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IMPROVING I.S. STUDENT ENGAGEMENT AND PERCEIVED COURSE VALUE

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ABSTRACT

This study investigated the relationships among course organization, active learning assignments, perceived course value, and student engagement. The study relied on constructs from previous studies to measure value, engagement, and course organization. A new construct of active learning assignments was specially designed for this study. Statistically significant findings were observed between course organization, active learning assignments, perceived course value, and student engagement. The use of active learning assignments has a strong positive relationship with students' perception of course value and course engagement. Likewise, there is a positive correlation between course organization and students' perception of course value and course engagement.

Keywords

Student engagement, course organization, course assignments, course value, learning

INTRODUCTION

Information systems instructors are often faced with the issue of how much time to spend in developing hands-on learning activities to simulate real-world information system environments. Some instructors lean toward focusing on concepts, while others argue that hands-on activities will engage students and enhance the students' learning experience. Trying to attract students into our I.S. programs to become I.S. majors has also been an issue that may be affected by the way courses are designed or taught. Because incorporating active learning assignments into the classroom comes with a cost in the instructor's time and knowledge, it is important to know whether the effort is worth it.

Similarly, colleges and universities are competing for students and trying to market themselves as providing their students with the best educational experience possible. In order to make their programs more attractive to current and potential students, many colleges and universities have begun a fundamental shift in how their classes are conducted. Often, these institutions have moved away from the traditional lecture-based pedagogy in favor of more active, learner-centered activities. It is believed that more learner-centered and collaborative activities will enhance a student's learning experience. Though a positive learning experience could be defined by a number of factors, engagement and perceived course value are believed to be integral to a student's positive learning experience and to retention of less-prepared students.

One of the most important and often researched factors that contribute to a student's course experience is engagement. Because numerous studies have examined student engagement, a complete examination of this topic is beyond the scope of this paper. However, Corno and Mandinach (1983) were the first researchers to define and examine student cognitive engagement. They proposed that student engagement was evident when students demonstrated prolonged attention to a mentally challenging task, resulting in authentic learning and increased levels of higher order thinking.

Richardson and Newby (2006) defined cognitive engagement as the integration and utilization of students' motivations and strategies in the course of their learning. In their study, an engaged student is a motivated student. They focused on which motivations and learning strategies lead to cognitive engagement in order to properly manipulate the learning environment to encourage the students' engagement.

In addition to engagement, it is believed that a student's perception of course value is an equally important concept in evaluating a student's learning experience. We define perceived course value as simply a measure of how valuable a student feels a given course is, including whether the course stimulated the student's interest in the subject matter or whether the course has real-world application and is thought to be important to the student's future. Simulating real-world projects can assist the student in identifying learning goals and can generate increased motivation and learning (Jurow, 2005).

Another important factor that can affect a student's perceived course value and motivate students during the learning process is course organization. Course organization and planning are critical in the process of teaching effective courses, particularly courses taught online (Coppola, Hiltz, & Rotter, 2002; Karuppan & Karuppan, 1999). Dykman and Davis (2008) explain that the process of course planning and organization should go far beyond simply choosing a textbook and developing the syllabus. Instead, it is essential to include detailed planning, including developing specific objectives for the entire course as well as for each individual lesson, specifying reading assignments in detail, and describing specific deliverables. It is important that faculty document expectations for student performance and decide how interaction will take place between and among the instructor and students.

According to Zen (2008), developing a well structured and thoughtfully designed course, particularly in an online environment, can reduce learner anxiety, promote the quality and quantity of interaction, and improve learner satisfaction. In a study of factors affecting student satisfaction and perceived learning in asynchronous online courses, Swan (2001) found that course design, interaction with instructors, and active discussion among participants "significantly influenced students' satisfaction and perceived learning" (p. 306). Research on effective online instruction found that course design and organization was one of the most important factors affecting student satisfaction toward online learning (Zen, 2008).

The type of activities included in a course is an important factor to consider in a student's learning experience. In technology classes, instructors often choose to include hands-on assignments such as simulations, case studies and projects. These active learning assignments represent a move toward a more learner-centered approach and away from the traditional pedagogy of lectures and multiple choice exams. Where instructors choose to incorporate hands-on activities into their classrooms, students have been shown to retain the subject matter and increase their problem-solving skills (Davis, 1993). Also, active learning assignments have been shown to increase student engagement with course material (Perry, Huss, McAuliff & Galas, 1996). Case studies, in particular, help students gain a deeper understanding of a given problem or situation (Patton, 1990). Pariseau and Kezim (2007) found that students who completed more case studies in a business statistics course had higher overall averages and rated their learning experience higher than students who completed either just one or no case studies. Finally, in a survey of 60 undergraduate students, Aulls (2004) asked students to describe, from their experience, a "good" university course and a "poor" university course. Factors associated with good courses included lecture combined with student activities and active student participation. Factors associated with poor courses included lecture only or lecture combined with slides.

