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Optimizing Student Engagement in Online Learning Environments

A.V. Senthil Kumar

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Optimizing Student Engagement in Online Learning Environments

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A volume in the Advances in Educational Technologies and Instructional Design (AETID) Book Series

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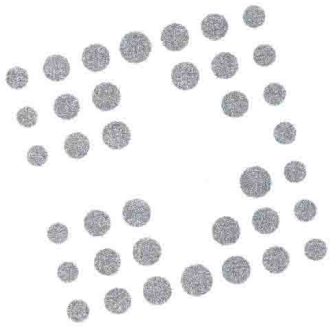
Published in the United States of America by
IGI Global
Information Science Reference (an imprint of IGI Global)
701 E. Chocolate Avenue
Hershey PA, USA 17033
Tel: 717-533-8845
Fax: 717-533-8661
E-mail: cust@igi-global.com
Web site: http://www.igi-global.com

Library of Congress Cataloging-in-Publication Data

Names: Kumar, A. V. Senthil, 1966- editor.
Title: Optimizing student engagement in online learning environments / A.V. Senthil Kumar, editor.
Description: Hershey, PA : Information Science Reference, 2018. | Includes bibliographical references.
Identifiers: LCCN 2017020274| ISBN 9781522536345 (hardcover) | ISBN 9781522536352 (ebook)
Subjects: LCSH: Web-based instruction. | Motivation in education. | Engagement (Philosophy)
Classification: LCC LB1044.87 .O8 2018 | DDC 371.33/4--dc23 LC record available at https://lccn.loc.gov/2017020274

This book is published in the IGI Global book series Advances in Educational Technologies and Instructional Design (AETID) (ISSN: 2326-8905; eISSN: 2326-8913)

British Cataloguing in Publication Data
A Cataloguing in Publication record for this book is available from the British Library.



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Robert Morris University, USA

ISSN:2326-8905
EISSN:2326-8913

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Preface

Online learning is an emerging technology which provides dynamic features to enhance the learning experience of an individual through self-disciplined manner. The key success of this system is delivering content over internet and it can be accessed by the learners over internet and it can be accessed by the learners anywhere and anytime. Such online based educational software strives to fulfil the learners' expectations in terms of providing comfortable online environment. Although, the e-learning systems are greatly acknowledged as an efficient solution, most of these systems do not consider the learners' motivation with respect to teaching strategies and contents. There are many evidences in the traditional system that lack of motivation implies poor quality of learning. The success of an online course depends greatly on how actively engaged students are with the instructor, with their classmates, with the content, with technology, and with course management tools. Interactivity in any teaching and learning context involves students responding to information, seeking instructors' feedback, reflecting in the feedback, and acting to appropriately tailor personal learning experience (Hingsheng Dai, 2007).

Recent software collections were taken various attempts to accommodate the learners' motivational states through attractive designs, graphical representations and gaming features. Since it has been proven successful in several cases, especially in the learners' perspective, students are not always focused on their learning and even they might try for some other actions to succeed in an educational environment. The online learning system needs an ability to recognize the learners' attitude and behavior. Detecting disengagement status from learners' action would offer the opportunity to make online learning more efficient, drastically reducing the disengaged learners and reengage them back thereby it reduces the attrition ratio. The motivational based disengagement system is still in an informing stage with respect to assessing the learners' attitude and characteristics.

Learning environments aim to deliver efficacious instruction, but rarely take into consideration the motivational factors involved in the learning process. However, motivational aspects like engagement play an important role in effective learning-engaged learning gain more in recent years, there has been increased interest in engagement during learning. This is of particular interest in the science, technology, engineering and mathematics domain. The online learning system gets more attraction in recent days and its resources are playing a pivotal role in the internet based education. One of the most critical elements for student success and retention in E-learning classes is being able to be discipline learner with good habits. Students must be able to understand the lesson format be able to moreover software tools for greater comprehension of course content. Educational Data Mining (EDM) is an emerging field in latest era, which exploits statistical, machine learning and data mining algorithms over different types of educational data. The main objective of Educational Data Mining is to solve the educational related issues (Baker & Yacel, 2009).

A study with data mining techniques to analyze various patterns of online learning behaviors, identified students' behavioral patterns and preferences in the online learning processes, differential active and passive learners, and found important parameters for performance prediction (Hung & Zhang, 2008). A study about the educators' task by employing any kind or analysis, how well the greatness in the test and the corresponding Elaborated Feedback (EF) were designed or tailored towards the individual needs of the students (Pechenizkiy, Calers, Vasilyeval, & De Bra, 2008). A collaborative educational data mining tool through association rule mining is used to improve live 3-learning courses and allowing teachers with similar course profiles to share and score discovered information (Garcia & Romero, 2011).

