

## **CHAPTER 7**

### **Discussion, Conclusion and Recommendations**

#### **7.1 Introduction**

The aim of this study was to develop a web-based blended learning model that could be used for creating and facilitating blended learning environments at UB. A framework called the LAPTEL model was theoretically conceived and developed (Chapter 5) to address the research question, “How can a web-based blended learning environment be designed, developed and implemented at the University of Botswana?” It was prototyped, piloted and subsequently revised before it was again implemented for the final evaluation (Chapter 6). The summary of findings was discussed in Sections 6.6, 6.6.1 and 6.6.2. The following sections discuss the study’s contribution to knowledge (Section 7.3), its contribution to UB and towards the national development (Section 7.4), conclusion from the study (Section 7.5), recommendations from the study findings (Section 7.6) and recommendations for further research. The final summary of the study is provided in Section 7.7.

#### **7.2 *The Research Question***

This study was conducted within the realm of the research question, “How can a web-based blended learning environment be designed, developed and implemented at the University of Botswana?” The high level of student satisfaction at both the pilot and the final evaluation of the LAPTEL model indicate that the course designed and developed based on this model could provide the subjects with the kind of learning experience that was determined by their learning needs and expectations. This inference drawn by the Researcher was based on findings from the two studies discussed in Sections 6.6, 6.6.1 and 6.6.2. The subjects in the study represented a sample of UB students; therefore, the model should be widely usable by the entire UB as its official learning model. Thus, aim of the study was achieved.

### 7.3 Contribution to Knowledge

The model makes an original contribution to the field of educational technology within the landscape of HE as it helps to improve practice by making a shift from teacher-centredness to student-centredness a real possibility. Further, it helps to address a demand for more flexible scheduling options that makes hybrid instruction one of the fastest growing delivery modes in both education and training around the world. The study describes in clear terms how to facilitate blended approaches and thus utilise the best features of both modes of delivery (Section 7.6.1).

### 7.4 Contribution to UB and towards National Development

UB is currently aspiring to transform itself into a technologically-driven University in order to expand access, participation, engagement and student experience based on its strategic priority areas as discussed in Section 1.3.2. The Researcher strongly believes that the LAPTEL model is robust, coherent and comprehensive enough to help UB to address all its priority areas, and to take education to the people across the nation and even beyond its borders. Thus UB will be in a better position to provide increased access and participation in quality higher education in a cost-effective<sup>1</sup> manner to more people who may not have otherwise had the opportunity, and to be in the forefront as a leading HE institution. Further, the model can support UB to improve productivity, and maintain quality of delivery in order to survive stiff competitions and uphold its status in today's global economy.

As the LAPTEL model can help to combine the best elements of both face-to-face and online instruction in a flexible manner, the Researcher believes that UB will be in a better position to respond to the national aspirations as espoused in its national document *Vision 2016: Towards Prosperity for All* (1997), especially in “building an educated, informed,

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<sup>1</sup> *Cost-effectiveness will be quite significant especially when there is a shift in the use of LMS from the commercial WebCT to an open source (e.g., Moodle) platform as UB is currently planning. The aspect of cost effectiveness is particularly significant as most organisations and nations are still struggling from oodles of challenges that emanated from the recent economic downtrend.*

prosperous, productive, and innovative nation”, thus actively contributing towards the national development process of Botswana.

A unique challenge that UB is currently facing is that it cannot get enough students to fill the existing quota because there are some recently incepted private institutions in Botswana competing for students from the same pool. A prudent step is to go online and attract an internationally mobile and culturally diverse student population.

### **7.5 Conclusions from the study**

The final evaluation of the LAPTEL model indicated that it could combine the effectiveness and socialization opportunities of the classroom with the technologically-enhanced interactive learning possibilities of the online environment; it can provide students with increased interactivity (more than that is normally possible in ‘face-to-face-only’ or ‘online-only’ learning environments), engagement (through discussion, collaboration, etc), flexibility (anytime, anywhere at learner’s own pace) and cognitive scaffolding that can enhance their learning experience. In essence, the LAPTEL model attempts to place the learner at the centre of the design and development process, and provide them many opportunities to actively engage in the learning process. The Researcher concludes that the LAPTEL model can be used by teachers at UB for creating blended learning environments that can help students work collaboratively and gain meaningful learning experience more easily than it is possible through traditional face-to-face methods.

