

Using Technologies and OER to Enhance Efficiency and Effectiveness of Higher Education in Bangladesh: Opportunities and Challenges

Mostafa Azad Kamal
Bangladesh Open University
Mostafa_azad@yahoo.com

Philip Uys
Charles Sturt University
philip.uys@globe-online.com

Sadia Afroze Sultana
Bangladesh Open University
sadia_afroze@yahoo.com

Abstract

The existing capacity of the on-campus institutions is not only insufficient to meet the growing demand for human resources, but also lagging behind in terms of engaging the learners and providing access to educational resources. Adopting technologies meaningfully can have a scalable impact on education in terms of output and quality of education. This paper discusses the benefits of the recently adapted technologies and OERs in some courses of BBA and MBA programs of Bangladesh Open University in terms of better learner engagement, access and learning management. The paper also highlights the challenges of technology integration into the courses and recommends remedial measures to address the challenges.

1. Introduction

The revolution of information technology is more significant than any previous revolution. Software has been, and will continue dramatically to disrupt most traditional industries – education, health, manufacturing, law, retail, architecture – in the coming years. The digital revolution offers unprecedented opportunities to source, collect, analyse, use and communicate data. The global information society will increasingly take hold, given that ICT are being integrated and mainstreamed in all sectors of society.

It has been estimated that the internet reached 50 million users in 5 years compared with radio that took 38 years to reach the same number, and television which took 13 years to reach 50 million users (Hayes, 1998). The coverage of technology is very high (for example, a fibre optic cable can now carry 1.5million conversations simultaneously) and thus the economy of scale can be exploited when technology is adopted. Also, the cost of access to information communication technologies continues to fall (the cost of computer power in 1997 only .001% of what it did in the early 1970s; Bill Gates told the Senate Judiciary that ‘the cost of computing has decreased 10 million fold since 1976 (Woodall, 1997c). Therefore, adoption of technology is beneficial for an institution in economic sense at least in the short run.

Technology can play a very crucial role in an Open and Distance learning (ODL) system. To enhance the effectiveness and the quality of ODL programmes, it is widely agreed that it is necessary to adopt educational technologies. Technologies can squeeze the so-called quality gap in ODL as compared to the conventional on-campus education system by enhancing teacher-student, student-student and student-content interaction. That means, adoption of technology can make the ODL programmes both more effective in terms of quality and efficient in terms of cost sharing.

Elearning will change teaching and learning. Students can learn from anywhere and teachers can teach from anywhere. The cloud can also encourage independent learning, with students taking ownership. Teachers can put resources (videos, documents, audio podcasts or interactive images...) online for students to access via a student's

computer, smartphone or tablet. As long as they have an internet connection – either via WiFi, 3G, 4G - they are able to participate.

Opportunities of economies of scale can be exploited significantly in the ODL programmes if technologies are used in the delivery of the educational materials. However, it is also paradoxically evident that inappropriate adoption of a new technology sometimes causes permanent cost increase, wastage of human and economic resources and unfortunate *quality shirking* in the programmes - leaving some *white elephants* for the institution. This situation fits very well with the reality of the developing countries. In the process of gulping the futile imported development syrup advised by ODL consultants or to show up with some conspicuous updates of the system or to fulfill the commitments to the donors of educational aid, ODL institutions in developing countries sometimes adopt some unnecessary technologies that cause some permanent financial burden on their shoulders. We must thus be careful in adopting a technology. We shouldn't use technology for the sake of technology. Choosing a technology wrongly not only creates an unnecessary financial burden for the institution but also impacted the students negatively by the wrong technology choice. It is very important to make the best decisions possible in choosing a technology. We must remember that a technology choice can speed up the students' learning, or slow it down. It can transparently support an activity or can create a barrier in the way of its completion. It can make their experience richer, or frustrate them and cause them to question why the technology was ever selected. Therefore, when choosing what technology to use to deliver a course at a distance, there are a wide variety of items to consider. There need to be a balance between technological knowledge, pedagogical knowledge and content knowledge (Koehler& Mishra, 2009). Careful thought and attention to these topics therefore before introducing a technology will ensure that the technology will meet the objectives of the course, will be viable for institution, will be convincing to the instructor, and most importantly, enhance the learning of the students.

On the face of sustainable development goals and upcoming 4th industrial revolution, Bangladesh as an emerging economy needs more skilled human resources to keep itself competitive in the world market as well ensuring its sustainable progress. The Bangladesh government has successfully implemented several projects to ensure better access to internet and affordable electronic devices like mobile, laptop, desktop, tabs, etc. Broadband internet is accessible almost everywhere in the country. Cell phone-based internet is now very cheap and easily accessible. Bangladesh is now in a very good position in overall e-readiness compared to the same global income group average, particularly in terms of affordability, infrastructure, government usage, social and economic impacts (Global Information Technology Report, 2015).

Given the better overall e-readiness, the use of ICT for learning purposes is still lagging behind especially in the universities in Bangladesh. The existing capacity of the on-campus institutions is not only insufficient to quench the gap, but also lagging behind in terms of engaging the learners and providing access to educational resources. Recently some initiatives have been taken to integrate technologies and adapting open educational resources (OER) in BBA and MBA programs to ensure better engagement, more flexibility and higher access to educational resources.

This paper discusses the benefits of the recently adapted technologies and OERs in some courses of BBA of an on-campus university and MBA programs of Bangladesh Open University in terms of better learner engagement, access and learning management. The paper also highlights the challenges of technology integration into the courses and recommends remedial measures to address these challenges.

2. Objectives

The objectives of the study are:

- To identify the readiness of the learners and faculties in terms of the use of technology;
- To explore the current status of the use of elearning by the faculties and learners;;
- To assess the effectiveness of elearning courses in BBA and MBA programmes;
- To identify the challenges with the elearning courses faced by the learners and faculties;
- To propose the strategies to mitigate the challenges with technology integration into academic courses; and
- To identify the scope of OER adaption into the courses of the BBA and MBA programmes.

