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PERCEPTIONS OF THE EFFECTIVENESS OF ASYNCHRONOUS ONLINE DISCUSSIONS AS A SUPPLEMENT TO FACE TO FACE INTERACTIONS: A META REVIEW

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PERCEPTIONS OF THE EFFECTIVENESS OF ASYNCHRONOUS ONLINE
DISCUSSIONS AS A SUPPLEMENT TO FACE TO FACE INTERACTIONS:

A META REVIEW

A Thesis

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Public Administration

by

Rachel Worrell

June 2020

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ABSTRACT

Today's technological age is evolving students away from the traditional classroom model with over three million students exclusively enrolled in online classes (Classes and Careers, 2018). with many online courses attempting to provide an online educational experience that parallels a traditional face to face (f2f) model. Researchers have deduced that there is no significant difference between online and f2f courses.(Johnson et al., 2000; Nguyen, 2015) however, modifications must be made due to the differences in the delivery modes of instruction. Asynchronous online discussion forums can be an effective tool for improving student learning outcomes (Green et al., 2014; Tony Bates, 1997) yet, such an environment decreases opportunities for social interactions (Bullock & Colvin, 2015) and can foster miscommunication in non-verbal subtleties clarified in spoken language (Mongan-Rallis & Shannon, 2006). This proposed research will investigate current literature concerning perceptions of the effectiveness of asynchronous online discussions as a supplement to f2f social interactions. Under the proposed study, a meta-analysis will be executed to synthesize already existing research with aims to evaluate the overall effectiveness and perceptions of asynchronous online threaded discussion forums versus f2f platforms.

DEDICATION

My first dedication is to Benjamin Rosenberg PhD, my first quantitative analysis professor whom sparked my interest in statistical analysis and research. My second dedication is to Margaret Gough PhD, who taught me how to code in statistical software, extract from big data sets, mentored me, and exposed me to the complete research process in which produced co-authored published work. My third dedication is to Professor Van Wart who helped me to solidify skills necessary to search databases and annotate articles. My final and most important dedication to this thesis is to Marc Fudge PhD. You have made this journey possible. Thank you for all your direction, time, critiques and dedication in assisting me through this process.

Thank you to all the professors during my undergraduate and graduate experiences whom have shared their knowledge and expertise and whom have personally taken the time to assist me in my development as a researcher.

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CHAPTER ONE

INTRODUCTION

Statement of the Problem

Virtual spaces are expected to become the future of social experiences. Hernandez-Serrano et. Al., (2011), explored interrelationships that mediate socialization in virtual spaces affirming, “more and more students will be using technologies for learning” (p. 471). This forecast deserves our attention because as the use of technology increases, the rate of human social f2f interactions decrease (Bullock & Colvin, 2015) and online platforms may well then be seen as an isolating place for some students (Borup et al., 2012). Furthermore, it is difficult to find a consensus in literature on the topic when conflicting findings are produced. Bates (1997)) and Han & Hill (2019) found that f2f class discussions may not facilitate learning better than asynchronous discussions and Meyers & Feeney (2016) unearthed positive relationships between perceptions of online and f2f discussions. Educational institutions have increasingly participated in the practice of implementing in their curriculum asynchronous discussion forms as a means to generalize a participatory experience and increase a student’s sense of social presence in distance learning platforms. Perhaps the reasoning is evidenced by some empirical research that supports the belief that there are no significant differences between the output of online and f2f environments (Lee et al., 2017) however, these conclusions elicit concerns central to this study. Literature has proven that the premise for social interactions in online and f2f

environments are mediated by various factors (Joksimović et al., 2015) in which Harrison (2016) reveals how the social identities of students was shown to influence online discussion participation. This research is further propelled by further analysis of asynchronous discussion forums because the intended output creates challenges for a population of diverse students when generalized into a standard experience. Due to discrepancies in data, this research seeks clarification as to if a f2f social experience can be effectively supplemented through participation in asynchronous discussions.

Purpose of the Study

Asynchronous online discussion forums have become a foundational part of on-line university course curriculum. Thus, the purpose of this analysis is to find out if online asynchronous discussion threads in higher educational settings are representative of their purpose to supplement f2f social interactions in an online environment. This study will review and synthesize existing literature drawn from colleges and universities in the U.S. Additionally, this research will enhance our knowledge of how incorporating asynchronous discussions in online course curriculum can be compared to f2f social interactions. The objective of the study will contribute to our understanding of social interactions in online versus f2f discussions to the educational community.

Definitions. This research will operationalize variables as follows for the purpose of this study:

Asynchronous discussion is synonymous with the terms threaded discussions, discussion boards, asynchronous forum and online discussion forum. It is the use of typed text to convey information, thoughts, and ideas without physical contact with the recipient of the message. Communication occurs via an established online board or forum. Interactions occur between instructor, and students. The start and end of a discussion time frame can vary from hours to weeks.

Threaded discussions occur on discussion boards and within discussion forums. They are defined by the lack of immediate feedback, communication occurs overtime. It involves typed text only in which information, thoughts, ideas are input into a shared forum in which the dialogue including a response is not received instantaneously. The communication involves two or more people that are not within physical proximity. Responses to discussion posts do not involve any visual clues, video media, audio, video conferencing, or zoom like, or face time like software.

Dialogue is defined as the transmittal of communication or the means by which one inputs and outputs information, thoughts, ideas. A computer screen is the medium by which one is linked into a discussion board thread within the virtual environment.

Educational standing is the level of education in which a student attained at the time the data was collected. An undergraduate student is not enrolled in

full time Master's coursework. A Master's student is enrolled in a Master's program.

Face to face (f2f) is a setting/ environment. It includes discussions, dialogue, or communication that occurs between students in a physical classroom. It involves two or more people that include students and at least one instructor.

Characteristics of a f2f discussion include turn taking in audible speech, physical proximity to others, immediate or simultaneous feedback, visual cues, non-verbal clues and a defined start and end time.

Face-to-face (f2f) environments occur at a University institution in which the curriculum is administered by an instructor in a physical classroom setting. It is characteristic of participants engaged in structured classroom discussions.

Discussions in this environment are not communicated online.

Online environment is defined as a University course in which the curriculum is administered online by an instructor virtually. This setting does not participate in physical contact with other students or the instructor. Discussions are delivered, structured, and administered online through typed text with no f2f interactions or audio cues in the discussion thread.

Social interaction is a form of communication that is synonymous with social presence. It is the "degree to which one perceives the presence of participants in the communication" (Calefato & Lanubile, 2010, p. 287) and includes self-perceptions and interpretations of virtual space.

Limitations of the Study

This study is limited to the time frame and database as listed in the methods section. This study only applied articles that extracted data, collected samples, interviewed or surveyed participants within the United States. There may be other significant findings from other countries that are not included as part of this review. Articles used for analysis were those that were made available through CSUSB One Search or Google Scholar at the time indicated in the methods section. This research relies on propositions extracted from analysis and review of previously published studies upon which reasonable assumptions were systematically derived. Publication bias may be a limitation based on articles were drawn from peer review journals. It could be argued that the scores on measures do not correlate with variable measures due to distinctness of concepts.

CHAPTER TWO

LITERATURE REVIEW

Many online courses attempt to provide an on-line educational experience that parallels a traditional f2f model. Researchers have deduced that there is no significant difference between online and f2f courses (Johnson et al., 2000; Nguyen, 2015) however, modifications must be made due to differences in the delivery mode of instruction (Hernandez-Serrano & Gonzales-Sanchez, 2011). One way that educational institutions modify the f2f social experience online is through threaded discussion forums. Courses offered fully online with no f2f meetings, commonly require students to participate in asynchronous discussion boards that are incorporated as part of a student's grade in which participation is mandatory. This research seeks specific clarification as to how the social components within asynchronous threaded discussions can be supplemented as a social interaction as compared to traditional f2f social interactions. Research documents that as the use of technology increases, the rate of human social f2f interactions decrease (Bullock & Colvin, 2015). Whereas research by (Rainsbury and Malcolm (2003) and (Berry (2005) deduced that students' on line discussions are better than f2f discussions for fostering ideas, interaction, and in depth consideration of others viewpoints. Additionally, the position of social presence in a virtual world is influenced by various factors (Joksimović et al., 2015). Therefore, we begin discussion with what constitutes social presence in a virtual environment followed by the presentation of characteristics of social

presence, and the influencing factors of socio cognitive processes, and the role of participation that influences differences in online versus f2f social aspects.

Social Presence

Joksimovic et. Al (2015) conducted research on social presence indicators in online discussions and defined social presence as a “students’ ability to engage socially with an online learning community” (p. 638). vanOostveen et al. (2016) concurred with (Garrison, Anderson, and Archer (1999) in defining social presence online as a presence of when students feel invited and supported by a mutually respectful atmosphere in which one can freely express thoughts devoid of fear. Interactions between participants, the behavior of students, communication modes, (Joksimović et al., 2015; Poth, 2018; So & Brush, 2008) and perceptions between self and space in relation to time illustrate foundations to student presence and engagement facilitated through texted communication. In order to sustain social presence in online learning villages, a body of research is in agreement that influencing factors that affect the development of social presence are foundation to the institution of social presence. Research highlights important factors to consider in establishing online social experience by students in which online and f2f formats impact social presence.

Characteristics. If discussion threaded boards are incorporated as part of a standardized core curriculum experience in online learning, we must explore how characteristics of an asynchronous discussion elicit online experiences. Blackmon (2012) demonstrated that discussion boards contain both engaging

and non-engaging components. They argued that asynchronous discussions contain social cues, but rather these cues are simply presented differently. Namely, the lack of a response to a discussion forum holds equal weight as a response. A non-response prompt moves students to navigate to different forums whereas engaged students carry on posting (Blackmon & Major, 2012). Threaded discussion boards can additionally limit opportunities for freedom of expression and increase feelings of loneliness which hinder connection and interaction. Research conducted by Mulvihill (2013) pointed out characteristics within discussion threads by which the ease of elements such as “language and grammar or spelling” through typed methods facilitated “cyber stereotypes”.

Factors of Influence

Socio-Cognitive Processes. To bring about an understanding of how a threaded discussion may be effective or ineffective as a supplement to social interactions in an on-line environment, we explore socio cognitive aspects. These aspects encompass how students perceive others and formulate meaning about other humans surrounding them in virtual spaces. Students demonstrate cognitive presence by forming questions, devising problems, and uncovering relevant information, while actively participating in generating and constructing understanding (vanOostveen et al., 2016). According to Eryilmaz et al. (2013), a framework for cognitive processes in an online environment derives from the social constructivists theory in which learning flows through a process of comprehension, input from others, examines views different than our own, and

incorporates collective insight. In an asynchronous threaded discussion forum, the perception of others is extracted from typed text. The formulation of meaning and social experience within that virtual space exists between the medium of the technology facilitating the communication, the participant's individual perception, and time.

Participation. Asynchronous discussions lack f2f interactions and do not occur instantaneously. Therefore, when students post to the forum, how does a platform without physical or visual contact in which time delays communication be conceived as social? To examine this, we further probe social constructivist principles that stem from the erection of knowledge established in 1997. The Interaction Analysis Model (IAM) examined communication between computers and humans and noted how collaborative environments impacted the construction of human knowledge (Lucas et al., 2014). Results demonstrated that "interaction, meaning negotiation, and building of shared understanding" are all part of the creation of social interactions (Lucas, Gunawardena, and Moreira, 2014, p. 576). This knowledge and interactions encompass an "entire gestalt" formulated by contributors communicating in online environments (Lucas et al., 2014). Therefore, the act of typing text combined with cognitive thought to create sentences, impact our sense of an online social interaction in an asynchronous discussion platform. Joksimović et al. (2015) agree that within an online environment, the simple act of engaging and participating with the learning community constitutes social presence.