It has to be noted that the LAPTEL model is not tied to or dependent on any particular LMS. The reason is that although there are numerous LMSs, they vary in functionality and acceptability, and none of them actually meets all the facilities needed for teaching and learning. Therefore, in order to make learning environments more appealing to today’s networked generation course designers and tutors must try to integrate third party communication tools (e.g., mobile technologies, YouTube, Facebook, Twitter, Flickr, etc) to LMS. Keeping emerging technology advances in mind, the LAPTEL model is designed as an evolutionary process model that can deal with change and evolution of

many dimensions of Web-based learning and educational potentialities of new technologies. The model may also be extended for mobile learning to allow learners the most flexibility possible. Further, the model may be adapted to other institutions with contexts similar to that of UB.

### *7.5.1 Concluding remarks on the role of leadership aspect in the LAPTEL Model*

The relative strategic importance of, and the actual adoption of elearning in HE institutions depend largely on the context, history, specific campus culture and unique personalities that contribute to the ethos of the institution. Some of these could become potential barriers to technology adoption unless there is an institutional vision and an elearning policy in place for technology adoption.

Based on the literature and conventional wisdom, a visionary leadership is a critical success factor (discussed in Sections 3.14.1 and 5.8.1.1) in such situations to drive change, make resources available and create a conducive environment for innovative practices.

Without strong leadership particularly with a background of technology and an awareness of its potential in enhancing teaching and learning, a move to technology adoption in any institution will lead to mixed results—intended and unintended—with no clear guidelines and support to move towards the envisaged goals. Therefore, the Researcher considers a strong digital leadership as a pre-requisite (as depicted in Figure 5.2) for successful implementation of the blended learning model developed in this study. The course tutor and the expert evaluators commented that , “there was good support from the Head of the Department, and it helped in getting all necessary supports and making both the pilot and the final study a success”, and thus partly justifying the need of ‘Leadership’ as a critical factor in engaging in technology-supported teaching and learning.

## 7.6 Recommendations from the Study

### (i) *Individualised curriculum*

A major finding of the study (Section 6.6.2) is that all students do not respond to instructional strategies in the same manner. This may be due to different learning styles, ability levels, difference in students' multiple intelligences or their combinations and the like. Further, in constructivist environments, the learning is student directed, and the learning outcomes will vary widely from student to student. Consequently, it is critical that assessment should reflect these differences. The recommendation to address this is that all students in a class should not be given the same work load and same duration to complete it; some of them require alternative learning tasks and increased time on task (Mastery learning), and as a result, they will require altogether different assessment strategies.

For pragmatic reasons, the Researcher wants to suggest that the objectives and tasks chosen in a course should be of two levels- the *core* and the *extended* by taking students generally into two categories, average and above average. Core section of the course must be for all and must enable students to score a maximum of 2/3<sup>rd</sup> of the total marks; the extended curriculum for the remaining 1/3<sup>rd</sup> of the total score should be meant for above average students. The extended section may be made optional for students to choose or not to, based on self-assessment and advice from the teacher. The levels of learning outcomes based on Bloom's taxonomy and the corresponding suggested grades for cognitive competences on an Outstanding-Fail scale are given below in Table 7.1. Though not exactly, a similar approach in Science and Mathematics curricula is in use at secondary schools in Botswana and seems to be working well.

Table 7.1: Bloom's taxonomy and criteria for grading learning outcomes

Levels	Cognitive competences/ process dimensions			Grades	
<b>EXTENDED</b>	Level 3	Create Evaluate		Outstanding	A
				Excellent	B <sup>+</sup>
<b>CORE</b>	Level 2	Analyze Apply		Very Good	B
				Good	B.
	Level 1	Understand Remember		Pass	C <sup>+</sup>
				Pass	C
				Marginal Pass	C.
				Fail	D

My logic behind this seemingly revolutionary categorisation is that in most societies as it is in Botswana the majority of students are of average ability; the purpose of education is to equip *all* learners with those essential skills to live and prosper in this century, not to develop them all into Nobelists. However, this approach was not implemented in this study, but is a suggestion for more appropriate curriculum design for institution-wide student-centred strategies; such moves require the intervention of the Management with relevant policies in place. This could be an area for future research for taking policy decisions.

*(ii) Integration of assessment strategies with learning activities*

Greater emphasis must be put on assessing students while learning *is* taking place, *not after* it has occurred as it used to be traditionally. Therefore, assessment strategies should be integrated with learning activities. This requires the assessment methods to take into account *how* learning occurs (*learning how to learn*) rather than much on *what* is learned. The advantage is that students can be supported with rich feedback at the right time of need when they are struggling or failing to progress. This view is supported by Willis (1995), “documenting the learning process as it occurs, and how it progresses is critical. The resulting personal understanding of the learner is then most effectively assessed through formative evaluation”.

