

What Students Value about Education and Recommendations for Online Education

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Abstract—Online education is on the rise. Increasingly, students are seeking both undergraduate and graduate degrees online. Many are drawn to online education because of its convenience and flexibility to accommodate work or family schedules. Students also value online education when there is a perceived instructor presence and when students have the ability to interact with each other, such as through discussions. This paper explores what students' value about in person and online learning for the purpose of making recommendations for the design of online course design. A survey was administered to 38 students in the winter semester of 2015. Results indicated that students' value the following: instructor presence and instructor availability provided by in person classes; class discussions/debates both in person and online, group work and human interaction, in-person lectures, the deadlines and accountability provided by in-person classes, and the convenience of asynchronous online classes. Suggestions were made based on these results for the design of online courses.

Index Terms—online course design, online education, student values

Introduction

In today's competitive work environment, bachelor's degrees have become common place. Workers are seeking advanced degrees as a means of differentiating themselves from their peers within the work force. Additionally, those in the work force without a bachelor's degree do not always have the ability to quit work and attend school full-time. As a result, on-line degree programs are on the rise, as universities increasingly recognize the benefits of e-learning environments. The benefits to students have been noted to be:

- *The opportunity to take courses without having to physically travel to the instructor's location.*
- *The ability to take courses in one's area of interest.*
- *The capability to complete a customized degree using credits from several universities [1].*

Evidence indicates that the convenience of on-line learning is most likely major driving force behind those choosing this method of education. A 2009 study surveyed the students at the UNC Charlotte College of Engineering to determine their perceptions of on-line learning and delivery methods (asynchronous on-line, blended, and synchronous on-line) [2]. Female students tended to express more interest in on-line learning, especially in the asynchronous and blended formats. The gender difference was greater among graduate students than undergraduates, with female graduate students expressing the most interest in on-line learning. The authors of this study suggest that female graduate students choose learning formats with the greatest flexibility because they are trying to balance family and professional life. This study also found that the age group found to be most interested in on-line learning is 36-45, and that part-time students have a higher preference for on-line learning. It seems that on-line learning appeals more to non-traditional students already in the work force. The study also indicated a preference for asynchronous methods, especially among those who had already taken on-line classes.

Another 2007 study of a hybrid course using a synchronous format indicated that non-traditional students may find on-line learning more acceptable, but also indicated that students' perception of the use of on-line methods mattered in their acceptance of the method [3]. When students perceived the use of on-line lectures as a convenience to them, not the instructor, their motivation and the effectiveness of the method increased. Asynchronous recorded lectures are often preferred by students for their convenience. In one study examining the use of e-learning in a hybrid course, "the ability to download lectures and watch them again was referred to as the most positive aspect of the new delivery system." [1].

Not only does students' perception of the convenience of on-line learning affect its success and acceptance, but research has documented a connection between perceived "teaching presence" and student's sense of on-line learning community [4]. Thus, teaching methods which increase students' feelings of instructor's presence in the classroom may lead to a better educational experience for the students. The need to interact with instructors extends to a need to interact with peers in class. In fact, a study of interaction in online courses [5] found that student interaction and teamwork plays a significant part in online learning. Students who have interacted with each other in online courses achieve positive results, but when interaction is absent, students display a lack of satisfaction with the online learning experience.

Not all research of student's perceptions of online learning indicates positive opinions. In a 2011 study [6] surveying faculty and students about internet-based engineering education, both faculty and students agreed that it would be easier to plagiarize assignments in online courses because of open access to the internet during class. Respondents of this survey also felt students learn better in traditional classes, rather than online, because of lack of student discipline in online classes, reduced sensory involvement in online classes, divided student attention in the online environment, and reduced faculty and peer interactions. In addition to these negative perceptions of online engineering education, it has been well documented that providing effective engineering laboratories remotely is a significant challenge [7].

The format of an online class can make it more or less appealing to students. Graduate students in an online engineering technology management program were asked about their preferences in class format [8]. The students indicated a preference for threaded discussions, followed by research papers, homework, projects and presentations (in that order).

It is clear that students are drawn to online education for its convenience [1, 2, 3], especially in the asynchronous format. Other things that students value about online education include a sense of instructor present [4], and peer interaction [5], especially through threaded discussions [8]. This research seeks to further examine what students' value about both online and in person education for the purpose of making recommendations for more effective online course design.

Methods

A survey was administered to a class of 38 students in the winter semester of 2015. The course covered the interaction of technology and society, and was required to meet the ABET ethics requirements for all engineering technology (ET) majors. As such, 33 of the 38, about 87%, of the students were ET students (electrical engineering technology, industrial technologies, and mechanical engineering technology). The class was delivered in person for three 90-minute sessions each week, including lectures, in class discussion, and group project presentations.

