International Journal of Education and Development using Information and Communication Technology (IJEDICT), 2013, Vol. 9, Issue 3, pp. 124-136

Students' experiences and challenges of blended learning at the University of Dar es Salaam, Tanzania

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ABSTRACT

Recent developments in Information and Communication Technologies (ICTs), especially eLearning, have heightened the need for University of Dar es Salaam (UDSM) to supplement on-campus face-to-face delivery as well as meeting increased students' enrolments through blended distance learning. Since 2008, the University has been offering three postgraduate programmes: Postgraduate Diploma in Education, Postgraduate Diploma in Engineering Management, and Master degree in Engineering via dedicated Learning Centres in Mwanza, Arusha, and Dar es Salaam. In total, 310 students have been enrolled into these programmes since 2008. However, the implementation of these programmes has resulted in mixed and unpredictable results.

This paper reports on students' experiences as well as challenges UDSM has been facing during the implementation of blended learning courses in Tanzania. The data were generated through documentary reviews and 22 responses from a questionnaire distributed to students enrolled into these programmes. The study has revealed outdated learning resources, unavailability of instructors during live online sessions, under-utilization of Learning Centres, and technical difficulties are the main factors that affect students from exceling well in blended learning programmes. These findings have a number of important lessons and implications for similar institutions running blended learning or wishing to implement blended learning specifically in developing countries.

INTRODUCTION

The recent expansion of primary and secondary education under Primary Education Development Programme (PEDP) (2001-2006) and Secondary Education Development Programme (SEDP) (2004-2007) respectively has increased the demand of higher education in Tanzania. As a result of PEDP, the Gross Enrolment Rate and Net Enrolment Rate for primary education increased from 84% and 65.5% in 2001 to 102.7% and 94.0% in 2011 respectively (URT 2012). Moreover, the number of primary schools increased from 11,873 in 2001 to 16,001 in 2011 while the transition rate from primary to secondary school increased from 22.4% in 2001 to 53.6% in 2011.

Consequently, the enrolments in secondary education increased from 432,599 in 2000 to 1,020,510 in 2006, reaching 34% of the school-going population in 2011. More specifically, the transition rate from primary to secondary level increased from 36.1% in 2004 to 67.5% in 2007 (URT 2008). The PEDP and SEDP had also impacted technical college enrolments in the country. For example, the enrolment in technical training colleges increased by 79%, from 47,000 in 2008 to 84,000 in 2011.

Clearly, this increase in enrolments, as a consequence of PEDP and SEDP, increased the demand for higher education in the country. For example, the number of applicants in different degree programmes in the University of Dar es Salaam (UDSM), the biggest University in Tanzania, has been increasing every year while the number of registered students remained almost the same. In other words, the percentage of registered students has been decreasing

every year since 2001. As shown in Table 1, for instance, the number of applicants rose from 8,616 in 2004 to 17,164 in 2005 while the percentage of registered students dropped from 43% in 2004/2005 to 26% in 2005/2006. The slight rise in enrolment seen from 2006/2007 academic year was due to establishment of two new UDSM affiliated colleges: Dar es Salaam University College of Education (DUCE), and Mkwawa University College of Education (MUCE). Table one shows enrolment at UDSM from 2002/ 2003 academic year.

Table 1: *Students enrolment at UDSM since 2002/2003*

	Applied	**Registered**	**% Registered**
2002/03	6,171	3,423	55%
2003/04	6,036	3,582	59%
2004/05	8,616	4,264	43%
2005/06	17,164	4,475	26%
2006/07	15,185	7,049	46%

Source: *UDSM Facts and Figures 2006/2007*

This decrease in number of registered students as well as recent developments in ICTs (especially eLearning) have increased the need for UDSM to explore various delivery mechanisms to widen the access to higher education. As a result, UDSM has been investing heavily in ICTs in order to complement face-to-face delivery, and to widen access through blended distance delivery. Naturally, it is not uncommon to find several ICT facilities such as multimedia projectors, interactive white boards, computers, printers, scanners and similar equipment being part of teaching and learning facilities at UDSM. Similarly, several information systems such as student records management systems, eLearning systems, financial information systems, and library information systems has been procured and installed (Mtebe et al. 2011).