*(iii) Curriculum redesign for the information age*

Lack of requisite skills to meet job requirements is one of the major reasons of graduate unemployment. In today's information age, employers are looking for graduates who can communicate effectively, think critically, and solve problems in collaboration with other team members, not necessarily the most learned person in any discipline. As a result, traditional curriculum requires a total overhaul and a complete re-design in order to make it relevant and bridge the gap between skills produced by educational and training institutions and those required by employers. To achieve this successfully, the study recommends a partnership between HE institutions and employers in programme design. Therefore, the secret for successful survival of HE institutions in the future is their investment into continuous innovation and continued excellence in the education delivery. This requires a total overhaul and a complete re-design of the traditional curriculum to suit technology-supported learning environments which focus on learning and acquiring essential skills rather than on teaching. This has arisen from concerns of the course tutor in the two case studies, expert evaluators and other teachers (discussions during elearning training sessions for teachers at UB resourced by the Researcher in his capacity as Instructional Designer) that the current curriculum is not that suitable for constructivist and technology-supported approaches to student learning. The pressure to cover an overloaded curriculum in a specified period of time and high expectations of students, parents and the institutional management for student performance in exams with high scores are major challenges to be addressed.

*(iv) Training and support to teachers as well as students*

The high Mean and Mode values for peer-to-peer interaction and student-teacher interaction (Section 6.2.1) indicate that the learning environment based on the LAPTEL model has the potential to support both social and personalized learning which most of the teachers are not familiar with. The usual assumption that teachers who know how to teach face-to-face will naturally know how to teach online is baseless. Therefore, they need extensive training and post-training pedagogical and technical support to facilitate blended learning environments effectively. They need to be trained on course redesign,

assessment strategies, and course management techniques that include workload management.

According to Culp, Honey, and Mandinach (2005) professional development of teachers should be an ongoing process supporting both technology usage and pedagogical knowledge. In the process, they need to understand their new evolving roles (discussed in Section 5.9), explore new pedagogical options and develop learning activities that are appropriate to the medium. They should develop skills around how to establish effective communication and interaction in the absence of face-to-face instruction, to motivate students to learn and to assess higher order student learning outcomes. However, successful blending depends largely on the teacher's own creativity and ingeniousness as the most deciding factors. Therefore, teachers must be given the time and opportunity to have adequate practice and explore the existing research on the use of online/blended learning and related innovations.

We assume that all our students have grown up surrounded with digital media and are technology savvy. However, they need orientation in order psychologically accept the shift from teacher-centredness to technology-supported learner-centredness, and to become active self-directed learners who can interact with the tutor, collaborate with peers in order to develop personal understanding of course content, and can take increasing responsibility for their own learning. They also require other essential online learning and social skills as discussed in Section 6.3.1 (iii)

(v) *Institutional policies and strategies*

Technology adoption is disruptive and it can cause dramatic change in the organisational culture and the teachers' long-embraced instructional practices. They need to understand the nature and impact of the innovation on them for which appropriate policies and strategies must be in place. Afuah and Bahram (1995) argue that understanding the nature of an innovation is a crucial first step in managing the changes associated with any innovation (pp. 51–76). Successful transition to online teaching requires a comprehension of the new online and blended teaching environment, and the administrative and technology support to be expected.

Their concerns especially about intellectual property rights, and any demand for incentives for extra efforts must be adequately addressed. An institutional elearning policy which focuses on encouraging academics to participate in a pedagogical transformation and bringing about a radical shift in the learning and teaching culture of an institution should be in place for successful technology adoption. Currently, UB does not have an elearning policy; however, a Task Force is working on this; the Researcher is a member of this Group.

### ***7.6.1 The LAPTEL Model: Facilitation strategies***

In line with UB's current aspiration to become a technologically-driven University, the focus is initially on enriching the face-to-face delivery with some online activities, incrementally increasing the online component until the both teachers and students are comfortable with the use of technology, and then moving to mainly online mode with occasional face-to-face strategies. The study recommends a *buffet* menu approach (discussed in Section 3.5.7) to implement the LAPTEL model. The buffet model offers a range of possible pedagogical choices such as lectures, laboratories, small group sessions, multimedia tutorials, and online resources to be used appropriately. The choice depends on a number of factors such as the content, the context of learning, the learning goals and objectives; the tutor's and student's preferred approaches to teaching and learning, and the like. The aim is to provide opportunity for increased interactivity, engagement and flexibility such that students get meaningful learning experience.