Online. Online courses attribute 40 percent of the curriculum to threaded discussions (Brown & Green, 2009) In higher educational settings, online threaded discussion boards are implemented with the intent to provide students with a platform for social interactions as compared to f2f in class meetings. Social and nonsocial components encompass asynchronous threaded discussion boards. In a threaded discussion forum, conversations are posted and stored on a virtual board. These conversations are generally initiated by a proctored question posed by an instructor. Students post an initial response to the question then are required to read and comment to the posts of other peers enrolled in the same class. It is also important to note that responses to the proctored questions and communications between student experience a time delay. In other words, communication in threaded discussions are picked up and responded to at some latter point in time. This delay in responses is trademark for online asynchronous discussions which is a mitigating factor in the process and evaluation of online social communication.

Contextual aspects of online threaded discussions that can impact the virtual online social experience include variances in age, institutional quality of instruction, and class type. These variables play a large role in how students extract social information from their online environment. Lee et al. (2017) agree that apart from f2f settings, “soft skills” such as presentation, teamwork, communication and collaboration that are networked in online course quality present challenges in an online environment. In an asynchronous environment,

there is no sharing of physical space with others and ideas drawn from written language can be easily misconstrued. On the contrary, asynchronous communication tools do include some advantages. Course content is available anytime from any location, it can provide more time for reflection, students may have opportunities to share multiple perspectives and discussions can incorporate more equitable contributions from students.

Face to Face. Weekly f2f meetings in which course content and collaboration is assisted by the professor, share similarities with online curriculum. Both course modes typically include specific course content and opportunities for collaboration. However, differences include weekly f2f meetings conducted in a physical classroom whereas, online curriculum typically implements discussion threads in lieu of f2f meetings. Advantages of f2f classes include a true feeling of social presence, employing facial cues and voice inflection to interpret meaning. Individuals can contribute richness to discussions and received immediate feedback.

Each student will have a different experience with perceptions of virtual space and therefore educational institutions maybe challenged by the supplemental use of asynchronous discussions as a standard for matching social interactions online.

Patterns and Perceptions

A dimension of virtual space is framed by language connected to our perceptions of spatial elements therefore, when language is removed from the

physical representation, one's perception is reality wherein the value of space becomes relative (Hernandez-Serrano & Gonzales-Sanchez, 2011).

Students perceptions of social presence online will additionally vary by character, subject matter, and location of the educational institutions (Brooks & Bippus, 2012). For example, Caplan (2005) and Brooks and Bippus (2012) noted some students share less of a desire for f2f social encounters or may perceive an on-line environment as a better fit. Therefore, students who select f2f classes are more socially intrepid, whereas on-line enrollees are more secure with their personal digital technology (Brooks & Bippus, 2012; Mattes et al., 2003). Therefore, how can varying factors that are derived from personal perceptions and experiences be standardized and implemented as part of core educational curriculum? Brooks & Bippus (2012) demonstrate patterns of the presence of personal biases between f2f and online communities. Their research supports patterns in asynchronous discussions that expose an inherent bias that stems from personal course selection and or personal interests that contribute to the presence and input of the student enrolled in that course.

Another pattern characteristic of asynchronous discussion forums are that they are structured in a manner in which students are required to respond to each other. Vess (2005) research results concurred with findings of Heckman & Annabi (2006). They discovered patterns in asynchronous discussions versus traditional f2f class interactions that mainly produced dialogue between students and instructors whereas asynchronous modalities produced student to student

interactions. Since the guidelines for participation in asynchronous discussions is established and defined within the course's syllabus and is not voluntary therefore, the perception of social presence when students engage in on-line with each other via asynchronous discussions may simply be attributed to the pressure. These pressures include meeting standards such as minimum GPA requirements, student loan funding, and meeting prerequisites for promotion. All of these factors induce students to "participate" in asynchronous discussions and therefore may produce a pattern in which an authentic online social presence is not virtuously actualized. With debate over the perception and patterns of social interactions in asynchronous discussions as authentic, I seek evidence-based consensus from literature as to the use of asynchronous discussions as supplement to face to face social interactions in educational institutional settings.

Educational Standing. As compared to a couple of decades ago, a proliferation of universities now offer evening and weekend classes. The byproduct of this shift has resulted in a growing population of nontraditional students from all walks of life enrolled in online courses. The appeal of f2f classes held Monday through Friday during the day has less of a demand by as students are presented with pressures of juggle their education while balancing responsibilities within the home and those associated with employment. Current on line student trends show that 49 percent of undergraduates and 71 percent of graduate students are employed full-time (Classes and Careers, 2018). In particular, graduate students continuously seek more convenient ways to further

their education while commanding flexibility in accessing their education. This thesis highlights the discussion of differences in social interactions in a threaded discussion to include distinctions in educational standing. Students seeking graduate degrees are developmentally different as compared to those with lower educational standings (Hahs-Vaughn et al., 2017) therefore, the sense of social interactions in a virtual environment, combined with the quality of education experienced by this demographic group may not concur with the intent of online educational institutions when threaded discussions are used as a supplement to face to face communications.

Graduates. As colleges and universities attempt to capture a standardized “social experience” through course delivery of curriculum online via a threaded discussion, a major component in the equation includes how social experiences by Graduate students may differ or parallel with the underlying intent of the institution in the use of a threaded discussion board as a supplement to face to f2f social experiences. Perspectives of online discussions of graduate students in higher educational settings was qualitatively analyzed by Mulvihill (2013). They documented the experiences of graduate students implementing a “technorealist” context and documented student’s participatory perspectives during a threaded discussion board. The researchers discovered an environment of hostility in graduate level discussion forum experiences can be elicited and noted that asynchronous intercommunication or lack thereof, was premised on student’s own personal judgments of their peer’s posts.

CHAPTER THREE: METHODOLOGY

Cablova et. Al., 2017 explains that reviews that are narrative and traditional in nature, assess the results and quality of literature from particular fields utilizing criteria that is implicit. Whereas systemic reviews elect search strategies and criteria that are explicit in order to accomplish goals that analyze the reliability and quality of research findings (Cablova 2017). Under this study, the best method was a hybrid systemic review of existing literature using implicit and explicit strategies. The implicit aspects open interpretation of literature to subjectivity however, the systemic incorporation of search strategies and exclusion and inclusion criteria adds reliability and quality. Another reason as to why a review of literature is most appropriate for this study includes the complexity of the intricate relationships of semantic and linguistic elements between software and human communication. Basic social interactions in themselves without the presence of software are incredibly complex. Research conducted by Raidt et. Al (2005) devised an experiment in which the findings were presented at a joint conference on smart objects and ambient intelligence. The social cues in participants were measured when they interacted with a computer animated figure. The analysis noted that several theories of social interaction were drawn upon in order to formulate relationships between computer and human social dimensions of interaction. Additionally, a review of

literature is fitting in order to capture data from all over the US nation. This will allow the findings to be more generalizable and applicable to a more diverse population.

The main objective of this research was to synthesize literature and assess if there is an answer to the research question. The sample population includes full time and part time Master's level and Undergraduate students whom attended American higher education institutions across the nation from various disciplines such as but not limited to the fields of computer science, accounting, management, marketing, public administration, statistics, engineering, and finance. American institutions were selected in order to harmonize the aspect of educational cultural differences in educational settings. Analyzed literature includes institutions that participated in online discussion threads and or whom had comparative analysis of f2f and online discussions. Articles of analysis were collected via CSUSB's online library One search database and through reference list look ups. This section will further discuss explicit and implicit search strategies, inclusion and exclusion criteria, coding procedures, and discuss the validity and reliability of this study.

Online versus face to face social interactions elicit natural experiments. As a graduate student enrolled in online and f2f classes, I was curious as to why university curriculum of online courses includes discussion boards. At times discussions were engaging and other times discussions felt like busy work. Additionally, in providing substantive responses to peers it was challenging in

that the tone of voice and implicit messages could not be interpreted through typed text. I often wondered to what degree is the discussion board author expressing their thoughts since I had never had a f2f interaction in order to solidify the undertones and connotations of what I read in what they were trying to express.

To address the questions posed, the study developed three research propositions. Research propositions examine whether, or not, links exist between two ideas, or concepts. Research propositions rely on previous studies and provides a method where the researcher uses their expertise to draw conclusions based upon the relative correlation between the ideas or concepts. Research propositions also allow the researcher to make reasonable assumptions developed from a thorough and comprehensive systematic review of the relevant research.

Some of the challenges to using research propositions are that they cannot be tested scientifically. Thus the interpretations of the link between the two ideas or concepts are based upon the researcher making reasonable assumptions. If a study were to actually test the relationship between the two ideas or concepts, or variables in a quantitative study, the results may be different than the assumptions made from the research propositions.

Despite this potential shortcoming, research propositions are a good way to begin an exploratory study. Additionally, the research propositions are largely

based upon the researcher systematically reviewing and analyzing an extremely large body of previous research.

A research proposal is best suited for this analysis due to the abstractness, variability, and uniqueness of important mediating factors such as perceptions of space, perceived interpretations of communication, distinctions in an individual's participation, and socialization experiences. These concepts are difficult to measure quantitatively and present additional challenges qualitatively such as sample size, capturing proportioned demographics, and variance in the type of topic understudy.

This research was therefore directed by three broad questions:

1. Can a student's in class, face to face social discussion be replicated online by participating in a discussion board thread?
2. Do students perceive discussion threads as a parallel social platform to a classroom discussion?
3. Are students extracting a similar social experience online to their in-class counterparts?

These broad questions were the foundation upon which the following research question was posited:

To what extent do asynchronous online discussion boards provide a supplement to social face to face in-class discussions?

Instrumentation

The theoretical assumption of this study is premised on asynchronous discussions are an equivalent supplement to face to face discussion forums in higher education class settings. I seek to discover **to what extent do asynchronous online discussion boards provide a supplement to social face to face in-class discussions.** The course of action taken to develop this research included systematically employing implicit and explicit criteria, analyzing the results of studies with integration of conclusions of previously published articles.

Inclusion and Exclusion Criteria

Eligible participant populations are undergraduate and graduate students enrolled in U.S. higher education institutions. The sample size includes the results of previous research that was conducted between 2000 and 2018. The analysis of the articles and research reports under review took place between April/2020 and June/2020. The search criteria that was used to elicit the reports used the following key words: Online social interactions, online social discussions higher education, online versus traditional asynchronous discussions, comparisons online traditional classroom social interactions, asynchronous discussions online. The geographical and cultural restrictions include studies within the United States that were available in English only.

Search Strategies

The following strategies provided an explicit, systemic system review of researched articles published between 1600 - August 2019 that investigated

various factors of the effectiveness and perceptions of asynchronous on line discussions as a supplement to f2f social interactions .Reference and citation databases searched include: CSUSB One search, ERIC EDUCATION, Google Scholar, and PSYCINFO. Other efforts to retrieve available studies were conducted through reference lookups. Keywords used to enter databases include online social interactions, online social discussions higher education, online versus traditional asynchronous discussions, comparisons online traditional classroom social interactions, and asynchronous discussions online. Databases were accessed from a Microsoft Surface Pro through Google Chrome using Windows 10 software. Search modes and expanders that were inputted include: find all my search terms. Publication types were “all”, intended audience was “all”. Articles examined included abstracts, titles, and available in full text in English. Unpublished studies were not included in this analysis.

