



Synchronous, Asynchronous, and Face-to-Face Instruction: Students' Perception of their Effectiveness during the COVID-19 Pandemic: A Policy Paper

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ABSTRACT

The COVID-19 pandemic led to the abrupt transition from the traditional face-to-face instruction to distance learning. Although Web-based and computer-mediated learning continues to be scrutinized because of the long-believed perception that it is inferior to face-to-face instruction, the wake of the current COVID-19 pandemic has led University leaders to make online learning mandatory. Despite the rapid growth of Web-based/online instruction in higher education, many faculties do not see the potential of Web-based instruction in improving student learning and achievement. This paper seeks to investigate students' perception of synchronous, asynchronous, and face-to-face instruction during the distance-learning phase of education and the implications for public policy. The study employed a quantitative research design. The participants for this study were graduate and undergraduate student groups enrolled in public four-year institutions of higher learning. The study assesses student perceptions of effective learning environments across the dimensions of synchronous online instruction with SOIV, asynchronous online instruction, and face-to-face instruction. The rationale behind this research was based on an assessment of the elements of quality instruction found throughout the dimensions of SOIV, asynchronous online instruction, and face-to-face instruction. The results show that students would prefer asynchronous online learning environments rather than SOIV.

Keywords: Synchronous Instruction, Asynchronous Instruction, Face-to-Face Instruction, COVID-19, Students' Perception

INTRODUCTION TO THE PROBLEM

Although Web-based and computer-mediated learning continues to be scrutinized because of the long-believed perception that it is inferior to face-to-face instruction, the wake of the current COVID-19 pandemic has led University leaders to make online learning mandatory (Nikdel, 2020; Shahzad, 2020; Strielkowski, 2020). Today, web-based/online courses undergo more extensive reviews than face-to-face courses do. Even though there is a large amount of research available on Web-based/online instruction, it is difficult to draw firm conclusions as to what works and does not work (Gautam, 2020). The study suggests that there are various applications of Web-based instructional formats that outperform their face-to-face classroom counterparts and some that do not. Current course management systems such as Blackboard or WebCT do not accommodate for inherent learner differences. Even though these learning

environments provide students with needed collaboration, flexibility, and convenience, students demand more interaction (EasyLMS, 2021).

Even though Web-based instruction is still relatively a new way to instruct and learn, there is limited research to address the benefits of synchronous learning formats (combining voice with threaded discussion in real-time) over asynchronous learning (threaded discussion without voice where students participate in different times). Many believe that faculty should redesign course content to take advantage of the unique characteristics of the Web-based learning environment, which include the ability of students to participate in a learning environment that is learner-centered, flexible, and can accommodate for learner differences.

Researchers must address the critical issue: how do the elements of an online learning environment compare to those in a face-to-face environment in fostering learning? Failure to conduct research to assess the nature of Web-based instruction will only perpetuate the problem of faculty who refuse to embrace Web-based learning.

Despite the rapid growth of Web-based/online instruction in higher education, many faculties do not see the potential of Web-based instruction in improving student learning and achievement (Gautam, 2020; Rosell, 2020). This could easily be attributed to all of the media comparison studies in the past that labeled Web-based instruction or any kind of instruction other than traditional face-to-face instruction as inferior (Cooke, 2020; Cheng, 2016; Ayebi, 2020 Al-Azawei, 2017). For the most part, instead of Web-based courses using a student-centered model of instruction, many of these courses simply use the same teacher-centered delivery model that can already be found in traditional face-to-face classrooms (Li, 2020).

Research Question

The following question involving students' perceptions of the quality of courses delivered through Web-based instruction was addressed in the study:

Is there a statistically significant difference among student perceptions regarding the degree to which they perceive course quality is achieved through synchronous online instruction with voice (SOIV), asynchronous online instruction, and face-to-face instruction?

THEORETICAL FRAMEWORK

Moore and Kearsley's Distance Learning and Interaction theory (2005), and Kearsley's Engagement theory (1997) will be used as a basis for understanding the unique role and nature of Web-based learning environments and will form the theoretical framework of the study. Moore and Kearsley's theories put the learner and his or her interaction and engagement with their instructors and other students in a Web-based environment at the center of the learning process. The two researchers' theories support the notion that students' perceptions of quality instruction in Web-based learning formats can be affected by the level of interactivity and how engaged they are in a Web-based/online learning environment.