Cognitive engagement and perceived course value are two integral parts to the puzzle of creating the best possible learning experience for students. Students who are sufficiently engaged with learning course material and perceive the value of a course as high will have an overall positive learning experience. The current research proposes two factors that affect students' perception of engagement and course value: course organization and active learning assignments. Our hypotheses are modeled in Figure 1 and are stated as follows:

H₁: There is a positive relationship between the student's perception of course organization and the student's sense of engagement.

H₂: There is a positive relationship between the student's perception of course organization and the student's perception of course value.

H₃: There is a positive relationship between the student's perception of active learning assignments and the student's sense of engagement.

H₄: There is a positive relationship between the student's perception of active learning assignments and the student's perception of course value.

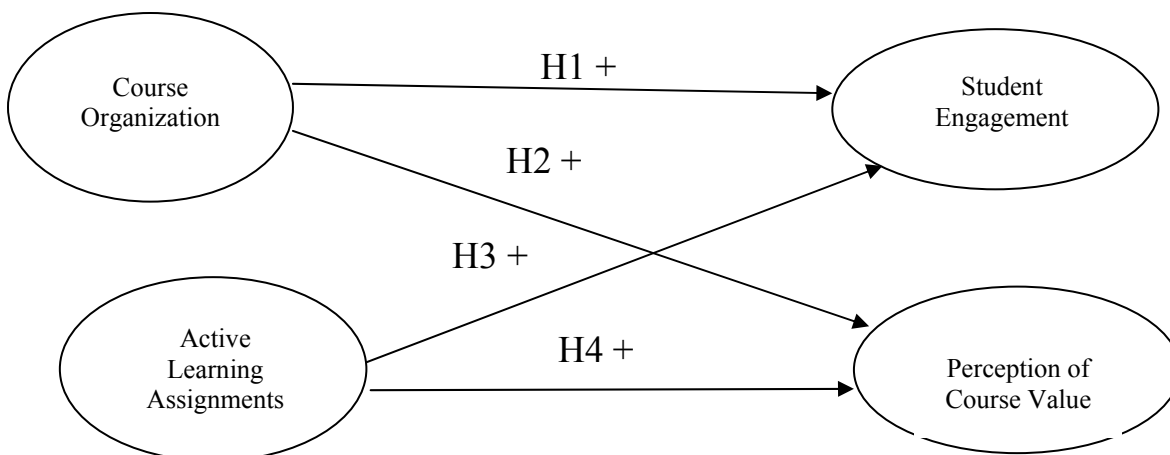


Figure 1: Student Engagement and Course Value Model

METHODOLOGY

Participants

The participants of this study consisted of 190 students enrolled in courses taught in the School of Information Technology at Macon State College, a medium sized (6,431 students), non-residential state college in the southeastern United States. The course sections involved in this study were taught over a period of three academic semesters – spring semester 2007, summer semester 2007, and fall semester 2007. Eight different courses taught in 14 sections attended mainly by information technology and business majors were included. The courses were taught by six different faculty. Eight of the sections were online and six were face-to-face.

Instrumentation

Drawing from scales on control and relevance of school work developed by Appleton et al. (2006), scales on students' evaluation of teaching effectiveness by Marsh and Cooper (1981), and scales on student course engagement by Handelsman et al. (2004)), items were selected and revised to address class organization, course value, and engagement. Four Likert-style questions to measure active learning assignments were created for this study and were (1) The in-class exercises added to the course understanding; (2) Simulations involving people (such as role playing, interviewing users, etc.) added to the course understanding; (3) Simulations involving technology (such as building systems or parts of systems, writing programs, setting up hardware, or using software tools) added to the course understanding; (4) Use of multimedia (such as PC-delivered video, voice narrations in PowerPoints, animations, or Flash tutorials) added to the course understanding. In total, twenty one items were developed and are shown in the Appendix. For all of the questions students responded to a Likert-style scale, which ranged from a low of 1 (very strongly disagree) to a high of 7 (very strongly agree).

Procedures

The instrument was administered electronically at the end of each of the three semesters. The students were guaranteed confidentiality of responses and assured that their professor would not be given responses by individual or be able to identify them.

A factor analysis with varimax rotation was performed on the items. The factors of perceived course value, student engagement, course organization, and active learning assignments resulted as expected. Using data from the sample of 190 students who completed the instrument, Cronbach's alpha was calculated for perceived course value ($\alpha = .946$), student engagement ($\alpha = .949$), course organization ($\alpha = .937$), and active learning assignments ($\alpha = .936$). As these numbers reveal, there was an excellent degree of internal consistency in the responses to each set of items.

Scales for perceived course value, student engagement, course organization, and active learning assignments were formed by averaging responses on the Likert scales for each respondent on the respective items for each construct.

