

Managing Innovation: Looking Forward to Web 2.0¹

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An on-line module using Web 2.0 tools was developed to supplement face-to-face instruction in communication skills. To improve interactivity in the module and to facilitate innovation growth, an on-line survey was administered. The *Concerns-Based Adoption Model* (CBAM) was mapped on data consisting of student reactions. Suggestions representative of each stage of concern were implemented to improve efficiency of the module. It was discovered that this is an effective way of forming an innovation based on Web 2.0. Model mapping helped us concentrate on the aspects of innovation which needed immediate attention without losing the spirit of innovation.

■ Introduction

As universities in many parts of the world are busy integrating new on-line components with the existing curriculum systems, there is an increasing need for more attention to be focused on building the necessary interactivity into the new on-line courses. Since the development of on-line courses occurs as an innovation, the management of these innovations is likely to decide the success of such courses (Whitworth, 2005). However, it appears that in many settings, attention to technological innovations has overshadowed the attention given to education innovations.

In this paper, I wish to discuss a study carried out in a university setting to investigate the following two issues:

1. Mapping the varying levels of awareness of this an educational innovation
2. Making use of student reactions to manage the innovation

■ Institutional Setting

The present developmental experiment was carried out in a university setting. In this context the university students complete three core modules in Communication Skills. One of these modules is Professional Communication. It is delivered over a period of four months with one lecture every week and two hours of tutorials every fortnight. Before the introduction of web-based components, teachers teaching this course always found these contact hours insufficient and decided to supplement them using Internet technology. In 2004, we (the teacher-researchers) developed supplementary modules using *Blackboard*, a delivery platform for Internet courses. The module was

implemented over a time period of six months. Since then the model has continually been developed and delivered every year. During this period of experiment a total of 170 users used the course website. The course website content included announcements on course activities, lecture notes (in interactive (hyperlinked) as well as MS Word format), presentations on lecture topics (mostly using MS PowerPoint), digitised videos, on-line quizzes and discussion forums (called Discussion Boards).

The platform used for development was *Blackboard* which provides an innovative collection of web-based tools that make it easy for the instructors to develop web-based content. The platform is very convenient for students from two points of view: easy access to content and facility to interact with other students. The platform can be customised to make it more suitable to the needs of individual instructors. *Blackboard* provides an interface that facilitates course construction (content organization, format, and design) as well as a set of educational and administrative tools. These tools include student management, access management, on-line scoring and grade-book maintenance, conference room, discussion boards, announcements area, documents storage, quiz preparation, student tracking and e-mail (visit <http://www.blackboard.com> for more information on *Blackboard*).

The technologies encompassed by Web 2.0 include blogs, wikis, and podcasts. The main feature of these technologies is social bookmarking. The philosophy focuses on the idea of empowering end-users of the Internet and actively helping them to become active contributors who can help to customize media and technology for their own purpose, as well as for the purpose of serving the user communities. This

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philosophy contrasts sharply with the old “Web 1.0” methodology, in which content was created by a handful of large corporations, web pages were static and rarely updated, and only the tech-savvy could contribute to the development of the World Wide Web.

■ Research Method

At the end of the semester, an on-line survey was administered to the course users. The survey had two components. The first component had fixed-choice response questions. This component essentially tried to measure the efficiency and interactivity of the delivery method. Findings related to this component have been reported in Pathak (2002). The second component asked the students to write briefly about their overall reaction to this innovation. In total, 96 student users responded to this question. Responses that were cryptic (such as “Very good”) or less relevant (including responses related to the overall course rather than to the innovation itself) were not taken into consideration. After omitting these responses, a total of 74 responses were rated by two raters. We used a part of the modified *Concerns-Based Adoption Model* (Hall & Loucks, 1986) for these ratings. Our model identifies six stages of concern that participants might experience when involved in an educational innovation. A description of these stages is given below.