Grade elements of the class included:

- Attendance and participation in class discussions, 20%. Each 90 minute class period included a short lecture on the reading followed by a class discussion of the reading. Students were divided into groups, with a rotating group leader, who took attendance and notes to submit at the end of the class.
- Three exams at 15% each, totaling 45%
- Class debate assignment 20%. Four person student teams were assigned a topic/technology to research and debate the use/implementation of in class. Each team was assigned a "pro" or "con" side of the argument.

- Research paper, 15%. Each student selected a technology to go without for two weeks. Students researched the history of the technology, its development, and how it affects and is affected by society. Research papers covered each students' experience and the technology itself.

This class was being considered for transition to an online offering. To determine student preference in class delivery method (online versus in person), and thoughts about how to transition the course online, students were surveyed at the end of the in person semester. Students filled out an anonymous survey of the following six open-ended questions:

1. What do you value about in-person classes?
2. What do you value about on-line classes?
3. Would you consider taking this class if it were offered online? Why or why not?
4. What would you change about this course if it were offered online?
5. What elements of the course would you keep if it were offered online?
6. Do you think on-line education will ever replace in-person? Why or why not?

Results were qualitatively analyzed for common themes in the answers to each question. Answers were then coded based on these common themes and the results were summarized.

Results

Answers to the first question in the survey "What do you value about in-person classes?" revealed the following common themes. Numbers in parentheses indicate the number of students providing an answer with this theme:

- Direct contact with the professor (15)
- Classroom discussion and debate (14)
- Human interaction (7)
- Easier to understand the material (6)
- Motivation to do work/accountability (4)
- More learning opportunities perceived (3)
- "Hands-on" experiences (3)
- Lectures (2)

The most common answer to the first survey question was that students (39% of respondents) valued some aspect of direct contact with the professor. Students who indicated that they valued direct contact with professors provided by in person classes often mentioned the ease of asking questions and getting answers directly. In the words of one student, "In person classes are more engaging. I value the in class discussions and personally asking questions as they arise." The response of this student indicates valuing the accessibility of the professor for asking questions in person, but also shows the importance of class discussion to engage students in person.

In fact, the second most common aspect of in person classes that students valued (37% of respondents) was classroom discussion and debate. In the words of one student, "The quality of discussions versus that of an online forum is much better. I learn much better in person." The student's answer indicates the importance of discussion in learning.

In addition, students' valued group-work nature of the discussion and debates, as explained by this student, "[What] I value about in person classes is working with groups to [address] the discussion topics as well as the debates." In fact, human interaction was the third most commonly mentioned aspect (by 18% of respondents) that students valued about in person classes.

After human interaction, the next most common aspect which students valued about in person classes was that (about 17% of) the students believed it was easier to understand the material through in person classes. The reasons ranged from having instructor and peer interactions, "It makes it easier to understand the class concepts when you have the teacher and other students in front of you to ask questions and go through examples" to being an auditory learner "I prefer in-person classes because I find it easier to learn when someone is speaking directly to you".

In addition to finding the material easier to understand in person, 11% of the students valued in person classes for the motivation/accountability they provided to do the class work. In the words of one student, "I like having the responsibility of having to attend class and being held to the expectation of doing readings and discussing."

Approximately 8% of students perceived in person classes as offering more learning opportunities, while an additional 8% found the “hands-on” experiences provided by in person classes valuable. Only 5% of the students mentioned valuing lectures within in person classes.

Answers to the second question in the survey “What do you value about on-line classes?” revealed the following common themes. Numbers in parentheses indicate the number of students providing an answer with this theme:

- Flexible schedule/convenience (21)
- Ability to work from home/anywhere (10)
- Ability to move at your own pace (5)
- Accommodates a job/work schedule (4)
- Less discussion (2)

The top aspect that students valued about online classes (mentioned by 55% of respondents) were their convenience for providing flexibility in personal schedules. Students explained that online classes typically can be attended at any time during the week, when the student chooses. In the words of one student, “You can do the work whenever you want. [Online classes are] easier if you have a job.” This student expresses valuing the flexible schedule as well as demonstrates the value expressed by four students (14%) of specifically being able to accommodate a work schedule.

In addition to flexibility in time, 26% of the students also valued online classes for their flexibility in location. Online classes can be accessed from anywhere with an internet connection. As one student put it, “I don’t have to drive to campus for class.”

Students (13%) also valued online classes for their perception of being able to move at their own pace. This student valued both flexibility in location and pace “Being able to stay at home and work on things at my own pace”.

Although 5% of students valued online classes for reduced discussion, 37% of students indicated that discussion/debate was one of the things that they valued about in person classes.

The third question in the survey was “Would you consider taking this class if it were offered online? Why or why not?” The majority, 21 students (55%), indicated that they would take the class if offered online, while 17 students (45%) indicated they would not. Most of the students neglected to answer the second part of this question (why or why not) and simply wrote yes or no as an answer.

Of those who explained why they would not take the class online, 3 (14%) indicated they did not like coming to class, while 2 (approximately 10%) indicated time constraints. Of those who explained why they would take the class online, 13 (76%) felt that class discussions would not work well online, while 4 (24%) did not like online classes in general. In the words of one student who would have preferred the class be offered in person, “I really liked having this class in-person. We had several great discussions we may not have had online.”

Answers to the fourth question in the survey “What would you change about this course if it were offered online?” revealed the following common themes. Numbers in parentheses indicate the number of students providing an answer with this theme:

- Eliminate in class debates (10)
- Increase the amount of homework (7)
- Have debates occur in on-line discussion forums (4)
- Change the text or have less reading (3)
- Eliminate the term paper (2)

The most frequently mentioned thing that 26% of students would change about the class if it were offered online were the in-class debates. In the words of one student, “The debates would be a challenge to do in an online class. Maybe something could take the place of the debates?” Interestingly, four (11%) students specifically suggested that debates could occur in threaded discussion forums.

Another suggestion 18% of students made to change about the class if it were offered online was to increase the amount of homework. In the words of one student, “I would add homework or quizzes to accompany the readings”.

5% of students felt the term paper should be eliminated in an online format, but provided no indication as to why it might be difficult to write a paper for an online class. 7% of students indicated that the course text should be changed, or less readings should be assigned in an online format.

Answers to the fifth question in the survey “What elements of the course would you keep if it were offered online?” revealed the following common themes. Numbers in parentheses indicate the number of students providing an answer with this theme:

- Discussions (17)
- Debate assignment (9)
- Term paper (9)
- Readings (8)
- Exams (4)

Class discussions were mentioned as the thing that 45% of students would keep if the course were moved to an online format. One student explained s/he would keep, “the focus questions on the assigned readings. I feel that the focus questions could spark some good discussion threads.” Clearly, students value discussion in both inline and in person learning formats.

In addition to keeping class discussion, 24% of the students also mentioned the class debate as an aspect they would keep in an online format. Although the majority suggested simply having each team submit a video or power point presentation of their side of the issue.

Term papers (24%) and readings (24%) were also mentioned as aspects that students would keep if the class were transitioned to an online format. However, these assignments would remain essentially unchanged in either format. Recall that 5% of students expressed a preference for the elimination of term papers and 7% desired altering/reducing the readings, as provided in response to question four. Thus, more students suggested keeping the term papers and readings than eliminating them.

11% of the students did suggest keeping the exams in an online format, even going so far as to suggest administering them in a time limited environment to reduce the opportunity for cheating.

The class overwhelmingly answered no (30 or 79%) to the sixth and final question in the survey “Do you think on-line education will ever replace in-person? Why or why not?” Most students just provided a yes or no answer to this question, despite being asked to explain their answer. However, some did provide the reasoning behind their answers. The negative answers revealed the following common themes. Numbers in parentheses indicate the number of students providing an answer with this theme:

- Reduced face to face interactions in the online environment (9)
- Some topics are easier in person (4)
- Online education is less “hands-on” (3)
- Reduced teacher presence in online environment (2)

The top reason why students (30%) felt that online education would not replace in person education was because of the reduced face to face interactions in the online environment. When responding to the question of whether online education would ever replace in person education, one student answered “No, it doesn’t allow students to learn as well. No interaction means less communication, and also means less chances to ask questions, express ideas or even challenge ideas.”

13% of students that indicated online education would never fully replace in person education also expressed the belief that some topics are easier in person. One student answered the question of whether online education would replace in person with this answer, “No. There are some topics that are far easier to understand in a classroom setting.” In addition, 7% of students specifically mentioned that “hands-on” learning experiences would be difficult to provide online. In the words of one student, “People learn in different ways. One form of learning is hands-on and seeing examples worked out in person. You cannot do this over a computer.” While an additional approximate 7% explained that online education could not replace in person because of reduced teacher presence.

Discussion & Recommendations for Online Class Design.

Understanding what students' value about in person classes can help us to design better online education to meet students' needs and interests. The student responses to the questionnaire revealed following themes of:

- Students value instructor the presence and availability provided from in person classes
- Students value quality class discussions/debates both in person and online.
- Students value group work and human interaction
- Students value audio lectures in person
- Students value deadlines and accountability provided by in person classes
- Students value asynchronous online classes for their convenience
- Students suggested increasing assessment within online classes
- Students believe some topics may be easier to teach online than others

The survey's first question asked about what students' valued about in person classes. The responses (of 15 students) indicated what students' value about traditional education experiences. Direct contact with the professor emerged as the aspect students valued most about in person classes. In addition, responses to the last question of whether the student thought online education would ever replace in person, revealed a majority opinion of "no". The top reason that (9) students provided for believing that online education could not fully replace in person education was the lack of face-to-face contact. An additional two students specifically mentioned that the perceived online classes as having less teacher presence.

When teaching online classes, it is important that students maintain this feeling of instructor contact or "presence" in the classroom [4]. Students specifically mentioned the importance of asking instructors questions. It is important that online instructors log onto class and respond to discussion threads in a timely manner. Online programs can provide students with the ability to provide real-time answers to questions through the establishment of virtual office hours in a chat room or Skype. Online programs designed to serve global student bodies or active duty

military often specifically require an asynchronous format for class delivery, so that students may log on in their own time and not be bound to "attending" class at specific times. For such programs, providing a 24-hour email turn around time can help students to receive feedback in a timely manner. Allowing students the ability to text questions to their instructors may also increase the sense of an instructor's availability to students.

The second aspect of both in person and online education which students valued was quality class discussions and debate. When asked what students' values about in person education, 14 specifically mentioned class discussion/debates. An additional 7 mentioned valuing human interaction, which one could argue is provided through class discussion and debate. When it came to online education, 13 students expressed concern about the quality of online discussion, while 2 expressed the belief that less discussion would occur in an online class. However, when making recommendations for online class transition, 17 students suggested keeping class discussions in an online format. Thus, it can be seen that students valued discussions in person, and desired to have quality discussions occur in an online format as well.

Recall that this class was arranged in a 90-minute format, with a brief lecture followed by a discussion of the materials. Discussion groups were assigned and remained constant throughout the semester. Team debates were assigned projects presented in class, where students debated for or against the use or limitation of a modern technology. It is possible that the existing structure of the class may have framed the student answers. However, the student answers indicate the need to maintain discussion quality and requirements online. This value is supported by the work of Doggett [8], where online students indicated a preference for threaded discussions, ranking them first among online educational methods. Guidelines should be provided for maintaining the academic quality of online discussions. Clear rubric in terms of what is considered a substantive discussion post should include a word count as well as arguments supported by cited research. Students should also be encouraged to ask each other open-ended questions

that facilitate dialogue, as opposed to yes or no questions.

Students also expressed that they valued the group-work nature of the discussion and debates provided by in-person classes (mentioned by 14 students, or 37%), as well as “human interaction” provided by in person classes (mentioned by 7). The preference for group work is much greater than expressed by graduate students in an online engineering technology management program, where 4% preferred group work, 71% preferred individual work and 24% were neutral [8]. However, the work of Doggett focused on graduate students, who may be more likely to be balancing school with work and family, while this study surveyed full time undergraduates at a traditional university. Graduate students may have less free time available to orchestrate the communications and meetings required for group work. Additionally, the class in this study was designed with frequent in class group discussions, which may not be a normal component of engineering classes. This class, in particular, was designed with quite a lot of peer-interaction, which may have skewed the answers, resulting in human interaction emerging as an important value for in person education. Further research should be performed to examine the preference of group work in online undergraduate versus graduate classes. By including group projects, presentations, or even assigning discussion groups, students may still have the experience of getting to know their peers more intimately than they would in a general classroom setting. Students should be encouraged to determine as a group the way that they will work together (email, skype, chat rooms, etc) and establish their own ground rules for group participation. Including a peer-participation grade can help motivate students to participate more actively within group projects.

Students polled also expressed the belief that it was easier to understand the material through in person classes (mentioned by 6 students), although the reasons ranged from having instructor and peer interactions, to being an auditory learner. For those students who are auditory learners, designing classes with embedded audio lectures may improve student understanding of material. Research by this author examined the differences in student performance in online classes where lectures were delivered with

audio components (power point lectures with embedded audio) and without (as word files) [9]. The results indicated that students may perform slightly better and have a slightly greater ranking of instructors in on-line classes which utilize slide lectures with audio, but the differences could not be statistically proven. However, It is possible that the lecture delivery method made very little difference in student performance because of the open-resource nature of the on-line quizzes and assignments for the class in which this research was performed.

