct its power overtly towards the needs of learners. Change in universities is an aspect of their organisation, and again, the opportunities of the new learning technologies, including all their capabilities for information processing, communications, mass participation, design, and creativity, support the kind of system structure that would enable change to be organic and progressive—adaptive rather than mechanistic (Laurillard, 2006, p. 12).

Lastly, the faculty professional development trainer should assist in identifying and defining training problems, obtaining commitment in practice from faculty, simulating positive experiences of ODL students in TEL, designing pedagogically sound course units, identifying learning problem scenarios with faculty members; designing pedagogical objectives that encourage students to make autonomous decisions while engaging with complex context, creating real-world learning tasks for students, and encouraging faculty to take responsibility of their own professional development. In short the role of the professional development trainer is to create scenarios in the learning environment that reflect the complexity and uncertainty of decision-making in real TEL contexts (Ehlers & Schneckenberg, 2008).

## **Research Design and Methodology**

### **Study Participants**

The study participants related to two categories: (i) the 21 academic faculty members from an ODL unit, the SCTE at NWU. During their course design activities, they create course content, support students, and assess learning tasks and examination papers of under qualified and unqualified teacher-students across South Africa and Namibia; and (ii) the e-Learning Manager who, over a period of more than two years, interacted with the faculty members daily, providing training in the use of interactive electronic whiteboards for synchronous computer mediated communication,

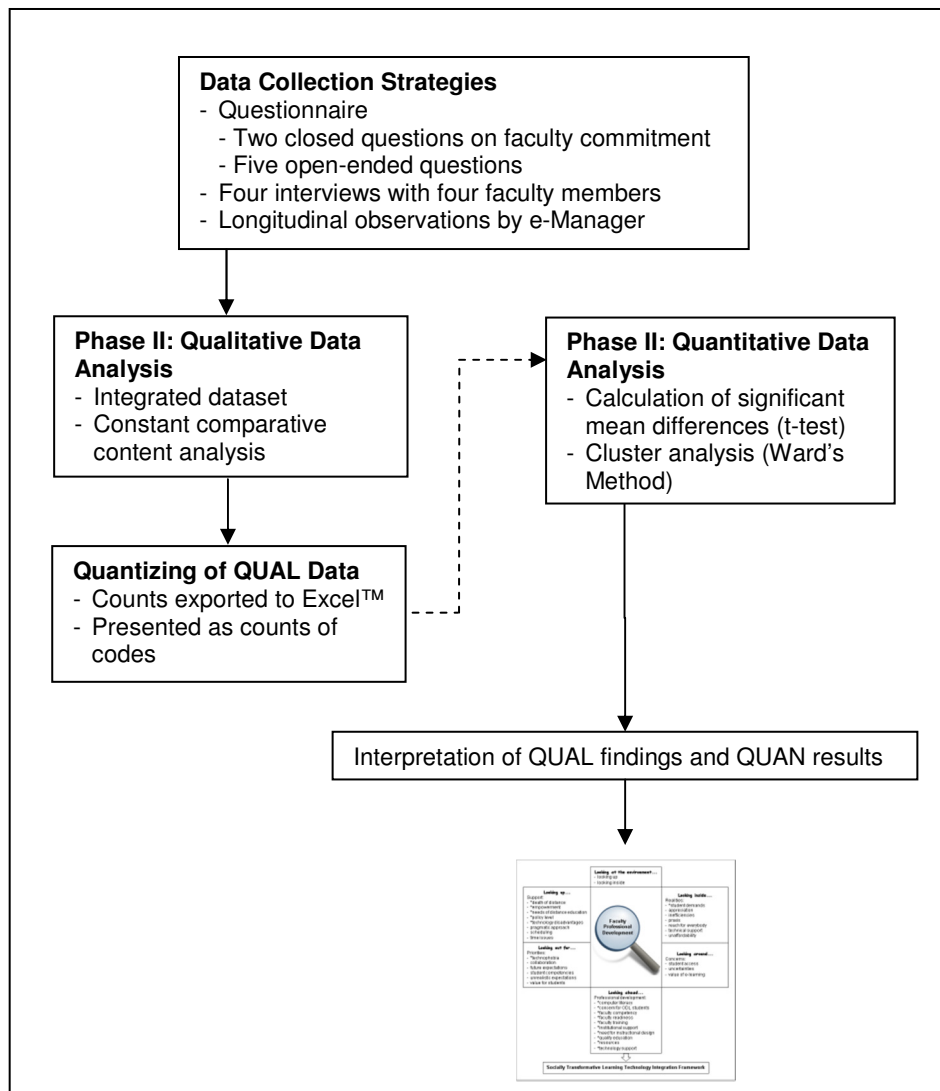
assisting in general computer use and literacy, sourcing of material for remote lecturing, and facilitating the recording of educational DVDs. He is also the main author of this article.