Enormous research information can be drawn through data mining and apply suitable research to educational problems in learning, cognition and assessment (Sachin & Vijay, 2012). Classification models has been applied for prediction of students' performance, and cluster models for grouping students based on their cognitive styles in e-learning environment (Joranovic, Vakicevic, Milovanovic, & Minovic, 2012).

This book seeks to provide the latest research and developments to determine the disengagement detection of students or learners through online learning system. Different tools, techniques and systems used to determine the disengagement detection of students or learners through online learning system will provide guidance to the professionals who will use this book to inform their practices. Being able to detect the disengagement status automatically this book would offer the opportunity to make online learning more efficient, drastically reducing the disengaged learners and reengage them back thereby it reduces the attrition ratio. Detecting and analyzing students' disengagement in online learning using various tools, techniques and systems will help to automatically detect disengagement learners and offer the opportunity to make online learning more efficient, enabling tutors and systems to target disengaged learners to reengage them and thus to reduce the attrition.

The audience of this book will widely vary from Professors, Tutors, individuals, researchers, scientists, academicians, students and libraries. This book will generate tremendous interest in terms of solutions to detect students' disengagement in online learning through the relevant information from learners' action and would offer the opportunity to make online learning more efficient, drastically reducing the disengaged learners and reengage them back, thus will have highly acceptable scholarly value and at the same time potentially contribute to this very specific sector of research.

ORGANIZATION OF CHAPTERS

The book has been divided into three sections: "Concepts and Practices," "Tools and Techniques," and "Methodologies and Cases." Altogether there are 12 chapters covering wider range of concepts, techniques, and methodologies.

Chapter 1 discusses briefly about the online learning, advantages and disadvantages of online learning, importance of motivation in Online learning, types of motivation, the motivational theories related to student engagement and finally discuss about various disengagement detection techniques in online learning.

Chapter 2 investigates how learners with different cultural background differ in their interaction style and visual behavior in multimedia-enhanced education, more specifically between groups from the African vs. Asian regions. The cross-cultural investigation done in this chapter collectively contributes towards effective use of multimedia technologies in education that ultimately increases learners' engagement and retention.

Chapter 3 deals with a study which explores the cloud-based educational environment and discusses how universities may take advantage of cloud computing in terms of students' social presence in relation to satisfaction and perceived learning. This study conducted a survey consisting of 13 questions among students from a public university in the southern region of peninsular Malaysia. The total number of respondents is 103 students. Through this study, a basis for the investigation of cloud computing in higher education is successfully established.

Chapter 4 discusses the various student engagement practices used today and their applicability to computer science students in online learning. The investigation will refer to case studies published and their relation to the concepts presented in this chapter. The chapter also provides, a framework of best practices for student engagement for computer science students.

Chapter 5 develops the idea of using online virtual reality (OVR) or online augmented reality (OAR) concepts for redesigning academic laboratory equipment or any kind of virtual classes to enhance the efficiency of learning process. This chapter provides a clear picture which results in virtual world can get more and more similar to the reality.

Chapter 6 explains how online education is currently led with MOOC education platform in a scalable way to satisfy the need of the specialized student community. It also illustrates how MOOC fills the knowledge gap between the academics and industry by offering the on-demand courses, which may not be available in the course curriculum. This chapter identifies and narrates the implementation issues in the MOOC model. The future research challenges are also summarized in this chapter.

Chapter 7 presents different learning styles, which are exhibited by the learners in an online environment. It identifies myriad ICT (information and communication technology) tools and shows association between learning styles and respective ICT tools. This chapter also shows possible implication towards online education and practices.

Chapter 8 provides an eye-tracking method to provide a useful experimental design for exploring reading performance of university online learners. Different eye-tracking experiments were carried out to help informing the teachers to improve the learning environment and be able to do more accurate assessment about what the students were attending to on the screen.

Chapter 9 presents the reasons how learners may decline to adapt the learning material or may deviate from their goals. Also the chapter discusses that a user model is needed to respond to different needs of a learner. This chapter provides an intuitionist fuzzy approach to handle the uncertainty of learner's mind while learning the concepts.

In Chapter 10, a new approach for end-user application analytics system is discussed and a methodology for developing model oriented decision support application using this approach is proposed.

Chapter 11 describes the process of developing both an engaging and motivating online ethics course for future engineers; and includes major concepts in engineering ethics beginning with why engineering students should study ethics at all. In this chapter various levels of ethics are examined, which include personal, organizational, and global ethics, and how each level then applies to the profession of engineering. Finally, the chapter explores engaging online methods for teaching ethics to engineering students throughout.