By this, UB academics can use the LAPTEL model to facilitate both face-to-face and online sessions in such a way that the two approaches successfully connect as well as complement with each other appropriately. A general guideline for blending is to make use of a powerful mix of synchronous and asynchronous learning strategies to enable students master core content online while deepening critical thinking, problem solving and application of content mastery in a face-to-face setting. Face-to-face sessions may also be used for more in-depth discussions focussing on developing higher-order skills or

one-on-one tutorials for clarifying difficult concepts. Thus one approach is not to be construed as a substitute for the other except for some clarification and reinforcement of difficult concepts.

Based on the literature and findings from the two studies undertaken, the Researcher suggests the following delivery strategies that course tutors could make use of when they use the LAPTEL model.

*i) Groundwork (before the course is due to begin):*

- Have a skeleton of the course ready before it is due to begin;
- Develop the online component of the course first, and then develop the hybrid; this is easier than the other way round;
- Post an appealing welcome message and introduction to the course that includes course and assessment expectations and course outline online; link this with the teacher's own homepage that allows students, according to Brown (2003), to understand more about the teacher's professional life. The course expectation refers to what is to be learned in the course;
- Post a questionnaire online to determine the demographics of students, and to survey their skills in computing skills in general and in the use of the LMS in particular;
- Post appropriate strategies online to probe and to activate students' existing knowledge as a foundation for new knowledge;
- If students' personal or other institutional email IDs (e.g., ITS) is available, send a mail to them with information about the course in order to arouse their interest in the course and the date for the first face-to-face session;
- Make arrangements to give students orientation on the use of LMS.

ii) *During the first face-to-face session:*

Face-to-face communication is the richest (most personal) means of communication, and there is no substitute for it. The first face-to-face meeting is a crucial one as it is said, “The first impression is the best impression”, and therefore, it should be quite impressive to give students a positive experience. In this meeting the course tutor should:

- prepare students socially and emotionally promoting trust for taking up a new mode of instructional delivery. They are also supported and encouraged to engage actively in the new approach in a non-threatening environment (*social climate*);
- encourage students to provide information about themselves to the entire class online; this is critical for establishing a social climate and the trust to help students interact among themselves; the ‘social presence’ from which a social climate develops is critical to promote trust and teamwork and thus create a ‘community of learners’ which is at the core of this study;
- introduce learners to the rationale of blended approach, its strategies and expectations of the course;
- provide a clear explanation about how the materials and activities are organized in each course module, and how the blending will function, that is, how face-to-face and online approaches fit in as a whole and an orientation of the entire course site;
- attempt to identify the type of online interaction that are favoured by most students; two most common interaction tools are the mail and announcement tool on the LMS;
- make attempts to assess students’ existing knowledge in general and any other needs; this is the time for a pre-test if there is a real need for it; this helps the teacher to determine what advance organisers will be required to bridge the gap;

- establish the ground rules such as instructional strategies, assignment submission procedures, and netiquettes for online interaction;
- discuss and establish in clear terms how the assessments— the modalities, frequency and marking methods – will be carried out;
- ensure that the students are up to the mark on the use of the LMS, and other essential ICT skills; if not, make sure it is achieved before the online tutoring starts.

*iii) Before the next face-to-face session:*

Let the online component of the course available for students to access and get prepared in advance such that the next face-to-face session could be used for clarifying difficult concepts and applied learning, such as case studies, problem-based learning, or group projects. The teacher:

- posts appropriate advance organizers to bridge any gap (based on the learner needs identified during the first face-to-face session) with the course curriculum;
- triggers events such as posing a challenging question or a problem that will be arouse students' interest in the course and encourage interaction among students; this may be further elaborated in the next face-to-face session;
- sends an email as well as posts an announcement online to remind those who could not complete the online questionnaire to do so;
- posts online a summary of all face-to-face discussions preferably in bulleted format can made available online; for this, email, discussion, or announcement tools may be used;
- can post example of past students' comments on critical issues and some of their exemplary work;
- organizes a face-to-face orientation session to help students become familiar with the online environment for the course, and to realize how interesting can be those communication tools (mail, discussion, blog, journal, and chat) of the LMS.