3. Methodology

Both primary and secondary data have been used in this paper. For primary data, an online survey tool has been used. The sampling was purposive and the survey was administered to 177 BBA and MBA learners and 13 teachers engaged in both face-to-face and ODL courses. Purposively, all the learners have been chosen so that they got at least 1 elearning /blended elearning course in their course of study. Few Schoology-based elearning courses were considered which the learners accessed as part of their learning practices. The respondents were distributed into different age groups. The sampled learners were of two types – one group exclusively received face to face teaching, while the other group attended the online ODL courses. The sampled face-to-face learners got experience of taking the traditional face-to-face courses and also the technology enabled face-to-face courses. On the other hand, the ODL learners under investigation also got two types of experiences – traditional ODL delivery and technology enabled delivery. By profession, learners have been distributed into three groups – executives, teachers and regular students. Among the respondent teachers, 7 were female and 6 were male. They are from 4 different disciplines – business administration, education, science and social science. Six of the teachers belong to 31-35 age group, 1 in 26-30 age group and others in 60-40 age group. The learners and faculties have been given the links of the online questionnaires. Questionnaires have been constructed mostly based on the COL's TEL survey template. For data analysis, Strata software has been used.

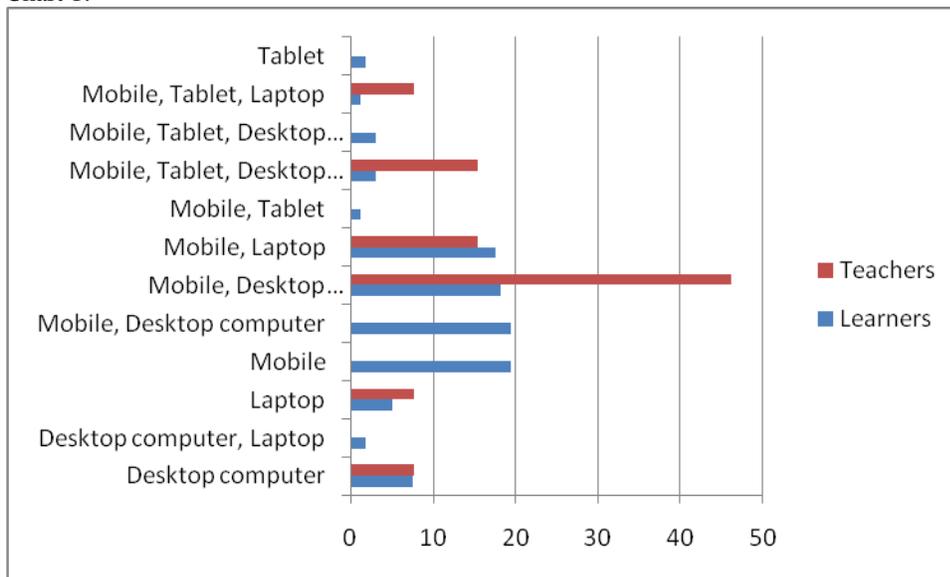
4. Findings and Analysis

4.1. Overall technology readiness of learners and teachers

4.1.1. Access to technology devices

Access to various devices by the learners and teachers is very important for successful integration of technologies in teaching and learning. Chart 1 shows that all the teacher and students got access to mobile phones and desktop computers or mobile and laptop computers at home or office or both.

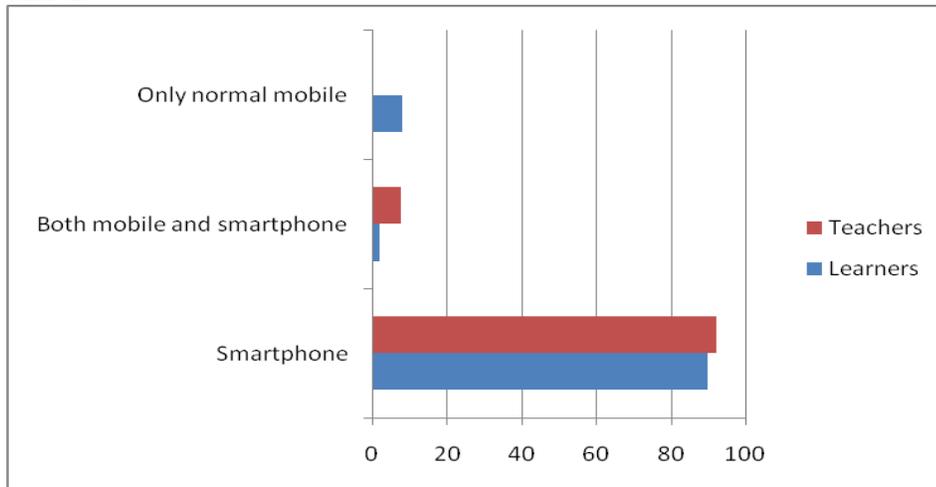
Chart 1:



4.1.2. Types of mobile sets used by the learners and teachers

As we know mobile is no longer used only for making phone calls. It is a device that is now also used for computing. Smartphones are powerful and provides us with the potential to use it for computing and learning. Chart 2 depicts that almost all the teachers and learners have smartphones with them. It is a very good indicator for successful integration of technologies into education.

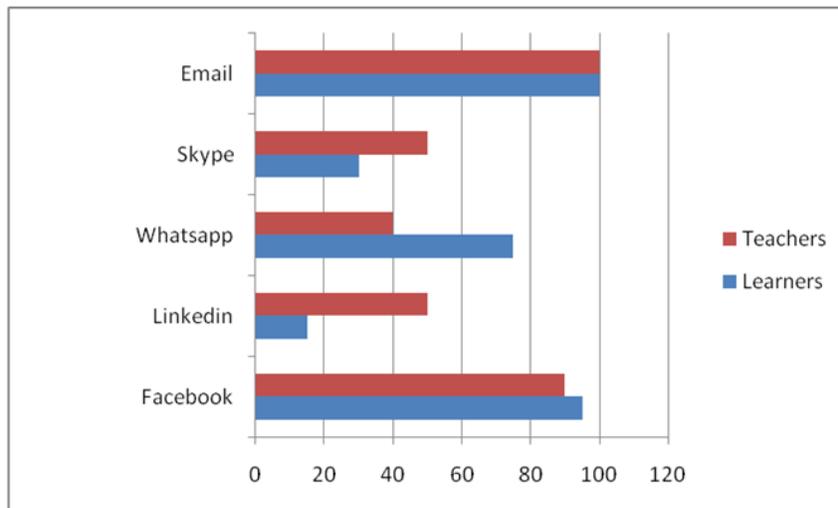
Chart 2:



4.1.3. Purpose of technology use

Currently, both teachers and learners use technologies for communicating and accessing the social media. Chart 3 shows that all the learners as well as the teachers use emails and almost everybody access Facebook. In the case of Skype and LinkedIn, teachers are a bit ahead of the learners; however, learners use Whatsapp more than the teachers.