RESEARCH DESIGN AND ANALYSIS

This study employed a quantitative research design. A multiple linear regression tested the hypothesis that there is a statistically significant relationship between the independent variable student demographics (gender, age, major course of study) and 41 student proficiency (dependent variable) in the use of computer technology such as spreadsheets, word processing,

slideshows, statistical programs, chat, programming, online course design, and threaded discussion.

Next, a Repeated Measures ANOVA test was conducted to determine if there was a significant difference in how students rated their experiences using face-to-face instruction, asynchronous online instruction, and synchronous online instruction with voice. Last, a multivariate analysis of variance (M ANOVA) tested the hypothesis that there is a statistically significant difference between males and females involving the degree to which they perceived that course quality could be achieved through synchronous online instruction with voice (SOTV), asynchronous online instruction, and face-to-face instruction. The .05 alpha level was used in all hypothesis testing.

Participants

The researcher was interested in possible differences between graduate and undergraduate student groups enrolled in public four-year institutions of higher learning. These differences were based on age, gender, and major course of study. Their researcher did not target any age groups for the study. The internet was used to search university departments in the South-Central region of the United States where course instruction was delivered via synchronous and asynchronous online media. The researcher's primary interest was universities within a 200-mile radius from his home institution of learning. The researcher found four-year universities where courses were offered using synchronous online technology. Nine of the universities were located in Louisiana, Mississippi, Alabama, and Tennessee; however, one was located in the state of Maryland. The university located in the state of Maryland was referred to the 42 researcher Instrumentation.

Table 1: Frequency and Percentage Distribution for Sample		
Variable	Frequency	P<
Sex		
Male	37	37.0
Female	63	63.0
Age		
18-25	23	23.0
26-35	37	37.0
36-45	14	14.0
46-55	21	21.0
56-75	5	5.0
Major		
Education	41	41.0
English	4	4.0
Science	13	13.0
Other	42	42.0

Table 2: Number of online courses completed, and type of online course completed

Variable	Frequency	Percent
# Of online courses completed		
None	21	21.0
1-2	23	23.0
3-5	23	23.0
6 or more	23	23.0
Missing	10	10.0
Type of online course completed		
Synchronous	63	63.0
Asynchronous	11	11.0
Missing	26	26.0

Table 3: Internal Consistency

Variable	Questions	Cronbach's alpha
Proficiency in use of Computer Technology	11 a-11 h	0.79
Course quality met through SOTV	20a-20n for SOTV	0.88
Course quality met through Asynchronous instruction	20a-20n for Asynchronous online instruction	0.77
Course quality met through Face-to-face instruction	20a-20n for Face-to-Face instruction	0.82
Course quality met through other distance delivery	20a-20n for other distance delivery media	0.98

RESULTS: IMPLICATIONS FOR POLICY AND PRACTICE

This investigation provided useful information for technology developers (web masters, web programmers, graphic designers, etc)—a group that is often ignored in learning technologies research. The primary purpose of this research was to assess student perceptions of effective learning environments across the dimensions of synchronous online instruction with SOIV, asynchronous online instruction, and face-to-face instruction. The rationale behind this research was based on an assessment of the elements of quality instruction found throughout the dimensions of SOIV, asynchronous online instruction, and face-to-face instruction. The results show that students would prefer asynchronous online learning environments rather than SOIV. Previous research has indicated that students in an asynchronous format have more time to digest information (Belanger & Jordan, 2000; Bollinger & Martindale, 2004; Whiteman, 2002). According to Garrison and ClevelandInnes (2004), students engaged in an asynchronous online environment have the flexibility to take as much time as deemed necessary to digest new information as they 69 reads. In addition, students can go back, and review videos previously viewed and replay them to comprehend the subject matter. Furthermore, with asynchronous online instruction, the instructor usually goes back to make any needed corrections on the website for students that will eventually visit the site. Hence, information on asynchronous

online instruction is usually up-to-date and more complete (Harasim, 2000; Rovai, 2002). Some of the features of synchronous online technology may disclose another reason that students seem to prefer asynchronous online technology over SOIV. Such features of synchronous online technology tend to operate very slowly. This is usually due to poor connectivity based on common bandwidth bottlenecks. Essentially, many online technologies are flooded with video and audio features that operate slowly due to poor connectivity. These very slow operating features that were meant to be captivating to the user become boring. The implication here is the need to address policy to have universal broadband / high-speed bandwidth similar to free access to public radio. One must be cautioned that such a move will likely draw opposition from large telecommunications companies that generate large portions of their revenues from selling bandwidth.

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