Coding Procedures

If a study was published and accepted it was an automatic qualifier for this analysis. Articles were selected based on key search words in abstracts and therefore, assessment of the quality of a study and study design was not a disqualifier but rather all studies that met the description above within the date of preparation were included for preliminary abstract analysis (Table 1). Articles that did not meet the criteria were eliminated from analysis in this study due to the focus of this research (Table 4). Articles were then further titrated into themes in which the findings, results, and conclusions for each article were summarized

then synthesized. Articles were grouped according to the following themes: 1) Can a student's in class, face to face social discussion be replicated online by participating in a discussion board thread? (Table 1a). 2) Do students perceive discussion threads as a parallel social platform to a classroom discussion? (Table 2a). 3) Are students extracting a similar social experience online to their in-class counterparts? (Table 3a).

Validity and Reliability

A challenge in comparing a number of studies is that diverse outcomes are produced. Thus, the use of common effect sizes and tests were implausible. Some studies were qualitative others quantitative. Tables are presented detailing all articles included and excluded and the methods of collecting data in this research is prescribed in the methods section. This study demonstrates variance in sample fluctuations in fixed, random, and subject level sampling. The content validity was examined through conceptual definitions of the construct. This review was conducted by a literature search procedure shown by principles of recording transparent and true records of the complete process.

Date Preparation

June 23, 2020.

CHAPTER FOUR: FINDINGS AND RESULTS

Research demonstrates that social presence online is influenced by various factors (Joksimović et al., 2015) that mediate social aspects in virtual spaces (Hernandez-Serrano & Gonzales-Sanchez, 2011). In the study of online threaded discussion forums, some students perceive this platform as an isolating place (Ellis, 2001) whereas other research has shown no differences between online and face to face courses (Johnson et al., 2000; Nguyen, 2015). Online and face to face modalities demonstrate differences in teaching techniques therefore, differences in how social interactions occur within those environments (Conley et al., 2017) deserves attention. Chapter four reports the results from this meta-study in which 27 studies from American higher education settings, qualified for analysis and were synthesized to seek clarification as to how f2f social discussions are supplemental to an online asynchronous discussion board threads (Appendix D). The research hypothesis was directed by the following questions:

1. Can a student's in class, face to face social discussion be replicated online by participating in a discussion board thread?
2. Do students perceive discussion threads as a parallel social platform to a classroom discussion?

3. Are students extracting a similar social experience online to their in-class counterparts?

Findings and Results

Can a student's in class, face to face social discussion be replicated online by participating in a discussion board thread?

How a student participates in an asynchronous discussion thread influences the amount of social presence. In Addition, the environment of an asynchronous discussion online versus a physical face to face discussion transport analogous influencing characteristics. Vess (2005) deduced that when a student continues a discussion, their actions are participatory thus, Joksimović et al. (2015) interprets those actions as the presence of social presence within that environment. Vess (2005) noted asynchronous environments were characteristic of student to student interactions while f2f interactions were directed towards student and instructor in which Ellis (2001) pointed out that it is possible to actively participate in an online discussion without the production of verbal input. Furthermore, some students responded to posts through the use of silence as means to disregard classmates (Mulvihill, 2013). Wise, Hausknecht, and Zhao (2014) confirmed that a characteristic of participation is when a discussion thread is revisited by a student however, this same study found inconsistency in the behaviors of a student's ability to speak and listen during an online discussion forum.

Implementation of strategic instructional tools can facilitate the replication of f2f social patterns in asynchronous discussions. Conley et al. (2017) discovered by incorporating tools online that facilitate socializing derived from f2f courses, such as shared activities, real life situations, and reflective discourse, online discussions had the potential to be interactive. However, the replication of a f2f discussion online faced challenges. Ellis (2001) concluded that the environment of a face to face course is more natural than one online however, as students made progress in the asynchronous class, interactions were enhanced. The results of this study also correlated to how online dialogue produced fragmented responses and a lack of feedback.

Wise et al. (2014) confirmed that students in online discussion threads felt “overwhelmed” in large asynchronous environments which produced unnatural responses that were not seen in f2f classes. Additionally, it was proven that when students engaged in the online format, they listened non instinctively in relation to the manner of “speaking positively” within the conducted research.

Do Students Perceive Discussion Threads as a Parallel Social Platform to a Classroom Discussion?

Perceptions of face to face versus online asynchronous discussion forums differ. Jacobi (2017) confirmed that because some students in virtual space experience less domination of a discussion by a minority of students, these students concluded that online platforms were more effective as compared to f2f classrooms. This study further compared traditional and on-line discussions in

which students reported on-line environments felt “less natural” and therefore perceived online environments not as effective.

The perception of discussion threads as a parallel social platform to a classroom discussion produce biased output. Hussein-Farraj, Barak, and Judy Dori (2012) noted that personal preference for online learning and students whom had previous online learning experience had higher, positive perceptions of distance learning however, in addition this group also expressed unease about the absence of communication with classmates within the online environment. Furthermore, Mulvihill (2013) discovered students selected posts to respond to based on personal judgment derived from their perception of the post.

Literature demonstrates limitations and conflicts in what perceptions students extract from discussion threads that parallel a f2f social experience. Vonderwell (2007), Comer and Lenaghan (2013), and Jacobi (2017) agreed that the structure of an online discussion can produce patterns that generate further “in depth” responses that are interactive however, the perception of engaging in an in depth conversation produced non congruent findings. Hachey (2017) noted existence of more social presence in an online post response as compared to the level of interaction that stemmed from the “main” post. Whereas the study conducted by Ellis (2001) and Tu (2000) demonstrated mixed results as to the validation of an asynchronous discussion thread to be perceived as stimulating. Vonderwell (2007) additionally stipulated through his findings that student involvement in discussions were dictated by the quality of student involvement

and teacher presence. On the contrary, (Liu & Yang, 2014) gathered data from asynchronous message posts and discovered the presence of significant associations unrelated to teaching presence between student's perceptions of online discussions and social presence.

Other unique student perceptions emerged in the literature. Student's assessed themselves by revisiting earlier posts and evaluated each other by the perception of their classmates opinions and thoughts (Vonderwell, 2007), as well as elements such as "positive feedback", "levels of sophistication", and "encouragement" were found to be present within a student's asynchronous discussion forum (Hachey, 2017). Peterson, Beymer, and Putnam (2018) concluded positive affect within asynchronous groups were not statistically significant and collaboration produced affect that was highly negatively correlated with perceptions of belonging low.

Are Students Extracting a Similar Social Experience Online to Their in-Class Counterparts?

There is an existence of differences in student experiences in online versus f2f formats (Brooks & Bippus, 2012; Putman et al., 2012) and according to research conducted by Hernandez-Serrano and Gonzales-Sanchez (2011), asynchronous environments did not produce significant results that support a sense of presence in virtual spaces.

Other ways online and face to face students extract social experiences were compared through the disadvantages of each format. Mulvihill (2013)

established the following observations. Firstly, students created ways to stereotype other classmates online through derivatives extracted from written syntax. Next, students expressed positive regard for equality and an absence of stereotypes within the forum however, they were captious in regard to the perceived level of equity. Final thoughts of this study included expressed friction between experiences of empowerment and equality in discussions online that notated that these online experiences undergo phases that pass through a fluid continuum.

Literature has documented that on line asynchronous discussion formats provided more opportunities to “edit”, “reflect” and “research”, however this same research by Meyers and Feeney (2016) found no statistical supported evidence that asynchronous environments differed in metacognition while Vonderwell (2007)uncovered “self-regulatory” cognitions exhibited by asynchronous discussion groups.

Students on line asynchronous discussion practices are shaped by other relationships (Blackmon & Major, 2012), but the development and structure of online interactions that were similar to f2f environments produced inconclusive results (Javadi, 2017). Hancock and Rowland (2017) explored the use of student volunteers however, the results were not exhaustive due to the removal of the student requirement to use the discussion form. Therefore, it was determined that students who did not engage in the discussion roles were the ones in which

the most benefit would have occurred since it was deduced that when discussion roles were used, social interaction increased.

Hachey (2017) did not find significant results that asynchronous participation in discussion forms were variant by course level yet, the study of Hussein-Farraj et al. (2012) demonstrated how engineering and science graduate students only lacked to validate elevated perceptions of learning online in realms that were communicative and social.

CHAPTER FIVE: DISCUSSIONS AND RECOMMENDATIONS

Statement of the Problem

As virtual spaces are expected to become the future of social experiences. Hernandez-Serrano and Gonzales-Sanchez (2011), explored interrelationships that mediate socialization in virtual spaces declaring, “more and more students will be using technologies for learning”. This forecast deserves our attention since as the use of technology increases, the rate of human social face to face interactions decrease Bullock and Colvin (2015) in which online platforms may well then be seen as an isolating place for some students (Borup et al., 2012). However, it has been a daunting task in locating a consensus in literature on the topic when conflicting findings have been generated. Tony Bates (1997)Bates and Han and Hill (2019) found that f2f class discussions may not facilitate learning better than asynchronous discussions and Meyers and Feeney (2016) unearthed positive relationships between perceptions of online and f2f discussions.

Educational institutions have increasingly participated in the practice of implementing in their online curriculum asynchronous discussion forms as a means to generalize a participatory experience and increase a student’s sense of social presence in distance learning platforms. Perhaps the reasoning is evidenced by some empirical research that supports the belief that there are no significant differences between the output of online and f2f environments (Lee et

al., 2017) however, these conclusions have elicited concerns central to this study. Literature has proven that the premise for social interactions in online and f2f environments are mediated by various factors (Joksimović et al., 2015) in which Harrison (2016) reveals how the social identities of students was shown to influence online discussion participation. This research was further propelled by further analysis of asynchronous discussion forums because the intended output creates challenges for a population of diverse students when generalized into standard practice. Due to discrepancies in data, this research sought clarification as to if a f2f social experience can be effectively supplemented through participation in asynchronous discussions and was therefore directed by three broad questions:

Research Questions and Hypothesis

1. Can a student's in class, face to face social discussion be replicated online by participating in a discussion board thread?
2. Do students perceive discussion threads as a parallel social platform to a classroom discussion?
3. Are students extracting a similar social experience online to their in-class counterparts?

These broad questions were the foundation upon which the following research question was posited:

To what extent do asynchronous online discussion boards provide a supplement to social face to face in-class discussions?

Discussion

How a student participates in an asynchronous discussion thread influences the amount of social presence.