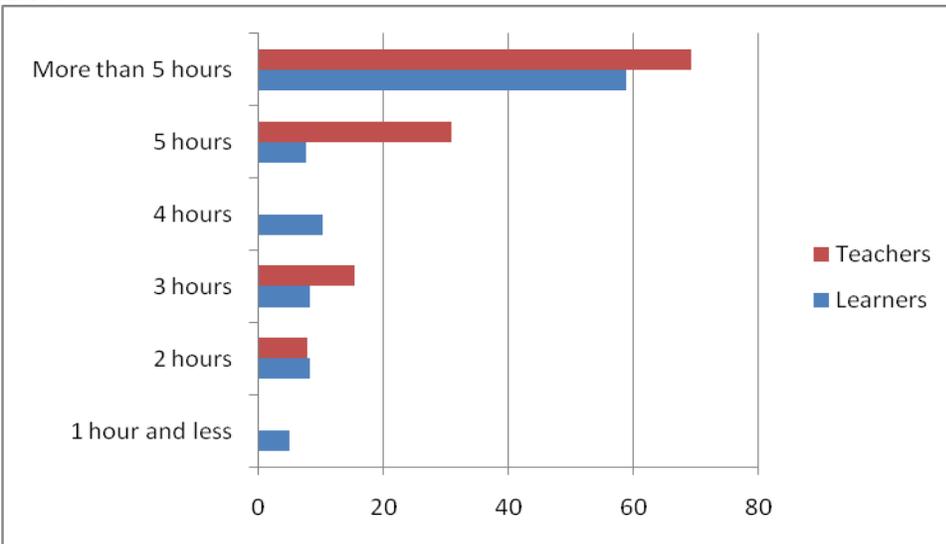
Chart 3:



4.1.4. Extent of internet use

Internet is the key to a variety of types of access and sharing of the learning resources. If someone doesn't have access to internet and the usage is very limited, then it becomes difficult to implement elearning meaningfully. Chart 4 depicts the extent of internet use by both the learners and teachers. It was found that most of the learners and teachers use internet for more than 5 hours a week.

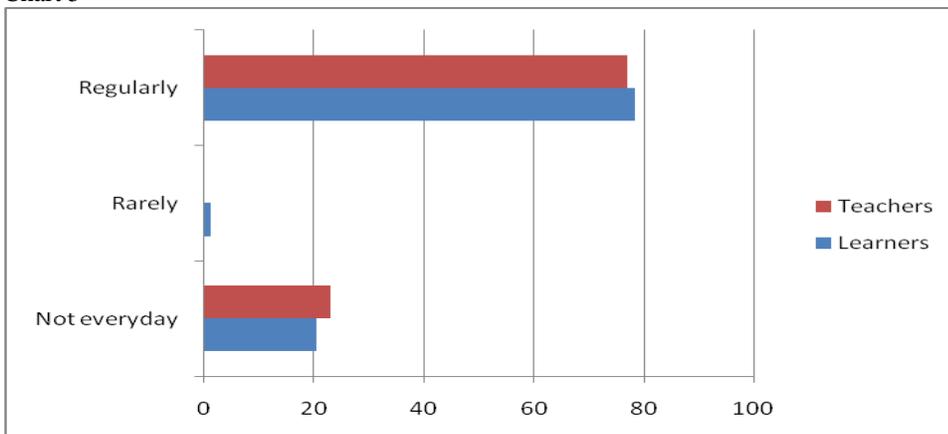
Chart 4



4.1.5. Frequency of internet use

Regular access to internet is essential for elearning. If learners and teachers are not regular in using internet, it will create frustration among the learners as they wait on responses of fellow learners. To keep the learners on board, it is important for the facilitators to be online frequently, if not for 24/7! Chart 5 indicates that most of the learners and teachers access the internet regularly.

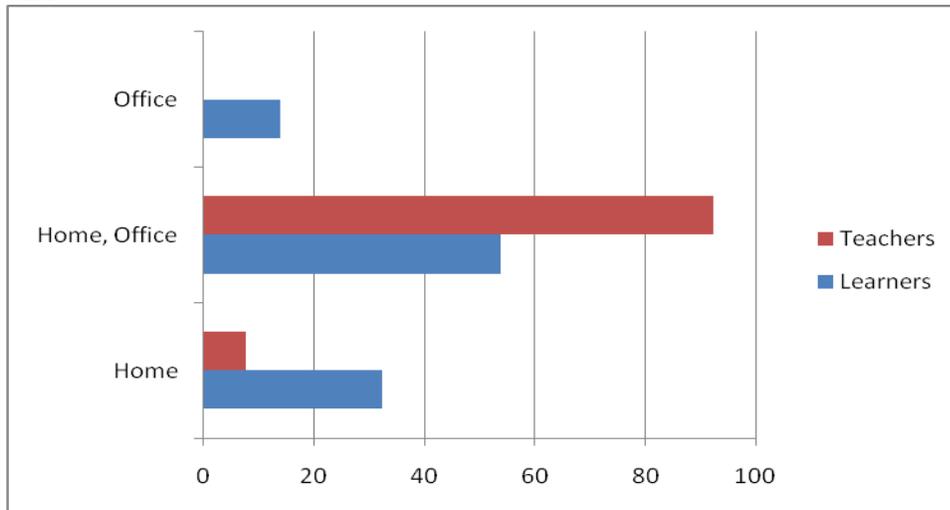
Chart 5



4.1.6. Place of internet use

The place of internet use sometimes plays a crucial role where learning is concerned. For learning purposes, there should be quality use of the internet. For meaningful learning through technology enable courses, the learners and teachers must have access to internet at a convenient time. Chart 6 shows that all the teachers have access to internet both at home and office. In the case of the learners, almost 47% of them use internet both at home and university/offices. However, they get more time to use internet for their learning purposes at their home. This is mostly true for the MBA students. For BBA students, they have access to the computer labs during their class days and they also have access to internet at home.