Blended learning is "the thoughtful integration of classroom face-to-face learning experiences with online learning experiences" (Garrison & Kanuka, 2004, p.96). It aims at combining two delivery modalities: face-to-face, and eLearning in order to provide an effective and efficient learning experience, thereby having the best of both instructional worlds (Kumar 2012). Such kind of combination helps in catering to different students' learning styles (Ho et al. 2006), increasing learning effectiveness, convenience, and widening access to education (Graham 2009). Moreover, blended learning makes courses more accessible to a growing and diverse student population, for example, those preferring to learn at work, at home or between places with the appropriate technology (Glogowska et al. 2011; Kumar 2012).

Perceiving these benefits, UDSM started to implement blended learning to supplement on-campus course delivery in 1998 as well as introduce blended distance programmes ten years later. The blended learning distance programmes are: Postgraduate Diploma in Education

(PDGE), Postgraduate Diploma in Engineering Management (PGDEM), and Master degree in Engineering Management (MEM).

As of now, at least 310 students have been enrolled and more than 145 students have graduated across all three programmes since 2008. However, the implementation of these programmes has resulted mixed and unpredictable results. Therefore, this paper reports on the students' experiences as well as the challenges UDSM has been facing during the implementation of blended learning distance programmes in Tanzania.
A questionnaire was sent to 35 students who are currently studying blended learning programmes besides reviewing some related documents. The findings of this study have brought out a number of important lessons and implications for similar institutions running blended learning or wishing to implement blended learning, especially in developing countries.

LITERATURE REVIEW

Existing literature shows blended learning has different definitions and descriptions. However, many of the studies agree that blended learning combines the strength of face-to-face and eLearning to create the most efficient learning environment. The eLearning environment involves the use of video conferencing, learning management systems, the Internet, and other related technologies (Kumar 2012). The eLearning environment provides opportunities for students to learn and express themselves in the written form while face-to-face discussions enables them to have enthusiasm that are spontaneous and contagious (Garrison & Kanuka 2004). Therefore, by blending these two forms of delivery, one provides an effective and efficient learning experience, taking best of both instructional worlds (Kumar 2012). Moreover, such a combination helps the instructors to use a variety of instructional techniques and achieve effective learning outcomes (Vaughan 2007).

Generally, there is no one formula for combining technologies and face-to-face delivery in order to create a certain blended learning design (Precel et al. 2009; Kumar 2012; Vaughan 2007). Accordingly, no two blended learning designs are identical (Garrison & Kanuka 2004). The ultimate goal is to apply the "right" learning technologies, matching the "right" students' learning style and transferring the "right" skills for the "right" students at the "right" time (Liu & Zhao 2010).

Several studies have proposed various blended learning models that can be implemented by institutions of higher education in various contexts. Nonetheless, the models proposed by Graham (2009) stand out in the literature. He proposed three blended learning delivery models: Enabling Blends, Enhancing Blends, and Transforming Blends.

a) The Enabling Blends enables institutions to address issues of access and convenience by using ICTs to provide "equivalent" learning experiences to the traditional face-to-face delivery.
b) The Enhancing Blends enables institutions to supplement face-to-face delivery with online resources and/or the implementation of online activities via learning management systems.
c) The Transforming Blends provides for a significant change in pedagogy that facilitates active learner construction of knowledge.

The choice of the model depends on several factors. Nevertheless, for developing countries like Tanzania where institutions are still faced with poor ICTs infrastructure, the choice of the model depends on the technologies available to individuals at different bands of the socio-economic spectrum (Graham 2009). Obviously, with learning management systems being used predominantly in higher education in developing countries, many institutions have chosen

Enhancing Blends. Likewise, UDSM has been supplementing face-to-face delivery with eLearning activities via Moodle learning management system.