In an asynchronous online environment, students are required to respond to each other not engage in continuous dialogue with the professor. Therefore, it would be expected that student-to-student interactions would be a characteristic of an asynchronous environment. Whereas in a face to face classroom student interact with a professor but are also posed with opportunities to interact with each other in dialogue through posing of questions and rebutting of comments. Being present in a forum itself may or may not quantify as being participatory just as being physically present a classroom may or may not signify that a student has satisfied participatory expectations. Some students may be simply participating because their grade depends on it thus inducing unnatural experiences predicated on the dependence of external pressures. A student who wants to get a good grade may say nice things simply to satisfy the grade requirement or may simply respond to the pressure of what would be a politically correct thing to say. Additional pressures when responding to asynchronous discussions to consider that influence the amount of social presence in a threaded discussions include the record of the written transaction. When things are placed in writing, it was demonstrated through this research that the benefits include the written transaction can be reflected upon at a later date. This reflective practice, however, alters original thought and therefore is subjected to

pseudo expressions whether positive or negative. As it is actualized, what is being communicated in writing converts to a permanent record of public opinion. Whereas the influence in the amount of social presence in a f2f class is experienced immediately through a combination of what was said, how it was said, and how the communication was received at the time it was transmitted. It is this experience that resonates and elicits social presence with students. Face to face classes do not transcribe the words of speakers however, a powerful thought can be verbally voiced, articulated and communicated to a degree which allows for future reflection. We can also surmise from this study that students whom enroll in f2f classes feel less pressure to be there thus the influences regarding the amount of social presence and participation would produce more positive outcomes since these students exhibit preference for f2f contact due to the non-selection of alternative online course options. When there is a desire to be somewhere, the elements that encompass social presence and engagement are presented with opportunities to naturally occur.

In addition, the environment of an asynchronous discussion forum online versus a physical face to face discussion transport analogous influencing characteristics. In a face to face classroom, some students exhibit challenges with speaking and listening during a discussion congruent with research that illustrated similar challenges may occur online. The challenges of engaging students to socialize online or when physically present in a f2f format maybe similar however, a f2f class aligns with a natural human evolutionary process of

communication versus that through computer mediated means. Both formats go through a continuum of behaviors that begin with less communication and conclude with increased communication, whether online or face to face. At the beginning of a class relationships have not formed and for the most part, people do not know each other. Thus, as students get to know each other and time passes, familiarity sets in and communication would be expected to increase. It can equally be argued that the comparisons of face to face formats with asynchronous discussions hold negatable value since the basic characteristics of the two formats differ. Whether this premise is true or false, it lends weight to support the original aim of this study and serves as an assertion to the proposition of to what extent do asynchronous online discussion boards provide a supplement to social f2f in-class discussions.

The perception of discussion threads as a parallel social platform to a classroom discussion produce biased output. Since each individual interprets their own environment and sense of virtual space differently, some students may or may not be extracting intended goals of an asynchronous on-line platform. Hernandez-Serrano and Gonzales-Sanchez (2011) articulated “technologies do not originate a socio territorial single model... it depends on how it is used and occupied by individuals. ... it would be necessary to design virtual spaces that would offer opportunities to every student, ... which could satisfy their level of adaptation with different degrees of interaction, too” (Hernandez-Serrano, Gonzalez-Sanchez, 2011, p. 477).

Differences in student experiences in online versus f2f formats exists. Feedback in a f2f discussion is immediate whether it is a suggested silence, or an audible comment, to facial gestures. A lack of feedback in a f2f format is uncommon and violates society's present social norms. As characteristic of asynchronous discussions, when feedback is delayed it interrupts the social process. When you return to the communication at a later point in time it is easy to forget about the initial impact of the response. Also, the disengagement from the discussion due to the need to await for a response can encourage a loss of interests in wanting to revisit the conversation. Another challenge of asynchronous discussions related to the experience of students includes the ease in which presenting a fake persona when engaging in dialogue can be enabled. This concept is more difficult to replicate in a physical class setting.

Students today are juggling goals of attaining an education with outside responsibilities such as work, family and children, therefore students seek the best quality education that can efficiently maximize the time needed to be spent on learning. Reading discussion threads of other peers within each class consumes a great deal of time. This research found support for how asynchronous discussion threads can produce overwhelming experiences when there are many posts to sift through. Thus, this presents opportunities for educational institutions to use the time spent on posting and responding to posts in asynchronous environments more efficiently. Perceptions of f2f versus online asynchronous discussion forums as social platforms differ. In a f2f classroom

some students exhibit challenges with speaking and listening during a discussion concurrently these same behaviors are challenges that occur online. Without a clear consensus from the literature, there lacks a strong foundation and support for standardizing a variant perceptive experience.

Implementation of strategic instructional tools can facilitate the replication of f2f social patterns in asynchronous discussions. Thus, what can institutions do to increase and support an online social experience? The study of Hancock and Rowland (2017) investigated how social interactions in virtual learning environments can be improved. The study suggested that “scaffolding of higher level thinking skills” and establishing a space that is “safe” and free from “fear of embarrassment” can increase social experiences online. The study of Hernandez-Serrano and Gonzales-Sanchez (2011) articulates practical examples of ways professors can stimulate successful social interactions in virtual spaces. Strategy 1.) Establish an identity online. This strategy enhances the building of an environment of collaboration. The course instructor needs to generate their own identity and then facilitate students’ construction of their own individual identities. Strategy 2.) Support active participation. A key component to the perception of extracting a social experience in a virtual space necessitates being engaged and being an active participant. Functions of teaching online demand reinforcement of connecting students, prompting their participation and retaining their engagement through supplying proper feedback. Future participation is positively correlated to the rate at which feedback and recognition

is given to students in virtual spaces (Hernandez-Serrano & Gonzales-Sanchez, 2011). Strategy 3.) Incorporate past points of reference and technological familiarity. The authors noted “on-line teacher may turn their frequent technologies, use for personal purposes, into academic tools for learning and socializing with other students” (Hernandez-Serrano, Gonzalez-Sanchez, 2011, p. 478). Strategy 4.) Form perceptions of social proximity. In virtual worlds when communicating, the lack of visual information entails beefing up participation and a solidification of adaptation through a “known spatial metaphor[ic]” design.

APPENDIX A: TABLE 1

Table 1. Records identified through database searching¶

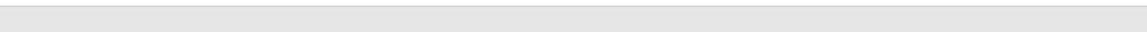
CITATION (43)¤
A¶ Acosta-Tello, E. (2010). Tools for Engaging Online Learners: Increasing Student Involvement in Online Classes. <i>Journal of Instructional Pedagogies</i> , 15, <i>Journal of Instructional Pedagogies</i> , October 2010, Vol. 15¤
¶ Al-Dheleai, Y. M., & Tasir, Z. (2019). Web 2.0 for Fostering Students' Social Presence in Online Learning-Based Interaction. <i>Journal of Technology and Science Education</i> , 9(1), 13–19¤
B¶ Berger, M. R. (2013). <i>The impact of social presence cues on postsecondary student achievement online</i> . Grand Canyon University¶ ProQuest LLC. ProQuest LLC. Retrieved from http://search.ebscohost.com.libproxy¤
Billings, D. M., Skiba, D. J., & Connors, H. R. (2005). Best practices in web-based courses: Generational differences across undergraduate and graduate nursing students. <i>Journal of Professional Nursing</i> , 21(2), 126-133.¤
Blackmon, S. J. (2012). Outcomes of chat and discussion board use in online learning: A research synthesis. <i>Journal of Educators Online</i> , 9(2), n2¶ ¤
Borup, J., West, R. E., & Graham, C. R. (2012). Improving Online Social Presence through Asynchronous Video. <i>Internet and Higher Education</i> , 15(3), 195–203.¶ ¤
Brooks, C. F., & Bippus, A. M. (2012). Underscoring the Social Nature of Classrooms by Examining the Amount of Virtual Talk across Online and Blended College Courses. <i>European Journal of Open, Distance and E-learning</i> ¶ ¤
Brown, A. H., & Green, T. (2009). Time students spend reading threaded discussions in online graduate courses requiring asynchronous participation. <i>The International Review of Research in Open and Distributed Learning</i> , 10(6), 51-64.¤
C¶ Calderon, O., & Sood, C. (2018). Evaluating learning outcomes of an asynchronous online discussion assignment: a post-priori content analysis. <i>Interactive Learning Environments</i> , 1-15 ¶ ¶
Chung, J. E. (2013). Social interaction in online support groups: Preference for online social interaction over offline social interaction. <i>Computers in Human Behavior</i> , 29(4), 1408-1414.¶ ¶
¶ Collins, K., Groff, S., Mathena, C., & Kupczynski, L. (2019). Asynchronous Video and the Development of Instructor Social Presence and Student Engagement. <i>Turkish Online Journal of Distance Education</i> , 20(1), 53–70.¶ ¤
Comer, D. R., & Lenaghan, J. A. (2013). Enhancing Discussions in the Asynchronous Online Classroom: The Lack of Face-to-Face Interaction Does Not Lessen the Lesson. <i>Journal of Management Education</i> , 37(2), 261–294¶ ¤
Conley, Q., Lutz, H. S., & Padgitt, A. J. (2017). Creating Participatory Online Learning Environments: A Social Learning Approach Revisited. <i>Journal of Interactive Learning Research</i> , 28(1), 5–27.¤
D¤
E¶ Ellis, A. (2001). <i>Student-Centered Collaborative Learning via Face-to-Face and Asynchronous Online Communication: What's the Difference?</i> Retrieved from http://search.ebscohost.com.libproxy.lib.csusb.edu/login.aspx¶ ¤
Eryilmaz, E., van der Pol, J., Ryan, T., Clark, P. M., & Mary, J. (2013). Enhancing Student Knowledge Acquisition from Online Learning Conversations. <i>International Journal of Computer-Supported Collaborative Learning</i> , 8(1), 113–144.¤
F¤
G¤
H¶ Hachey, V. (2017). Nontraditional Student Participation in Asynchronous Online Discussions. ¶ ¶

Harrison, K. M. (2016). Impression management and social presence within asynchronous online discussions: a case study. ¶
Hancock, C., & Rowland, B. (2017). Online and out of synch: Using discussion roles in online asynchronous discussions. Cogent Education, 4(1), 1368613 ¶
▣



Hahs-Vaughn, D. L., Acquaye, H., Griffith, M. D., Jo, H., Matthews, K., & Acharya, P. (2017). Statistical literacy as a function of online versus hybrid course delivery format for an introductory graduate statistics course. Journal of Statistics Education, 25(3), 112-121. ▣
Hernandez-Serrano, M. J., & Gonzales-Sanchez, M. (2011). Improving Social Interactions in Virtual Learning Environments: Guidance on Spatial Factors for Online Teachers. Online Submission, 471-480. ¶
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Hussein-Farraj, R., Barak, M., & Dori, Y. (2012). [Chais] Lifelong Learning at the Technion: Graduate Students' Perceptions of and Experiences in Distance Learning. Interdisciplinary Journal of E-Learning and Learning Objects, 8(1), 115-135. ▣
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J. ¶
Jacobi, L. (2017). The structure of discussions in an online communication Course: What do students find most effective? Journal of University Teaching & Learning Practice, 14(1), 11 ¶
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Javadi, E., Gebauer, J., & Novotny, N. (2017). Comparing Student Interaction in Asynchronous Online Discussions and in Face-to-Face Settings. Information Systems Education Journal, 15(3), 64 ¶
▣
Joksimovic, S., Gašević, D., Kovanovic, V., Riecke, B. E., & Hatala, M. (2015). Social Presence in Online Discussions as a Process Predictor of Academic Performance. Journal of Computer-Assisted Learning, 31(6), 638-654. ▣
▣
Jorczak, R. L., & Dupuis, D. N. (2014). Differences in Classroom versus Online Exam Performance Due to Asynchronous Discussion. Journal of Asynchronous Learning Networks, 18(2) ▣
K ▣
L ¶
Lee, D., Spear, R., & Kero, P. (2017). Perceptions of Social Presence among Public University Graduate Students Enrolled in Synchronous and Asynchronous Coursework. Online Submission. ¶
▣
Liu, C. J., & Yang, S. C. (2014). Using the community of inquiry model to investigate students' knowledge construction in asynchronous online discussions. Journal of Educational Computing Research, 51(3), 327-354. ▣
Luhrs, C., & McAnally-Salas, L. (2016). Collaboration Levels in Asynchronous Discussion Forums: A Social Network Analysis Approach. Journal of Interactive Online Learning, 14(1), 29-44. ▣
M ¶
Mandernach, B. J., Dailey-Hebert, A., & Donnelly-Sallee, E. (2007). Frequency and time investment of instructors' participation in threaded discussions in the online classroom. Journal of Interactive Online Learning, 6(1), 1-9. ¶
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Martono, F., & Salam, U. (2017). Students' learning in asynchronous discussion forums: A meta-analysis. International Journal of Information and Communication Technology Education (IJICTE), 13(1), 48-60. ¶