## **Methods**

A pragmatic approach (Burrell & Morgan, 1979) guided “an intensive [bounded case] study of a single unit with an aim to generalize across a larger set of units” (Berring, 2004, p. 341) in order to provide fitting resolutions on how to guide faculty towards TEL competency. The research plan encompassed a fully mixed sequential equal status design of mixing of sequential qualitative and quantitative findings during the analysis of the data (Leech & Onwuegbuzie, 2009) (Figure 2).

## **Instruments**

The main three strategies collected data from the two sets of research participants: (i) a custom-made questionnaire that collected (a) quantitative data from two questions (one binary, and one Likert scale data), measuring faculty commitment to the adoption of TEL; (b) qualitative data from two open-ended questions on elaboration of the commitment; (c) quantitative data from an open-ended question, requesting faculty members to list learning technologies they have considered before; and (d) qualitative data from five open-ended questions on the perceptions of faculty on the use of learning technology in ODL (Table I); and (ii) individual interviews with four purposefully selected faculty members selected according to the criterion that they, at that point of the research have just completed making an interactive DVD as part of their electronic study material for their respective courses; and (iii) a concatenation of the reflective journals of the e-Learning Manager at the SCTE. The e-Learning Manager recorded all academic staff meetings, discussions, academic training, as well as technology task team meetings on learning technology integration and the development of e-learning. Such meetings included central university management and management of various service departments. The observations document included viewpoints from all the role players in relation to faculty experience and context. This summative document became the comparative voice to those of the faculty members during the qualitative analysis (Figure 2).



**Figure 1: Pragmatic Research Design Exploring Faculty Needs for Technology Enhanced Learning**

**Qualitative analysis**

The textual documents relating to the four interviews captured as direct transcripts, the responses to five open-ended questions in the questionnaire, as well as the reflective document was assigned to Atlas.ti™, a computer assisted qualitative data analysis system, as an integrated dataset (Figure 2). The analysis followed Boeije's (2002) constant comparative process of qualitative content analysis where codes were allocated to sections of data and subsequently each piece of data was compared with every other piece of relevant data. The content analysis resulted in 34 codes (Table 1) with a total of 457 quotations linked to the codes. After the qualitative analysis the data were quantitised (Saldāna, 2009) and captured in Excel™ for further quantitative analysis with Statistica™ data analysis software system (StatSoft Inc., 2011) (Figure 2).

## Quantitative analysis

The questionnaire prompted the faculty members on (i) their intention to implementing e-learning at the SCTE, (ii) whether they considered it essential to increase the use of e-learning technologies in open distance learning initiatives; and (iii) a further question requested the respondents to list learning technologies they considered important. The first question elicited a five-point Likert scale response where 5 = *I Definitely Commit*; 4 = *I Commit*; 3 = *I am Neutral*; 2 = *I do not Commit*; 1 = *I Definitely do Not Commit*. The second required a binary response where *Yes*=1 and *No* = 0. The responses to the open-ended question, requesting the respondents to list learning technologies they considered important, were captured and counted (Table I).