A CLOSE LOOK AT THE BLENDED LEARNING AT UDSM

The introduction of blended learning at UDSM can be traced back to1998 when Blackboard system was introduced for the first time under Advanced Level End User Competence Upgrading Project (ALEUCUP). The ALEUCUP was funded by the Flemish Inter-University Council (Mtebe et al. 2011). Initially, Blackboard system was introduced to complement on-campus face-to-face delivery by enabling students to have access to quality learning resources uploaded in the system. In fact, instructors were sharing their course notes with students via the system while the delivery mode remained traditional face-to-face. During this period, more than 2,000 staff members were trained on how to use the system, and approximately 415 courses were uploaded (UDSM 2010).

However, because of the incease in the annual licensing costs that were beyond UDSM's limited budget, the Blackboard system was replaced by Open Source Moodle system in 2008 (Mtebe et al. 2011). The migration to Moodle system was accompanied by the introduction of blended learning programmes being offered outside the University campus through three established learning centres in Mwanza, Arusha, and Dar es Salaam. These programmes are: Postgraduate Diploma in Education (PGDE), Postgraduate Diploma in Engineering Management (PGDEM), and Master degree in Engineering Management (MEM).

The Blended Learning delivery model at UDSM

The UDSM blended learning model combines face-to-face delivery with eLearning technologies specifically the Moodle system and Compact Discs (CDs). All learning resources are uploaded in the system for students to access, and a copy of the same in the form of CDs given to students. The CDs enable students to access learning resources in an offline environment, or when there is limited internet connection. Furthermore, instructors facilitate course delivery using system tools such as discussion forums, whiteboards, and chat forums.

The mid-semester, compulsorily makes the students attend face-to-face classrooms at the nearest learning centre. The face-to-face sessions helps students in receiving support and guidance in areas where students had difficulties. Currently, there are three operational learning centres: Mwanza, Arusha, and Dar es Salaam (see Figure 1). The Mbeya Centre is currently not operational but is expected to be operational next year, 2014. The centres are equipped with computers connected to Internet and printing services.

The main aim of the centres is to provide access to computers and internet to students who do not have access in their homes or workplace. Further, the students have to go to these nearest centres to take the final examinations. However, the assessments which include assignments, tests, projects etc. are conducted online through the system.

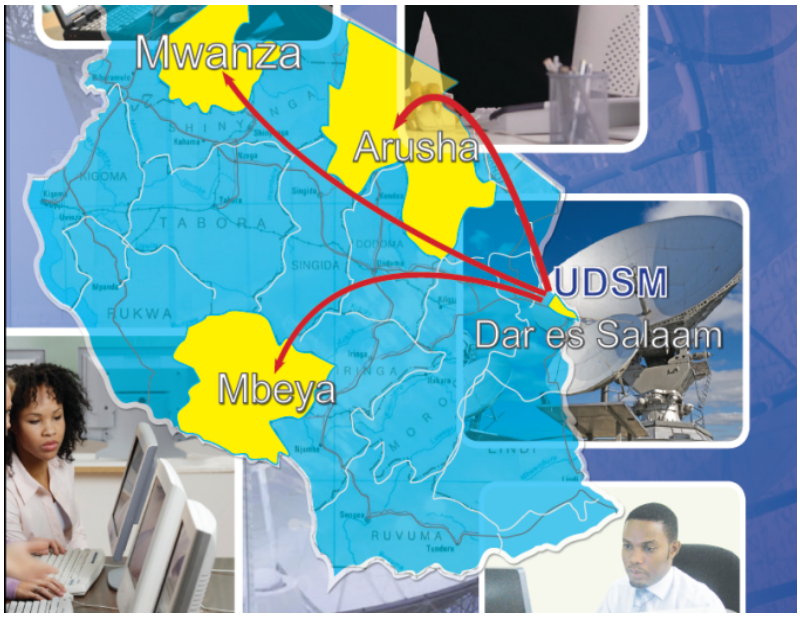

***Figure 1**: Location of UDSM Learning Centres*

Institutional arrangement

To enable smooth implementation of blended learning, UDSM established the Centre for Virtual Learning (CVL) in 2005 to facilitate the development and delivery of blended learning programmes. Specifically, the Centre:

- Provides pedagogical support to instructors for effective facilitation of blended learning programmes,
- Develops multimedia enhanced courses as well as packages them into CDs for students access,
- Conducts training for students and instructors on how to use Moodle system,
- Trains subject matter experts on instructional design and online course development principles, and
- Manages Moodle system and other software for delivery and development of blended learning courses.

The centre is equipped with various equipment and facilities for producing multimedia enhanced courses. These facilities include recording, editing and producing video and audio as well as developing 2D and 3D animations. The centre also has a number of software e.g., Adobe CS5, Learning Content Development System (LCDS), Camtasia, and Lactora. In addition, more than 17 technical staff were employed and trained on how to use these equipment and software.
In terms of course delivery, the centre does not own any academic programme. It rather facilitates the delivery of the programmes. The academic programmes are owned by the respective schools or colleges. The two programmes: MEM and PGDEM are owned and offered by the College of Engineering and Technology (CoET), while PGDE is offered by the School of Education (SoED). Figure 2 shows the arrangement between CVL, offering units (SOED, CoET), and Learning Centres.

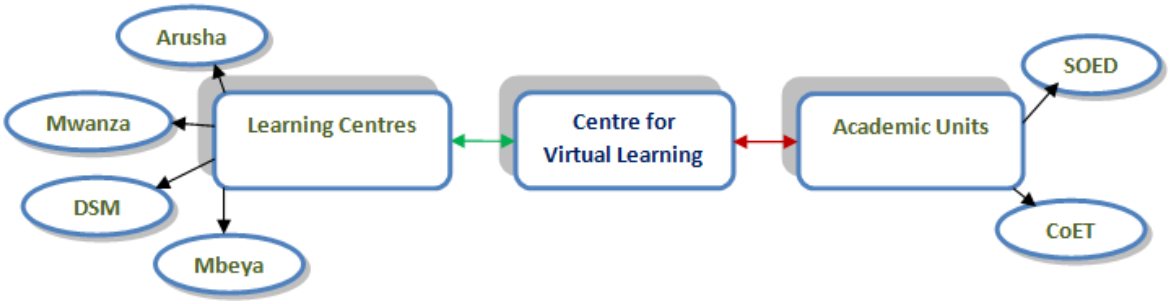

Figure 2: *BL Institutional arrangement*

Students Enrolment in blended learning programmes at UDSM

Since the blended learning programme started in 2008, a total of 104 PGDEM, 132 MEM, and 73 PGDE students have been admitted. By the end of 2013, more than 145 students graduated and several others are busy with their dissertstion. Table 2 shows the students' enrolment and graduation in the years since 2008.

Table 2: *Students' Enrollment and graduation from 2008/09 to 2013/14*

S/N	**Year**	**Enrolment**			**Graduated**		
		PGDE	**PGDEM**	**MEM**	**PGDE**	**PGDEM**	**MEM**
1	2008/2009	11	17	N/A	5	14	N/A
2	2009/2010	8	30	17	3	15	13
3	2010/2011	7	18	28	7	16	23
4	2011/2012	6	9	20	4	6	10
5	2012/2013	13	17	29	12	17	N/A
6	2013/2014	28	13	38	N/A	N/A	N/A
	Total	**73**	**104**	**132**			

RESEARCH METHODOLOGY

The questionnaire was created using Google Docs, and emailed to 35 students who are studying MEM, PGDE, and PGDEM. A total of 33 responses were possibly received as 2 mails came undeivered. However, only 22 subjects completed and returned the questionnaires (66.6% of all respondents). All respondents were guaranteed confidentiality of their individual responses, with the name field treated as optional. Data was collected through Google Docs, and thereafter, downloaded as an Excel file. The data collection was undertaken between April and July 2013. Statistical Packages for Social Science (SPSS) version 20 was used to analyze the data.