Meyers, S., & Feeney, L. D. (2016). Examining Interactive and Metacognitive Processes in Student Learning: Findings from a Hybrid Instructional Environment. <i>Online Learning</i> , 20(3), 110-125.¶
Morris, O. (2013). Faculty Choice and Student Perception of Web-based Technologies for Interaction in Online Economics Courses. 74(01). <i>Dissertation Abstracts International, A: The Humanities and Social Sciences</i> , Vol. 74(01).¶
N¶
O¶
P¶
Peterson, A. T., Beymer, P. N., & Putnam, R. T. (2018). Synchronous and Asynchronous Discussions: Effects on Cooperation, Belonging, and Affect. <i>Online Learning</i> , 22(4), 7-25.¶
Putman, S. M., Ford, K., & Tancock, S. (2012). Redefining Online Discussions: Using Participant Stances to Promote Collaboration and Cognitive Engagement. <i>International Journal of Teaching and Learning in Higher Education</i> , 24(2), 151–167.¶
Q¶
R¶
S¶
Swaminathan, R., & Mulvihill, T. M. (2013). Graduate Students' Perceptions of Online Discussions: Implications for Instructors. <i>Journal of Educational Technology</i> , 10(3), 27–34.¶
Szura, J. M. (2014). The impact of online social networking sites on student integration into the college peer social system (Doctoral dissertation, Oakland University).¶
T¶
Tirado-Morueta, R., Maraver-López, P., & Hernando-Gómez, Á. (2017). Patterns of participation and social connections in online discussion forums. <i>Small Group Research</i> , 48(6), 639-664.¶
¶



Tu, C.-H. (2000). Strategies to Increase Interaction in Online Social Learning Environments. Retrieved from http://search.ebscohost.com.libproxy.lib.csusb.edu/login.aspx ¶
U¶
V¶
Vonderwell, S., Liang, X., & Alderman, K. (2007). Asynchronous discussions and assessment in online learning. <i>Journal of Research on Technology in Education</i> , 39(3), 309-328.¶
vanOostveen, R., Childs, E., Clarkson, J., & Flynn, K. (2016). Becoming Close with Others Online: Distributed Community Building in Online PBL Courses. <i>College Quarterly</i> , 19(1).¶
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Vess, D. L. (2005). Asynchronous discussion and communication patterns in online and hybrid-history courses. <i>Communication Education</i> , 54(4), 355-364.¶

W¶ Wise, A. F., Hausknecht, S. N., & Zhao, Y. (2014). Attending to Others' Posts in Asynchronous Discussions: Learners' Online "Listening" and Its Relationship to Speaking. <i>International Journal of Computer-Supported Collaborative Learning</i> , 9(2), 185–209.¶
X¶
Y¶
Z¶

APPENDIX B: TABLE 2

Table 2a. Do students perceive discussion threads as a parallel social platform to a classroom discussion?

CITATION	FINDINGS AND RESULTS	Participant
Brown, A. H., & Green, T. (2009). Time students spend reading threaded discussions in online graduate courses requiring asynchronous participation. <i>The International Review of Research in Open and Distributed Learning</i> , 10(6), 31-64.	Determine whether students are spending more or less time participating in an online course than in a traditional classroom. The number of words per discussion the average words per discussion were calculated. It may be pointed that asynchronous threaded discussion of the type studied here provides a reasonably similar experience in terms of time spent participating in classroom activity. NOT A STUDENT PERSPECTIVE.	
Liu, C. J., & Yang, S. C. (2014). Using the community of inquiry model to investigate students' knowledge construction in asynchronous online discussions. <i>Journal of Educational Computing Research</i> , 51(3), 327-354.	34 fourth-year undergraduates (17 males, 9 females) Data were collected from the participants' message posts, the teacher's reflection notes, and a survey that the students completed. Results indicate that the discussion types were significantly related to CP (cognitive pres), SP (social pres), and the students' perceptions of the course, but that the discussion types were not related to TP (teaching pres). This study used asynchronous online discussion for the IE course. All asynchronous communication and contributions were stored and tracked for analysis at the end of the semester. Overall, students in asynchronous groups reported higher levels of individualism, competition, and negative affect compared to students in the synchronous groups. Students in the synchronous groups reported higher levels of cooperative perceptions, belonging, and positive emotions compared to students in the asynchronous groups. Student perceptions of belonging were higher for students in the synchronous group than the asynchronous group. There were no significant differences between synchronous and asynchronous groups when examining positive affect, perceptions of cooperation, or perceptions of competition. Although there were significant differences between online learning mode, there were neither significant effects across time for the constructs measured nor significant interaction between learning mode and time. At the conversation level, students in the synchronous and asynchronous conditions posted in different patterns. Synchronous students wrote 218.43 (SD=158.6) words per conversation, with an average of 14.59 (SD=15.67) words per post. Asynchronous students wrote 133.04 (SD=79.71) words per conversation with an average of 31.17 (SD=28.91) words per post. In other words, the synchronous students rapidly exchanged shorter posts. A t-test was used to confirm that there were significant differences for words per conversation ($t(461) = -9.08, p < .001$) and words per post ($t(4516) = -22.06, p < .001$) between synchronous and asynchronous students. No significant results were found between groups for positive emotions. When examining the mean scores, students' in the synchronous groups had higher mean scores on negative emotions, discrepancy, and certainty when compared to students' in the asynchronous groups. This finding supports prior research that asynchronous communication interferes with the relationship between cooperative goals and cooperation (Peterson & Rowell, 2016; Rowell, Salvatore, & Glass, 2011; Salvatore & Rowell, 2014). Those who collaborated asynchronously also had lower perceptions of belonging and higher negative affect. Although we provided interaction guidelines to encourage equal interactions and the instructional design of the conditions was identical, the asynchronous groups exchanged fewer posts than the synchronous groups, and the lower interaction may have affected the perceptions of interdependence. The students reported that "most learning takes place" through asynchronous discussions.	
Peterson, A. T., Beymer, P. N., & Putnam, R. T. (2018). Synchronous and Asynchronous Discussions: Effects on Cooperation, Belonging, and Affect. <i>Online Learning</i> , 22(4), 7-25.	Overall, students in asynchronous groups reported higher levels of individualism, competition, and negative affect compared to students in the synchronous groups. Students in the synchronous groups reported higher levels of cooperative perceptions, belonging, and positive emotions compared to students in the asynchronous groups. Student perceptions of belonging were higher for students in the synchronous group than the asynchronous group. There were no significant differences between synchronous and asynchronous groups when examining positive affect, perceptions of cooperation, or perceptions of competition. Although there were significant differences between online learning mode, there were neither significant effects across time for the constructs measured nor significant interaction between learning mode and time. At the conversation level, students in the synchronous and asynchronous conditions posted in different patterns. Synchronous students wrote 218.43 (SD=158.6) words per conversation, with an average of 14.59 (SD=15.67) words per post. Asynchronous students wrote 133.04 (SD=79.71) words per conversation with an average of 31.17 (SD=28.91) words per post. In other words, the synchronous students rapidly exchanged shorter posts. A t-test was used to confirm that there were significant differences for words per conversation ($t(461) = -9.08, p < .001$) and words per post ($t(4516) = -22.06, p < .001$) between synchronous and asynchronous students. No significant results were found between groups for positive emotions. When examining the mean scores, students' in the synchronous groups had higher mean scores on negative emotions, discrepancy, and certainty when compared to students' in the asynchronous groups. This finding supports prior research that asynchronous communication interferes with the relationship between cooperative goals and cooperation (Peterson & Rowell, 2016; Rowell, Salvatore, & Glass, 2011; Salvatore & Rowell, 2014). Those who collaborated asynchronously also had lower perceptions of belonging and higher negative affect. Although we provided interaction guidelines to encourage equal interactions and the instructional design of the conditions was identical, the asynchronous groups exchanged fewer posts than the synchronous groups, and the lower interaction may have affected the perceptions of interdependence. The students reported that "most learning takes place" through asynchronous discussions.	52 undergraduate students in an online teacher education course at a public university in the Midwest.
Vonderwell, S., Liang, X., & Alderman, K. (2007). Asynchronous discussions and assessment in online	The students reported that "most learning takes place" through asynchronous discussions.	

Jacobi, L. (2017). The structure of discussions in an online communication course: What do students find most effective? <i>Journal of University Teaching & Learning Practice</i> , 14(1), 11.	Almost one third (29%) of all the negative statements in the post questionnaire expressed negative perceptions and experiences about social interaction, about another third (29%) were related to affective aspects. It appears that while students who learned the course from distance had negative perceptions and experiences about DL, relating to "social interaction" only. DL students were also concerned about lack of social interactions with peers while learning from distance. The initial stage included about 260 science and engineering graduate students. Half of them (51%) were engineers. Among them, about half (53.5%) were males. The comparative stage included 105 science and engineering graduate students that participated in one of two courses: Innovation Management (N=52) or From Cell to Tissue (N=53). The students' descriptions, sorted by course, gender, age, major, and veterans in their workplace is presented in Table 1. Overwhelmingly, students found online discussions more effective than those in traditional classrooms. Those who saw the online discussions as more effective said that it was largely due to the fact that everyone participated. Because discussion postings accounted for a significant portion of the grade (33%), all students felt motivated to participate. Students also claimed that the necessity of participating led to more fruitful discussions, since a variety of perspectives were offered, and they prepared more thoughtful, research-based responses. Students also found online discussions more effective because the students who tend to dominate discussions in traditional classrooms were inhibited from doing so in the virtual classroom; this has been confirmed in research by Dixon, Kahlhorst and Reiff (2006). Moreover, shy people feel more comfortable voicing their opinions online due to the sense of anonymity they feel behind a computer screen. Students also characterized online discussions as more effective for other reasons: likelihood of more-focused discussions and ability to revisit the discussions. Students who found the online discussions to be less effective than discussions in traditional classrooms cited one major reason: it feels less natural. Again, only four out of 27 students found them less effective.	Surveys from 27 student participants.
Heskey, V. (2017). Nontraditional Student Participation in Asynchronous Online Discussions.	This study utilized a post-priori analysis of students' responses to an online discussion board assignment in a graduate course to identify organically emerging indicators of learning that occur when completing such assignments, thus capturing learning outcomes that are unique to an online group discussion assignment. A total of 83 responses have been analyzed, producing 223 units of meaning. There were 23 instances that involved a disagreement between coders in terms of grouping units of meaning from these responses into categories, resulting in a 90% inter-coder agreement on the content analysis. Many of the responses were characterized by peer-to-peer interaction. The three categories within this theme represent increasingly sophisticated interpersonal communication skills from providing	