The quantitised (Saldña, 2009) qualitative data were subjected to two statistical procedures: (i) testing for significant differences between the means of the two groups (faculty and e-Learning Manager); and (ii) cluster analysis of the codes in order to compile a model for faculty development relating to the use of technology enhanced learning in ODL. Cluster membership was assessed by calculating the total sum of squared deviations from the mean of a cluster. The criterion for fusion is that it should produce the smallest possible increase in the error sum of squares (Burns & Burns, 2008). The cluster analysis was performed according to Ward's minimum variance method. Ward's method provides a special case for measuring the objective function of Euclidean distances that ensures minimum distance between elements and maximum distance between clusters (Cohen, Manion, & Morrison, 2011). This method is most appropriate for quantitative, but not binary variables. It is distinct from other methods because it uses an analysis of variance approach to evaluate efficient distances between clusters (McMillan & Schumacher, 2001).

## Results and discussion

Table 1 lists faculty members' responses to their commitment of using e-learning during their teaching and learning on a five-point Likert scale, as well as their opinion on the value of e-Learning. The faculty member who selected the neutral response in terms of his commitment to e-learning explained that he was not involved in lecturing at that point of time. He also selected *No* for the same reason in for the second question.

**Table 1: Faculty committing to the use of TEL**

Question and Scale	Responses
<i>Question 1: I am committed to implementing e-learning</i>	
I Definitely Commit	19
I Commit	1
I am Neutral	1
I do not commit	0
I definitely do not commit	0
<i>Question 2: I consider it essential to increase the use of e-learning technologies in ODL initiatives</i>	
Yes	18
No	1
<i>Question 3: I consider the following as examples of e-learning technologies</i>	
Interactive Whiteboard	17
SMS: mobile phones	12
Internet: e-mail	10
LMS: Moodle / e-Fundi	9
iPad / iPod	5
DVD / MMD	2
Mobisites	2
Others: Computer gadgets; e-readers, social networks, iPhone, m-Learning, radio, reading literacy labs, screencasts, Skype, Web2.0	1 each

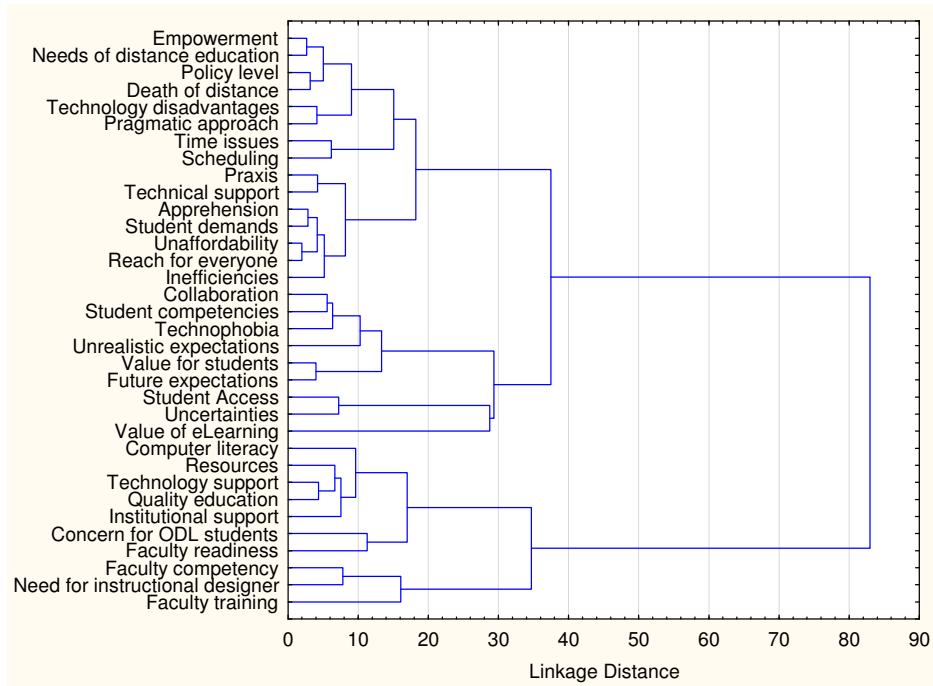
The discussion of the results takes place from a firm faculty commitment to participation in the adoption of e-learning, and a conviction that it is essential to increase the use of e-learning technologies in ODL initiatives. Yet, the faculty has limited perspective on the scope of learning technologies, as well as their affordances for ODL. During interviews conducted at the start of the active development process, faculty informally named only seven examples of learning technologies, maintaining that they have not been exposed to others. After the introduction of IWBs, while some could only refer to different technologies, others could discuss their use and affordances (Table 1).