RESEARCH RESULTS

Demography

Table 3 shows respondent's demographic information.

Table 3: *Respondents' Demographic Profile*

Respondents Profile	Classification	Frequency	Percentage
Gender	Male	16	72.7
	Female	6	27.3
Type of Programme	PGDE	4	18.2
	PGDEM	4	18.2
	MEM	14	63.6
Learning Centre	Dar es Salaam	12	54.5
	Arusha	6	27.3
	Mwanza	4	18.2
Employment Status	Yes	20	90.9
	No	2	9.1

Students' experiences and challenges faced UDSM during implementation of blended learning

Out-dated Learning Resources

The findings indicated that, most of learning resources posted in Moodle system were outdated. This implies that the instructors were not updating learning resources once they post them in the system. When respondents were asked to rate if learning resources were regularly updated and references were current and relevant, over 70% of respondents strongly disagreed (see Figure 3). The system log revealed that, the majority of courses consisted of learning resources used by previous students.

Moreover, some courses had links that would not open files or play some animations, video clips or audio. When respondents were asked to provide comments regarding learning resources, the majority indicated the need for instructors to update their learning resources regularly (especially before the beginning of every semester). For example, one student said *"….Some courses are not up-to-date. Some pdf files and video clips are not showing or playing. Otherwise it is a good idea but content must be up-to-date".*

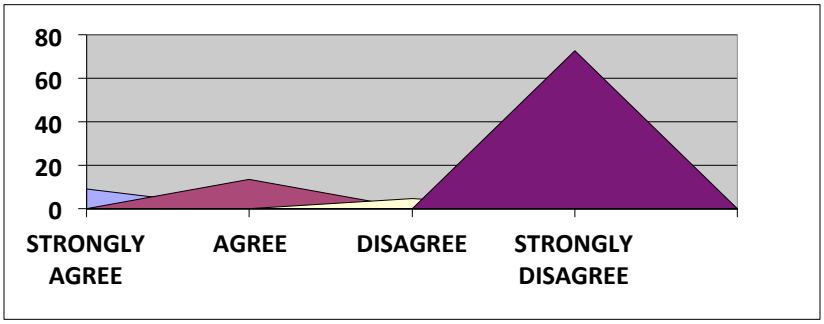

Figure 3: *Learning Resources are regularly updated; References are Current and are based on Regular Literatures*

When respondents were asked to rate the appropriateness and sequence of content and learning activities within the course, more than two-thirds of the participants (77%) strongly disagreed while only 18% agreed (see Figure 4). Moreover, when asked if all modules were covered in the course content uploaded in the system, 68% strongly disagreed, 23% disagreed, and only 9% agreed.