Results

Approximately half of the students reported that active learning assignments were not applicable to their course, and these students were dropped from further analysis. The descriptive statistics for, and the correlation between, perceived course value, engagement, course organization, and active learning assignments for the remaining students (N=98) are presented in Table 1. Statistical analysis reveals that there is a positive and significant correlation, at the $p < .001$ level, between course organization and engagement (supporting H1) and between course organization and perceived course value (supporting H2). In addition, a positive and significant correlation, at the $p < .001$ level, exists between active learning assignments and engagement (supporting H3) and between active learning assignments and perceived course value (supporting H4). These findings suggest that when students perceive the course materials to be well prepared and clear, they are more likely to be engaged in the learning process and their perceived value of the course content is high. These results also suggest that students are more engaged and their perceived value of the course is higher when assignments include hands-on activities and simulations that add to the understanding of the course material.

	1	2	3	4
1. Perceived Course Value	---			
2. Student Engagement	.620**	---		
3. Course Organization	.740**	.559**	---	
4. Active learning assignments	.754**	.717**	.607**	---
Mean	5.22	5.02	5.46	4.85
Standard Dev.	1.41	1.43	1.52	1.49
Scale Min/Max Values	1 to 7	1 to 7	1 to 7	1 to 7
Cronbach's α	.946	.949	.937	.936

** $p < .001$

Table 1: Spearman Correlations and Descriptive Statistics

Limitations

The limitations of this research include the use of a convenience sample. The sample was composed of students enrolled in information technology courses taught by instructors in the School of Information Technology at a regional Southern state college in the United States. Future research should include a more diverse group of faculty and students in other areas of study and other regions of the country or world.

CONCLUSION

As hypothesized, this study of I.S. classes found that there are strong positive correlations between course organization and student engagement, as well as between course organization and perceived course value. The strength of the correlation between course organization and perceived course value is so strong ($r = .74$) that future researchers may wish to investigate whether it is even possible for students to perceive a course to have value without good course organization. Instructors should ensure that course materials are well prepared and clear, objectives are stated and pursued, and course materials or learning aids are available as students need them.

Strong positive correlations ($r > .7$) were also found between active learning assignments and student engagement, as well as between active learning assignments and perceived course value. Exercises or in-class simulations should be carefully

designed and incorporated to increase course understanding. Our active learning assignments included in-class exercises, simulations involving role playing and the like, using technology to build systems, and using multimedia in presentations. The strong correlations found suggest that these methods can be used by I.S. departments to respond to the current pressure to increase student engagement and the students' perceived value of our courses. It is believed, although not shown in this study, that engagement and perceived course value will, in turn, lead to higher levels of learning and better student retention. Implications for teaching and research include the need to identify and design active learning assignments that are appropriate for various types of I.S. classes.

At a time when institutions of higher education are rigorously competing for students, the development of quality academic programs is essential. An important goal for information systems faculty is to design courses that will enhance their academic programs and in turn attract prospective students. Currently, there is much debate over whether information systems courses should focus on teaching concepts or whether they should include hands-on activities that will simulate real-world business and information systems. Many faculty are often hesitant to develop interactive activities because of the added time and work that is involved. The results of this study suggest that it is worthwhile for faculty to develop courses that include active learning assignments. When courses are well planned, structured, and thoughtfully designed to include activities such as simulations, cases studies, and projects, students tend to demonstrate increased levels of engagement and their perception of the course value is high. Creating a positive and authentic learning experience for students is imperative if institutions are going to provide the best possible educational experience.

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APPENDIX

Measures

Value 1: The course was challenging/stimulating

Value 2: I learned something valuable

Value 3: The course increased my interest in the subject

Value 4: The course helped me to learn/understand the subject matter

Value 5: The readings/text were valuable

Value 6: The assignments added to course understanding

Value 7: What I am learning in this class will be important to my future.

Value 8: The assignments gave me a sense of the application of this course to the "real world."

Engaged 1: The class encouraged discussion

Engaged 2: Students shared their ideas/knowledge

Engaged 3: The class encouraged questions and answers

Engaged 4: The class encouraged expression of ideas

Engaged 5: I have felt very involved or engaged in this class

Engaged 6: I have felt more involved or engaged in this class than in other courses I've taken

Assignments 1: The in-class exercises added to the course understanding.

Assignments 2: Simulations involving people (such as role playing, interviewing users, etc.) added to the course understanding.

Assignments 3: Simulations involving technology (such as building systems or parts of systems, writing programs, setting up hardware, or using software tools) added to the course understanding.

Assignments 4: Use of multimedia (such as PC-delivered video, voice narrations in PowerPoints, animations, or Flash tutorials) added to the course understanding.

Organization 1: The course materials were well prepared and clear

Organization 2: The objectives of the course were stated and pursued

Organization 3: Course materials or learning aids were available when I needed them