Summary of Research Papers of Learning Management System (edX-MOOCs)

CS 797: edX Enhancement

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1 Introduction

All papers are downloaded in the duration from 2/August/2013 to 29/August/2013.

2 Papers on Enhancement of Learning Management System

1. A literature-based method to automatically detect learning styles in learning management systems[7]
   - Summary: Efficiency and effectiveness of learning process can be improved by adaptations to learners learning styles. But for the time being, most of existing education systems lack of adaptation or personalization; every learner is delivered the same learning contents. Many researchers have been studying to find out an efficient way of students learning style identification for a better personalization.
   - Keywords: Adaptation, Personalization, Learning style detection, Learning management system

2. A decision support system to improve e-learning environments[30]
   - Summary: Due to the lack of face-to-face contact, distance course instructors have real difficulties knowing who their students are, how their students behave in the virtual course, what difficulties they find, what probability they have of passing the subject, in short, they need to have feedback which helps them to improve the learning-teaching process. Although most Learning Content Management System (LCMS) offer a reporting tool, in general, these do not show a clear vision of each students academic progression.
   - Keywords: Data mining, Web mining, Data warehouse, E-learning, Distance education.

3. Obtaining Adaptation of Virtual Courses by Using a Collaborative Tool and Learning Design[22]
   - Summary: It provides teachers with a highly intuitive visual authoring environment for creating sequences of learning activities. These activities can include a range of individual tasks, small group work and whole class activities based on both content and collaboration. Then a methodology to apply this tool is described.
   - Keywords: Learning Design, Collaborative Learning, Learning Object, eLearning, Adaptation, Virtual Courses, Ontologies

• Summary: In a learning environment, the students experience different affective states. Learning environments that take into account the students affective state enhance the students learning, gain and experience. Therefore, it is crucial to provide students with different learning material and activities according to different affective states. To provide learning that considers students affective states, the primary step is the detection of affective states of a student.

• Keywords: Human Computer Interaction, Affective States, Adaptive Learning Systems, Confidence, Confusion, Effort, Independence

5. An Interaction Visualisation Tool for a Learning Management System[14]

• Summary: This paper describes an automated, scalable, multi-browser, real-time visualisation software tool, which depicts the structure and design of the interaction between the students in an asynchronous conference. It gives an in-depth explanation of the tool and illustrates the purpose and management of interactions between the students in a learning environment.

• Keywords: Not Provided.

6. Challenges and opportunities for learning analytics when formal teaching meets social spaces[21]

• Summary: Unlike conventional learning management systems, social software environments such as Athabasca Landing provide a persistent space and are flexible enough to support social and learner-led methods of informal, non-formal, and formal learning. Analytics can be used to effectively track and measure personal progress and help uncover extra-curricular factor affecting learner success such as network formation and growth. The paper reports on an attempt to explore this problem through analysis of student behaviour on the Athabasca Landing site within the context of a course. Its findings, explanation, and potential implications are listed.

• Keywords: Management, Measurement, Documentation, Experimentation, Human Factors


• Summary: Typical learning management systems consider only little or, in most cases, no adaptivity. In this paper, we introduce an adaptive mechanism which enables such systems to provide students with courses that fit their individual learning styles. The adaptive mechanism is based on an advanced student modelling approach which identifies learning styles by automatic, dynamic, and global
student modelling. Based on the identified learning styles, the adaptive mechanism composes courses that match the students learning styles, aiming at making learning easier for students.

- Keywords: Not Provided.

8. Defining Learning Management System Skills for Faculty: An Instructional Design Workshop for Faculty Technology Trainers[3]

- Summary: To help insure effective, efficient faculty training, it is recommended that technology trainers, faculty developers, and instructional technologists use a recognized instructional design method to develop training activities. Applying instructional design will make it simpler to define the needed skills, focus training on learners, and develop effective training.
- Keywords: Instructional technology, online learning, faculty development, training, instructional design. Learning Management Systems

9. Developing and analysing a mobile learning knowledge management system[8]

- Summary: The core idea of this system is to catch the attention of the subscriber and at the very moment by inject simple knowledge cues to this attention which if desired by the subscriber may get into more details, and that way promote a proactive learning style.
- Keywords: M-learning, knowledge management, knowledge cues, learner attention, learners environment


- Summary: The proposed back-end system is aimed at fair and effective assessment in a class of elementary programming practice. While most LMSs provide basic functions to support various learning courses, this back-end system complements such conventional LMSs by providing the following specialized functions: syntax check of codes, plagiarism detection, and automated black-box testing. The specialized back-end system makes a general-purpose LMS more useful for both students and teachers at low cost.
- Keywords: Learning Management System, Code Assessment, Plagiarism Detection, Black-box Testing

11. E = MA^2 (e-learning in a Moodle-based adaptive and accumulative system)[13]

- Summary: The paper proposes an approach to automated learning object metadata retrieval in the context of an adaptive learning management system. It is based on the idea of generation of test items
using the accumulated student answers to a special kind of test questions of the so called Accumulative Question Type. Further, it provides the outlines of a possible implementation on the basis of the open-source computer learning environment Moodle.