*iv) In the subsequent face-to-face sessions:*

In general, face-to-face sessions are to be used for clarifying and enhancing their understanding of the content, discussing case studies, providing reinforcement of the material recently learned, and guiding students on how to make use of the blended approach to learning effectively and efficiently. The course tutor can:

- start with class discussions around online activities and assignments;
- diagnose student misconceptions, and inspire students to clarify individual or group work, to engage in critical dialogue and to seek answers together;
- provide in-class activities that enable students to practice skills, and think critically about material covered online;
- feel the complexity of students thinking and the depth of their understanding of given concepts, attempt to make the class interactive, and even grade students on the quality and depth of their understanding;
- address student concerns raised in surveys; listen to what students have to say, share their most honest thoughts and feelings, and attend to their problems and intellectual growth;
- display student work, identified as excellent as well as poor, to be critiqued by others (without identifying the owner of the poor work);
- continue motivating students to engage in online activities and self-assessments at a pace that they are comfortable;
- plan with the students for the appropriate online learning activities / tasks that will help them achieve their educational goals;
- close the gap between online and face-to-face sessions, inspire students to collaborate with others online emphasising the fact that learning in isolation is not effective and has limited value;
- engage students in individual and small-group activities, as well as in highly structured, in-depth, focused, and meaningful small-group discussions;

- introduce difficult or abstract concepts which can further be explored by students in the online community;
- engage in active and Socratic dialogue for the reinforcement of concepts, rather than for information transmission or a typical lecture;
- focus on higher-level skills since the basics are supposedly known by all students and were even tested using the online assessment tool;
- support students in their development of autonomy and ability to become lifelong, independent learners;
- provide the intangible benefit of "contact with human beings" to students as the skills required by them to learn and succeed in their life outside are beyond the limited 'learning outcomes' that are defined for a specific subject course;
- provide the opportunity to create better student-instructor interaction than online only.

In general, the format of the face-to-face mode must shift from a process of information transfer to a more student-centred and interactive style.

v) *Between subsequent face-to-face sessions:*

- Post a summary of the face-to-face discussions in order to reinforce their understanding and what further activities students should carry out to catch up the prerequisites of the course/topic; email, discussion, or announcement tools may be used;
- Post all the boring aspects of instruction by changing them to engaging and interactive tutorials, exercises and self tests with opportunities for rich feedback and on-demand help from others;
- Initiate online discussion of critical issues related learning activities in small groups of three to five students;
- Monitor discussions, evaluate students' participation and contributions, and scaffold their thinking, however without actually interfering (to restrict their level of thinking) unless they go off track;

- Most often, activities are posted online for students to complete and subsequent face-to-face meetings are used to discuss the work that was completed online;
- Use discussion forum, blogs and journal to stimulate curiosity and promote individual reflection and dialogue;
- Use of announcement tool to post useful tips or information to keep all learners up to date and involved, and to foster a sense of community;
- Students can use email to contact the teacher or peers to address individual problems such as clarification of assignments or some concepts;
- Provide rich just-in-time feedback; she/he can also post common queries from students on a FAQ forum where they can be answered by other students;
- Provide opportunity to create reflective discussion summaries (synthesis and analysis) group-wise;
- Students engage in learning and self-assessment activities;
- Address and support individual student needs through private communication and scheduled 'virtual office' hours when appropriate;
- Administer an anonymous online survey on what they learned and what they could not: it can help the teacher to plan for the next face-to-face session and activities;
- The teacher tracks student participation, interaction, and performance, and takes appropriate intervention plans for student failure.

vi) *Face-to-face session at the end of each module:*

This is meant to conclude a given module by clarifying or addressing any pending issues. The tutor can consolidate what students have learned in the module and then ask them to complete anything that has not been done either individually or in groups, in an online learning environment. The teacher can:

- Present a summary or some reflections about main concepts in the module with specific examples;
- An end-of-module test is provided to allow learners to recall, summarise and practise the main concepts and skills included in the module;
- Brief wrap up discussion- final thoughts or comments;
- Move onto the next module which triggers the next inquiry cycle.

In both face-to-face and online, the course tutor should carefully watch for signs of struggling by the students in all aspects of the course. An important strategy is to progressively reduce the number of face-to-face meetings in favour of online interactions through appropriate motivation and online scaffolding.

### **7.7 Recommendation for further study**

The need for a transformation of higher education practices is felt all over the world for various reasons discussed in Chapters 1 and 2. Technology will surely be a key component of all future higher education, but we need to rethink how we use technology inside as well as outside of the classroom (Bowen, 2006) particularly at this time when higher education institutions are struggling to deal with their financial constraints and when many students are looking for more flexible options to obtain higher education qualifications.