A t-test calculated significant differences between the means of the perceptions from faculty (looking out) and e-Learning Manager's observations (looking in). Table 2 indicates that significant differences occurred in 17 of the 34 variables.

**Table 2: Calculation of Significant Differences between Faculty Perceptions (Looking Out) and Observations of e-Learning Manager (Looking In)**

Variable	Mean Out <sup>a</sup>	Mean In <sup>b</sup>	t-Value	p	Std Dev Out <sup>a</sup>
* Computer literacy	1.67	18	-8.28	0.000	1.87
* Concern for students	3.11	15	-3.84	0.005	2.93
* Death of distance	0.89	7	-7.42	0.000	0.78
* Empowerment	0.67	5	-2.91	0.020	1.41
* Faculty competency	4.67	17	-2.38	0.045	4.92
* Faculty readiness	2.22	10	-2.31	0.050	3.19
* Faculty training	6.11	20	-2.55	0.034	5.16
* Institutional support	2.00	15	-5.52	0.001	2.24
* Need for instructional design	3.11	18	-3.94	0.004	3.59
* Needs of distance education	0.67	6	-4.53	0.002	1.12
* Policy level	0.11	6	-16.76	0.000	0.33
* Quality education	0.44	16	-14.56	0.000	1.01
* Resources	0.44	14	-9.64	0.000	1.33
* Student demands	0.56	2	-2.60	0.032	0.53
* Technology disadvantages	1.22	5	-2.57	0.033	1.39
* Technology support	1.22	14	-8.69	0.000	1.39
* Technophobia	1.89	10	-2.36	0.046	3.26
Appreciation	0.67	1	-0.28	0.784	1.12
Collaboration	2.11	7	-2.05	0.074	2.26
Future expectations	1.44	2	-0.24	0.820	2.24
Inefficiencies	0.67	2	-0.96	0.367	1.32
Pragmatic approach	2.22	5	-1.61	0.147	1.64
Praxis	1.44	0	1.55	0.159	0.88
Reach for everyone	0.33	0	0.63	0.545	0.50
Scheduling	2.00	2	0.00	1.000	2.00
Student access	4.33	0	1.20	0.265	3.43
Student competencies	2.11	8	-2.10	0.069	2.67
Technical support	1.00	2	-0.67	0.521	1.41
Time issues	2.11	3	-0.28	0.784	2.98
Unaffordability	0.33	0	0.45	0.667	0.71
Uncertainties	3.78	5	-0.38	0.712	3.03
Unrealistic expectations	2.78	9	-1.87	0.098	3.15
Value for students	1.22	4	-1.33	0.221	1.99
Value of e-Learning	5.78	9	-0.58	0.576	5.24
<sup>a</sup>	Faculty observations				
<sup>b</sup>	e-Learning manager's longitudinal observations				
*	Significant difference p≤0.05				
Df:	8				
Valid N Out <sup>b</sup> :	9				
Valid N In <sup>a</sup> :	1				
Std Dev In <sup>a</sup> :	0				

Further a cluster analysis according to Ward's Method using Euclidean distances were used to cluster the 34 variables into five clusters (Figure 2). Figure 2 reflects the researchers' adoption of the metaphor of faculty members *looking out* from their perspective of acquiring TEL competencies for ODL, and the e-Learning Manager's perspective of *looking into* their development. The cluster analysis resulted in five clusters themes: (i) *Looking up*: The environment in which faculty members are expected to adopt learning technology use from the perspective of support from above; (ii) *Looking inside*: The environment in which faculty members are expected to adopt learning technology use from the perspective of inherent realities; (iii) *Looking out*: Human factors relating to the adoption of learning technologies; (iv) *Looking around*: Concerns and reservations about technology use; (v) *Looking ahead*: Continuing professional development needs expectations and motivators.



**Figure 2: Clustering Tree Diagram for 34 Variables According to Ward's Method for Euclidean Distances**

Table 3 depicts the five cluster themes (Figure 2) as a discussion framework for implementing TEL at the SCTE. It lists the five cluster themes (*looking up; looking inside; looking at; looking around and looking ahead*), as well as the variables that faculty and the e-Learning Manager during the statistical analysis agreed upon, and those that deferred.