- Keywords: E-Learning, Learning Object Metadata, Metadata Generation, BPM, WMS, Adaptive LMS

12. **Enhancing learning management systems to better support computer science education**[12]

- Summary: In this report they provide an overview of current CS specific on-line learning resources and guidance on how one might best go about extending an LMS to include such tools and resources. We refer to an LMS that is extended specifically for computer science education as a Computing Augmented Learning Management System, or CALMS. We also discuss sound pedagogical practices and some practical and technical principles for building a CALMS.

- Keywords: Learning management system, LMS, CALMS, computing augmented learning management system, computer science education

13. **Learning management systems: the need for critical analyses**[2]

- Summary: Learning management systems are receiving much attention in Nordic education. While they undoubtedly provide opportunities for educational innovations and can efficiently facilitate distance education, the enthusiasm can mask problematic consequences or preconditions which in effect sift out who may become included and who cannot. This paper points to a range of such difficulties and argues the need for voicing critical perspectives.

- Keywords: Education, learning management systems, LMS, accessibility, educational methods, control, standardisation

14. **Redundant features of design in blackboard (LMS) and user error**[20]

- Summary: The increasing prevalence of Learning/Course Management Systems in higher education is providing some new opportunities to explore and assess the design of such systems in reaching their purpose as integrated platforms that create online learning environments. Certain web-based design features have some likeliness to result in user errors. Blackboard is such a case study.

- Keywords: Learning Management System, Blackboard, design, teaching pedagogy

15. **LOMOLEHEA: learning object model for online learning based on the european higher education area**[5]
• Summary: They proposed a Learning Objects Model for Online Learning (LOMOLEHEA) based on the European Higher Education Area, which allows the implementation of the different levels of a learning object. They demonstrate that the use of an online courses content structure, favors the creation of learning objects with didactic units, which in turn improves organization in so far as it is highly reusable. Therefore, it is important for teachers to be familiar with the use of structures or templates that support the use of didactic units and give a uniform pattern to the contents in learning management systems.

• Keywords: Learning object modeling, metadata


• Summary: This paper focused on alleviating the workload for designers of adaptive courses on the complexity task of authoring adaptive learning designs adjusted to specific user characteristics and the user context. We propose an adaptation platform that consists in a set of intelligent agents where each agent carries out an independent adaptation task. The agents apply machine learning techniques to support the user modelling for the adaptation process.

• Keywords: Not provided.


• Summary: The purpose of the study reported in this paper was to explore what organisational factors affected teachers use and perception of information & communication technologies, and the use of a new learning management system. Teaching staff across all learning areas at a secondary school responded to a survey. Outcomes from the study are in the form of recommendations to assist the ongoing implementation of a learning management system and the integration of technology in learning environments.

• Keywords: Organisational culture, perceptions of leadership, training, management approaches to system implementation, technology acceptance, learning management systems

18. Organizing technology enhanced learning[25]

• Summary: In this Paper a methodology is presented to integrate this framework in various learning applications. Thus, compliance with organizational rules is ensured both within one application and cross-system.

• Keywords: Not provided.
19. **Paving the way towards an efficient Learning Management System**[6]

- **Summary:** The emergence of networked computers has brought to the forefront the use of web-based education, which defies boundaries. The pivotal advantage associated with web based learning is the classroom and platform independence it provides. Current web-based systems are found to be a collection of static pages accessorized with few videos. The learning associated with these web based systems is static and serial, making the whole process uninteresting and incomplete. The need for the hour is a Learning Management System (LMS), which adapts itself according to the learners performance and learning path. This paper provides insight into building an effective and efficient LMS using five general principles, which are defined as the Five Elements. This leads to the creation of a dynamic, learner centered environment which focuses on learning retention and cognitive development, juxtaposed with emerging technologies.

- **Keywords:** LMS, Design Issues, Expert, Learner-Centered, Student Status Monitoring (SSM)

20. **Preparing for the long tail of teaching and learning tools**[26]

- **Summary:** Learning tools in the long tail are those that are widely used by a subset of instructors tools specific to large courses or tools specific to a particular field, and tools that are only used in a few courses or a single course. Using several examples from courses taught on School of Information, University of Michigan campus, they showed how to put extensibility in the hands of the instructors to create knowledge-age learning technologies that are customizable, interactive and controlled by users.

- **Keywords:** Not provided.


- **Summary:** A preliminary work in support of our research in developing ontology driven LO extraction analyzes some of the existing Learning Content Management Systems with emphasis on Architecture and Design Issues. Learning Object Repositories have great impact on retrieval and storage of contents, so performance improvement issues via content aggregation in Learning Object Repositories have been studied in this paper. The paper discusses the challenges that are being faced by Web-Based Learning Content Managements System with regards to content extraction.

