A Comparative Analysis of Students' Perceptions of Learning in Online Versus Traditional Courses

Robert Hilton *
The Robert W. Plaster College of Business
Missouri Southern State University, USA
Email: Hilton-r@mssu.edu
* Corresponding Author

Chris Moos
The Robert W. Plaster College of Business
Missouri Southern State University, USA

Cynthia Barnes
College of Business
Lamar University, USA

Abstract

The purpose of this study is to examine student perceptions of learning and course satisfaction of online courses compared to face-to-face (F2F) courses. The general trend in increasing online course offerings has been exacerbated by the Spring 2020 COVID closure and forced conversion to online formats. Approximately 400 undergraduate and graduate students from a mid-sized, moderately selective public university were surveyed and asked to answer four questions relating to perceptions of learning in online and F2F courses. In this study, analysis by gender did not present any significant differences. On the other hand, as participant age increased, responses indicated a higher level of agreement with the statement that just as much learning takes place in online as in F2F courses. Similar to the age variable, the greatest differences were between second-year and the fourth-year and graduate students. This study also found the more online courses students had taken, the more positive the perception of online learning becomes. Lastly, no significant differences were found on any of the four research questions for majors.

Key words*: Online education; e-learning; face-to-face learning; student perceptions; student satisfaction.*

Introduction

The COVID-19 pandemic of 2020 has accelerated the trend of colleges and universities offering online courses and degree programs. Universities continue to integrate various forms of online courses (100% online), hybrid courses (substantial portion online and substantial portion face-to-face), and blended courses (campus courses that use online components). While research studies conclude that there is no significant difference between online and face-to-face (F2F) learning outcomes, questions remain about student perceptions of learning and overall satisfaction between online and F2F instruction (Baker & Unni, 2018). As technology is increasingly being used in one format or another for instructional purposes, (but currently, the format is 100% online because of the Covid virus), research on student perceptions in the online learning environment continues (Guest, Rhode, Selvanathan & Soesmanto, 2018; Tratnik, Urh & Jereb, 2019; Baker & Unni, 2018; Barnes, 2017; Fish & Snodgrass, 2015; Allen & Seaman, 2013; Perreault, Waldman, Alexander & Zhao, 2008; Tanner, Noser & Langford, 2003; Tanner, Noser, Fuselier & Totaro, 2004a; 2004b; Tanner, Noser, Totaro & Birch, 2006; Tanner et al., 2009).

Instruction, when completed in a F2F setting, can provide ongoing immediate feedback to faculty and students about the lesson, delivery, and learning experience. Observing a student's body language and non-verbal cues allows the faculty member to immediately adjust or develop the response for the students and allows for additional questioning to gain a more detailed idea of the information needed. Online education does not provide these same clues and instead the instructor and students must rely more on written responses or feedback to assignments, discussion boards, or direct questioning. What might be perceived and easily achieved in the F2F classroom requires a little more probing and questioning in an online course.

Purpose of the Research

The purpose of this research is to understand how students perceive learning in online versus F2F classes, and how those perceptions may vary by age, gender, online course experience and class standing. The results are presented in this paper.

Literature Review

Online instruction has become an important delivery mode in recent years. In recent years, a plethora of literature claiming to identify quality characteristics of online education has evolved. McGorry (2003) emphasized that a quality online course should include flexibility, responsive-ness and student support, self-reported (perceived) learning, interaction, perceived usefulness and ease of use of technology, technical support, and student satisfaction. Means, Toyama, Murphy, Bakia, and Jones (2010) found that including multiple media was related to quality online instruction when the student was able to control the media. The study also found that student reflection was critical for student success in an online learning environment (Means et al, 2010). Herrington, Herrington, Oliver, Stoney, and Willis (2001) found that pedagogies, resources, and delivery strategies were crucial for quality in online education.

