Chapter 103

A Design Theory for Vigilant Online Learning Systems

M. Keith Wright
University of Houston, USA

ABSTRACT

There is now a preponderance of evidence suggesting that the types of online course management software (OCMS) used in purely online undergraduate college courses, do not meet the needs of younger immature students. These students often lack the learning skills necessary to succeed in such courses, nor do the popular OCMS include the vigilance mechanisms to guide such students to successful course completion in the absence of face-to-face human instruction. This paper explores the literature relevant to design theory, learning theory, decision support, and vigilance, to extend information systems design theory to a design theory of vigilant online learning systems. It is hoped that this research note will help guide software developers and academics studying how to design future online learning systems for the immature student.

1. INTRODUCTION

Online courses are usually thought of as one form of distance education. They typically involve the use of the world-wide-web and online course management software (OCMS) such as Blackboard or Moodle. However, for many years now, evidence has shown that typical OCMS have fallen short of their educational potential (See Demirkan & Goul, 2010; Kim &Bonk. al, 2006, Ioannou & Hannafin, 2008, Chua, 2008). In spite of this, the emerging cyber-space culture, as well as the accelerating demand for college degrees, made online courses a global pop-culture phenomenon in the early 21st century (Pappano, 2012; Rosenthal, 2013). By 2002, over three-quarters of all U.S. colleges and universities offered at least one online course (Molenda & Bichelmeyer, 2005). As of 2006, a third of all college students (more than seven million) were enrolled in online courses (Jaggars, 2006); and there were more than 90,000 online college courses. By 2010, 89% of public, four-year colleges offered at least one course online. (AACSB, 2010).

The summer of 2011 saw the first widely known MOOC (Massive Open Online Course) which was taught by Sebastian Thruna, the famous Stanford professor (Pappano, 2012; Rosenthal, 2013). He and a colleague created a free online course, which featured their filmed lectures on artificial intelligence. Roughly 160,000 students from around the world enrolled. The popularity of that course touched off a wave of investment in MOOCs. To date, venture capitalists have poured more than $100 million into MOOC companies like Coursera and Udacity. In 2013, the University of Pennsylvania along with other elite schools, such as Stanford, Princeton, and the University of Michigan, partnered with Coursera, an educational technology startup. As of 2012, 2.6% of higher education institutions had a MOOC, and another 9.4% reported MOOCs in the planning stages. The majority of institutions (55.4%) report they are undecided about MOOCs, while under one-third (32.7%) report they have no such plans (Seaman, 2013).

Starting in 2013, MOOCs came under fire in the popular press. A Baltimore Sun article reported that many MOOCs were poorly developed, and were merely:

…turning good teachers into mediocre filmmakers…Where the incoherence and mindlessness enter the picture is the current thinking among university officials and digital-minded faculty that delivering a degree or college-level courses to anyone with an Internet connection will revolutionize U.S. higher education institutions. (Grimmelmann, J. 2013, p.1)

Perhaps because of bad press, the growth rate of purely online courses began to decline in 2013. The 2013 annual College Board survey showed the annual enrollment growth rate of online courses to be only 9.3%, the lowest in ten years (Seaman, 2013).

There is now much empirical evidence that purely online courses are not well suited for the average undergraduate online college student. For example, a University of Pennsylvania study, which examined the behavior of a million Coursera MOOC students from June 2012 to June 2013, found that only 4% completed the classes, and that these students were disproportionally wealthy and well-educated (Perna et al, 2013). Furthermore, there is evidence that younger students just out of high school or community colleges are most at risk, in part because they lack effective learning skills. For example, the 2013 College Board survey found that the proportion of academic leaders citing the need for more "discipline" on the part of online students increased from 80% in 2007 to 89%. (Seaman, 2013). In that study the majority of university chief academic officers reported that online undergraduate courses have a lower retention rate than do classroom courses. Many of those online students spend their first two years in community colleges, where according to a 2013 New York Times article, they are significantly more likely to fall behind, fail or withdraw than are classroom students (Rosenthal, 2013). Such students were found less likely to earn degrees or transfer to four-year colleges. Among the reasons cited were that students, looking for shortcuts, were attracted to online asynchronous courses, *because* of their lack of time-management and language skills (Rosenthal, 2013).

Today's typical online course management systems (OCMS), including Moogle, Blackboard, Coursera, Udacity, etc. are a poor fit for the needs of younger immature students. These students, whose undergraduate online college courses typically operate without day-to-day human instruction, simply log on to the OCMS, get their assignments, and try to complete and submit them, while isolated intellectually from classmates and course authors. These OCMS, were designed based primarily on how the system developers and administrators wanted to use the systems, rather than on what ordinary students need or want (Ioannou & Hannafin (2008)). As a result, these OCMS are simply rudimentary information systems, rather than vigilant learning systems: they do not well incorporate what is known about learning theory,

Related Content

Nurturing Curiosity Learning Through STEM in Physical Education in Zimbabwe
Thembelihle Gondoand Jenet Jean Mudekunye (2020). *International Journal of Technology-Enabled Student Support Services (pp. 20-30).*
www.irma-international.org/article/nurturing-curiosity-learning-through-stem-in-physical-education-in-zimbabwe/270261

The Scholarship of Learning and Teaching in the Dynamic Discipline of Pharmacology and Chemistry
Abdullah Karaksha (2018). *Emerging Technologies and Work-Integrated Learning Experiences in Allied Health Education (pp. 12-36).*
www.irma-international.org/chapter/the-scholarship-of-learning-and-teaching-in-the-dynamic-discipline-of-pharmacology-and-chemistry/195968

Public Policy Reforms: A Scholarly Perspective on Education 5.0 Primary and Secondary Education in Zimbabwe
Cleophas Gwakwaraand Eric Blanco Niyitunga (2024). *International Journal of Technology-Enhanced Education (pp. 1-18).*
www.irma-international.org/article/public-policy-reforms/338364

The Sky Is the Limit!
George Drivas, Chryssanthe Sotiriou, Helen Bonanou, Sofia Saliari, Michelle Balafoutiand Helen Tsevi (2018). *Handbook of Research on Educational Design and Cloud Computing in Modern Classroom Settings (pp. 101-121).*
www.irma-international.org/chapter/the-sky-is-the-limit/195269

Nurturing Curiosity Learning Through STEM in Physical Education in Zimbabwe
Thembelihle Gondoand Jenet Jean Mudekunye (2020). *International Journal of Technology-Enabled Student Support Services (pp. 20-30).*
www.irma-international.org/article/nurturing-curiosity-learning-through-stem-in-physical-education-in-zimbabwe/270261