Chapter 12 promotes Multimedia Learning in the sphere of Medical Education and Practice. It describes how learners can acquire educational experiences as e-learning experiences. The chapter illustrates that the main reasons for not having achieved on-line learning are the Complexity of the Content, and the Type of Learning, which are unique, in some sense set apart from the main paradigm for learning that governs most other sciences.

CONCLUSION

Online learning system is persistently evolving and it requires new strategies to motivate to learners. Several approaches are proposed to deal with motivational aspects such as game features, attractive designs, whiteboards, clickers and animated agents. Knowledge about the engagement status and the motivational characteristics of learners would enhance the educational systems with detection capabilities and ultimately, with personalized intervention strategies targeting the motivational status and characteristics of the learners. Disengagement results in dropout in online learning and it requires serious concern. Hence, it would result into high costs for the states, which meet all the expenditures in education. Online learning system would be improved by tracking learners' disengagement that in turn would allow personalized interventions at appropriate times to reengage students.

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Many higher education institutions are hoping to enhance student engagement in learning environment for improving the educational experiences and outcomes. Therefore, providing expectations of learners and using new technology environments to facilitate their teaching and learning activities are prominent to make universities competitive. A solution can be cloud computing which is the newest alternative in current educational environments and has significant impact on teaching and learning. This study explores the cloud-based educational environment and discusses how universities may take advantage of cloud computing in terms of students' social presence in relation to satisfaction and perceived learning. This study conducted a survey consisting of 13 questions among students from a public university in the southern region of peninsular Malaysia. The total number of respondents is 103 students. Through this study, a basis for the investigation of cloud computing in higher education is successfully established.

Online learning has many challenges, and student engagement is one of them. Computer science students differ from most other disciplines. As a consequence, students typically find it easier to adapt to the new learning environment, but at the same time, they are more demanding on the tools and services offered to enhance their learning experience and engagement. This chapter discusses the various student engagement practices used today and their applicability to computer science students in online learning. The investigation will refer to case studies published and their relation to the concepts presented in this chapter. Computer science student engagement in online platforms is directly associated with positive learning experience from the content and context to interface to the interaction design a course embodies. Finally, a framework of best practices for student engagement for computer science students will be provided.

Section 2
Tools and Techniques

In this chapter, we are to develop the idea of using online virtual reality (OVR) or online augmented reality (OAR) concepts for redesigning academic laboratory equipment or any kind of virtual classes to enhance the efficiency of learning process. One of the main advantages of OVR is the interactions of students with each other from different locations. In the framework of the OVR lab, students are beyond the physical limitations. In virtual classroom environments similar to the real classrooms, one can walk in and see auxiliary objects made by the teacher to improve the learning efficiency. The VR setup provides the opportunity for surgeons to have a realistic picture of post-operation. In the subject of interior design, students can easily change and select various elements including the texture, color levels, the context, lights, shadows, and location of various apparatus. A questionnaire was set to get feedbacks from the students with very much positive result. The virtual world can get more and more similar to the reality.

Chapter 6

MOOC for Student Learning and Active Engagement 127

K. Saravanan, Anna University – Tirunelveli, India

Online education is currently led with MOOC education platform in a scalable way to satisfy the need of the specialized student community. With the adoption of MOOC, students not only study for course credits, but also to learn the newest technologies in the market. Several MOOC providers offer thousands of online courses using knowledge experts in the fields. Thus, MOOC fills the knowledge gap between the academics and industry by offering the on-demand courses, which may not be available in the course curriculum. These MOOC courses are offered either free or payment. At the successful completion of the course, most MOOC platforms give the certification to the participants. MOOC is already doing revolution in higher education and online education. This chapter deals with MOOC model and its evolution and need. The different types and categories of MOOCs are listed. The different MOOC providers and their course criteria are also discussed. This chapter identifies and narrates the implementation issues in the MOOC model. The future research challenges are also summarized.

Chapter 7

Learning Styles and Online Tools: How to Construct an Effective Online Learning Environment 147

Md. Shahadat Hossain Khan, Islamic University of Technology, Bangladesh
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Mutwalibi Nambobi, Islamic University in Uganda, Uganda

Very few studies in the existing literature elaborated about the learners learning preference and their preferred ICT tools while they were engaging in an online course. In order to fill this gap, this chapter presents different learning styles, which are exhibited by the learners in an online environment. It identifies myriad ICT (information and communication technology) tools and shows association between learning styles and respective ICT tools. It has four main broad areas to discuss: provides general importance of incorporating ICT tools in an online environment; presents four types of learners in an online context, which are characterized by following previous theoretical framework; identifies different learning activities, which are preferred by the four learners; and provides ICT tools along with their web address that are linked with online activities. This chapter shows possible implication towards online education and practices.