However, the literature throws light on several challenges in the integration of technology across an institution, as it is now experienced at UB. For example, the integration of technology for teaching and learning is appealing to some teachers, and not to others.

Therefore, there should be studies:

- on how to motivate all teachers at UB to adopt innovative instructional approaches that will help learners acquire skills that are essential to live, work, and prosper in the 21<sup>st</sup> century;

- to identify the concerns and perceptions of UB teachers on technology adoption and to map out appropriate change management strategies to address them;
- on how to reward teachers who adopt new technology to address the educational needs of their technology savvy, socially networked students and to enhance their learning experience;
- to examine how effective the LAPTEL model is when it is used with OSSs and mobile learning devices.

Addressing these could lead to changes in teaching and learning on campus and online, which is the general focus of this study.

## **7.8 Summary**

The main purpose of this study was to develop a Web-based blended learning model for use at the University of Botswana for creating learning environments that are more personalized, user-friendly, and effective in supporting students in their learning. Accordingly the LAPTEL model was developed, and various strategies for facilitating Web-based blended learning environment were suggested (Section 7.7.1). The model and the strategies together illustrate sound guidelines for the effective design of blended learning environment that focuses on creating an effective learning community to support social and personalised learning.

A case study methodology was used to determine the usefulness of the model. Mainly four data collection methods: semi-structured interviews, online student satisfaction survey, focus-group interview and expert evaluation were used in the case study. The successful implementation of the LAPTEL model shows its potential as a framework for designing and developing conducive online and blended environments for effective teaching and learning.

The Researcher recommends web-based blended learning as the best choice for HE institutions operating under conditions similar to UB in order to better prepare their students for today's knowledge economy, to remain competitive especially at a time of

diminishing resources, and to survive in today's competition among similar institutions for quality-conscious students. It could also be a solution to address the long overdue need for a paradigm shift from the traditional teacher-centred methods of teaching to student-centred learning strategies.

The study also found that no single theoretical foundation exists for instructional design approaches suitable for all types of learning; both instructivist and constructivist approaches are valuable depending on the content, the learner and the context with emphasis on changing between the objective and the subjective realities. The marriage of these two traditionally conflicting philosophies makes the LAPTEL model a realistic model as there are numerous criticisms levelled against banking on purely constructivist approaches (see section 2.3.2) for all types of knowledge and for students of varying ability levels. As it uses elements from various theories (in a complementary manner), it could also be arguably said to be a converging model.

It is hoped that the findings and the model would encourage lecturers at UB to rethink traditional teaching practices, and to consider enhancing the process of student learning using a web-based blended approach.

To bring about a change in organisational culture<sup>2</sup> in a university such as UB requires organisational change management strategies in place, and these require strong determination and aggressive intervention from the management (leadership). Further, there should be sufficient hardware and good connectivity for students to be able to carry out their tasks online. Investment in professional development of tutors is another area to be addressed in order to support them in this new way of teaching and thus, make them effective facilitators of student learning.

There is a strong case in the literature that blended learning approach is the most popularly accepted approach in higher education around the world (e.g., Singh, 2003; Thorne, 2003; Bonk and Graham, 2006; Yoon and Lim; 2007). This Researcher wants to strongly support this view on the basis of findings from this study, and he believes that

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<sup>2</sup> *Organizational culture is a mode of functioning rather than a mechanism. Culture, is the sense of shared meanings, collective norms, and views on interaction and collaboration. Culture has a major role in holding the organization together.*

those institutions which do not want to move away from traditional teacher-centred to student-centred approaches through the use of new technologies will desperately fail to equip their students adequately to compete in the globalised market system. Therefore, it is hoped that UB will address all the related issues including change management strategies, curriculum support (to reflect the changing needs of the 21<sup>st</sup> century), and institutional policies concerning learning resources, incentives to teachers and the like in order to develop an organisational culture for the appropriate and effective educational use of ICT in all its programmes.

Let the LAPTEL model serve as an innovative tool that UB can employ to provide increased access to quality education to Batswana<sup>3</sup> in order to realise the potential of each and every individual student for academic excellence and personal growth such that Botswana can remain competitive in national as well as international economic, technological and human resource sectors.

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<sup>3</sup> In Setswana which is a local language, 'Batswana' mean peoples of Botswana.