Chart 6



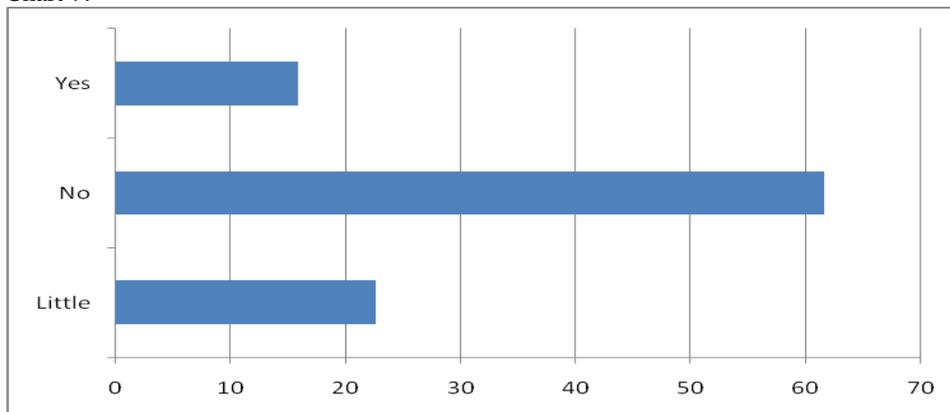
4.2. Perceptions of learners about technology-enabled learning

Even though access to internet and the relevant devices are foundational conditions for implementing elearning, the knowledge, attitude and skill of using elearning determines the success of any elearning course. In this section of the paper, the perception of the learners about elearning is presented to get a picture how the key beneficiaries view elearning compared to other traditional teaching-learning practices.

4.2.1. Prior knowledge about elearning course

Most of the learners did not have any prior knowledge about elearning. The Schoology-based elearning courses are the first ones they encountered. Chart 7 shows that almost 63% learners didn't have any elearning experiences before taking the schoology-based course. Only very few had some experience of elearning.

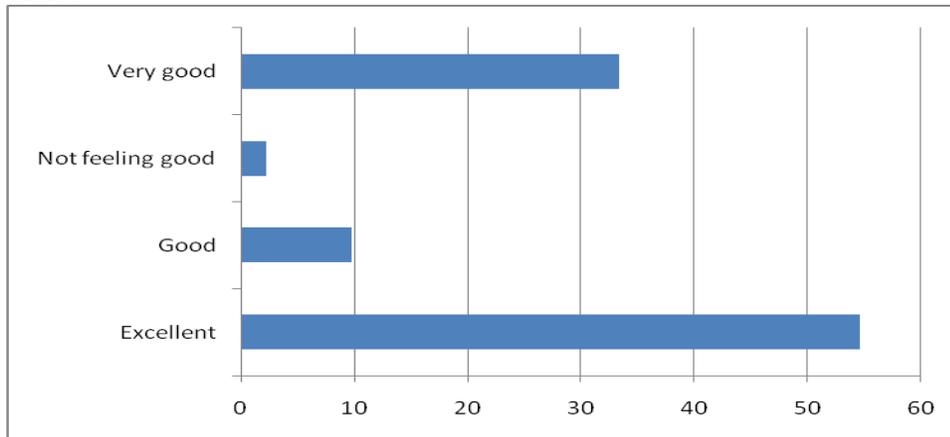
Chart 7:



4.2.2. Reflection on the elearning course

The learners expressed their experiences as they first took an elearning course. Their reflections are summarized in Chart 8. The chart shows that most of the learners found the Schoology-based elearning course as excellent or very good. Few of the learners didn't appreciate the technology mediated process of learning because of their low access and lack of skill in using technology.

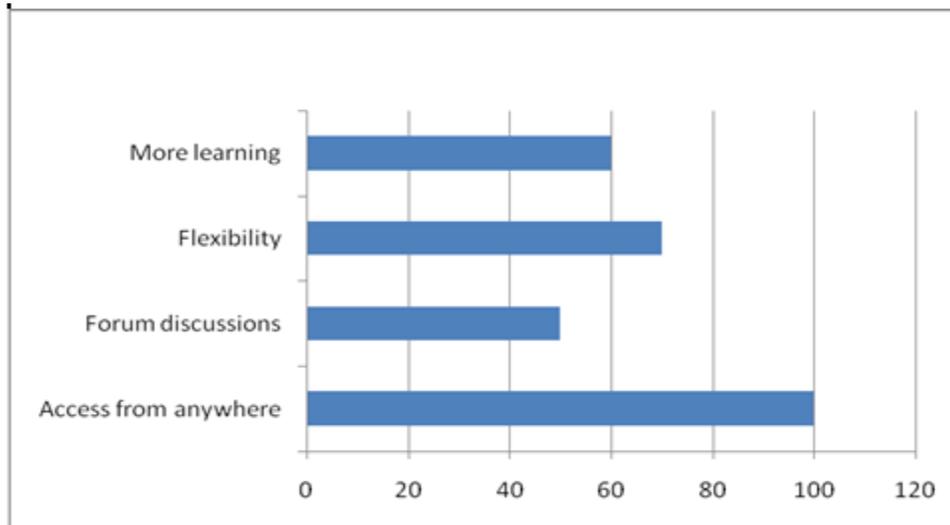
Chart 8



4.2.3. Effectiveness of elearning course in terms of learning engagements

Even if it was a new experience for the learners, they enjoyed some features of the Schoology-based courses. Chart 9 shows that the learners found numerous benefits from the Schoology-based elearning courses. The best thing they enjoyed is the access to resources anytime from anywhere. They also reported that they got flexibility in submitting the assignment, quizzes and they could have been engaged in discussions with peer learners both in synchronous and asynchronous way. Overall, they got more learning from the Schoology-based elearning courses compared to the traditional courses.