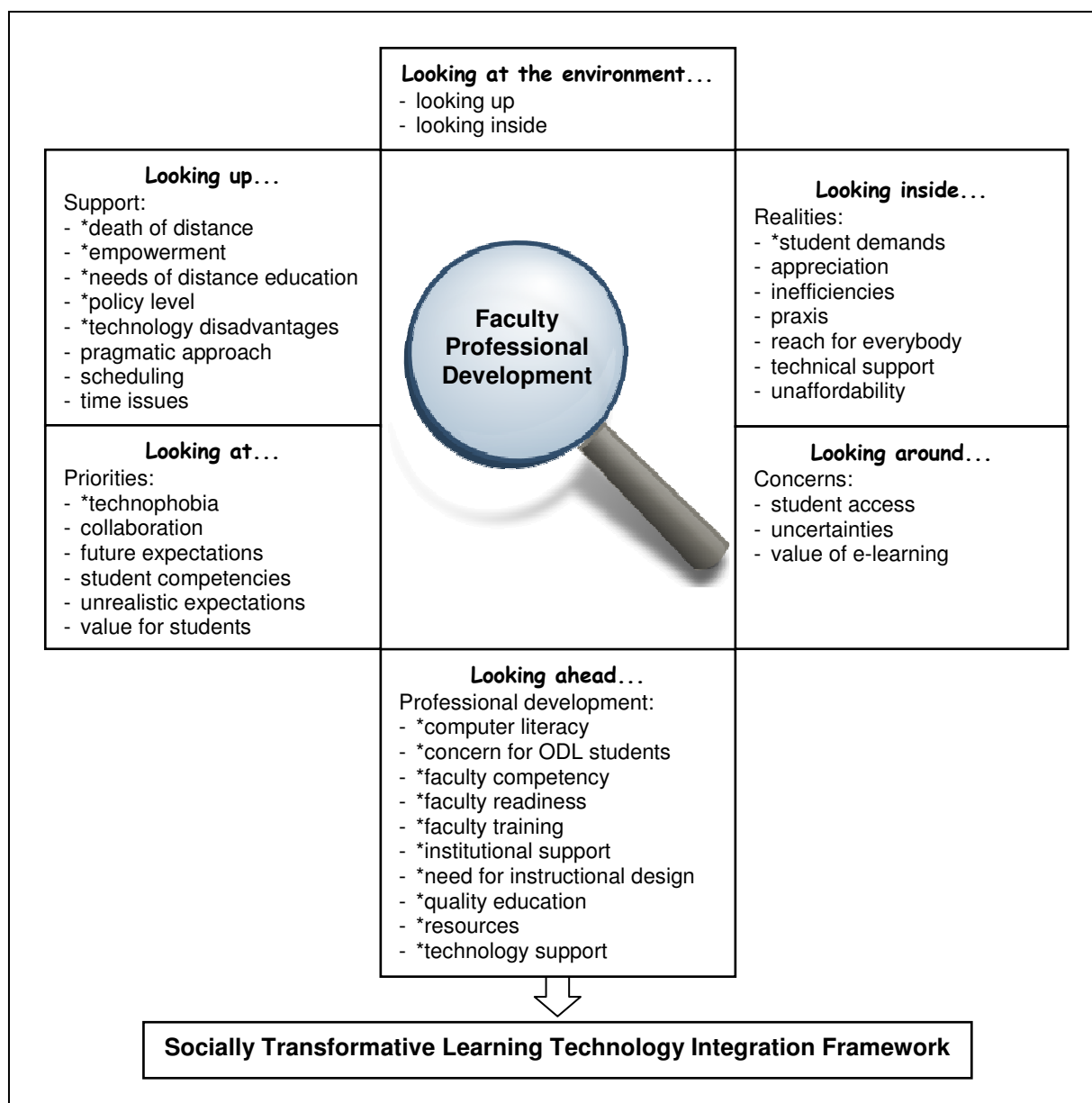
**Table 3: Cluster themes with agreement and contrast between intensities**