- **Keywords:** WBLCMS, Personalized Learning, content aggregation, metadata, standards, Learning Object Content Models
3 Papers on Massive Open Online Courses

1. Deconstructing disengagement: analyzing learner subpopulations in massive open online courses[16]
   - Summary: As MOOCs grow in popularity, the relatively low completion rates of learners has been a central criticism. This focus on completion rates, however, reflects a monolithic view of disengagement that does not allow MOOC designers to target interventions or develop adaptive course features for particular subpopulations of learners. To address this, we present a simple, scalable, and informative classification method that identifies a small number of longitudinal engagement trajectories in MOOCs. Learners are classified based on their patterns of interaction with video lectures and assessments, the primary features of most MOOCs to date.
   - Keywords: Learning Analytics, Learner Engagement Patterns, MOOCs

2. Implementing a massive open online course (MOOC)[17]
   - Summary: Massive open online courses (otherwise known as MOOCs) from non-profits like edX and for-profits like Coursera and Udacity have repeatedly drawn upwards of 100,000 registrants from all over the world. How to teach so many students effectively, though, is non obvious. How to disseminate content to so many students, particularly large videos, is technically challenging (if not expensive). And how to collect, evaluate, and return work to so many students is a feat unto itself.
   - Keywords: Not Provided

3. Will massive online open courses (MOOCS) change education?[23]
   - Summary: This panel will present a lively debate about the promise, and realities, of MOOCs and whether they are transformative, or merely a faddish trend.
   - Keywords: MOOC, Massive Open Online Education, online learning

4. METAVERSIA: a proposal for a Drupal based MOOC publisher[24]
   - Summary: They proposed a conceptual model of a MOOC, named Metaversia with knowledge-building based framework. The conceptual model is validated by a prototype implemented on Drupal, an open source content management system.
   - Keywords: E-learning, Open Education Resources, OpenCourseWare, Massive Open Online Courses, Drupal

5. Interactive learning resources and linked data for online scientific experimentation[18]
• Summary: This paper presents FORGE, a new European initiative for online learning using Future Internet Research and Experimentation (FIRE) facilities. FORGE is a step towards turning FIRE into a pan-European educational platform for Future Internet through Linked Data. This will benefit learners and educators by giving them both access to world class facilities in order to carry out experiments on e.g. new internet protocols. In turn, this supports constructivist and self-regulated learning approaches, through the use of interactive learning resources, such as eBooks.

• Keywords: Interactive eBooks, widgets, Linked Data, Open Educational Resources, Massive Open Online Courses, Self-Regulated Learning

6. The value of learning analytics to networked learning on a personal learning environment[9]

• Summary: In this paper they tried to define learning analytics and their purpose for learning and education. They pondered on the best possible fit of particular types of research methods and their analysis. Methodological concerns related to the analysis of Big Data collected on online networks as well as ethical and privacy concerns will also be highlighted and a case study of the use of learning analytics in a Massive Open Online Course explored.

• Keywords: Learning Analytics, Analytics Tools, Massive Open Online Courses, Educational Research, Big Data

7. MOOCs and the funnel of participation[4]

• Summary: This paper explores these issues, and introduces the metaphor of a funnel of participation to reconceptualise the steep drop off in activity, and the pattern of steeply unequal participation, which appear to be characteristic of MOOCs and similar learning environments. Empirical data to support this funnel of participation are presented from three online learning sites: iSpot (observations of nature), Cloudworks (a place to share, find and discuss learning and teaching ideas and experiences), and openED 2.0, a MOOC on business and management that ran between 2010-2012. Implications of the funnel for MOOCs, formal education, and learning analytics practice are discussed.

• Keywords: Learning analytics, participation, MOOCs

8. Multi-faceted support for MOOC in programming[29]

• Summary: Many massive open online courses (MOOC) have been tremendously popular, causing a stir in academic institutions. The most successful courses have reached tens of thousands of participants. In our MOOC on introductory programming, we aimed to
improve distinctive challenges that concern most of the open online courses: allowing and requiring the participants to be more active in their online learning (flipped-classroom), demanding them to go deeper than typical CS1 course, and added incentives for participant retention by treating the course as a formal entrance exam to CS/IT degree. Our Extreme Apprenticeship (XA) method for programming education appeared to be successful in an online environment as well.

- Keywords: mooc, programming, extreme apprenticeship, automatic assessment service, formal acknowledgement

9. ASQ: interactive web presentations for hybrid MOOCs[28]

- Summary: Proposed system is designed to support teachers that need to gather real-time feedback from the students while delivering their lectures. Presentation slides are delivered to viewers that can answer the questions embedded in the slides. The objective is to maximize the efficiency of bi-directional communication between the lecturer and a large audience. More specifically, in the context of a hybrid MOOC classroom, a teacher can use ASQ to get feedback in real time about the level of comprehension of the presented material while reducing the time for gathering survey data, monitoring attendance and assessing solutions.

- Keywords: HTML5, Software clicker, impress.js

References