Allen and Seaman (2013) found that learning outcomes through online education are the same or superior to those in traditional F2F classrooms. However, critics argue that due to intrinsic differences, online education does not duplicate the learning that occurs in the traditional classroom (Bejerano, 2008). Tratnik et al, (2019) found significant differences in student satisfaction levels between online and face-to-face courses. Students were more satisfied with the course in a F2F setting. A 2015 study conducted in an AACSB accredited business school revealed opposing results to Allen and Seaman's study (2013), indicating that 34.6% of students strongly disagreed

learning is greater from online courses, while 31.1% disagreed, 21.2% had no opinion, 8.6% agreed, and only 4.3% strongly agreed with that statement (Kuzma, Kuzma & Thiewes, 2015). In addition, Kuzma et al. (2015) found that 37% of students strongly agreed that more learning occurred in traditional classes, 31.1% agreed, 21.3% had no opinion, while 19% disagreed, and 1.2% strongly disagreed. A 2019 study of graduate computing students found that student perceptions of online learning and self-efficacy show differences based on gender and that overall students with prior online education experience have lower learning self-efficacy and more positive perceptions of online learning (Kreth, Spirou, Budenstein & Melkers, 2019).

Student attitudes and perceptions are important elements of the student's inclination toward e-learning (Chawla & Joshi, 2012). These attitudes and perceptions include motivation, belief, confidence, computer anxiety, fear, boredom, apprehension, enthusiasm, excitement, pride and embarrassment (Konradt & Sulz, 2001). Student (demographic) characteristics—major/level, gender, previous experience with online education may impact a student's attitudes and perceptions (also known as 'perceptual characteristics' in this paper) of online education, including the student's motivation, discipline, self-directed nature, independence, feelings regarding time and cost investment, preference, happiness, and appropriateness. In a traditional F2F classroom, instructors recognize and react to emotional states (facial expressions, gestures, eye contact and speech) along with individual student differences (maturity and experience) and modify lessons to help students toward positive learning experiences (Reilly, Gallager-Lepak & Killion, 2012). However, an online course does not allow instructors to modify the course in real time and those factors may impact upon students' perceptions in the online versus the F2F environment.

Gender

McKnight-Tutein and Thackaberry (2011) asserted there was a strong body of evidence that suggested women learned differently from men, which made women inherently more successful in the online learning environment. Participants perceived that women were uniquely positioned to be effective learners. To that end, women utilize learning methods that allow learning in relational ways by drawing on connections (Hayes, 2001). Sarkans (2018) however found that male students preferred F2F courses by 80% and females preferred online by 75%.
Further, a study conducted in 2002-2004 with 191 learners at Open University UK indicated that, "women's access to technology and enrollment in the online version of the course was comparable to men's" (Price, 2006: 353). This study also found that women were significantly more academically successful in the online version of the course than men, and a greater percentage of women than men completed the course. Similarly, a survey of 406 university students between the ages of 18 and 39 years old found that female students were more receptive to online learning than male students (Selwyn, 2007).

Motivation and self-regulation also played a role in successful online learning. Online students, as compared to traditional F2F students, were more predisposed to self-study, self-discipline, and time-management (Tratnik et al., 2019). According to Yoo and Huang (2013), "female students have a stronger intrinsic motivation to take online courses than their male counterparts." Studies by McSporran and Young (2001) found that women and older students preferred online courses, had a strong motivation to participate in online learning, and were good at communicating online. The study also noted that women did better on assignments and exams, were more successful at finding uninterrupted study time and were better at self-regulating (McSporran & Young, 2001). Women were also more likely to progress through a set task in a linear fashion, while men would jump ahead and run into problems.

A study by Caspi, Chajut and Saporta (2008) investigated gender participation differences in online classroom discussions finding that females posted more messages than males. Prinsen, Volman and Terwel (2007) also found that females posted more messages in online discussions.

Age

According to Artino's (2011) research related to age and the student's related perception/ experience on a quality online course, students who have not had an online course have a more positive perception of a quality online course compared to students who have taken one or more online courses. The statistics showed that 81 students were under the age of 22 and had no online course experience and scored a mean of 39.83 compared to the same group that had online course experience and had a mean score of 58.71. This pattern of difference was consistent with all age groups.

Barnes (2017) found that there was a statistically significant (at the $p<.01$ level) difference among the different age categories. The students in the 18-24 group tended to disagree that more learning occurs in online classes than in F2F classes. The older students (over age 30), perhaps more mature and self-motivated, tended to favor the online classes.