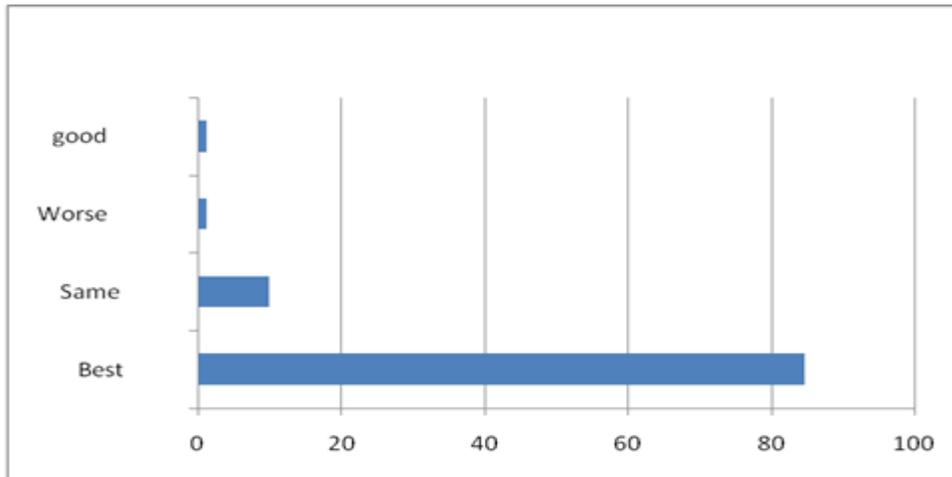
Chart 9:



4.2.4. Overall Rating of Elearning course over the other traditionally delivered courses

When the learners were asked to give their reflection on the overall quality of the Schoology-based courses and traditional courses they already completed, they ranked the Schoology-based elearning courses at the top. Chart 10 shows that almost 83% of learners consider Schoology-based elearning courses as the best ones among the courses they completed so far.

Chart10:



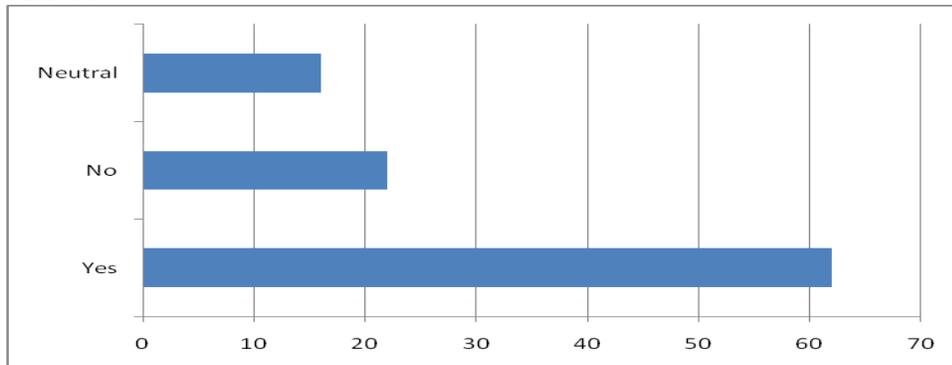
4.3. Perception of teachers regarding elearning courses

Meaningful engagement of the teachers/facilitators regarding elearning is crucial for successful implementation of elearning courses. Without proper facilitation, it is difficult to ensure success of the elearning courses. This section of the paper summarizes the teachers experience in technology use, their attitude and skills for creating and facilitating an elearning course, and their experience of using OERs in their teaching learning practices.

4.3.1. Current use of technologies in teaching/facilitation

The respondent teachers were asked to share their experience of using technologies in their teaching learning practices. Chart 11 shows that almost 62% of the teachers use technologies in their teaching/facilitation one way or another. The other teachers showed their reluctance in using technologies in their teaching/facilitation.

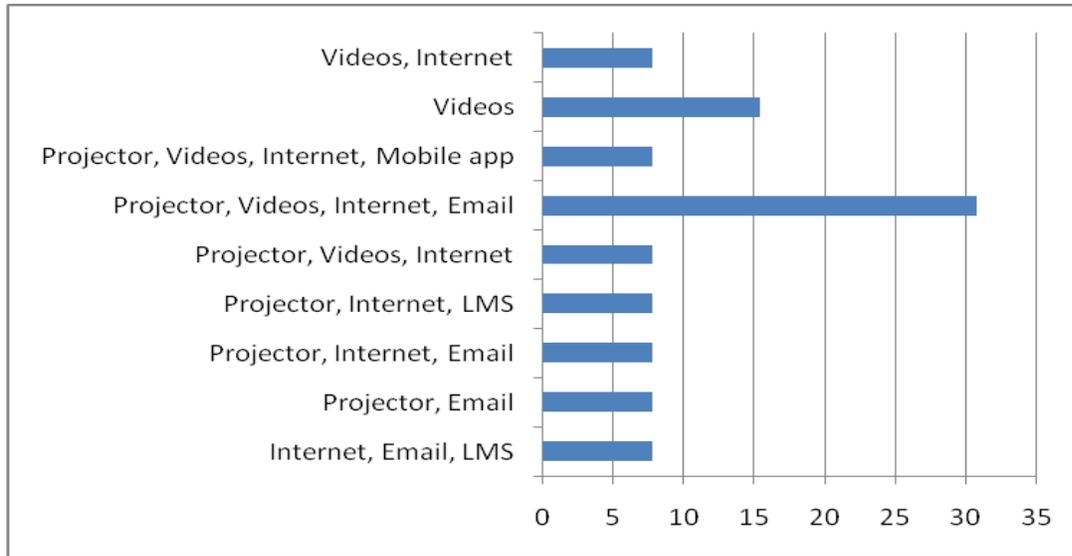
Chart 11:



4.3.2. Types of the technology used by teachers

The respondent teachers who use technologies were asked to indicate the types of technologies they were using. Chart 12 summarizes their responses. The chart shows that teachers mostly use multimedia projectors to play the powerpoint slides in the class. Very few of the teachers use a learning management system (LMS) for engaging the learners and also sharing the resources. The teachers usually use internet for their personal research and personal engagement in social media. Few teachers mentioned that they use emails for sharing information with learners.