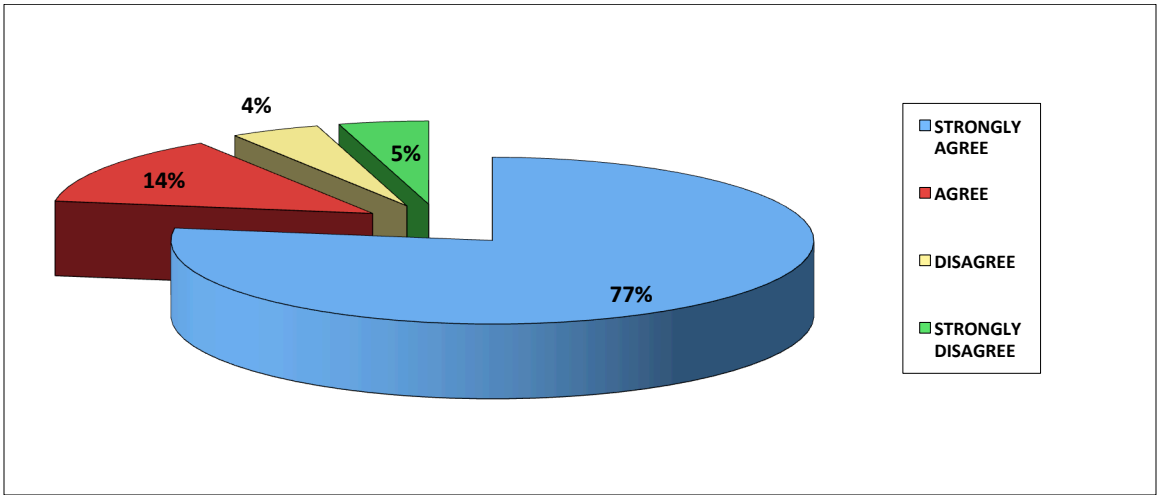

Figure 4: *Course content are Organized logically throughout the Course*

Internet Connectivity and Computer Access

The majority of respondents (72.7%) had access to reliable Internet connection as well as access to computers as shown in Figure 5. However, some courses which were integrated with animations, and video clips could not play well due to slow internet speeds. The most affected students were those using internet connection in their offices or at home using broadband connection.

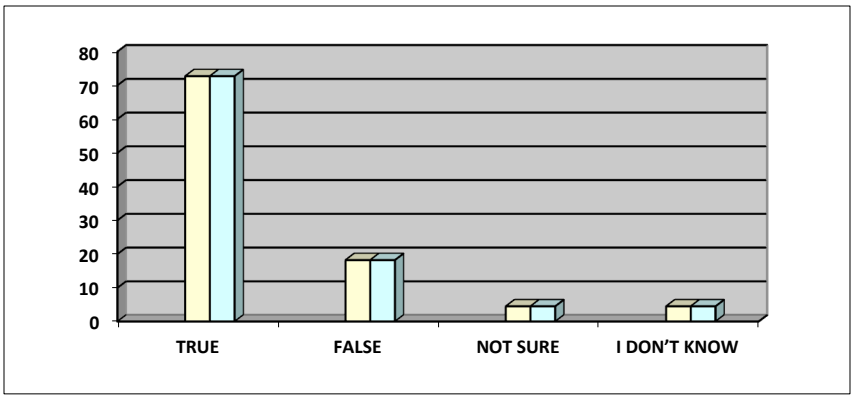

Figure 5: *I have convenient access to computer/Internet*

Learning Support

Overall, respondents were positive on the support services provided by CVL prior and during course delivery. For example, almost two-thirds of the participants (68.2%) strongly agreed, and 26% agreed that the Learning Centres were equipped with computers connected to fast Internet. Similarly, 81.8% of respondents strongly agreed that orientation week was productive and was done effectively, while 13.6% agreed, and only 4.5% strongly disagreed. However, majority of Learning Centres did not have enough reference books, and students were unable to access online resources from the library. This has been demonstrated by the fact that, when respondents were asked if there were able to access online resources from the library, 70.4% of respondents strongly disagreed, while 14.8% were undecided. Likewise, when asked if there were enough reference books at the Learning Centres, majority of respondents (over 80%) strongly disagreed (see Figure 6).