Themes	Agreement	Contrast
<b>1 Looking up</b> The environment in which faculty members are expected to adopt TEL use from the perspective of support from the institution	<ul style="list-style-type: none"> <li>• pragmatic approach</li> <li>• scheduling</li> <li>• time issues</li> </ul>	<ul style="list-style-type: none"> <li>• *death of distance</li> <li>• *empowerment</li> <li>• *needs of distance education</li> <li>• *policy level</li> <li>• *technology disadvantages</li> </ul>
<b>2 Looking inside</b> The environment in which faculty members are expected to adopt TEL from the perspective of local realities	<ul style="list-style-type: none"> <li>• appreciation</li> <li>• inefficiencies</li> <li>• praxis</li> <li>• reach for everybody</li> <li>• technical support</li> <li>• unaffordability</li> </ul>	<ul style="list-style-type: none"> <li>• *student demands</li> </ul>
<b>3 Looking at</b> Human factors relating to the adoption of TEL	<ul style="list-style-type: none"> <li>• collaboration</li> <li>• future expectations</li> <li>• student competencies</li> <li>• unrealistic expectations</li> <li>• value for students</li> </ul>	<ul style="list-style-type: none"> <li>• *technophobia</li> </ul>
<b>4 Looking around</b> Concerns and reservations about the use of TEL	<ul style="list-style-type: none"> <li>• student access</li> <li>• uncertainties</li> <li>• value of e-Learning</li> </ul>	
<b>5 Looking ahead</b> Continuing professional development needs expectations and motivators		<ul style="list-style-type: none"> <li>• *computer literacy</li> <li>• *concern for ODL students</li> <li>• *faculty competency</li> <li>• *faculty readiness</li> <li>• *faculty training</li> <li>• *institutional support</li> <li>• *need for instructional design</li> <li>• *quality education</li> <li>• *resources</li> <li>• *technology support</li> </ul>

\* Significant difference  $p \leq 0.05$

Table 2 indicates that no significant differences occurred in two clusters between the perceptions of faculty members and the observations of the e-Learning Manager between: (i) the variables in the cluster 1, *looking around*, the concerns and reservations about technology use: student access, uncertainties, and value of e-learning; and (ii) the variables in the cluster 5, *looking ahead*, the continuing professional development need and motivators: computer literacy training, concern for ODL students, faculty competency, faculty readiness, faculty training, institutional support, need for instructional design, quality education, resources, and technology support. Theme 1 shows the largest number of discrepancies between the perceptions of the faculty and the observations of the e-Learning Manager. While faculty focused on their daily work-related challenges: following a pragmatic approach, scheduling, and general time issues, the e-Learning Manager's attention related to more strategic issues: death of distance (the irradiation of the negative effects of distance education), empowerment of faculty and learners, needs of distance education, policy level issues, and disadvantages that the adoption of technology posed for the SCTE. Clusters 2 and 3 only relate differences with regard to one variable each, contrasting the observations of the e-Learning Manager and the perceptions of the faculty. Again, in both cases, the observations of the e-Learning Manager related to strategic issues, while the perceptions of faculty zoomed in on their daily practices.

From the looking-in perspective of the e-Learning Manager, variables such the *need for instructional design* to be freely available to faculty, the improvement of faculty *computer literacy* and *faculty competency* in pedagogical application through learning technologies in *quality education*, *concern for ODL students*, *institutional support*, *technology support*, *resources*, *faculty readiness*, and *technophobia* all relate to themes to be addressed during faculty professional development for the adoption of TEL. From the perceptions of the faculty *looking out*, perspectives on staff development are dominated by a strong plea for comprehensive practice-based *faculty training*. Next, the *value of e-learning* is in high regard, followed by concerns over *faculty competency*, *access* of students to the Internet and to ICT technology, *reservations* about the possibilities of e-learning adoption, *concern for ODL students' needs* and *need for instructional design* to effect e-learning development. Further instances revolve around *unrealistic expectations* (faculty's perception of performing functions which they are neither trained for nor have experience in), *faculty readiness* (committed to the mission of SCTE to use TEL), *pragmatic approach*, *insufficient student competencies*, *collaboration*, *time issues*, *institutional support*, *scheduling*, *technophobia* and *computer literacy*. These relate to 17 of the 34 codes in order of intensity. These issues are graphically depicted as Figure 3 as a model for faculty development towards socially transformative learning technology integration for ODL.