- **Stage 1: Awareness**
A general awareness of the innovation. Participants seem confident that the innovation is likely to bring some benefit to them.
- **Stage 2: Personal Inadequacies**
Participants seem to be uncertain about the demands of the innovation. They are worried about their inadequacy to meet these demands. They might be worried about the level of skills required and the need for retraining themselves.
- **Stage 3: Efficient Management**
Attention is focused on the management of resources and suggestions are made regarding how specific

aspects can be handled more efficiently.

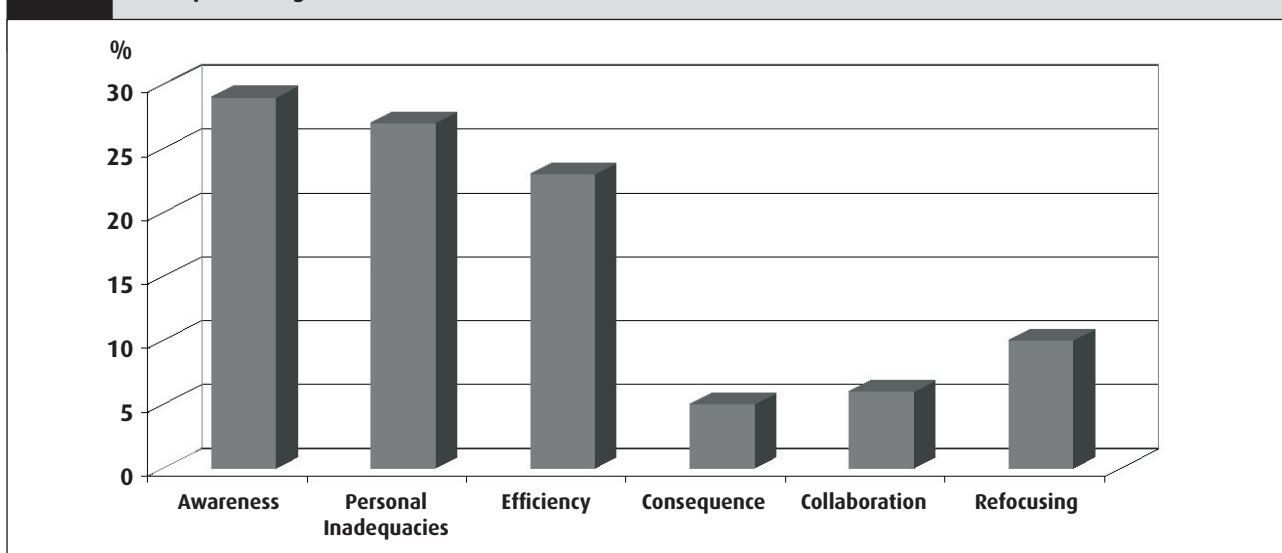
- **Stage 4: Consequence**
Participants are concerned about the long-term impact. They may worry about the utility of the innovations for their own convenience.
- **Stage 5: Collaboration**
The focus is on the utility of the innovation to the whole student population. Participants are concerned about collaboration with and cooperation of other students.
- **Stage 6: Refocusing**
Participants take a holistic view of the innovation and, at times, have definite ideas about the directions the innovation could take in future. Alternatives are suggested on the basis of an understanding of the entire innovation process.

■ Results

Table 1 shows the number of participants at each stage of concern. As expected, a large number of the students (29 percent) were only at the ‘Awareness’ stage of concern, while a similar number of students (27 percent) focused on the ‘Efficiency’ of the innovation.

Compared to some other countries, Singapore is considered digitally more advanced. It is generally believed that access is less of an issue in Singapore as far as computers are concerned. Secondly, the students participating in this experiment were students of Computer Engineering. We had therefore assumed that skill level in IT will not be an issue of concern. Against this background, it was rather unexpected that 29 percent of the students would still be concerned about their personal capacities. What was encouraging to see was that about 10 per cent took a holistic view of the innovation (‘Refocusing’). Only five percent were bothered about the ‘practical’ and immediate use of the innovation. Similarly, very few (six percent) were concerned with collaboration, a finding that was rather disappointing, since collaboration was one of the main aims of building the course-site.