An additional aspect of in person classes which students’ valued was the motivation/accountability they provided to do the class work (mentioned by 4 students). Students specifically mentioned that in person classes maintained an expectation of staying current in readings to be able to participate in discussions. Online courses are most often designed with weekly deadlines. By asking students discussion questions about the readings, and including due dates for initial postings in discussion forums early in the week, online instructors can help students to maintain their motivation to stay on track with the course syllabus. By assigning a point penalty for lateness (for example, -10% for each day an assignment or discussion posting is late) instructors can provide further motivation for doing course work on time.

As indicated by research of others [1, 2, 3], students value asynchronous online classes for their convenience. Although only 21 of the 38 students specifically mentioned the convenience of online education, this may be due to the fact that the students surveyed were primarily undergraduates at a physical university, with less life demands outside of work than those whose only option for continuing education is online. Still, by organizing courses with asynchronous elements, which can be accessed any time of the day, instructors can tailor classes to be more convenient than classes that require log on to view a live lecture.

Students suggested increasing assessment within online classes (7 suggested more homework). Increased assessment opportunities might increase student motivation to stay engaged through the term. In addition, it prevents any individual grade element from counting for too much of the overall course grade. Increased assessments can also provide students with a sense of how they are performing in the class,

so that they can adjust participation and effort if necessary.

Students also expressed the belief that some topics may be easier to teach online than others. The students (4 of the 38 surveyed) volunteered this answer in response to being questioned about why (or why not) online education could ever replace face-to-face instruction. It should be noted that this particular class did not require a laboratory, but research has shown that engineering laboratories can present a unique challenge to online educators [7].

Conclusions

The research revealed that students' value the following things about in person classes: instructor presence and availability, quality class discussions and debates, human interaction and group work, lectures, deadlines and accountability. Online classes were primarily valued for their convenience, and expressed concern over the quality of online class discussions and debates. Students also specifically suggested increasing assessment opportunities within online classes. Based on these values, recommendations were made for the design of online classes to ensure more of the qualities which students' value about in person classes are retained when courses are migrated online, including:

- Establishment of virtual office hours by instructors
- Frequent instructor login to the classroom
- 24 hour turn around time on emails
- Offering students the option of texting instructors for a quick response
- Clear rubrics should be provided for online discussions
- Incorporate group work within online classes
- Encourage students to establish their own group work methods and criteria for interacting
- Incorporate audio lectures into online courses
- Include due dates and late penalties for online discussions and assignments
- Structure the online class in an asynchronous format
- Increase assessment opportunities in online classes

Future research might examine the success of utilizing these measures by comparing overall student performance and course and instructor ratings between in person and online offering. It was also mentioned that the format of this class was very discussion-heavy. Future research might examine whether there is a difference between undergraduate and graduate online students' preference for group work.

References

- [1] Azemi. "Designing and Effective Distance Course Using a Synchronous and Hybrid E-Learning Approach." ASEE Annual Conference 2009. AC 2009-2216.
- [2] Ozelkan, E. and A. Galambosi. "Assessing Engineering Management Students' Perception of Online Learning." ASEE Conference 2009. AC2009-1142.
- [3] Crofton, J., Rogers, J., Pugh, C., and K. Evans "The Use of Elluminate Distance-Learning Software in Engineering Education." ASEE Annual Conference 2007. AC 2007-350.
- [4] Shea, P., Li, C. S., and A. Pickett. "A Study of the Teaching Presence and Student Sense of Learning Community in Fully Online and Web-enhanced College Courses." Internet and Higher Education. Volume 6, 2003, 209-124.
- [5] Francis, A., C. Larkin, and S. D. Aslinia. "Interaction in Online Courses." Journal of Online Engineering Education. Volume 1, Number 1, Article 1, 2010.
- [6] Jordan, K. L., Pakzad, A., and R. Oats. "Faculty and Student Perspectives on Internet-Based Engineering Education." Journal of Online Engineering Education. Volume 2, Number 2, Article 2, 2011.
- [7] Badjou, S., and R. Dahmani. "Current Status of Online Science and Engineering Education." Journal of Online Engineering Education. Volume 4, Number 1, Article 3, 2013.
- [8] Doggett, A. M. "Online Learning Preferences of Engineering Technology Management Graduate

Students.” *Journal of Online Engineering Education*.
Volume 45 Number 1, Article 1, 2014.

[9] Jarvie-Eggart, M. E., “A Comparison of Student Performance Using Two Different Online Delivery Softwares.” *Computers in Education Journal*. 2013. XXIII (4): 38-43.