

Predicting Grades and Mastery of Accreditation Standards of College  
Students Using a Learning Management System

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## Abstract

As student enrollment has taken a center place in higher education, faculty and administrators are concerned about student retention and success in traditional face-to-face, online and blended courses. This presentation will explore the implications of data mining for predicting relationships between information contained within a learning management system for mastery of accreditation standards and the final grade in selected courses in a counselor training program. Implications of predicting grades in online and hybrid courses for graduate programs in counselor training programs involve compliance with accreditation standards. The standards and course objectives can be imbedded within assignments and placed within a learning management system. By examining student progress within the learning management system faculty in counseling programs can better track student performance.

As student enrollment has taken a center place in higher education, faculty and administrators are concerned about student retention and success in traditional face-to-face, online and blended courses. The practice of data mining of information contained within learning management systems have proven useful in identifying variables for student success. While much of the literature explained student success with undergraduate students and in disciplines such as political science, (Holman, Aguilar, Levick, Stern, Plummer & Fishman, 2015), computer science, mathematics, statistics (Cohen, 2017), general education courses (DeTure, 2004) accounting, computer engineering, information technology and human services (Abdous, He and Yen (2012)). The study by Abdous et al. (2012) used undergraduate and graduate students. This presentation will explore the implications of data mining for predicting relationships between information contained within a learning management system for mastery of accreditation standards and the final grade in selected courses in a counselor training program.

Data mining was derived from several disciplines but has been primarily used in business settings as a means of obtaining data and transforming it into a useful format for decision making. It was been used to identify trends and consumer practices but rarely used in education (Abdous et al, 2012). Romero and Ventura (2010) described data mining in education as a novel way to utilize data in decision making. Delavaria, Phon-Amnuaiska and Beikzadehb (2008) maintained that the data extracted from data mining will lay the foundation for colleges to better plan for students, project individual student behaviors and enhance the process of allocating resources and staff. Castro, Vellido, Nebot and Mugica (2007) reported that data mining has the ability to evaluate student learning, provide baseline data in order to project the successfulness of learning strategies designed to improve student learning, rate instructional materials and web-based courses and identify unusual student learning behaviors.

In predicting final grades. Minaei-Bidgoli and Punch (2003) examined correct answers, total times that homework was attempted, the amount of time used to communicate, and reading of course information as a means of predicting final grades. Their predictive ability ranged from 51% and 86.8% based upon the variable that was identified. Falakmasir and Jafar (2010) used data mining to rank student assignments which impacted their performance as a part of the final grade in a course. Their results emphasized that student participation in a virtual class setting impacted their final grades.

Macfadyen and Dawson (2010) used data from a learning management system to analyze student participation on a discussion board as a predictor of success. The results indicated that student participation on the discussion board strongly predicted student success. Abdous et al. (2012) used regression analysis and clustering analysis to examine the variables of total times logged into the learning management system, total number of chat messages, types of questions posed to the professor and final grades. The participants were students who finished 138 courses in a variety of disciplines such as accounting, computer engineering, information technology and human services during the fall semester 2009. Information with regard to courses and student data was obtained from the live video streaming system. Students who did not respond to questions and chat messages were not included within the study. As a result of university policy, the registrar's office did not provide information with regard to the age or gender of the students. The grading scales for the courses was not provided and final grades were based on a nominal scale. A total of 138 undergraduate students were included in the study and a total of 160 graduate students were included within the study. The results were that student participation in live video streaming courses were not useful in predicting final grades.

Their learning management system consisted of live video streaming and a text-based chat system.

According to Abdous et al. (2012), there was a link between questions presented to the professor and chat messages among students. Students who posted chat messages frequently interacted more with their professors. The topics of the chat messages were technical problems (video, sound, etc.) and test/exam issues. Students tended to discuss technical issues among themselves rather than to discuss the issues with their professors. Students who logged into the live video streaming delivery system more frequently and chatted often with their peers, also asked more questions. Students who logged in less frequently also interacted less with the chat messages.

Implications of predicting grades in online and hybrid courses for graduate programs in counselor education training programs involve compliance with accreditation standards. As the counseling accrediting agency, Council for Accreditation of Counseling and Related Educational Programs (CACREP) mandated in the 2016 CACREP Standards, that programs should show that students have mastered knowledge, skills and clinical practices. This information can be tied to specific courses and course assignments in a learning management system (Haberstroh, Duffey, Marble & Ivers, 2014). Liles and Wagner also advocated for tying program objectives to student learning outcomes. The CACREP Guiding Statement on Student Learning Outcomes (2014) stated: “CACREP’s focus is to verify that the program has the tools to determine that every student has either learned or not learned the necessary knowledge and skills to be an effective counselor” (p. 1). Student progress can be monitored on the learning management system and interventions for improvement can be initiated. . The standards and course objectives can be imbedded within assignments and placed within a learning management

system. By examining student progress within the learning management system faculty in counseling programs can better track student performance. In addition, this information can be useful to faculty in making decisions related to curricular changes.

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