ABSTRACT

Many educational institutes venturing into courseware development to create online learning materials for their own students are often not aware of the challenges that lie ahead in managing courseware development projects. This paper highlights the potential challenges a courseware development project may face. It discusses lessons learnt from development projects carried out in Malaysia for content and language-based courses. Particularly, real cases will be presented to highlight challenges and the steps that were taken to overcome them within the constraints of time, budget, curriculum demands, client expectations, and competencies of content providers.

Keywords
content-based courseware, courseware development, language-based courseware, project management

1) INTRODUCTION

With the advent of computer technologies, popularisation of blended approaches to learning, and the availability of online and distance learning modes, many educational institutions have ventured into courseware development to create their own online learning resources for their students. For example, at Universiti Putra Malaysia, the creation of online e-learning materials for students is one of the key performance indexes used to assess the performance of the lecturer. Many institutions have jumped onto the bandwagon by actively customising and developing open source e-learning platforms to encourage and facilitate the lecturers in producing online learner-centered learning materials. Many of these projects, however, have not met with the level of success expected and many institutions have had to outsource the work to professional courseware development companies.

Educators as well as institutions are often not aware of the challenges that lie ahead in managing courseware development projects when they embark on such projects. Professional courseware developers, on the other hand, are well aware that courseware development is fraught with uncertainties and problems because it involves more than just converting teaching material into electronic format. Often, unforeseen difficulties arise to derail projects handled by an inexperienced project manager or an inexperienced lecturer entrusted with the responsibilities of a project manager. For ease of reference, we will use the term ‘project manager’ to refer to all who are engaged formally or informally in managing courseware development.

This paper is organised in the following ways. Section 2 discusses some of the general misconceptions about courseware development that is held by inexperienced project managers. Section 3 presents various challenges that are faced in managing content-based and language-based courseware projects. Examples
of cases are drawn from the years of experience the first author has in dealing with both types of projects. Section 4 concludes the paper by highlighting the role that is played by the project manager in managing courseware development.

2) GENERAL MISCONCEPTIONS ABOUT COURSEWARE DEVELOPMENT

The ambitious and the inexperienced are often caught unaware of the tremendous amount of planning, revising and coordinating of resources that are required in a courseware development project. We believe some of the unexpected pitfalls that hit a project midway result from some of the following misconceptions about courseware development. Busting these misconceptions, we feel, is the first step towards successful management of a courseware development project.

2.1) Misconception 1: Get a text, module or book in print and convert it into electronic format

Those who are not trained in instructional design and who do not understand the difference between online learning and traditional learning approaches make the mistake in assuming that courseware development involves a simple conversion of offline materials into electronic format. Hence, there have been cases where course instructors either voluntarily offered or were told to turn in their lecture notes for conversion into the electronic format. Many assume that the project should be completed within a very short period of time. After all, how long does it take to have a typist type out the relevant lecture notes, and include some exercises with answer keys into the computer?

However, courseware development is not merely a simple process of converting lecture notes or even a module with exercises into electronic form (e.g. Golas, 1993; Ng et al., 1997; Norhayati & Siew, 2004). Lecture notes and textbooks are often supplementary to face-to-face sessions with an instructor. An effective courseware, on the other hand, may replace the instructor as in the case with some distance learning programmes and self-access learning modules. Unlike lecture notes and textbooks, a courseware may not be used only to supplement face-to-face lessons. Even when it is supplementary, it is often used without the supervision of an instructor. Courseware, therefore, have to be self-sufficient in themselves.

Providing the answer key alone to exercises or quizzes may not be the best option available to aid learning. Instructional designers involved in courseware development often brainstorm and even pilot-run the courseware to identify various learning paths that may be sought by the learner. For example, it is common to find the following options on the menu of a courseware: a glossary of terms for definitions of technical jargon, a dictionary for second language learners, a key to the answer for quizzes, a key to more explanation, a key that allows students to review content that they have read prior to the quiz, and a key for more quiz items, just to name a few. These options are often not available in lecture notes or books, but they are indispensable elements for a digital courseware.

2.2) Misconception 2: Make use of freely available tools to make your online materials and quizzes

With more and more open source software available for free on the Internet, many have also thought that the cost for developing a courseware should be very minimal. After all, the technical platform is available free of charge. However, many may not have the technical expertise to customise these available resources for their own needs (Sloan, n.d.). More frequently, the subject matter may require features that are not readily available in these open source software.

2.3) Misconception 3: Get the lecturers to provide the content for the course

Realistically, the content providers would be the lecturers of the course. However, not all lecturers know how to do everything on their own to create the needed materials for the courseware. In a traditional classroom,
instructors often photocopy or play videos to demonstrate a learning point. Resources can be obtained from libraries and on the Internet and provided to learners. These methods however cannot be replicated with ease in a courseware development project. For one, there are issues with copyright that have to be addressed.

Course instructors may not be able to provide original and authentic materials that can be utilised in the courseware. What is needed in such situations is a team of developers. You need, in addition to the content experts, the graphics experts, the multimedia experts, the voice or even sound and music experts, the programmers, the language experts, and the instructional designers. The role of the project manager is to coordinate the expertise that is brought to the table by these experts.

2.4) Misconception 4: Face-to-face teaching is the same as online teaching.

There are some pedagogical principles that are shared between face-to-face teaching and learning situations, and between online teaching and learning situations. However to think that these two situations are the same and would require the same input would definitely lead one down a disastrous path for courseware development. A good courseware often anticipates in advance all possible options taken by students. Assumptions are explicitly mapped to ensure that learning progress is not blocked by an unmet or unrealistic assumption. Students following an online course do not have the luxury of asking the instructor questions while working on the materials. This is why a lot of time and effort is spent to ensure that these stumbling blocks are removed from the learning path engaged in by the learners (Smith, P.L. & Ragan, T.J).

3) ISSUES AND CHALLENGES

In this section, we will present real cases to exemplify the different challenges that a project manager may face when developing content-based and language-based courseware.

3.1) Content-based courses

3.1.1. Pedagogical knowledge of content providers

Understanding how to effectively transfer content knowledge to the learners is critical to effective courseware development. While content lecturers are experts in their own fields of specialisation, most of them do not have explicit knowledge of pedagogy. Some teach the way they were taught. Very few have been exposed to online learning. Therefore, they do not have the experience of using online e-Learning materials to appreciate the impact of the materials on the fresh minds of the learners. How can a project manager deal with such a challenge?

In one such project to produce a courseware for an introductory course to quantity surveying, the project manager, together with the instructional designers, had to sit through a series of lectures given by the content expert to learn the subject matter before providing feedback to instructional designers on how to work on the storyboard for the course. During these sessions, when the project manager or the instructional designers had difficulty understanding a specific concept, they posed their questions to the content expert. This was how they discovered that the content expert had assumed that the learners already knew a fundamental concept (that would have been taught by another lecturer in a different area) which was not covered in the course materials. This was the missing link discovered that was crucial to the progress of students in the course. The project manager made sure that provision was made to have this fundamental concept covered in order to provide a proper and systematic structure in the initial lessons provided in the courseware, an important aspect of instructional design.

3.1.2. Commitment of content providers in the process

Embarking on a project without clearly understanding the level of commitment that is
required of the content providers in the process of courseware development could jeopardise the quality of the courseware developed.

In another project, the content lecturers were merely given a directive to be involved in the courseware development project. No immediate incentives were provided. They were merely asked to work with the project manager brought in to oversee the whole project. Since there were no tangible incentives, some instructors merely surrendered their lecture notes, power point slides and their textbooks to the project manager.

Realising that the content providers had little understanding of the process involved, the project manager called for regular meetings and had to even conduct demonstration and training sessions for the content providers to understand the magnitude of the project and what is required of them in the project. Having understood the regular involvement needed, although they were happy with the results from the discussions and the quality of courseware produced from the iterative process of ongoing evaluation and feedback, these lecturers were not motivated to continue sacrificing the long hours needed, without immediate or short term returns. As such, the management had to work out some immediate incentives and travelling allowances to motivate them.

Content lecturers often make this complaint, which we have paraphrased in our own words:

“We are engaged to teach in this institution. Nothing in our appointment letter says anything about producing authentic materials for the college. Besides we are not paid for writing materials for these courseware and we are also not given the credit for the materials produced. This does not seem like a fair deal. We don’t have time for this.”

This is a legitimate complaint. When credit and motivation of the content providers are not addressed, the chances of getting anywhere near completion of the project is rather slim. The project manager would have to work doubly hard with the administrators to work around this problem, which involves constraints of time and budget.

3.1.3. Lack of one real expert in the field

Most instructors are experts in the subject matter that they teach. Often their areas of specialisation are very specific.

In a courseware project for a foundation course of a professional subject, a few subject matter experts of the subject were needed for the different areas, as according to the lecturers, each area was taught by a different lecturer who was the expert for that particular area. When the particular lecturer was not available for a period of time, production of the course content had to be delayed.

To make the learning tasks meaningful, the expertise that is needed for development of a good courseware may not involve depth but breadth of content knowledge as well as other related general knowledge (Siemens, 2002).

For example, in one project undertaken, an authentic video recording of practical work in the workshop was required. Since the courseware could not make use of available copyrighted videos, the decision was made to have the content expert conduct and record the experiment on video.

Getting the content expert to conduct the experiment in the workshop was not a problem. However, upon reviewing the video made, the video could not be used because standard workshop safety procedures were not followed during the shooting of the video. The content provider wore a watch during the demonstration of the practical work and did not have protective gloves on – contravening one of the requirements of the video which is to showcase that standard workshop safety measures have been taken.

3.2) Language-based courses

A different set of problems presents itself in the development of language-based courseware. The examples chosen here are courseware for developing proficiency in the English language.
3.2.1. Curriculum constraints
One of the major challenges faced is working within the curriculum demands of the courseware. In Malaysia, for example, the Ministry of Education requires stories used to teach language to project the local culture and to include specific moral values identified in the curriculum (Kementerian Pelajaran Malaysia, 2000).

How does this affect the courseware development process? Courseware developers cannot buy stories from native writers in English speaking countries like the US, UK or Australia. Local writers have to be commissioned to write authentic stories that include specific moral values. This is one of the major challenges faced. Local writers who can write well in English are difficult to find. Local writers who can interpret the curriculum and write within the constraints of the curriculum are even harder to come by. Also, often there are budget constraints that rule out engagement of professional writers for the job. A project manager working on such a project would often have to work with non-professional writers who may lack the creativity needed to produce engaging reading passages. This often causes many rounds of rejections and revisions, resulting in frustrations for the non-professional writers engaged for the project and for the whole project team who see their work going in fruitless circles. One way to solve this problem is to have a realistic budget allocation right from the beginning for the procurement of stories so that experienced and good writers can be engaged.

3.2.2. Leveling
The next major challenge in developing a language-based courseware is dealing with the issue of determining the right difficulty levels for materials used in the courseware.

Perception of levels is dependent on the context in which the courseware is to be used. For example, materials that are considered as elementary for an urban school setting may be considered as intermediate or even advanced for a rural school setting. When content providers write stories for different levels, a uniform understanding of the intended levels has to be achieved.

With some projects, this problem was not really resolved. However, with a current preschool project, a prototype was shown to a group of preschool teachers to get their comments on the leveling. For the first prototype shown, the comment was that it was too difficult, and the voice-over was too fast. Using this feedback, the materials were simplified, and shorter simple sentences were used. Graphics that illustrated the meaning of some words were also included to make sure that difficult words were explained on demand. (i.e with hyperlink).

Having an experienced courseware quality assurance (QA) personnel who has taught different levels helps to standardise the leveling. This person needs to be able to edit and simplify the language used based on the content given by the writer or make requests for the writer to enhance the content with more challenging words. Having a group of content QA personnel who can do this and having an avenue to check the suitability is an advantage to the project team.

4) THE ROLE OF THE PROJECT MANAGER

In conclusion, we would like to recapitulate on the role of project managers. Project managers need to have a sound knowledge of pedagogical principles and instructional design. They should also have an understanding of the power of technology and how that can be utilised to make learning effective. Having this understanding, they need to be able to transfer their knowledge to the rest of the team, as a courseware development project involves a whole team of people: content providers, instructional designers, programmers, technical assistants for graphics, video and sound recording, free-lance writers, editors, and the stakeholders of the project (i.e. the institution or college).

Project managers play the role of leader, moderator and mediator. They have to deal
with the instructional designers, the programmers, the content providers and the clients to make sure that the project is progressing within budgetary and time constraints. When things fall through, they have to negotiate for more time or for a bigger budget. They have to deal with changes in demands and expectations made by clients as the project progresses. They have to be able to recognise when a new demand from a client is or is not a variation order: changes that involve additional charges. In short, a project manager is the central person who pulls together people of diverse expertise to make the project a success.

5) REFERENCES


