Enhancing Teaching-Learning Professional Courses via M-Learning

V. Sangeetha Chamundeswari and G.S. Mahalakshmi

Abstract Professional courses impose restrictions on teaching methodologies. Though not very theoretical in nature, following ICT techniques for teaching-learning professional courses will only cater to better presentation to the audience but not with the objectives being understood. Assessment techniques have to be evolved for ensuring the reach of such courses. And teaching-learning-assessing becomes less interesting when the traditional techniques are to be followed during online learning. It might be expected in the near future that learning will take place in versatile environments that are smoothly integrated into everyday life. This paper proposes a course management system for m-learning. This paper also discusses and shares the experiences in using mobile learning and innovative assessment methodologies followed for teaching-learning professional course, say GE9021-Professional Ethics and Engineering, R2008, Anna university, Chennai, India.

Keywords Mobile learning · Course management systems · Flexible learning · Interactive tools · Lifelong learning

1 Introduction

CMS is a course-based system that enables participants to communicate and collaborate, access activities and resources, meanwhile being tracked, assessed and reported on via the web [4]. The Course management systems are used mainly for online learning which includes placing course materials online, course administra-

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tion, associating students with courses, tracking student performances, submission of assignments, assessing student grades, and also providing effective communication between the learner and the instructor [7]. The CMS can provide an instructor with a set of tools and a framework which allows building course content online and to provide various interactions with students taking the course. CMSs provide an integrated set of Web-based tools for learning and course management. Examples of a CMS include Blackboard, Angel, Sakai, Desire2Learn, WebCT, Oncourse and Moodle serves as prominent resources which are nearly ubiquitous in Higher Education and have a positive effect on teaching and learning [2]. This prominence comes from using CMSs to enhance courses, offer distance learning courses, and support hybrid courses, which combine online courses, can further be extended to mobile learning with the tremendous growth of the increased mobile technologies.

This article proposes a model for CMS research that equally considers technical features in these systems and conceptual issues about how people learn. Categories in the model relate to these features and issues. The categories are transmitting information to students, creating class discussions, evaluating students, evaluating courses, and creating computer based instruction [6]. Detailed information about each category will be provided.

2 M-CMS Framework

The CMS framework proposed in this work essentially addresses several important design aspects through a modular design approach and we have mapped the framework with the cognitive domain aspect of the bloom's taxonomy as shown in Fig. 1.

Fig. 1 M-CMS framework
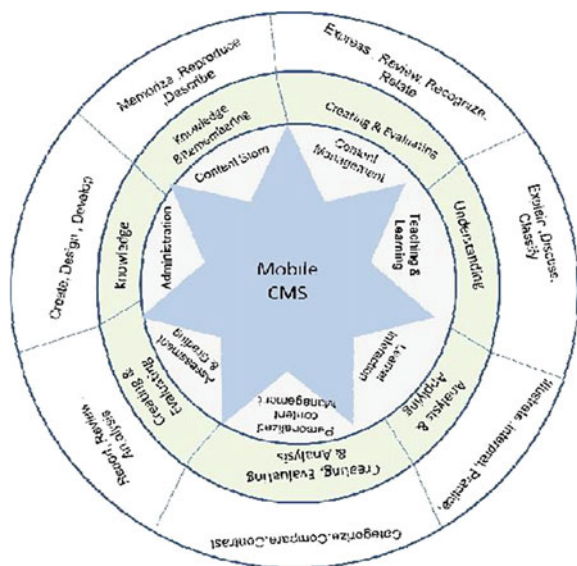
The proposed framework in Fig. 1 will create, store, assemble and deliver personalized e-learning content. We have taken a sample course GE9021—Professional Ethics, which comes under curriculum of VIII Semester Computer Science Engineering students at Anna University, Chennai and provide a case study on how the same can be conducted via mobile devices and social media. The outcome of the course will be the knowledge level of the learner gained through the course and also to fulfill learning objectives of the course.

3 GE9021 Professional Ethics via M-Learning—A Case Study

The aim of Professional Ethics course is to foster in students the competence of applying integrated knowledge with mobile technologies. Therefore, it is important to develop an integrated curriculum for teaching standard operating procedures in physical assessment courses through mobile devices. During the learning activities, each student is equipped with a mobile device; the learning system not only guides individual students to perform each operation of the physical assessment procedure but also provides instant feedback and supplementary materials to them if the operating sequence is incorrect [11]. Students were given a wide array of choice for the type of group activities they should be a part of. Apart from group activities, some marks were set aside in each assessment for evaluating students individually for their creativity in bringing out issues related to ethics. While these activities promised the students a fun learning process, a good effort was taken to ensure that these activities also covered the syllabus as prescribed by the University from an examination point of view. In future, sensing devices can also be used to detect whether the student has conducted the activities correctly for assessing the current status of the student.