**Figure 3: Model for Faculty Development towards Socially Transformative Learning Technology Integration for Open Distance Learning** (\* significant difference  $p \leq 0.05$ )

### Conclusions and Recommendations

This explorative analysis according to a multimode research methodology resulted in a model indicating (i) the environment in which faculty members adopt TEL from the perspective of support from the institution; (ii) the environment in which faculty members adopt TEL from the perspective of local realities; (iii) the human factors relating to the adoption of TEL; (iv) the concerns and reservations relating to the use of TEL; and (v) the continuous professional development needs, expectations and motivators of faculty. This analysis indicated the agreement and disagreement of the development variables between the perceptions of the faculty and the observations of the e-Learning Manager. While the faculty mainly zoomed in on TPACK issues (Mishra & Koehler, 2006), the e-Learning manager zoomed out to strategic issues in order to gradually shift the teaching and

learning approach from an instructivist towards a more constructivist approach (Jonassen, *et al.*, 1995).

The analyses indicated that faculty perceptions at the onset of a transition process from paper-based distance education to e-learning adoption reflected a need for comprehensive practice-based faculty training. This is motivated by the plight of the SCTE ODL teacher-students—practicing teachers on whom thousands of learners depend for an education. The five aspects of the model (Figure 3) drive the adoption of TEL at the SCTE. Faculty look up for support from management to look inside the institution to provide procedural support in terms of pragmatic approaches to focus on TEL adoption (Schneckenberg, *et al.*, 2011). Faculty request measures to manage their workload and scheduling of pedagogical priorities, interventions to overcome technological unfamiliarity, and TPACK training to use TEL effectively. Interventions that transform faculty require bold decisions to foster creativity and enable learning content and curriculum transformation as “educators’ roles are changing from managing content to connecting learners in new ways to other learners, resources, and expertise” (Schwier, 2010, p. 91).

Changes in technology may introduce uncertainty and lead to technophobia (Christensen & Knezek, 2008, p. 352). For example, during this study, the versions of computer operating system, interactive whiteboard software, Microsoft Office™ programs and logon authentication used by the university changed. Professional development has to focus on holistic coping strategies to build technological confidence, rather than on an overload of detailed information and mechanistic operating procedures (Minovic, Stavljanin, Milovanovic, & Starcevic, 2008). However, faculty hold the key to the successful integration of learning technologies. The SCTE faculty is committed to the integration of learning technologies. Faculty’s perceptions show a strong concern for SCTE students, many of whom are from disadvantaged backgrounds with low confidence in using technology, limited computer literacy, and access to the Internet and to technology. TEL has the potential to enhance flexible learning by providing students with permanent access to learning resources and by widening their learning options independent from place and time; and ICT can help to raise quality standards and to create a culture of excellence in teaching and learning by adding digital communication channels for increased collaboration to the course setting.

At many HEIs the innovative potential of TEL is not being systematically utilized for the macro-level of their strategic options or and the micro-level of faculty implementation of TEL. The rapid pace of technology development tends to outpace strategic thinking and pedagogical design in higher education. Recent studies show that the diffusion of new technologies threatens TEL integration into universities (Schneckenberg, 2008). Zemksy and Massy (2004) are of the opinion that sustainable integration of ICT into HEIs remains a major challenge and that they should substantially increase efforts to involve and engage faculty, who play a key role in education innovation. Faculty face a growing demand from students to offer a more flexible, technology-enriched course delivery while they themselves increasingly race technology to compete for their students’ attention. They also face the pedagogical challenges to design innovative learning environments which respond to

the changing needs of technology-able students, and integrate TEL to further the vision of the HEI (Schneckenberg, *et al.*, 2011).

Faculty require professional development in order to acquire new competences that enable them to know and to judge why, when and how to use ICT in education. If HEIs want to move forward in an organized way to improve the range and quality of their teaching and learning, they have to define coherent strategic frameworks for e-Learning which include the creation of adequate support units and measures which foster the development of ICT-related competences.

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