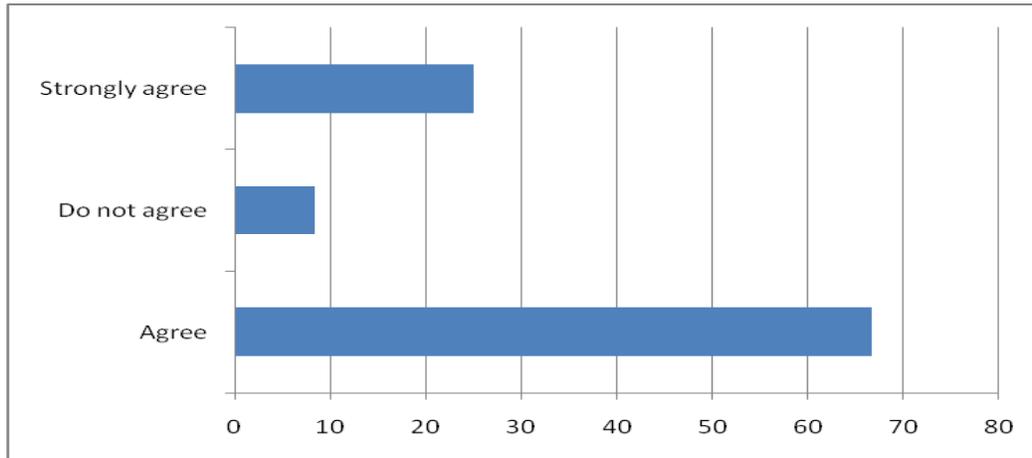
Chart 12:



4.3.3. Does technology improves the quality of education?

The respondent teachers agreed that technology integration improves the quality of education. Chart 13 shows that around 68% of the respondents agreed that technology integration improves quality, 24% strongly agreed and a few didn't agree.

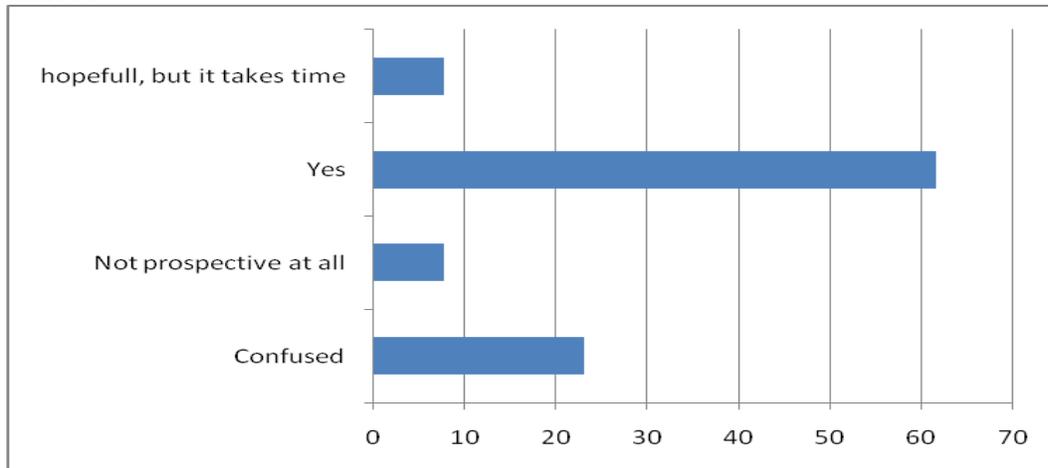
Chart 13



4.3.4. Potential of elearning in Bangladesh

The teachers see huge potential for elearning in Bangladesh as there is a big gap between growing demand for education and skill, and educational opportunities in the on-campus institutions is growing fast. Chart 14 indicates that 61% of the teachers agree that there is huge potential for elearning in Bangladesh, a few disagreed and 13% were not clear.

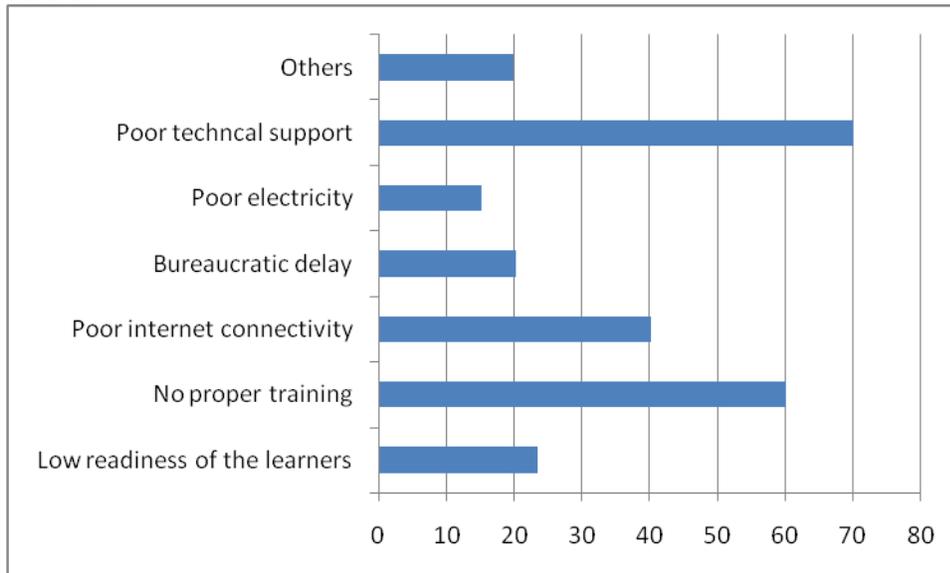
Chart 14



4.3.5. Challenges with implementation of elearning in Bangladesh

Even if there are many benefits of elearning, infrastructure and skills must be supportive to realize these benefits. Chart 15 depicts the challenges the teachers face and require to be resolved soon to ensure meaningful implementation of elearning courses. The teachers feel that poor technical support and lack of skills to create and facilitate an elearning course are the top challenges with elearning implementation in Bangladesh. Other challenges are poor internet connectivity and low readiness of the learners.