Table 1 Participants’ stages of concern about the innovation



■ Using the Results

We decided to make maximum use of the comments at 'Efficiency' and 'Refocusing' stages. Suggestions at the 'Efficiency' stages were immediately implemented whenever possible. These included:

- *Provide printer-friendly version of documents:* Isolated student reactions indicate that some students lack the knowledge of the flexibility the MS Word and MS PowerPoint provide in this regard. The following reaction is a case in point.

Perhaps the lecture notes in PowerPoint form can be condensed to be more plain and more printer-friendly. (Response No. 73)

Action taken: Students were taught how they can condense notes themselves using features in the software. One of the main goals in this project was to encourage students to manipulate the provided content for learning purposes.

- *Organise units according to topics rather than on a timeline.*

Action taken: We used the 'Learning Unit' tool in Blackboard to organise lectures, tutorials, and videos into a single learning unit. This satisfied the demands for thematic as well as chronological organisation.

- *Use more digitised videos.*

Action taken: Digitised videos do offer adaptive interactivity to some extent. They can be paused and replayed. They offer the much-required personal and selective viewing. We were therefore happy to video-record more of lecture content and offer it on the teaching site.

- *Create more accessible user interface.*

Action taken: Although we did ponder on this issue for quite some time, not much could be done. First, what is 'accessible' and what is not for the entire class remains a subjective matter. Second, the environment offered by Blackboard platform is customisable only to a limited extent. In future we would like to investigate which features make the environment 'accessible'.

Comments at the 'Refocusing' stage helped us refine our own holistic view of the innovation and re-design the website for the next intake of students. We have been thinking about some of the following issues:

- Provide a single 'gateway' to all courses: The comments suggested that this would motivate students to make more frequent visits to the site and would also increase the participation rate.
- Reconstruct the site to provide more communication 'models' and examples, moving away from text-based content to visual content, from discrete-point quizzes to web-quests and other interactive exercises.

Other measures in the future might involve convergence of technologies such as software tools (the reviewing feature in MS Word), use of Classroom Management Systems (for sharing files), and a closer

relation between face-to-face teaching and the Discussion Boards.

Although only six percent of the students made suggestions regarding 'Collaboration', the following two useful directions emerged to improve collaborative interactivity:

- Increase participation of tutors in on-line discussions
- Include lecture-related stimulating topics for discussion

■ Conclusion

Systematically using participant feedback can be a challenging task while managing an innovation. To keep the innovation progressing, it becomes essential to focus on the feedback of those participants who are at the *Efficiency* and *Refocusing* stages of the innovation. If building interactivity into the on-line courses is an aim (as it was in our case), it becomes necessary to ensure that majority of participants are able to reach the *Collaboration* stage. Lastly, problems related to hardware, network, and users' computer skills need to be addressed at the institutional level.

Mapping our student reactions onto the *Stages of Concern Model* has helped us make better use of our student feedback. We were able to concentrate on the aspects of innovation which needed immediate attention without losing sight of the spirit of innovation.

It is clear from the students' reactions that we have come a long way following the e-learning path. In fact, there seems to be no separate entity as e-learning. This is because more and more of learning is becoming web-based. To accomplish our objectives, Web 2.0 tools allow us to address our innate need for human contact. That can occur through blogs, wikis, or just by sharing our experiences on a discussion forum. We can thus integrate the isolated acts of conventional e-learning and the human need for companionship and interaction. As we realised in this experiment, we need to make a conscious effort to engage learners in e-learning. This can only be done by making them active participants in the process of managing this innovation.

REFERENCES

- Guay, T. (1995). Web publishing paradigms. Retrieved on June 16, 2008, from <http://www.smcc.qld.edu.au/infotech/Paradigm/Multimed.htm>.
- Hall, G., & Loucks, S. (1986). Teachers' concerns as a basis for facilitating and personalizing staff development. *Teachers' College Record*, 80(1), 54-68.
- Pathak, A. (2002). Initiating and establishing on-line courses: A case study. *Proceedings of the IUTA2002 Conference*. Bangkok: CUP.
- Whitworth, A. (2005). The politics of virtual learning environments: Environmental change, conflict, and e-learning. *British Journal of Educational Technology*, 36(4), 685-691.