Major

According to Barnes (2017), for the variable *Major*, the results were mixed. There was a statistically significant difference at the $p<05$ level between the majors on some items on the survey, but on the items related to F2F classes having more learning, the significance was at the 10% level. In response to the statement about learning just as much in an online course, MIS majors disagreed much more than expected. On this same question, the engineering and science majors were at the other extreme, with a larger number agreeing that learning was the same in both types of classes. Accounting majors generally disagreed that learning is the same in online classes, while other non-business majors agreed more than expected with the statement.

But other research shows different results. According to Wilcox (2013), the results of his research showed that none of the factors investigated, such as academic discipline, age, enrollment status, or previous exposure to college level online coursework, were found to have any effect on students' perceptions of quality in online courses when compared between groups. Platt, Raile, and Yu (2014) found that students did not perceive online and F2F class as equivalent. Furthermore, as online course experience increased, Platt et al. (2014) found that students' perceptions of equivalence were positively correlated. Guest et al (2018) studied student satisfaction for online and F2F courses within the contexts of (a) the course, and (b) the instructor. Guest et.al. found student satisfaction with instructors of online courses is less popular than with face-to-face instructors and that converting a course from a F2F delivery mode to an online mode appears to lower student satisfaction with the course.

Method

A survey was developed and administered to students in various disciplines across campus during the 2019-20 academic year at a moderately selective, medium sized public university. A total of 446 surveys were administered with 410 students consenting to participate. One participant did not answer any questions while another checked "strongly disagree" to every question, and a third participant chose to leave all demographic data unanswered, resulting in 407 valid responses for a 91% response

rate. Not all students provided answers to every question and those responses have been excluded from analysis on those specific questions.

The survey was comprised of questions aimed to assess student perceptions of learning between F2F and online classes based on a similar study by Barnes (2017). Seven-point Likert-scaled items were used with the following choices: 1. Strongly disagree, 2. Disagree, 3. Somewhat Disagree, 4. Neutral, 5. Somewhat Agree, 6. Agree, and 7. Strongly Agree. Demographic information of gender, major, classification, age, and experience with online classes was collected. Questions three and four are reverse scoring compared to questions one and two, resulting in a Cronbach's alpha of .918.

Research Questions

The four specific questions from the Barnes (2017) study that were used in this survey are:
1. I feel I learned as much in my online courses as I have in my F2F courses.
2. I feel I have learned more in online courses than I have in my face- to-face courses.
3. I feel I have learned more in face-to-face courses than in online courses.
4. In my opinion, I feel that a student learns more in a F2F course than in online courses.

Sample

The sample in this study consisted of a convenience sample of n=407 undergraduate and Master level students. The participants consisted of 223 female, 178 male and six chose not to answer. Age was asked in terms of ranges, with 138 age 21 or younger, 154 age 22 to 26, 42 age 27 to 34, 34 age 35 to 40, and 37 over the age of 40. Only eight students had never taken an online course while 69 had taken from one to three online courses, 114 students had taken from four to six online courses, 55 students had taken from seven to nine online courses, and 161 having taken 10 or more online courses. A total of 283 students were from the College of Business and 113 from other colleges across campus. Class standing showed eight students in the first year of study, 35 in the second year of studies, 130 in the third year, 195 in the fourth year, and a total of 39 graduate masters level students.

Assumptions

The main assumptions of the study were: (a) the responses were in fact those of the participants; (b) the data were the actual perceptions of the participants, (c) the surveys were completed independently by each participant, and (d) that participants answered honestly.

Limitations

The study has several limitations. The interpretations of the survey questions may have affected the participants' responses. The environment in which the participants completed the survey may also have interfered with the level of concentration exhibited by each respondent. Participants may have answered according to a desired comparison instead of actual perceptions.

Delimitations

This study was delimited to students at one institution and therefore restricted to a relatively low number of participants. Data was collected using a survey instrument with a Likert-type scale with only one open-ended response item (Major). The survey

also covered a two-semester period of time, during which the existence and wide publicity of COVID-19 occurred and may have affected student perceptions.

Results and Discussion

This study utilized a seven-point Likert scale to further differentiate from the five-point scale used in the Barnes (2017) study and included graduate students in the study. This section contains counts and analysis of responses and significance levels for student perceptions of learning in online and F2F classes.