Hancock, C., & Rowland, B. (2017). Online and out of speech: Using discussion roles in online asynchronous discussions. <i>Cogent Education</i> , 4(1).	Findings indicated that the students used the discussions to assess peer learning by looking at peers' views and ideas. The study findings indicated that online discussions facilitated reflective and self-assessment processes. Non-real-time aspect of the asynchronous discussion gave the students enough time to "share a composed thought or question... and be able to reread messages" before posting them online. Time for reflection and being able to reread the discussion messages posted allowed the students to assess their own contributions. Third finding includes the way students became more aware of 10 different ways to view one discussion topic or question. Discussions that are structured can be for extracting information, but most importantly, for enjoyment, making connections, and formulating new perspectives. The structure does create a "safe" space for students to express themselves without fear of embarrassment. The scaffolding of higher level thinking skills means students can take control of their own learning in college and transfer this thinking to real-world environments.	
Hassain-Farraj, R., Barak, M., & Dor, Y. (2012). [Chao] Lifelong Learning at the Technion: Graduate Students' Perceptions of and Experiences in Distance Learning. <i>Interdisciplinary Journal of E-Learning and Learning Objects</i> , 8(1), 115.	Findings indicated that graduate science and engineering students have high positive perceptions of DL in all the categories except the category social aspects and communication. It appears that students had concerns about their ability to communicate with their classmates and lecturers from distance. Finding indicated that students who had previous experience in DL held statistically significant higher positive perceptions of DL. Findings also indicated that students who preferred asynchronous DL delivery mode held statistically significant higher positive perceptions of DL. Statistically significant differences were found in students' perceptions of DL, by age groups. The following categories promoting meaningful learning ($F(2, 234) = 3.36, p < .05$), course quality and student support ($F(2, 234) = 5.93, p < 0.01$), workplace and promotion ($F(2, 234) = 3.27, p < .05$) as well as in the total questionnaire mean scores ($F(2, 234) = 3.14, p < 0.05$). Younger students had more positive perceptions of the mentioned categories in comparison to their older peers. However, data indicated that DL students asserted higher positive opinions on the course in comparison with their P2F peers. Indeed, at the end of the course, the DL students were more satisfied with their learning compared to the P2F students. When examining students' learning preferences, we found that more DL students (72%), in comparison with P2F students (65%), preferred the asynchronous mode for course delivery. This is probably so because asynchronous DL allows flexibility in time and place of learning, independence, and self-responsibility for their learning processes. It appears that female students were more confident about their ability to communicate with their classmates and lecturers from distance. Findings indicated that young employees, who had worked less than four years at their workplace, were more satisfied with DL than student working over five years at their workplace categories.	

Comer, D. R., & Lennaghan, J. A. (2013). Enhancing Discussions in the Asynchronous Online Classroom: The Lack of Face-to-Face Interaction Does Not Lessen the Lesson. <i>Journal of Management Education</i> , 37(2), 261-294.	words of encouragement to offering constructive criticism to assuming a leadership role by engaging peers in the conversation. Positive feedback/encouragement was evident in responses that expressed agreement with a previous post by peer. The results are also consistent with Isomson et al. (2014), in that collaboration among peers, or peer-to-peer communication, inherently engages as learning takes place. However, the current results further suggest that learning within each of the dimensions identified in the analysis reported here occurs on a continuum. Within the inter-personal communication dimension, peer-to-peer interaction was characterized by increasing level of sophistication, extending from providing basic encouragement to offering constructive criticism, and at the most advanced level, assuming a leadership role within the thread. This research explores the nature of participation in asynchronous online discussions of nontraditional students in online courses. Research question 1: Does the nature of nontraditional student participation in asynchronous online discussions differ between levels of courses? This indicates there is a difference in level of cognitive presence across course levels in this study. Does overall level of social presence vary across course level? Very little difference in social presence across course level. Do categories of social presence vary across post type? • EE: There is an association between social presence category and post type. • EA: There is an association between social presence category and post type. Indicating less social presence in main posts and more social presence in response posts. Further, there was far less open communication in main posts and far more open communication in response posts than would be expected with no associations. The lack of face-to-face interaction in asynchronous online courses does not have to lessen the lesson. Instead, asynchronous online discussions can promote students' participation and learning. This article introduced a system developed to foster online discussions that are useful for students. Since introducing the system, we have noticed that the comments students post are more meaningful than they were before we used OLS and VACS, and discussion has been more thoughtful and gratifying for us as instructors. Students have reported, at the end of the course, that the discussion board is one of their favorite parts of the course. This observed link between the perceived relevance of the discussion board and students' use of it is consistent with Technology Acceptance Model (Davis, 1989). Furthermore, we found that our model was viewed more favorably by students in an introductory class, where the discussion board featured significantly later than final grade, than by their counterparts in an advanced elective course, in which the discussion board was weighted less than other coursework. We cannot ascertain, at this point, whether it is the amount the discussion board counts toward students' grades and/or its prominence in the course that matters). The students saw advantages of the asynchronous written nature of the online forum, yet found face-to-face exchanges a more natural form of communication. It would appear that the student-centric nature of the online forum encouraged a collaborative approach to learning, and a subsequent natural development of collaboration outside the online environment. Data comparing face-to-face with on-line communication was collected through reflective reports written by the students, a number of in-depth interviews with	
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	<p>some students, videotaping of the face-to-face discussion, observations made by the lecturer, texts of the online discussions and logs of the access to the online forum.</p> <p>Initially, the purpose of this investigation was to examine the differences between face-to-face communication and online asynchronous communication to improve communication in the online forum and subsequently provide a better learning environment. As a result of observations made, issues relating to collaborative learning emerged. The results summarized here attempt to highlight the differences between the two forms of communication and their impact on collaborative learning.</p> <p>Table 1 lists the advantages of the forum given by the students, with flexibility of access being considered the greatest advantage. Students found this flexibility useful for both the discussion and accessing up-to-date subject information. This is consistent with other researchers who also found indications of similar advantages in flexibility (Twee, 2000; Barnes, 2000).</p> <p>Disadvantages of the online forum listed by students were mainly to do with the lack of immediacy of response and lack of the interactive features of conversation that caused the forum discussion to be more constrained (see Table 2). About 25% of the students felt that too much opinion was expressed (posting only from existing knowledge) rather than structured analysis and research, and that a student's written English skills may influence their participation.</p> <p>The asynchronous nature of online forums lacks the immediacy of conversation, yet has the advantage of allowing a more considered response. Seven students (33%) saw the lack of immediacy of response and synchronous interactivity as a disadvantage.</p> <p>Conversely, seven students saw the asynchronous nature of the forum allowing a more considered response to be an advantage. While some students' comments were quite spontaneous, for the most part responses in the asynchronous medium tended to be more considered than for the face-to-face discussion.</p> <p>The medium of text did not appear to inhibit the students' use of the forum, perhaps due to students' familiarity with online communication via email.</p> <p>By contrast, half the students considered lack of both body language and the ability to accurately assess emotion a disadvantage.</p> <p>On analyzing the discussions it was apparent that contribution and activity increased as the semester progressed.</p> <p>An interesting feature was that some students thought the impersonal nature of the forum encouraged responses not likely to be expressed face-to-face.</p> <p>Students recognized the online forum was about collaborative learning.</p> <p>The students did respond to one another's postings and actively discuss points, however the discussion often appeared disjointed, with points being made in isolation from others and questions posed that were never answered. The exception was the discussion relating to online identity; perhaps because students had more interest in the topic area and more personal experience of this phenomenon. This was partly due to the students' inexperience with threaded discussions that caused messages to be attached inappropriately to a particular thread of the discussion, making it difficult to follow. In hindsight, training in the use of a threaded discussion is needed. Most discussion was generated from the student's existing knowledge rather than from further research. Conflicting responses about the depth of response in discussion occurred. Some students felt the discussion was more in depth than the face-to-face discussion.</p> <p>In a face-to-face discussion agreement is gained from the group by such things as nodding one's head and murmurs of agreement. It is possible to "actively participate without making a verbal contribution" (Barnes, 2000, p.240). This was missing from the online discussion. Students thought it redundant to post a</p>
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<p>message saying "I agree", therefore awareness of the group sense only came from those actively participating.</p> <p>In the online forum, as people tend not to post to voice agreement with a comment, it is almost impossible to gauge whether others are silent because of agreement or because of a lack of willingness to post. Hence the discussion sometimes became forced.</p> <p>The students did form their own learning communities to study and assist one another with assignments.</p> <p>Tu, C.-H. (2000). Strategies To Increase Interaction in Online Social Learning Environments. Retrieved from http://search.ebscohost.com.libraries.lib.cornell.edu/login.aspx</p> <p>Swaminathan, R., & Mohrhill, T. M. (2011). Graduate Students' Perceptions of Online Discussions: Implications for Instructors. <i>Journal of Educational Technology, 19</i>(3), 27-34.</p>	<p>Is there a relationship between social presence and online interaction?</p> <p>(6) Does the use of CMC intensify social interaction among online learners?</p> <p>Triangulation was not a validation process in this study. Rather, it was considered a means to a better understanding about the perception of social presence. Triangulation allows the consideration of analyses from a novel standpoint, additional data are available for study, but further, these additional data may alter the researcher's perception of the initial data (Bloor, 1997).</p> <p>Includes expressiveness, stimulation, and the conveying of feelings and emotions through online language. The language used in an online communication expressed meanings and thoughts with difficulty and was easily misunderstood. Many messages were perceived and interpreted as not stimulating while some were perceived as stimulating.</p> <p>Although both bulletin board and real time chat can be considered as one-to-many communications, bulletin board is perceived as a more public communication because the bulletin board messages were available online most of the time.</p> <p>Fifty participants were asked to answer the Social Presence and Privacy Questionnaire (Tu, DGOang, Janssens, & Tu, in preparation). This questionnaire, evaluating e-mail, bulletin board, and real-time chat, contains six items social presence items, and thirteen privacy items each with a 5-point Likert scale, and twelve demographic identifiers.</p> <p>Students admitted that they interacted with some peers over others based on how they perceived their peers' posts or participation.</p>
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APPENDIX C: TABLE 1A

Table 1a: Can a student's in class, face to face social discussion be replicated online by participating in a discussion board thread?

CITATION	FINDINGS AND RESULTS	Participant
Voss, D. L. (2005). Asynchronous discussion and communication patterns in online and hybrid history courses. <i>Communication Education</i> , 34(4), 355-364.	This study, therefore, explores the impact of asynchronous discussions in a fully online world civilization course, as compared to a mainly face-to-face course enhanced with asynchronous discussion. Online students often exceeded course requirements when preparing their initial postings. Student-to-student interaction are especially characteristic of asynchronous online modes of instruction, as interactions in the traditional course tend to be predominantly between an instructor and the students, with few exchanges between students themselves. Students in the fully asynchronous class, in contrast, were inclined to continue a discussion thread, while those in face-to-face discussions generally tended to respond only to the instructor's questions and not to each other.	
Joksimovic, S., Ostevik, D., Kovacic, V., Riecke, D. E., & Hatala, M. (2015). Social Presence in Online Discussions as a Process Predictor of Academic Performance. <i>Journal of Computer Assisted Learning</i> , 31(6), 638-654.	The dataset contained 1747 messages of students' online discussions within an asynchronous discussion forum with 84 different topics. Study analyzed the importance of social presence as a predictor of students' academic performance (i.e. the final grade) in an online master's level course. The results show that certain indicators of social presence (i.e. containing a thread and complimenting, expressing appreciation) were significant predictors of academic performance.	
Vonderwell, S., Liang, X., & Alderman, K. (2007). Asynchronous discussion and assessment in online learning. <i>Journal of Research on Technology in Education</i> , 39(3), 309-328.	The findings indicated that structure of an online discussion is essential for successful learning and assessment. The students reported that a discussion topic that is not structured properly impacts student responses, and thus restricts learning. Classroom observations showed that threaded discussions versus non-threaded discussions initiated more in-depth and diverse responses, and helped develop an interactive response pattern. Non-threaded discussions involved inquiry into a single question whereas threaded discussions involved inquiry into several questions through multiple threads.	
Cramer, D. R., & Loughan, J. A. (2013). Enhancing Discussions in the Asynchronous Online Classroom: The Lack of Face-to-Face Interaction Does Not Lessen the Leverage. <i>Journal of Management Education</i> , 37(2), 204-294.	The lack of face-to-face interaction in asynchronous online courses does not have to lessen the lesson. Instead, asynchronous online discussions can promote students' participation and learning. This article introduced a system developed to foster online discussions that are useful for students. Since introducing the system, we have noticed that the comments students post are more meaningful than they were before we used OLI and VAC, and discussion has been more thoughtful and gratifying for us as instructors. Students have reported, at the end of the course, that the discussion board is one of their favorite parts of the course. This observed link between the perceived relevance of the discussion board and students' use of it is consistent with Technology Acceptance Model (Davis, 1989). Furthermore, we found that our model was viewed more favorably by students in an introductory class, where the discussion board featured significantly into their final grade, than by their counterparts in an advanced elective course, in which the discussion board was weighted less than other coursework.	140 total participants between summer 2009-Jan. 2011 (in and summer terms only)
Conley, Q., Latt, H. S., & Palgitt, A. J. (2017). Creating Participatory Online Learning Environments: A Social Learning Approach Revisited. <i>Journal of Interactive Learning Research</i> , 28(1), 5-27.	We cannot ascertain, at this point, whether it is the amount the discussion board counts toward students' grades and so its prominence in the course that matters (r). Social presence and interaction is the most vital component of a successful online learning experience for students (Garrison & Cleveland-Innes, 2010; Harsanyi, 2009; Huang, 2002; Martin, Parker, & Deale, 2012; Tu, 2002; Wegerif, 1998). In addition to the technology, we suggest the inclusion of five essential instructional strategies for creating participatory OLEs. Drawing from social learning theory and social cognitive learning theory, it is important to include planned social interaction, collaborative activities, real-life context, learner reflection, and assessment of participation and interactions. These instructional techniques can be brought to life in an online classroom through social media tools.	

<p>isolation from others and questions posed that were never mirrored. The exception was the discussion relating to online identity, perhaps because students had more interest in the topic area and more personal experience of this phenomenon. This was partly due to the students' inexperience with threaded discussions that caused messages to be attached inappropriately to a particular thread of the discussion, making it difficult to follow. In hindsight, training in the use of a threaded discussion is needed. Most discussion was generated from the student's existing knowledge rather than from further research. Conflicting responses about the depth of response in discussion occurred. Some students felt the discussion was more in depth than the face-to-face discussion.</p> <p>In a face-to-face discussion agreement is gained from the group by such things as nodding one's head and murmurs of agreement. It is possible to do this online participate without making a verbal contribution" (Barnes, 2000, p.240). This was missing from the online discussion. Students thought of reluctance to post a message saying "I agree", therefore answers of the group seem only come from those actively participating.</p> <p>In the online forum, as people tend not to post to voice agreement with a comment, it is almost impossible to gauge whether others are silent because of agreement or because of a lack of willingness to post. Hence the discussion sometimes became forced.</p> <p>The students did form their own learning communities to study and assist one another with assignments.</p>	
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<p>Tu, C.-H. (2000). Strategies To Increase Interaction in Online Social Learning Environments. Retrieved from http://search.ebscohost.com.librory.lib.csub.edu/login.aspx.</p> <p>(6) Does the use of CMC intensify social interaction among online learners?</p> <p>Triangulation was not a validation process in this study. Rather, it was considered a means to a better understanding about the perception of social presence. Triangulation allows the consideration of analyses from a novel standpoint, additional data are available for study, but further, these additional data may alter the researcher's perception of the initial data (Bloor, 1997).</p> <p>Includes expressiveness, stimulation, and the conveying of feelings and emotions through online language. The language used in an online communication expressed meanings and thoughts with difficulty and was easily misunderstood. Many messages were perceived and interpreted as not stimulating while some were perceived as stimulating.</p> <p>Although both bulletin board and real time chat can be considered as one-to-many communications, bulletin board is perceived as a more public communication because the bulletin board messages were available online most of the time.</p> <p>Fifty participants were asked to answer the Social Presence and Privacy Questionnaire (Tu, DeGangi, Janssen, & Yu in preparation). This questionnaire, evaluating e-mail, bulletinboard, and real-time chat, contains seventeen social presence items, and thirteen privacy items each with a 5-point Likert scale, and twelve demographic identifiers.</p>	
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<p>Wise, A. F., Hamsknecht, S. N., & Zhao, Y. (2014). Attending to Others' Posts in Asynchronous Discussions: Learners' Online "Listening" and Its Relationship to Speaking. <i>International Journal of Computer-Supported Collaborative Learning</i>, 9(2), 185-209.</p> <p>There was great diversity in listening and speaking behaviors in the discussions. All students logged into the forum at least once over the course of the discussions; however, some engaged in minimal participation with no posting and little attention to others' posts, while others logged-in multiple times and read every post in the discussion. This research suggests that in some discussion contexts reviewing previously read posts is an important element of effective participation.</p> <p>It is possible that rereading previously viewed peer posts helped students clarify some of the questions or doubts they had when they viewed those posts the first time, leading them to ask fewer questions. However, allocation was conceptualized to include not only clarification questions but also raising wonderings to the group. Thus, another possible interpretation is that when learners repeatedly set questions to the group, they were more likely to focus their energies on the new responses to these, rather than posts they had read previously.</p>	
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<p>Ellis, A. (2001). Student-centred collaborative learning via face-to-face and asynchronous online communication: What's the difference?. ERIC Clearinghouse.</p> <p>Although there still exists a strong need for more empirical evidence, the implications of the online learning revolution are somewhat obvious. Online learning is different from the conventional classroom; therefore, online instructors need to apply instructional techniques that facilitate participation and interaction, and promote students' learning success. The key challenge instructors face is the absence of "natural" social interaction and learner proximity that promote the learning process—a circumstance that is automatically present in face-to-face environments (Bandura, 1977; Vygotsky, 1978).</p> <p>The students saw advantages in the asynchronous written nature of the online forum, yet found face-to-face exchanges a more natural form of communication. It would appear that the student-centric nature of the online forum encouraged a collaborative approach to learning, and a subsequent natural development of collaboration outside the online environment.</p> <p>Data comparing face-to-face with on-line communication was collected through reflective reports written by the students, a number of in-depth interviews with some students, videotaping of the face-to-face discussion, observations made by the lecturers, texts of the online discussions and logs of the access to the online forum.</p> <p>Initially, the purpose of this investigation was to examine the differences between face-to-face communication and online asynchronous communication to improve communication in the online forum and subsequently provide a better learning environment. As a result of observations made, issues relating to collaborative learning emerged. The results summarised here attempt to highlight the differences between the two forms of communication and their impact on collaborative learning.</p> <p>Table 1 lists the advantages of the forum given by the students, with flexibility of access being considered the greatest advantage. Students found this flexibility useful for both the discussion and accessing up-to-date subject information. This is consistent with other researchers who also found indications of similar advantages in flexibility (Tinne, 2000; Barnes, 2000).</p> <p>Disadvantages of the online forum listed by students were mainly to do with the lack of immediacy of response and lack of the interactive features of conversation that cannot the forum discussion to be more constrained (see Table 2). About 25% of the students felt that too much opinion was expressed (posting only from existing knowledge) rather than structured analysis and research, and that a student's written English skills may influence their participation.</p> <p>The asynchronous nature of online forums lacks the immediacy of conversation, yet has the advantage of allowing a more considered response. Seven students (33%) saw the lack of immediacy of response and synchronous interactivity as a disadvantage.</p> <p>Conversely, seven students saw the asynchronous nature of the forum allowing a more considered response to be an advantage. While some students' comments were quite spontaneous, for the most part responses in the asynchronous medium tended to be more considered than for the face-to-face discussion.</p> <p>The medium of text did not appear to inhibit the students' use of the forum, perhaps due to students' familiarity with online communication via email.</p> <p>By contrast, half the students considered lack of both body language and the ability to accurately assess emotion a disadvantage.</p> <p>On analyzing the discussions it was apparent that contribution and activity increased as the semester progressed.</p> <p>An interesting feature was that some students thought the impersonal nature of the forum encouraged responses not likely to be expressed face-to-face. Students recognized the online forum was about collaborative learning.</p> <p>The students did respond to one another's postings and actively discuss posts, however the discussion often appeared disjointed, with points being made in</p>	
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<p>Swaminathan, R., & Mulvihill, T. M. (2011). Graduate Students' Perceptions of Online Discussions: Implications for Instructors. <i>Journal of Educational Technology</i>, 16(1), 27-34.</p> <p>a large amount of posts in a discussion lead students to feel overwhelmed (Peterson and Hewitt 2010) and suggests that it is beneficial to make groups small, thus keeping discussions at a manageable size which allows students to be responsive as part of an interactive dialogue. Documenting students' use of videotaped counting as a strategy for coping with high-volume discussions (Wise et al. 2012; Peterson and Hewitt 2010), suggest that students do not instinctively listen in the ways seen to positively relate to speaking in this study.</p> <p>We can detect if and when students open a post, but we cannot determine whether they are actually attending to it for the full time it is on their screen. Counting for scanning activity and setting a maximum allowed action length in the calculation prevents extreme examples of off-task behavior from being counted, but will not catch shorter breaks in activity.</p> <p>Silence was used as a type of response to ignore some students'</p>	
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APPENDIX D: TABLE 3A

Table 3a: Are students extracting a similar social experience online to their in-class counterparts?

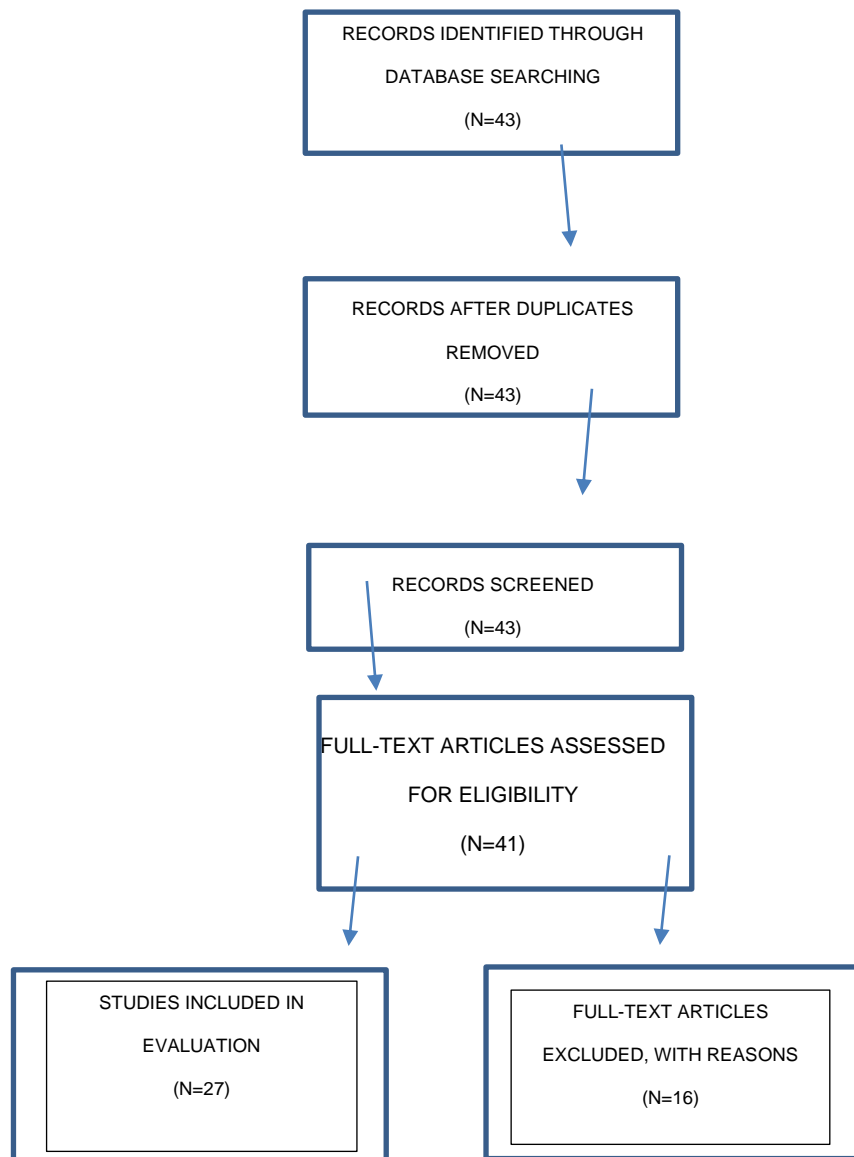
CITATION	FINDINGS AND RESULTS	Participant#
Blackman, S. J. (2012). Outcomes of chat and discussion board use in online learning: A research synthesis. <i>Journal of Educators Online</i> , 9(2).	Other relationships between students impacted their asynchronous online discussion experiences. However, in the online environment, social cues often change from that of facial expression and tone, which is still available in courses that use synchronous discussion tools like Wimba Live Classroom, to response cues.	
Brooks, C. F., & Bippus, A. M. (2012). Understanding the social nature of classrooms by examining the amount of virtual talk across online and blended college courses. <i>European Journal of Open, Distance and E-Learning</i> , 15(1).	The post hoc Scheffe test indicated that the differences existed between the blended and online students attending the traditional face-to-face campus for both the second and third conferences. These conflicting findings reveal an predictable pattern of participation across course types (i.e., online and blended) and thereby reinforce the constructive nature of classrooms as well as the importance of group size, student place, and subjectivities. Given that classroom format as the primary manipulated variable in this study did not make a significant difference in terms of students' discussion patterns with others in their class. These findings suggest that students' experiences across course formats are underpinned by social dynamics and relational performances that likely outweigh assumptions and decisions practitioners make about classroom environmental design.	N=103
Hernandez-Serrano, M. J., & Gonzalez-Sanchez, M. (2011). Improving Social Interactions in Virtual Learning Environments: Guidance on Spatial Factors for Online Teachers. <i>Online Submission</i> , 471-480.	Perception of personal presence, significant results ($p = 0.000$) showed that spaces where the sense of presence was greater were in the chat and the social environment—due to the higher levels of communication—and also in the e-learning platform, which offered more possibilities and activities.	
Sveinsson, R., & Mikkilä, T. M. (2013). Graduate Students' Perceptions of Online Discussions: Implications for Instructors. <i>Journal of Educational Technology</i> , 19(3), 27-34.	Data are drawn primarily from interviews and student journal entries. In Phase one, when the data comprised student journals, students reported on the advantages of online discussions. Phase two, students continued to be positive regarding the lack of stereotypes and the potential for equity in online platforms. However, they also started to discuss disadvantages of the online experience similar to those they experienced in face to face courses. In addition, they reported that competition and pressures to perform now overshadowed their early experiences of empowerment. Online cyber stereotypes emerged not based on visual cues but based on use of language and grammar or spelling. Judgments were not suspended simply because students were in an online platform; instead new ways to categorize and distinguish between students became evident in the new context. This study found tensions between empowerment and equality in students' experiences of online discussion forums. Students presented mixed reviews of equality in the online environment. They were positive about equality (everyone getting a chance to post), and were critical of equity (who gets heard and why).	
Meyers, S., & Fossey, L. D. (2016). Examining Interactive and Metacognitive Processes in Student Learning: Findings from a Hybrid Instructional Environment. <i>Online Learning</i> , 20(3), 110-125.	Students in the asynchronous group who had the time to research, reflect, and edit before posting on a discussion board might logically be expected to demonstrate a higher level of metacognitive behaviors than their peers who were engaged in an extemporaneous discussion. However, there was no statistically significant difference between the two groups. The United States Department of Education concluded that guiding questions influence interactions but do not affect the amount of learning that occurs (2010, p.83). However, the results in this study challenge that conclusion. Student artifacts in this study were generated based on guiding questions and the data illustrates that learning did take place. Summarizing the raw data, Table 3 lists the number of instances of interactive behaviors and Table 4 lists the number of instances of metacognitive behaviors occurring in synchronous and asynchronous environments throughout the semester. Because of the disparate group sizes, no conclusions should be drawn from the raw count of behaviors. Findings from this study should not be generalized to all populations.	

Puhann, S. M., Ford, K., & Tancock, S. (2012). Redefining Online Discussion: Using Participant Stances to Promote Collaboration and Cognitive Engagement. <i>International Journal of Teaching and Learning in Higher Education</i> , 24(2), 151-167.	The findings from data analysis identified a series of distinct participant stances in the asynchronous online discussions. (Most likely same type of people in a f2f class) This research was undertaken to explore the nature of participants' interactions within online discussions through the analysis of their responses and postings. Goal was to identify and describe stances, or characteristic attitudes and behaviors, that participants adopted within online discussions and to determine how these stances impacted the discussions.	
Vonderwell, S., Liang, X., & Alderman, K. (2007). Asynchronous discussions and assessment in online learning. <i>Journal of Research on Technology in Education</i> , 19(3), 309-328.	Instructor presence and student participation quality influenced the level of student involvement in the discussions. The quality of the participation was important to model and sustain a high standard level of student engagement and motivation. Observations of the asynchronous discussions and the student reports indicated that self-regulatory cognitions and activities occurred in a variety of ways.	
Hancock, C., & Rowland, B. (2017). Online and out of synch: Using discussion roles in online asynchronous discussions. <i>Cognate Education</i> , 4(1).	The study relied on student volunteers, even when instructors assigned roles. This means that requiring the use of Discussion Roles might have produced more distinct and in-depth findings. Furthermore, students who would have benefited most from using Discussion Roles in order to create meaningful responses often did not use them, and those students declined to be surveyed as to the reasons. Instructors observed that students who struggled in discussion were those who did not use Discussion Roles or dropped the course before using the roles. As students began to use the discussion roles, they engaged in social interaction with others creating a dialog between learners which helps build an awareness of one's writing and how others perceive that writing (Drouill, 2000). This second finding is also true: "The assignment of roles is a crucial structuring tool to enhance the knowledge construction processes in synchronous discussion groups when roles are introduced right at the start of the discussion" (De Wree, Van Keer, Schellens, & Valcke, 2009, p. 521). Students are more likely to use the roles if the roles are introduced in the beginning of the course and encouraged throughout.	
Javidi, E., Gebauer, J., & Newberg, N. (2017). Comparing Student Interaction in Asynchronous Online Discussions and in Face-to-Face Settings. <i>Information Systems Education Journal</i> , 15(3), 64.	The presented analyses are not conclusive; they provide some insights into how to examine the relationship between online and face-to-face interactions. The results suggest an individual's tendency for online interaction with people who are more connected with her than in face-to-face settings. Online interaction with connected others could therefore limit depth and breadth of peer-learning in courses. Network-level, node-level, and dyadic analyses in this study were mostly consistent with this study's hypotheses that structure and evolution of online interactions mirror those of face-to-face settings. To advance our understanding of how online and face-to-face interactions co-evolve and to establish and investigate the direction of causality, the theoretical framework of the study must be strengthened. Future theoretical and empirical studies based on this research project should try to shed light on the nature and dynamic of individuals' information processing habits online and offline interactions are used in tandem (Walser 1992). Due to the institutional limits of classroom research and concerns regarding coercion and privacy, this study's design did not include student characteristics.	
Hackey, V. (2017). Nontraditional Student Participation in Asynchronous Online Discussions.	1. Does the nature of facultational student participation in asynchronous online discussions differ between levels of courses? There were not significant differences found between individual course levels for social presence. Social presence was found to have a large effect size on cognitive presence.	

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APPENDIX E: STUDY FLOW DIAGRAM



APPENDIX F: GLOSSARY

Asynchronous discussion-is synonymous with the terms threaded discussions, discussion boards, asynchronous forum and online discussion forum. It is the use of typed text to convey information, thoughts, and ideas without physical contact with the recipient of the message. Communication occurs via an established online board or forum. Interactions occur between instructor, and students. The start and end of a discussion time frame can vary from hours to weeks.

Dialogue-is defined as the transmittal of communication or the means by which one inputs and outputs information, thoughts, ideas. A computer screen is the medium by which one is linked into a discussion board thread within the virtual environment.

Educational standing- is the level of education in which a student attained at the time the data was collected. An undergraduate student is not enrolled in full time Master's coursework. A Master's student is enrolled in a Master's program.

Face to face (f2f)- discussions-is a setting/ environment. It includes discussions, dialogue, or communication that occurs between students in a physical classroom. It involves two or more people that include students and at least one instructor. Characteristics of a face to face discussion include turn taking in audible speech, physical proximity to others, immediate or simultaneous feedback, visual cues, nonverbal clues and a defined start and end time.

Face-to-face (f2f) environments- occur at a University institution in which the curriculum is administered by an instructor in a physical classroom setting. It is characteristic of participants engaged in structured classroom discussions. Discussions in this environment are not communicated online.

Online environment- is defined as a University course in which the curriculum is administered online by an instructor virtually. This setting does not participate in physical contact with other students or the instructor. Discussions are delivered, structured, and administered online through typed text with no face to face interactions or audio cues in the discussion thread.

Social interaction- is a form of communication that is synonymous with social presence. It is the “degree to which one perceives the presence of participants in the communication” (Calefato & Lanubile, 2010, p. 287) and includes self perceptions and interpretations of virtual space.

Threaded discussions- occur on discussion boards and within discussion forums. They are defined by the lack of immediate feedback, communication occurs overtime. It involves typed text only in which information, thoughts, ideas are input into a shared forum in which the dialogue including a response is not received instantaneously. The communication involves two or more people that are not within physical proximity. Responses to discussion posts do not involve any visual clues, video media, audio, video conferencing, or zoom like, or face time like software.

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