3.1 Activities in Professional Ethics Course

Students were given a wide array of choice for the type of activities they should be a part of. The overall findings of the activities indicated that the students generally viewed Mobile Learning as beneficial and useful. This indicated a satisfactory level of perception of the use of mobile devices in learning. In terms of time management, the respondents held the opinion that Mobile Learning will better assist them in managing their time as well as paying much more attention to learning percent [5]. This was because Mobile Learning provides great flexibility for students to manage their learning time [8]. The various activities followed for team assessments were: Ad wars, Surveys, debates, news reporting and corporate ethics, Fig. 2

Fig. 2 Behavioural pattern of different levels of learners
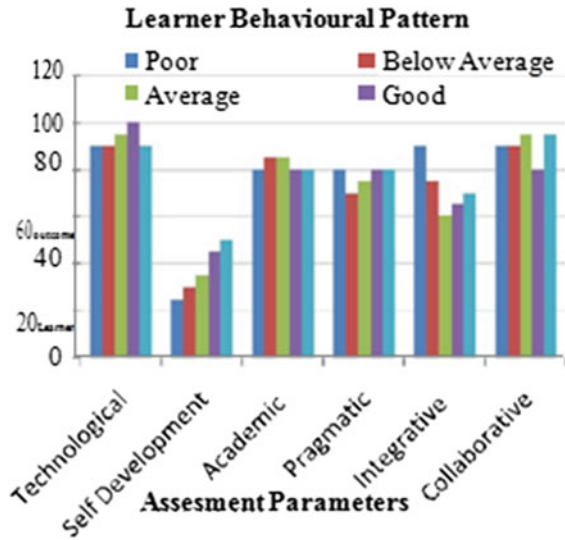
depicts the behavioral pattern of different levels of learners for all the above mentioned activities.

Preparation of news bulleting and movie reviews were performed for individual assessment. As the final leg of the activity-based approach that was adopted for the class "Professional Ethics in Engineering", students were asked to analyze various ethical issues prevalent in the society using any form of social networking of their choice.

3.1.1 Using Social Media Platforms to Support Group Collaboration

Community opinion is always invaluable. Crowd sourcing enables you to tap into the collective intelligence of others in a community and with social media this can be done at a scale never before possible [10]. The avenues of social networking employed by students were: facebook, twitter and quora.

3.1.2 Using Social Media to Monitor Group Members' Individual Contributions

Well-defined responsibilities helped in working asynchronously and putting toge-ther the combined efforts. The split-up proposed by most teams participating was of the form:

- Deciding the social media platform(s) to be used.
- Deciding the ethical issue to be analyzed.

- Circulating/Promoting the page or post among people via social networking to harvest as many opinions as was possible.

Comparison and contrasting others' reasoning, opinions and conclusions helped endorse higher quality decision making, better problem solving and also increased creativity of each member [9]. There was healthy competition to come up with the best conclusions and thereby contribute to a major portion of the analysis of the ethical issue.

Since all the work was done online (Social Networking sites and Document Sharing platforms) and since the interdependence between the work done by each of the group members required constant data exchange, it was easy and necessary to ensure that there was constant progress in each individual's contribution [12].

3.1.3 Using Social Media to Facilitate the Assessment of Students' Contributions and Learning Outcomes

The activity of each student is effectively logged in social networking websites and teachers can be given access to this information for evaluating each student [13]. The same metrics mentioned for peer evaluation can also be used by teachers to assess the quality of individual posts [1]. Besides this, the number of people following the thread or group or question is an excellent measure to identify the popularity and quality of the discussion as a whole. An example metric that can be devised by teachers for assessing the student can be the ratio of the number of people who followed the question to the number of people who viewed it. The higher the value of this ratio, the better the quality of discussion. The regulation of posts by the students should also be taken into account for their assessment [14].

3.2 Assessment

The various parameters taken into consideration are technological, self development, Academic, pragmatic, integrative and collaborative. Engineers must perform under a standard of professional behaviour that requires adherence to the highest principles of ethical conduct.' In conformance to this, this course is directed at helping students:

- Identify the core values that shape the ethical behaviour of an engineer
- Utilize opportunities to explore one's own values in ethical issues
- Become aware of ethical concerns and conflicts
- Enhance familiarity with codes of conduct
- Increase the ability to recognize and resolve ethical dilemmas.

Irrespective of the different levels of the learner, the activity based approach for teaching and learning professional courses serves to an equal extent which meets the requirements of the learners. As shown in Fig. 2, a below average student could also perform extremely well in an activity compared to a bright student. Thus the technology enhanced learning has got the benefit of retaining any kind of learner for a long time [3].

4 Conclusion

This paper has presented a reflective overview of developments in mobile course management systems from the perspective of pedagogy. The challenge will be to discover how to use mobile technologies to transform learning into a seamless task where it is not recognized as learning at all. Integrated technology-enhanced courses seem to be more demanding for students and also for instructors. In the future, the mobile CMS should cater for easy course administration, tracking facilities, targeted email facilities, reporting functions, assessments and statistics in a mobile friendly manner by hosting on cloud servers.

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