Converting a Course from Traditional Teaching to Online Learning for a Blended Programme

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Abstract

In this paper, we discuss a methodology of converting a course to an online course without changing the outcomes of a traditional face to face (F2F) course. Sri Lanka Technological Campus (SLTC) has been offering approved engineering degree programmes since 2016. According to the requests, there is a demand for these programmes among working people. Therefore, SLTC has decided to offer the same programme as a blended programme for working people as a part-time degree. In line with the decision, only a part of the programme will be offered online. Taking this into consideration, the existing content and the different learning activities in courses are analysed in this paper. Furthermore, possibilities and difficulties were identified when converting the activities to online and some solutions to overcome them were suggested. Subsequently, a methodology was developed for converting a course to online mode. The proposed methodology can be used for converting a F2F course to an online course. Consequently, it opens another path for working people to follow an engineering degree.

Introduction

The advancement and the use of Information Technology (IT) has become the key to a new world of education which experiences phenomenal changes with the teaching and learning process while offering more opportunities. This compels the era to move towards the pedagogical approach of Blended Learning (BL), which is a combination of face to face (F2F) (synchronous) and online delivery methods (asynchronous) in a flexible, integrated and complementary manner in order to help, support and enhance learners' diverse needs and provide a successful, efficient and enjoyable learning experience. It is necessary to use the strengths of each medium appropriately to achieve a successful approach. This approach always helps learners and teachers to fulfil their ultimate roles. It also helps institutions by providing students with the best environment with the best learning experience possible. Similar circumstances arose in Sri Lanka Technological Campus (SLTC) as well. SLTC has been offering approved engineering degree programmes since 2016 with the traditional approach. However, according to the requests from the working people, SLTC has decided to offer those programmes in blended mode as well. Accordingly, it creates a challenge in adapting to the BL approach in an environment which is currently using a traditional F2F teaching-learning process.

The implementation of BL is not an easy task for educational authorities and institutes who are currently following the traditional teaching-learning process. Throughout these years, traditional learning has been well practised, hence it would be advisable to gradually implement the transition of the proportion to an online component of BL. Therefore, it is important to have a proper methodology for converting a traditional course to a BL model.

In this paper, we discuss a methodology of converting a course to an online course without changing the outcomes of traditional F2F course. Courses offered at SLTC are taken as a case study for the development of the methodology. According to the decision taken by SLTC, a part of the programme will be offered online. The methodology for converting a course to online mode is presented, after analysing the existing content and the different learning activities in courses.

F2F and Online learning

Blended Learning is a pedagogical approach that combines traditional classroom methods with effective and socializing opportunities together with online learning activities and technologically enhanced active learning possibilities of the online environment taking advantage of the best elements of both settings across a diverse group of learners. According to Singh (2003), learning is not just a one-time event but rather learning is a continuous process that provides various benefits over using any single learning delivery medium alone. Recent researches show that BL is the most effective learning model which has a great potential to emerge as the predominant learning model in the future (Barbara et. al., 2011; Jacqueline, 2015). More than one delivery method

is used in this approach to optimize the Learning Outcomes (LOs) and the cost of the program (Singh & Reed 2001). They identified several benefits of using this approach which improved learning effectiveness, extended outreach, optimized development cost and time and optimized business results. According to Osguthorpe and Graham (2003), the six reasons why one might choose to design or use a BL system are pedagogical richness, access to knowledge, social interaction, personal agency, cost-effectiveness and ease of revision.

In the modern educational strategy, BL mode has been accepted around the globe with the development of technology which becomes ubiquitous in e-learning. The BL model is a logical and scientifically acceptable alternative to the e-learning process which is smoothed by combining the teaching and learning process in an innovative, less expensive and incorporates more sophisticated types of learning that are becoming increasingly more common at universities and life-long educational institutions. Garrison & Kanuka H. (2004) argued that BL is a term that explains the various attempts made by teachers to incorporate the element of technology into the traditional classroom setting, because of the efficiency this arrangement brings. According to the research findings of Akkoyunlu & Soylu (2008), the students' views towards this process are positive with respect to their learning styles. Kavitha & Jaisingh (2018) studied how beneficial this approach for students who are skilled in using certain computer programs and applications.

This learning modality combines the benefits of both online and offline teacher-learner methods to achieve the best possible results for the learners while the learner is actively engaged and has control over the individual learning experience. This approach consists of some of the characteristics such as cost reduction, independent learning in a flexible manner (studying at a distance from the originator of teaching material; at their own time, at the place of their choice and without F2F contact with the teacher), time efficiency, both online and offline learning, instructor involvement, and peer interaction. According to the researchers, three main reasons were identified why BL is being recommended (Graham, 2006). Increase access to learning, the flexibility of learning and the cost-effectiveness are those three identified factors. The common characteristics cited by Ruchi and Sunita (2015) are cooperative learning, critical thinking, reusable learning object, cost-effectiveness, time-saving, flexible, reflective thinking, and combination of digital content and F2F classes.

BL has many benefits undoubtedly and it enhances the performance of students with the use of IT. However, there are some limitations too: the lecturer has to cover long, detailed and extensive tasks and consumes a lot of time for preparation. Some of the F2F interactions could be mislaid since it has a limited number of contact hours with the lecturer. Sometimes students may feel that they have been allocated for more work and may reduce the motivation. Above mentioned can be recognized as some barriers of implementing BL model at an institutional level. Those could be highlighted towards a peer-reviewed successful implementation of a high-quality instructional design process of the BL model including technological support and learner support.

It is important to understand how much of the F2F instruction must be replaced by online coursework. There are various ways to define BL; it is still a problem to understand how to make BL work best for students in order to achieve a positive outcome. There are many types of research emerging with respect to this field. Proctor (2002) proposes a spectrum of e-learning as highlighted in Figure 1.

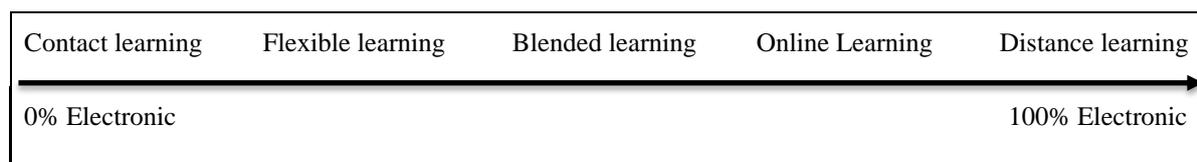| Contact learning	Flexible learning	Blended learning	Online Learning	Distance learning
0% Electronic				100% Electronic

Figure 1. The spectrum of E-Learning (Proctor, 2002)

BL systems combine F2F instruction with computer-mediated instructions. Figure 2 reflects the spectrum of delivery modes in terms of time and space and illustrates the relationship among distance learning, E-Learning and BL (Bencheva, 2010).

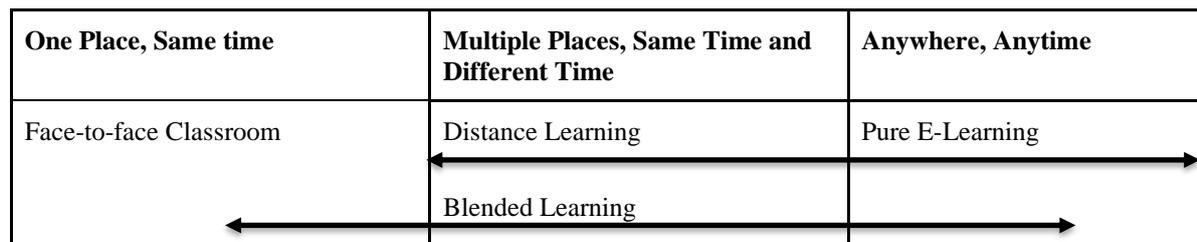| One Place, Same time	Multiple Places, Same Time and Different Time	Anywhere, Anytime
Face-to-face Classroom	Distance Learning	Pure E-Learning
	Blended Learning	

Figure 2. The spectrum of delivery modes (Bencheva, 2010)

A traditional course cannot be easily replaced by a blended mode. It is important to integrate both F2F and online modes successfully by considering learning objectives and LOs. Most of the institutes now focus on a flexible, results-oriented curriculum. As per Tucker (2004) Outcome Based Education (OBE) is a process that involves in the restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of higher order learning and mastery rather than the accumulation of course credits. In order to achieve the best results, careful integration of F2F and online mode is important when converting a traditional course into BL.

Methodology

Schools, colleges, universities and other educational institutes are now exploring the idea of BL, as this method is beneficial to achieve effectiveness in the teaching/learning process with new opportunities. However, there should be proper guidelines or a mechanism to convert any existing traditional course to online. To develop a methodology, the existing content and the different learning activities in courses are analysed in this paper. Furthermore, possibilities and difficulties were identified when converting the activities to online. Some solutions to overcome them were considered in the methodology.

The following flow diagram (Figure 3) focuses on a previously developed course and shows how to convert it to a BL mode. Accordingly, a course can be converted into an online course without changing the outcomes of traditional F2F course. Therefore, the LOs and the learning objectives will be the same for the BL course.

According to the diagram, in the first stage, it is necessary to analyse and identify all the activities in a course as per the traditional F2F context. All courses in the traditional mode of delivery have F2F lecture sessions. These lectures can be delivered online in different formats; using different types of media and communication tools. For instance, a presentation/lecture can be delivered as a PowerPoint file, as a recorded (or live) video presentation (audio format is also possible), self-study session, referring recommended textbooks, an online discussion can be carried out in a discussion forum or through a Skype call and videos with screencasting. The instructor can also use the virtual class concept where a group of learners can connect to the platform at the same time. Learners can keep live contact with the instructor while other learners ask and answer questions, comment, etc. Thereafter, the diagram directs to the next activity which is the laboratory sessions. The F2F laboratory sessions can be converted to videos, video conferencing sessions and guided written documents where students can use them to do practical at home without an instructor.

Some lab practical sessions can be done even at home if it is possible to find the required materials under the instruction guide. Practical which requires instruments that are expensive and difficult to find can be studied through video recordings. For example, simulators can be used to do Electrical, Electronic and Computer practical. Further, workshops arranged within the university premises can be recorded and uploaded into Learning Management System (LMS). However, the students can be given the opportunity to attend the F2F workshop at university premises as well. Furthermore, the projects can be given to students with properly documented materials with the necessary guidelines. So that the students can continue with the progress reports according to the guidelines and can meet the project supervisor via online communication media such as Skype. Reports can be submitted to the supervisor through e-mail or LMS. When a group project is given, peer communication becomes an important aspect. The effective use of social media can be used to establish this. When it comes to case studies, the same method that is used for the projects can be followed. Moreover, the tutorial classes are very important for courses such as Mathematics. The tutor can record, or screencast some sample problems and guide through a video session. Those videos can be shared among students via LMS.

The assessment component of the BL is the other important branch that should be considered. Vaughan, Cleveland-Innes, and Garrison (2013) share some important aspects with the assessments that focus on practices required of BL approach. Cleveland-Innes and Wilton (2018) emphasize three important points about assessments which include both formative and summative assessments and assessments that encourage deep learning. Formative assessments provide feedback and information during the instructional process, while learning is taking place and measure student progress as well as the progress of the instructor. Self-assessment and peer-assessment activities and questions that teachers raise during the learning process are some examples of formative assessments. The goal of summative assessment is to evaluate student learning at the end of an instructional unit by comparing it against some standard or benchmark. Midterm examinations, end of unit or chapter tests, final projects or papers are some of the examples for summative assessments. Graded activities that include collaboration and constructed thought, activity and products will encourage students to engage in deep learning.

In the flow diagram (Figure 3), the lectures, laboratory sessions, assignments, workshops, field visits and projects can be evaluated accordingly. The assessments such as Self-Assessment Questions (SAQs) can be used in the BL approach. SAQs can be given in the form of online quizzes (MCQs), structured questions and peer-reviewed questions which are important and can be hosted via LMS. Answer scripts of the assignments and progress reports of the projects, case studies, field visits can be evaluated once students uploaded them to LMS and the
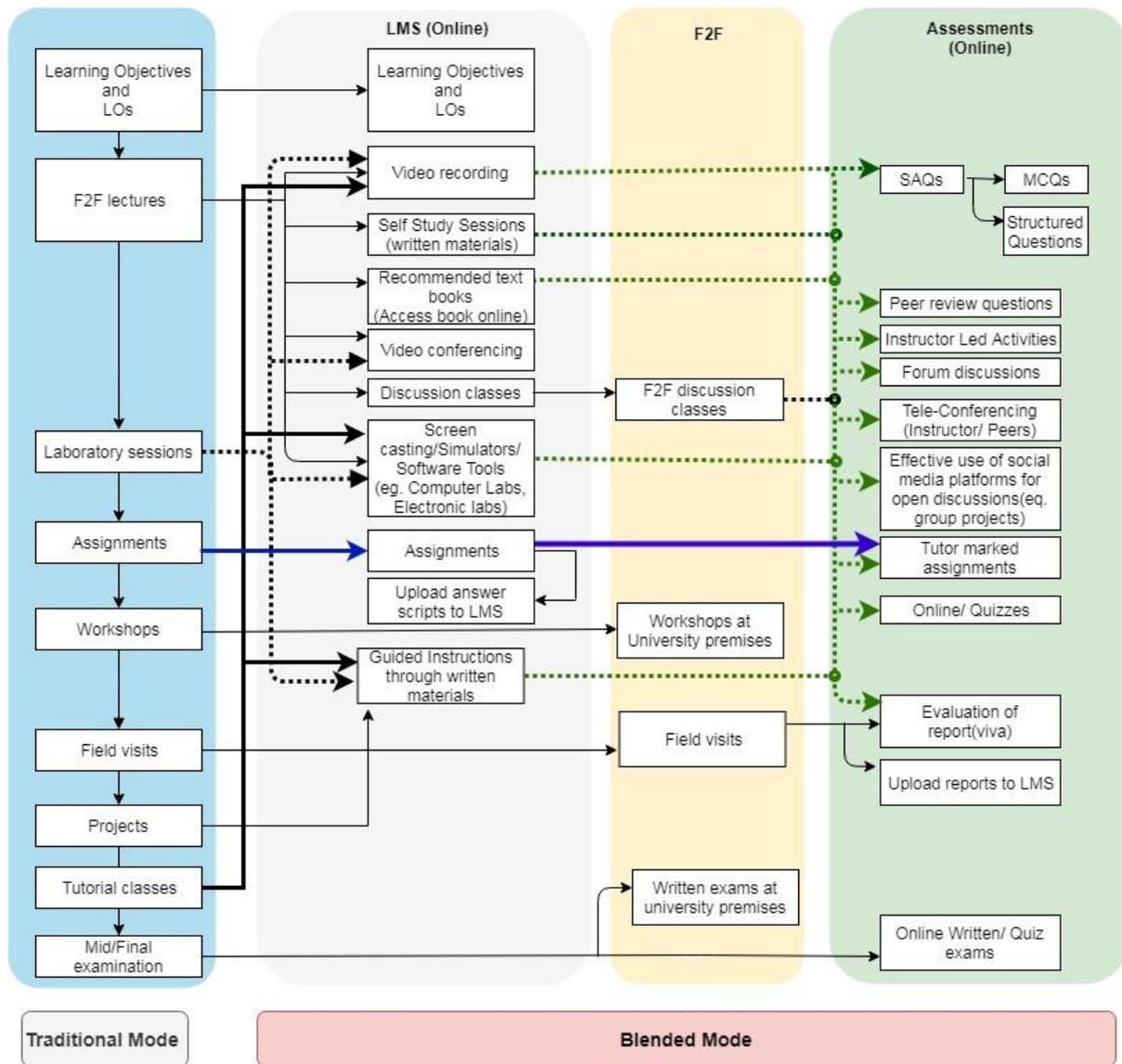
Figure 3. The flow diagram to convert a traditional F2F course to BL mode

VIVA/presentations can be conducted via Skype. Mid examinations and the final examination can be done via LMS or in the university premises.

The diagram (Figure 3) shows the way in which a traditional F2F course can be converted into a BL programme at an institutional level with the use of the methodology proposed. The percentage of F2F and the online component to be mixed can be decided by the institute.

Analysis of the results

The proposed methodology presented as a flow diagram (Figure 3) has been tested for three modules: Principles of Programming, Digital Electronics and Differential Equations under the engineering degree programme at SLTC. Accordingly, each component of this module has been converted by following the flow diagram. However, the final decision of making the components into BL mode was taken after careful consideration of other factors such as resources and technology available in SLTC. Table 1 shows the results of the conversion.

It can be seen that the conversion is well simplified when this methodology is used and the only factor which is to be considered is the availability of resources and technology in SLTC. The components required for blended learning are already defined in the diagram.

Table 1. The results of the conversion of traditional F2F course to BL mode using the flow diagram. (Abbreviations: DS - discussion session; VS - recorded video sessions; SC - screencasting; OQ - online quizzes; SQ - Structured questions; FD - forum discussion in LMS; QB - question bank; LS - laboratory sessions; GI - guided instructions; TMA - Tutor marked assignment; IQ - in class Quiz)

Components in an existing course	Principles of Programming		Digital Electronics		Differential Equations	
	Traditional Mode	BL Mode	Traditional Mode	BL Mode	Traditional Mode	BL Mode
Learning Objectives and LOs	Learning Objectives and Los	Learning Objectives and LOs	Learning Objectives and LOs	Learning Objectives and LOs	Learning Objectives and LOs	Learning Objectives and LOs
F2F lectures	14 F2F lectures	1st lecture – F2F DS 13 VS SAQs (OQ, SQ) FD Peer review QB in LMS	14 F2F lectures	1st lecture – F2F DS 13 VS SAQs (OQ, SQ) FD Peer review QB in LMS	14 F2F lectures	1st lecture – F2F DS 8 VS 4 SC sessions SAQs (OQ, SQ) FD Peer review QB in LMS
Laboratory Sessions	10 laboratory sessions	3 – written GI 4 - Videos with SC 3 – Video recordings	10 laboratory sessions	4 - Videos with simulations 3 – Video recordings, 3 – LS at university	NA	NA
Assignments	2 TMA 1 IQ	2 TMA in LMS, submit via LMS marked by the Tutor 1 OQ	2 TMA 1 IQ	2 TMA in LMS, submit via LMS marked by the Tutor 2 OQs	3 TMA 2 IQ	3 TMA in LMS, submit via LMS marked by the Tutor 2 OQ
Workshops	NA	NA	NA	NA	NA	NA
Field Visits	NA	NA	NA	NA	NA	NA
Projects	Submit the hard copy of the reports, Viva and presentations at university premises	Submission of the reports via LMS, Viva and presentation through Skype/F2F	NA	NA	NA	NA
Tutorial classes	NA	NA	NA	NA	3 tutorial classes	1-video recording, 2 –written GI
Mid/Final examination	Mid and Final examination – Written exams at university premises	Mid examination - Online examination with SQ and MCQs, Final examination - at university	Mid and Final examination – Written exams at university premises	Mid examination - Online examination with SQ and MCQs, Final examination at university	Mid and Final examination – Written exams at university premises	Mid and Final examination – Written exams at university premises

Conclusion

According to the findings drawn, it can be concluded that the proposed methodology can be used in order to convert the traditional F2F courses to online courses at SLTC and prepare a blended programme for the working people. Further, this blended learning model would be beneficial in many ways for students who enrol this degree programme which allows them to study from any place, at any time, in a flexible manner while working. The students who are currently studying can also follow some courses in the blended learning mode. Both the university and learners take advantage in their learning and teaching environments based on their expectations and goals with available opportunities in this model.

The proposed methodology can be used to successfully convert traditional F2F courses to BL mode. This was convinced according to the courses already converted using this methodology within SLTC. Moreover, any institute that wishes to convert its traditional courses to BL mode can use this methodology as well.

It can be concluded that the proposed methodology can be successfully implemented at SLTC to prepare a new blended programme while enabling working people to get the opportunity of following an engineering degree.

Acknowledgements

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