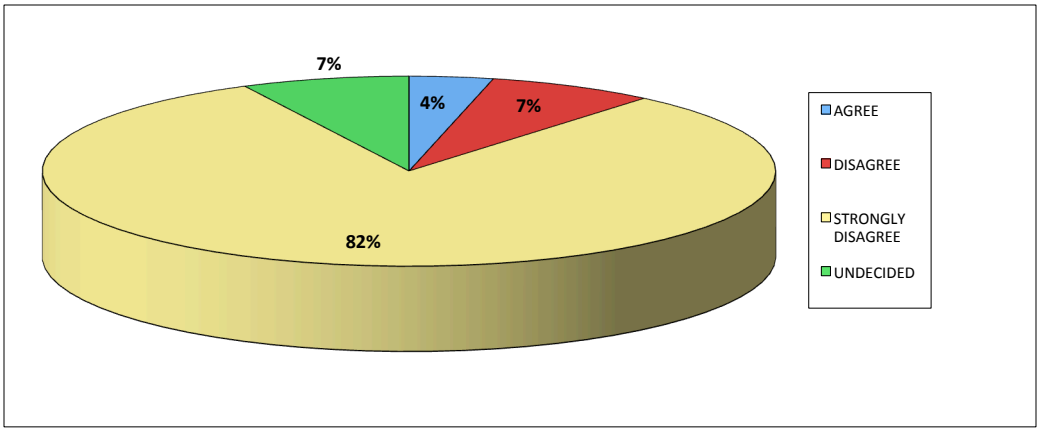

Figure 6: *There are enough books in the library at the centres*

Availability of Instructors in Online Sessions

When the respondents were asked how often instructors appeared in arranged online sessions, majority of respondents said instructors were not available in most of live chats. For example, one student said that"…*Mostly lecturer are not available online during session hours*". However,

nearly half of respondents (with 31.8% strongly agreed, and 36.4% agreed) showed that instructors were participating in asynchronous discussion forums, and were providing timely and meaningful feedback while 22.7% of respondents disagreed, and 9.1% strongly disagreed.

On the other hand, students suggested that the face-to-face sessions be increased from one week to at least two weeks. For instance, one respondent suggested that "…*the college should increase time of face to face in the learning centre"*

The use of Learning Centres

One of the interesting findings was that, almost 84% of respondents were using Learning Centres for examinations and face-to-face sessions only, while 9% were using it once per week for access learning resources. A bare 7% were using only once in a month. This clearly indicates that the Learning Centres are not effectively used to access learning resources and other activities.

Technical issues

When respondents were asked if they encountered any technical difficulties when participating in blended learning delivery, almost 68% said YES, while 32% said NO. When the students were asked to explain some of the difficulties they were facing, the majority of them ascribed it to inaccessibility of PDF, animations, and video clips. For example, one student said " … *there are other materials which are not downloaded while you need to download it".* Similarly, another student said *"… Some pdf files and video clips are not showing or playing".*

However, many respondents indicated that CDs were useful and effective in providing an alternative means to access learning resources. Moreover, most of course notes, videos clips, and animations were accessible on CDs. As shown in Figure 7, 95.5% of respondents strongly agreed, and 4.5% agreed that the CDs were effective and most of the courses were accessible.

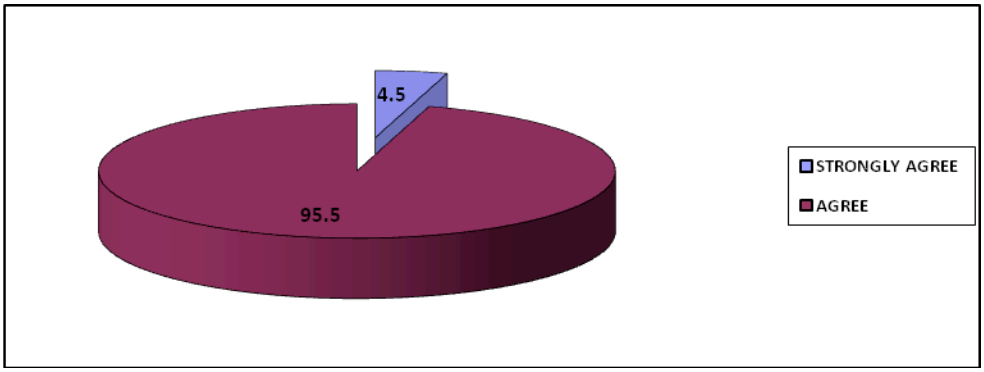

Figure 7: *Accessibility and effectiveness of CDs*

DISCUSSION AND RECOMMENDATIONS

This study aimed to report on students' experiences as well as challenges UDSM has been facing during implementation of blended learning programmes in Tanzania. The study has revealed outdated learning resources, unavailability of instructors during live online sessions, under-utilized of Learning Centres, and technical difficulties are factors that affect students from exceling well in