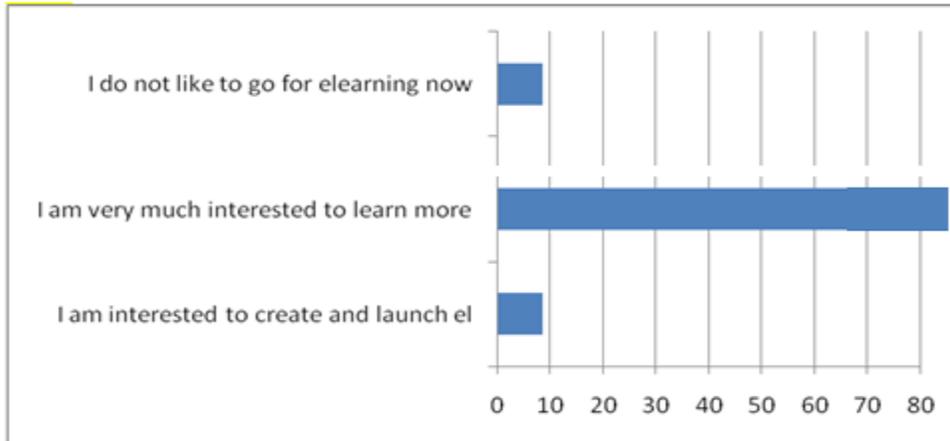
Chart 15



4.3.6. Intention/plan for using technologies in teaching/facilitation

Given the technological infrastructure and skills, the teachers are optimistic about elearning. However, they feel that they need to learn more about elearning design, facilitation and how to make the most of an LMS. Chart 16 shows that the teachers wish to improve their understanding and skills through training. Almost 68% of the teachers mentioned that they are interested to learn more about elearning.

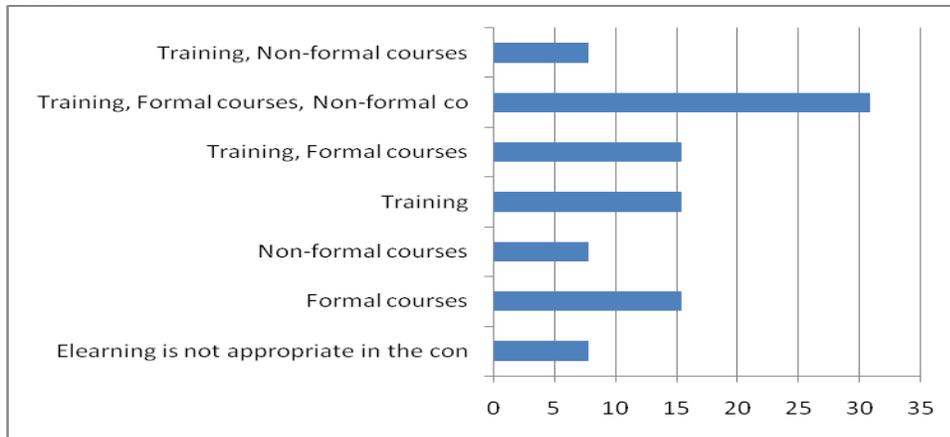
Chart 16



4.3.7. Scope of using of technologies in education

The teachers feel that elearning can create benefits in all types of courses. Chart 17 shows that majority of the teachers thinks elearning can be implemented in the case of formal courses as well as in non-formal and training courses.

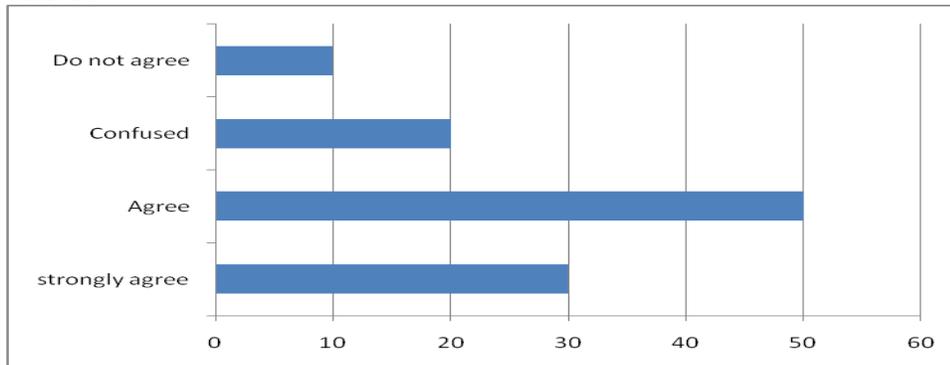
Chart 17



4.3.8. Using OER into elearning courses

Using OER is highly appreciated while elearning courses are developed and facilitated. Also, the elearning course themselves can be OERs. Chart 18 depicts that 50% teachers agree that adopting/adapting OERs into elearning courses will enhance the efficiency and quality of the elearning courses, while 30% of the teachers strongly supported OERs adoption/adaption.

Chart 18



5. Discussions

Elearning is an immediate possibility for a developing country like Bangladesh. With its huge population size, there is no alternative to meet the growing demand of the human resources in the country but to use technologies in education and training. Based on the data collected purposively through an online survey administered with both the learners and teachers, the paper summarizes the readiness, attitudes, skills of learners and teachers toward elearning. The paper also shed light on the scope and attitude of the teacher regarding OER adoption/adaption into elearning courses.

- 5.1. Readiness for technology use: Both learners and teachers have sufficient access to mobile phones and desktop computers or mobile and laptop computers at home or office or both. Almost all the teachers and learners have smartphones with them. Currently, both teachers and learners use technologies for communicating and accessing the social media. Almost everybody access Facebook and use emails. In the case of Skype and LinkedIn, teachers are a bit ahead of the learners; however, learners use Whatsapp more than the teachers. Most of the learners and teachers use the internet more than 5 hours a week and access the internet regularly.
- 5.2. Technology use in teaching-learning: Perception of the learners and teachers about elearning gives a picture how they view elearning compared to other traditional teaching-learning practices. Almost 63% learners didn't have elearning experience before taking the schoology-based course. Only few had some experience about elearning before they took Schoology-based elearning course. However, after they first took the elearning course, most of the learners found the elearning course excellent or very good. Few of the learners didn't feel good with the technology mediated process of learning because of their low access and lack of skill in using technology. The learners found numerous benefits from the Schoology-based elearning courses. The best thing they enjoyed is the access to resources anytime from anywhere. They also reported that they got flexibility in submitting the assignment, quizzes and they could have been engaged in discussions with peer learners both in synchronous and asynchronous way. Overall, they got more learning from the Schoology-based elearning courses compared to the traditional courses. Nearly 83% of learners consider Schoology-based elearning courses as the best ones of the courses they completed so far.