Gender

Previous studies have shown mixed results with regards to gender differences and online study (Barnes, 2017; Chawla & Joshi, 2012; Fish & Snodgrass, 2015; Chaturvedi & Dhar, 2009). Most studies finding differences have studied online attitudes, motivation, discipline, and time or cost investment (Fish & Snodgrass, 2015). In this study, analysis by gender did not present any significant differences. Table 1 shows the mean responses by gender.

Table 1:
Responses based on Gender

Gender	N =	I learn same in online as F2F Mean	I learn more in online Mean	I learn more in F2F Mean	Students in general learn more F2F Mean
Female	223	4.309	3.435	4.637	4.525
Male	178	4.062	3.747	4.659	4.736
Significance Level		0.398	0.158	0.992	0.478
Declined to Answer	6	4.333	3.833	5.000	4.167

Age

Age is both a sign of maturity and experience as well as a proxy for class standing (1st year, 2nd year, etc…). Age groupings were based on natural break points in the participant pool. The Barnes (2017) study showed statistically significant differences using two age groups of 18 to 24 and over 24. This study provided five age groupings of 21 & younger, 22 to 26, 27 to 34, 35 to 40, and over age 40. Younger students, the 21 and younger group, were significantly different in perceptions of learning than older student groups on all four questions. Students aged 22 to 26 showed a significant difference to older student groups only in regards to learning more in F2F classes, exhibiting a perception that as a group a strong feeling of greater learning occurs in F2F classes. Table 2 shows the mean responses by age group and Table 3 gives the statistical significance by age group.

Table 2:

Responses by Age Group

Age Group	N =	I learn same in online as F2F Mean	I learn more in online Mean	I learn more in F2F Mean	Students in general learn more F2F Mean
21 & Younger	138	3.587	3.116	5.181	5.174
22 to 26	154	4.331	3.740	4.734	4.597
27 to 34	42	4.643	3.738	3.854	4.071
35 to 40	34	5.029	4.294	3.824	3.882
Over 40	37	4.649	3.676	4.000	3.919

Table 3:

Age Group Statistical Significance

Comparison		I learn same in online as F2F	I learn more in online	I learn more in F2F	Students in general learn more F2F
21 & Younger	22 to 26	0.006**	0.012*	0.170	0.043*
	27 to 34	0.011**	0.209	0.001***	0.004**
	35 to 40	0.001***	0.002**	0.001***	0.001***
	Over 40	0.017*	0.360	0.002**	0.001***
22 to 26	27 to34	0.869	1.000	0.030*	0.423
	35 to 40	0.270	0.396	0.042*	0.203
	Over 40	0.881	1.000	0.142	0.219
27 to34	35 to 40	0.894	0.559	1.000	0.990
	Over 40	1.000	4.000	0.996	0.100
35 to 40	Over 40	0.908	0.516	0.993	1.000
*p<.05, **P<.01, ***p<.001					

This provides a better understanding of age showing that the maturing students age 22 and up tend to view the learning in online and F2F as more equal. This can be readily viewed via the change in the group means. As participant age increased, responses indicated a higher level of agreement with the statement that just as much learning takes place in online as in F2F courses.

Classification

While the sample size of first-year students was too small for meaningful analysis, the second-year students showed a significant difference to third-year, fourth-year, and graduate students. Similar to the age variable, the greatest differences were between second-year and the fourth-year and graduate students. While the mean scores do show a gradual greater agreement with learning equally well in online classes

as compared to F2F, results showed a similar decline in agreement with learning more in F2F classes.

Online Experience

As might be logically expected, the more online courses students had taken, the more positive the perception of online learning becomes. Participants were asked to respond to how many online classes had been taken in groups of one to three courses, four to six courses, seven to nine courses, and 10 or more courses. Students who had taken only one to three online courses tend to have a much more positive perception of learning in F2F over online, as compared to all other groups. Students who had taken four to six courses were significantly different only to students who had taken 10 or more courses.

Major

This study surveyed students from a variety of majors, but the only grouping that could be done was to compare Business majors to all other majors. While no significant differences were found on any of the four questions for the two groupings of majors, there were obvious differences in the means between the learning more in F2F and students in general learning more in F2F. This is likely an effect of the amount of online courses offered in the Business School versus other schools at the university where the survey occurred.

Conclusions

While a major field of study does not appear to show any differences in students' perceptions of learning between online and F2F classes, there is a trend that appears in analyzing age, classification, and experience (with online classes). In general, the younger the student, the earlier in the academic career, and the fewer the number of online courses taken, the greater the perception is that F2F format is better than the online format.

Obvious potential explanations for this include maturity (age and experience) and self-discipline. The online environment has progressed with new tools and interactivity over time and presents a rich medium; however, not all courses are constructed in the same fashion or take advantage of the various tools. Just as in a F2F course, professors each have differing teaching styles online.

The effect of increasing experience on student perceptions of learning in an online course is, perhaps, of great importance. In response to the spring 2020 pandemic and closure requirements, schools were closed and students were forced to convert from F2F to online at all academic levels. Students now entering university and college careers will be arriving with greater experience in the online environment from K through 12 online courses, and greater expectations of online courses presenting the same learning environment as F2F. The extent to which differing educational institutions have adopted and become adept at providing a good online learning environment, and continue to do so, will be instrumental in the future success of those institutions.

Recommendations for Future Research

Generalizing the findings of this study should be viewed with caution because of the great number of variables affecting the study, including the ability of the institution to deliver a consistent online experience for all online courses. The institution has a significant online delivery of course content (fewer than 10 participants in this study had

never taken an online course). Further studies might examine the current literatures' best online practice in terms of student perceptions of learning, undertake larger multi-institution studies, and examine independent variables such as family, culture, and work responsibilities or the effects of the COVID forced conversion on students' perceptions.

References

Allen, I., & Seaman, J. (2013). *Changing Course: Ten Years of Tracking Online Education in the United States. The Sloan Consortium (Sloan-C)*, Retrieved on July 23, 2020 from http://sloanconsortium.org/nublications/survev/making the grade 2006

Artino, K. A. (2011). *Undergraduate students' perceptions of a quality online course: online experience versus no online experience*. A Thesis. Akron, OH.

Baker, D., & Unni, R. (2018). USA and Asia hospitality & tourism students' perceptions and satisfaction with online learning versus traditional face-to-face instruction. e-*Journal of Business Education & Scholarship of Teaching*, 12(2), 40-54.

Barnes, C. (2017). An Analysis of Student Perceptions of The Quality and Course Satisfaction of Online Courses. *Journal of Higher Education Theory and Practice*, 17(6), 92 – 98.

Bejerano (2008). Raising the question: The genesis and evolution of online degree programs: Who are they for and what have we lost along the way?, *Communication Education*, 57(3), 408- 414.

Caspi, A., Chajut, E. & Saporta, K. (2008). Participation in class and in online discussions: gender differences. Computers & Education, 50(3), 718-724.

Chaturvedi, S., & Dhar, S. (2009). Demographics and e-learning: A perceptual study. *Abhigyan*, 27(1), 20-27.

Chawla, D. and Joshi, H. (2012). E-learning perception and its relationship with demographic variables: a factor analysis approach. *International Journal of Information and Communication Technology Education*, 8(4), 105-118.

Fish, L.A. and Snodgrass. C. (2015). Business Student Perceptions of Online versus Face-to-Face Education: Student Characteristics. *Business Education Innovation Journal*, 7(2), 83 – 96.

Guest, R., Rhode, N., Selvanathan, S., & Soesmanto, T. (2018). Student satisfaction and online teaching. *Assessment & Evaluation in Higher Education*, 43(7), 1084-1093.

Hayes, E. (2001). A new look at women's learning. *New Directions for Adult and Continuing Education*, 89, 35-42.

Herrington, A., Herrington, J., Oliver, R., Stoney, S., & Willis, J. (2001). Quality guidelines for Online courses: The development of an instrument to audit online units. *In G. Kennedy, M. Keppell, C. McNaught, & T. Petrovic (Ed.), Meeting at the crossroads: Proceedings of ASCILITE 2001 (pp. 263-270*). Melbourne: The University of Melbourne.

Konradt, U., & Sulz, K. (2001). The experience of flow in interacting with a hypermedia learning environment. *Journal of Educational Multimedia and Hypermedia*, 10(1), 69-84.

Kreth, Q., Spirou, M. E., Budenstein, S., & Melkers, J. (2019). How prior experience and self-efficacy shape graduate student perceptions of an online learning environment in computing. *Computer Science Education*, 29(4), 357–381.

Kuzma, A., Kuzma, J., and Thiewes, H. (2015), Business Student Attitudes, Experience, and Satisfaction with Online Courses. *American Journal of Business Education*, 8(2), 121–310.

McGorry, S. Y. (2003). Measuring quality in online programs. *Internet and Higher Education*, 6, 159-177.

McKnight-Tutein, G. & Thackaberry, A.S. (2011) Having it all: The hybrid solution for the best of both worlds in women's postsecondary education. *Distance Learning*, 8(3), 17-22.

McSporran, M. & Young, S. (2001). Does gender matter in online learning? *Association of Learning Technology Journal,* 9: 2, 3-14.

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010, September). *US Department of Education.* Retrieved on July 12, 2020 from Evaluation of Evidence-Based Practices in Online Learning: http://www2.ed.gov/rschstat/eval/tech/evidence-based practices/finalreport.pdf

Platt, C.A., Raile, A. N. W., and Yu, N. (2014). Virtually the Same?: Student Perceptions of the Equivalence of Online Classes to Face-to-Face Classes. *Journal of Online Learning & Teaching*, 10(3), 489-503.

Perreault, H., Waldman, L., Alexander, M. & Zhao, J. (2008). Graduate Business Students' Perceptions of Online Learning: A Five Year Comparison. *The Delta Pi Epsilon Journal*, 50(3), 164-179.

Price, L. (2006). Gender differences and similarities in online courses: challenging stereotypical views of women. *Journal of Computer Assisted Learning*, 22, 349-359.

Prinsen, F.R., Volman, M.L. & Terwel, J. (2007). Gender-related differences in computer-mediated communication and computer supported collaborative learning. *Journal of Computer Assisted Learning*, 23, 393-409.

Reilly, J.R., Gallager-Lepak, S. & Killion, C. (2012). Me and My Computer: Emotional Factors in Online Learning. *Nursing Education Perspectives*, 33(2), 100 - 105.

Sarkans, A. (2018). Student Perceptions of Online and Face-to-Face Learning. *International Journal of Curriculum and Instruction*, 10(2), 61-76.

Selwyn, N. (2007). The use of computer technology in university teaching and learning: a critical perspective. *Journal of Computer Assisted Learning*, 23, 83-94.

Tanner, J.R., Noser, T.C., & Totaro, M.W. (2009). Business Faculty and Undergraduate Students' Perceptions of Online Learning: A Comparative Study. *Journal of Information Systems Education*, 20(1), 29-40.

Tanner, J., Noser, T., Totaro, M., & Birch, R. (2006). Student Perceptions of The Online 'Classroom': An Update. *International Business & Economics Research Journal*, 5(10), 31-38.

Tanner, J., Noser, T., Fuselier, J., & Totaro, M. (2004a). 'The Online 'Classroom': Differences in Perception between Business Students and Non-Business Students. *Journal of College Teaching and Learning*, 1(3), 37-44.

Tanner, J., Noser, T., Fuselier, J., & Totaro, M. (2004b), 'The Online 'Classroom': What Do Students Think?, *Journal of Informatics Education Research*, 6(1), 43-54.

Tanner, J., Noser, T., & Langford, H. (2003). Perceptions of Undergraduate Business Students Toward Online Courses in Higher Education Expanded and Revisited: Do Gender, Age, and/or Past Experiences Make a Difference?, *Journal of Business and Economics Research*, 1(2), 13-20.

Tratnik, A., Urh, M., & Jereb, E. (2019). Student satisfaction with an online and a face-to-face Business English course in a higher education context. *Innovations in Education and Teaching International*, 56(1), 36-45.

Wilcox, B. R. (2013). *Student Perceptions of Online Course Quality: A Comparison By Academic Discipline.* Doctor of Philosophy (PhD), Dissertation, Educ Foundations & Leadership, Old Dominion University. Retrieved on July 13 from https://digitalcommons.odu.edu/efl_etds/174

Yoo, S.J. & Huang, W.D. (2013). Engaging Online Adult Learners in Higher Education: Motivational Factors Impacted by Gender, Age, and Prior Experiences. *Journal of Continuing Higher Education*, 61(3), 151-164.