blended learning programmes. Contrary to expectations, this study found that more than two thirds (over 70%) of students had access to computers connected to reliable Internet connection.

Another unanticipated finding was that, instructors do not update learning resources on time. The findings of this study are consistent with those of Bhalalusesa, Lukwaro, and Clemence (2013) conducted at the Open University of Tanzania in blended learning programmes offered via Moodle system with 90 respondents. They found that, there were no adequate effective learning contents uploaded in the system for students' access. Generally, there is lack of expertise and experience in the instructors in higher education in developing countries to develop quality learning resources (Unwin et al. 2010). As result, many institutions have continued to rely on printed resources which are expensive to produce, and difficult to share with wider group of learners (Lwoga 2012).

This study recommends instructors to make use of Open Educational Resources (OER) so as to improve the quality of existing courses through adapting, modifying, and reusing thousands of freely available courses contents in the public domain. Instructors can also acquire skills and competences to develop quality learning resources through participation in OER communities.

It is somewhat surprising that students were not using Learning Centres to a great extent. The study found almost 84% do not use Learning Centres for accessing learning resources and other activities. This is a clear indication that, internet access in Tanzania has improved significantly contrary to previous findings such as that of Tedre, Ngumbuke, and Kemppainen (2010). This corroborates the fact that, the recent rollout of the National fibre-optic cable SEACOM project has increased bandwidth to 1/155MBS across the country (Lwoga 2012). Therefore, students prefer to access internet at home or at workplace rather than going to the Learning Centres.

Another important finding was that, students were unable to access multimedia enhanced courses properly via internet due to bandwidth difficulties. This finding seem to be consistent with other studies by Lwoga (2012), and Bhalalusesa et al. (2013) which found slow internet speed has been the main factor that hinders adoption of technology enhanced learning in Tanzania. Despite the fact that majority of respondents indicated to have access to reliable internet connection to access Moodle system, still over two thirds (68%) could not play video clips, or animations properly due to slow internet speeds. Nonetheless, as the government is rolling out SEACOM marine cable in many parts of the country, the internet speed will improve significantly. Therefore, the current accessibility and slow internet speed is a short term problem.

Finally, unavailability of instructors in online live discussions conducted via Moodle system forums is a major challenge especially in the kind of blended learning environment where there is only one week of face-to-face meeting. Bhalalusesa, Lukwaro, and Clemence (2013) argue that, instructors are too busy to participate in live sessions on a daily basis as they have many responsibilities to attend. However, this can also be explained differently. According to Ssekakubo et al. (2011), many instructors in higher education in developing countries have not been exposed to many ICTs solutions, and therefore their confidence and comfort levels towards using technology is always low. Therefore, this study recommends that CVL provide reliable and effective user support regularly to instructors so that they can use Moodle system effectively.

CONCLUSION

Although UDSM has been implementing blended learning programmes for five years now, this study found that there are still some challenges that need to be addressed in order to realize the expected benefits. These challenges include outdated learning resources, unavailability of instructors during live online sessions, under-utilization of LCs, and technical difficulties.

Notwithstanding these limitations, it is becoming increasing difficult to ignore the importance of blended learning programmes in widening access to, and improving the quality of education in Tanzania. The price of ICTs equipment is going down every year, while at the same time ICT infrastructure is improving. Clearly, the future of BL programmes implementation in Tanzania is very bright.

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