Without proper facilitation, it is difficult to ensure success of the elearning courses. Almost 62% of the teachers use technologies in their teaching/facilitation one way or another. The rest of the teachers showed their reluctance in using technologies in their teaching/facilitation. The teachers mostly used multimedia projectors to play the powerpoint slides in the class. Very few of the teachers use LMS for engaging the learners and also sharing the resources. The teachers usually use internet for their personal research and personal engagement in social media. Few teachers mentioned that they use emails for sharing information with learners. However, around 24% of the teachers strongly agreed and 68% agreed that technology integration can improve quality. Also, 61% of the teachers agreed that there is huge potential for elearning in Bangladesh. The teachers identified some challenges that needs to addressed rapidly to ensure meaningful implementation of elearning courses. Among the challenges, they feel that poor technical support and lack of skills to create and facilitate an elearning course are in the top of the list. Other challenges they identified are poor internet connectivity and low readiness of the learners. The teachers feel that they need to learn more about elearning design, facilitation and use of an LMS. Almost 68% of the teachers mentioned that they are very interested to learn more about elearning.

5.3. Using OER in elearning: Using OER is highly appreciated while elearning courses are developed and facilitated. Also, the elearning course themselves can be OERs. About 30% the teachers strongly agreed and 50% agreed that adopting/adapting OERs will enhance the efficiency and quality of the elearning courses.

6. Conclusion and recommendations

Findings in this study explain the status of e-readiness, knowledge, skills and attitudes towards elearning and OER from the perspectives of learners and teachers. Given the status quo of technology use and attitude, the study justifies the scope for institutional interventions to equip and encourage the teachers, learners and other stakeholders to exploit the benefits of technology integration and the use of OER into teaching and learning.

Elearning needs to be prevalent so that students can have the flexibility to study at their own pace, place and time (Bonk, 2016; SDG4, United Nations, 2016) often through learning management systems but also a myriad other online learning technologies. Flexible learning of this kind provides new channels for delivery and support through, for instance, online tutoring (JISC, 2012).

Merely putting content online does not lead to high quality learning and teaching but requires a pedagogical framework and appropriate training specifically of teachers and tutors. Many students are as likely to resist watching video lectures on their computers as they are to pay attention during in-class lectures. The four most common mistakes in introducing ICT into teaching are:

- installing learning technology without reviewing student needs and content availability;
- imposing technological systems from the top down without involving teaching staff and students;
- using inappropriate content from other regions of the world without customizing it appropriately; and
- producing low quality content that has poor instructional design and is not adapted to the technology in use (COL, 2009).

This study recommends the following steps for improving the capacity, attitude and readiness for learning practices and OER adoption/adaption in teaching-learning:

- Arrangement of capacity building workshops in technology enabled teaching-learning practices as well as in digital literacy; Digital literacy is seen as one of eight basic, required skills in the O*NET Content Model (World Bank, 2016, p. 112; WEF, 2016). Digital literacy has been described by JISC as those capabilities which equip an individual for living, learning and working in a digital society. Digital literacy programs, however, that are considered most successful have some principles in common (World Bank, 2016, p.265):
 - They are mainstreamed into the non-ICT curriculum;
 - They focus on teachers' digital literacy;
 - They go beyond ICT, into the beginnings of "computational thinking." Such thinking refers to the problem-solving skills and techniques software engineers use to write programs, especially those related to breaking a problem into parts, pattern recognition, abstraction, and algorithm design.
 - They are embedded in local content;
- Top down, bottom up and inside-out strategies need to be synchronised to overcome the inevitable resistance of many teachers (Uys, 2007);
- There is already a massive amount of resources online that students can find and use themselves. Learners need to move from consumers to creators (The New Media Consortium, 2015);
- Development and implementation of elearning policy;
- Development and implementation of OER/IP policy – national and institutional;
- Implementation of quality assurance policy;
- Development and implementation accreditation policy for the elearning courses.

References

- BANBEIS, *Bangladesh Educational Statistics*, 2009.
- Bangladesh Open University at a glance, 2001
- Bonk, C. (2016) *Education 3.0: The Learning World of Middle Earth is Fast Changing!*
Accessed http://www.trainingshare.com/pdfs/Education_3_New_Zealand_April_2016.pptx
- COL (2009) *ICTs for Higher Education*. Accessed <https://www.col.org/resources/icts-higher-education>
- Hayes, H (1998). "Models for scholarly publishing in the 20th century". *Online-Ed*, 22 May.
- JISC (2012) *Emerging Practice in a Digital Age. A guide to technology-enhanced institutional innovation*. Accessed http://www.educoas.org/portal/la_educacion_digital/147/pdf/digitalage.pdf
- Koehler, M. & Mishra, P. (2009). What is Technological Pedagogical Content Knowledge (TPACK)?
Contemporary Issues in Technology and Teacher Education 9(1), 60-70.
- Student Support Services Division, BOU, 2010.
- The New Media Consortium (2015). *Horizon Report. K-12 Edition*. Accessed <http://www.nmc.org/publication/nmc-horizon-report-2015-k-12-edition/>
- United Nations (2016). *Transforming Our World: The 2030 Agenda for Sustainable Development*. Accessed: <https://sustainabledevelopment.un.org/post2015/transformingourworld>
- Uys, P.M. (2007). *Enterprise-Wide Technological Transformation in Higher Education: The LASO Model*.
International Journal of Educational Management (ISSN: 0951-354X), Emerald, UK. Accessed <http://www.globe-online.com/philip.uys/2006%2008%20uysLASOmodel.htm>
- Woodall, P (1997c). "The end of everything". In O. Morton, (Ed.), *Exploiting the Information Age*. London: Profile Books.
- World Bank (2016). *World Development Report 2016 - Digital Dividends*. Accessed http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2016/01/13/090224b08405ea05/2_0/Rendered/PDF/World0developm0000digital0dividends.pdf
- World Economic Forum (2016). *The Future of Jobs. Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*. Accessed http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf