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A QUALITATIVE CASE STUDY OF STUDENTS' PERCEPTIONS OF THEIR
EXPERIENCES IN UNDERGRADUATE ONLINE COURSES

A dissertation submitted in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

to the faculty of the

DEPARTMENT OF ADMINISTRATIVE AND INSTRUCTIONAL LEADERSHIP

of

THE SCHOOL OF EDUCATION

at

ST. JOHN'S UNIVERSITY

New York

by

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Date Submitted: 2/24/2022

Date Approved: 5/17/2022

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ABSTRACT

A QUALITATIVE CASE STUDY OF STUDENTS' PERCEPTIONS OF THEIR EXPERIENCES IN UNDERGRADUATE ONLINE COURSES

Glenda Lander Lugo

The advancement of instructional technology has significantly influenced course delivery in higher education institutions and online learning has increased considerably as an instructional course delivery method. In addition, the changing student demographics and increasing cost of education have spurred the growth of online learning and have demonstrated the inevitability of online learning as an alternative to in-class instruction. Further, the ad-hoc implementation of online learning in higher education due to the COVID-19 pandemic has validated the use of online environments as a viable educational platform but has also amplified the challenges associated with providing an optimal online education experience for students.

The application of traditional education theories to online learning is still evolving and the research on online course effectiveness has focused primarily on student outcomes. The objective of this qualitative case study was to capture students' perceptions of their experiences and the processes that facilitated the outcomes or the quality of student learning. This study sought to inform the practice of developing engaging, instructional course design focused on student success and learning. The research will add to the body of literature regarding students' perceptions and experiences in online courses.

DEDICATION

I dedicate this work to my family. A special dedication to my mom, Roma Lander, your intelligence, compassion and patience are important for any academic discipline but were inspiring for me on this journey. To my husband, Anthony and my children, Aria and Gabriella, you inspire and encourage me. To my mother-in-law and father-in-law, Olga and Antonio Lugo, thank you for taking care of my kids during the formative years of their lives. To my sisters, brothers, sisters-in-law, brothers-in-law, nieces, nephews and my extended family and friends, thank you for your love and support. I have been blessed with the best family!

This is in loving memory of my father, Raphael Lander. Persistence, one of the qualities we have in common, was really an asset during this process.

ACKNOWLEDGEMENTS

I acknowledge my parents for their discipline and guidance. To my husband, my children, my family and my in-laws, thank you for your love and support.

To my mentor, Dr. Ceceilia Parnter, I cannot express my gratitude to you for your knowledge, support and guidance throughout this process. Your dedication to your mentees and students is truly exemplary and unparalleled.

To my committee faculty members, Dr. Birringer-Haig and Dr. Annunziato. You were just as amazing in the process as you were as professors. Thank you for the expertise and insight you provided in support of this study. A special thanks to the chair and faculty member who allowed me to use the students in my study. Thank you for your support of my study. To Dr. DiMartino, I appreciate your guidance as an advanced qualitative research professor. I was positive that I would design a quantitative research study but the qualitative courses in the program highlighted the merits of qualitative research. Dr. Cozza and Ms. Rosaria Cimino, thanks for the advisement support. To all the Ed.D. candidates that I encountered on my academic journey, especially my unofficial cohort members, Kim, Bette and Linda, and my Saturday writing seminar colleagues, thanks for running the race and keeping the faith. Thanks to my friend, Jerline, for the late night dinners!

Finally, thank you God, for your blessings and guidance!

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CHAPTER 1

Introduction

The terms online education, online learning and distance education have been used interchangeably in online education. The U.S. Department of Education (USDOE), National Center for Education Statistics (NCES), Integrated Postsecondary Education Data System (IPEDS) defines online learning as education delivered to students, separated from the instructors, using one or more technologies (NCES, 2020). Research statistics indicate that online learning has significantly increased as an instructional delivery method in higher education and has increased access to higher education by providing students an opportunity to take classes on their optimal schedule.

A review of a survey of over 1,000 higher education institutions verified that both online and blended course offerings have increased in higher education institutions. The survey data also showed that an increasing number of higher education leaders indicated that online course offerings were integral to their institution's long-term strategy and that online learning outcomes are comparable or superior to outcomes for the traditional in-class instruction (Allen et al., 2007). More recently, an annual report by the Babson Survey Research Group on the state of online learning in higher education in the United States, found that enrollment in online education had increased significantly. The annual report, co-sponsored by the Online Learning Consortium, a collaborative community focused on the advancement of quality online education, revealed that enrollment in online courses had steadily increased over the past 14 years and as of Fall 2016, 31.6% of students were enrolled in at least one online education course (Seaman et al., 2018). Further, data from the NCES showed that, in Fall 2018, 79% of higher education

institutions offered either individual online courses or online degree programs and 35% of the total Fall 2018 student population were enrolled in at least one online course (National Center for Education Statistics, 2020). These statistics demonstrate that the use of online learning as an alternate learning modality has increased over the last three decades. Further, the changing education climate, compounded by the coronavirus pandemic in spring 2020, has demonstrated the inevitability of online learning in higher education.

However, there are diverging views about the quality of online courses. Opponents of online education have questioned whether online environments provide as comparable an interaction as the traditional classroom setting, are wary of the qualifications of instructors who teach online courses and have asserted that online programs are not included in the formal faculty structures that have traditionally provided oversight for instructional course quality (Yang & Cornelius, 2004). Similarly, in a working paper to review whether online education can be leveraged to increase the progression and academic success of underprepared and disadvantaged students, Jaggars (2011) established that online courses do not necessarily lower the cost barriers but that the technological infrastructure required for online learning posed a significant barrier. Conversely, advocates of online learning have suggested that online education can build problem solving, critical-thinking, cognitive and collaboration skills through the integration of instructional course design and the use of technology in pedagogy (Ascough, 2002). Proponents also assert that online education can augment program offerings and improve technology skills of students (Yang & Cornelius, 2004).

These diverging views on the quality of online learning indicate that, although the

potential of online education as an alternative learning modality for improving access to education is widely established, further research on students' perceptions of online courses is necessary. The research of online learning has focused primarily on comparisons with the traditional face-to-face course format and the existing research literature has mainly highlighted quantitative studies that examine student outcomes in online courses. However, factors that create the optimal conditions for learning, as perceived by students, should be considered and need further research because studies that emphasize technical aspects, compare online learning to the traditional learning format or focus on quantitative outcomes can obscure the effective evaluation of online education. Understanding students' perspectives of these factors is necessary to have a holistic approach of the dynamics of online education.

Purpose of Study

The purpose this study was to explore the experiences of students enrolled in online courses at the professional studies college of a private, urban university in the Northeast United States. There is an inherent benefit of hearing from students' experiences, particularly since universities are increasingly providing additional online course offerings, and so research on online education cannot rely solely on quantitative data or data based on faculty experiences. Students' voices are important to understanding their academic experiences and this dialogue can enhance the design of an online environment that promotes ownership of learning. To address this, the researcher chose a qualitative descriptive case study research methodology, using a sample of students enrolled in an asynchronous online, introductory computer science course to understand their perceptions of their online courses and the factors that shape their

experiences. The research sought to understand students' experiences in online courses, to inform the practice of online course development and to provide additional data, to faculty and instructional course designers, about the factors that contribute to students' experiences.

Theoretical Framework

The study was guided by the constructivist theoretical framework. Constructivism learning theory suggests that learning is an active process and that students have ownership of their learning and assessment. Within the constructivist model, the learner is at the center of learning and is not merely a passive participant. As a learner-centered approach, one of the goals of constructivism is to create a meaningful, communicative and collaborative environment, all important characteristics of an online learning environment.

In online environments, students are able to engage with the instructor, other students and the course in a more purposeful way and the roles of the student, instructor and technology in the online learning environment are guided by the principles of constructivist learning theory. With online peer interactions, students are exposed to multiple perspectives, which allow for deeper construction of knowledge (Schrader, 2015). Specifically, online discussion and interaction in an asynchronous online environment can facilitate the constructivist approach to knowledge creation. The constructivist instructor in an online environment focuses on the learning process in ways that allow for deeper thinking in the construction of knowledge and so the primary responsibility of the instructor in a constructivist, learning environment is to create a collaborative, problem-solving environment where students become active participants in

their own learning (Gold, 2001). Further, technology, used in online learning environments, extends classroom boundaries, creates new learning communities and accesses diverse collaborators in the learning process (Schrader, 2015).

However, although constructivism is widely discussed in the context of the standard learning process, the framework is underexplored in the context of online learning (Schrader, 2015). Prior research on the constructivist framework has demonstrated the need for extending the research on constructivism to online learning where students create knowledge in the absence of physical co-presence. This study fitted with the prior research on constructivism in exploring how learners learn but also sought to understand, in the context of the constructivist learning theories, how students' learning experiences are shaped by the online learning communities. The review of the theoretical framework and literature underscored the need for understanding students' subjective experiences as well as the meaning students make out of those experiences (Seidman, 2006) and justified the need for additional qualitative research into students' experiences in online environments.

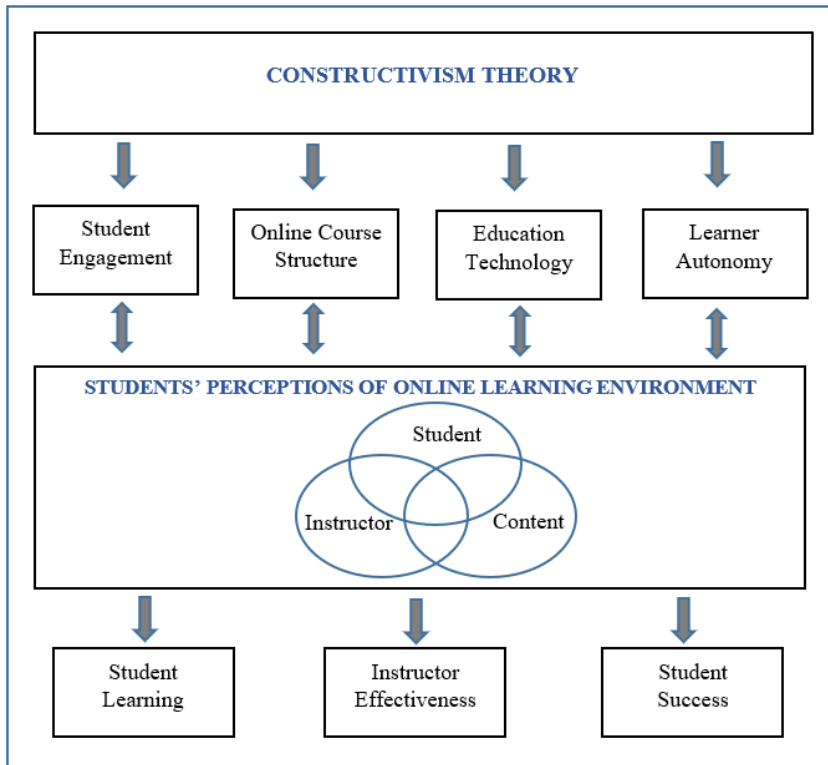
Conceptual Framework

Based on the constructivist theoretical framework and on a synthesis of the relevant concepts in the existing literature, the following conceptual framework was used to explain the logic of the research study (Figure 1). Constructivism provided the theories that supported the study, and in this study, the constructivist paradigm was further explored in the context of online learning. The systematic literature review revealed categories, such as student engagement, online course structure, education technology and learner autonomy, that influenced students' perceptions of their experiences in online

courses.

Figure 1

Factors Affecting Students' Experiences in Online Courses



Significance of the Study

The design of online learning communities has historically been technology-driven instead of student-focused. Additionally, the research on online course effectiveness has focused primarily on student quantitative outcomes, such as course grades, which may not necessarily capture the core student experience, the process that facilitated the outcomes or the quality of student learning. Understanding the perspectives of student enrolled in online courses is key to understanding students' experiences, is integral to student satisfaction and is important to implementing online practices that enhance students' experiences and promote learning.

The NCES statistics indicate that online learning has significantly increased as an instructional course delivery method in higher education. The advancement of instructional technology has significantly influenced course delivery in higher education institutions. However, the coronavirus pandemic in spring 2020 emphasized the need for additional research on the factors that shaped students' experiences in online courses. Although the ad-hoc implementation of online learning during the pandemic validated the use of online learning as a viable educational platform, it also amplified the challenges associated with providing an optimal online education experience for students.

There is a need for the current study because at the core of the research problems are issues related to retention and persistence of students. Student retention and persistence are not only key components of student success but are important parts of higher education institutions' admission processes, reputation and core constituency. This study sought to inform the practice of engaging instructional course design focused on student learning and to add to the body of literature researching students' perceptions and experiences in online courses.

Connection with Social Justice and/or Vincentian Mission in Education

The study focused on students enrolled in online learning at a private, urban university that affirms student mobility as part of its mission. The university's mission and core values are focused on promoting supportive and enriching academic environments that allow all members of the university community to be successful (University, 2021).

The traditional institutional university structure is constrained by geographical boundaries and can be a barrier for many non-traditional students. Non-traditional

students are typically not able to afford the traditional tuition and board schedule and may need to supplement university, state and federal aid with income from work. Online education is changing the landscape of education. It offers learning opportunities for non-traditional students who do not reside in proximity of a university or who have other commitments that prevent them from participating in the traditional instruction structure. Online learning offers options for academic access, progression and success in higher education by providing students the opportunity to work around their schedules while participating in instruction either synchronously or asynchronously.

Research Questions

The study explored the experiences of students enrolled in online courses and was guided by the following research questions:

- 1) How do undergraduate students enrolled in the professional studies college at a private, urban higher education institution describe their experiences in online courses?
- 2) What factors shape the experiences of undergraduate students enrolled in online courses in the professional studies college at a private, urban higher education institution?

Design and Methods

Research Design and Data Analysis

The study was a qualitative descriptive case study research methodology that explored the commonality of the experiences of students enrolled in undergraduate online courses at a private, urban university in the Northeast United States.

A qualitative study was appropriate for this study because the research sought to

understand the shared experiences common to a heterogeneous group of students. Qualitative research examines the meaning individuals assign to social or human issues (Creswell & Poth, 2018). Students' voices are important to understanding their academic experiences and this dialogue can enhance the design of an online environment that promotes ownership of learning.

The case study research was appropriate for this study since it focused on the exploration of a real-life phenomenon bounded by time and place - the shared experiences of a heterogeneous group of students enrolled in an asynchronous online, introductory computer science course in the professional studies college at a private, urban higher education institution. The research collected data from students, within a specific context, regarding their experiences in online courses and developed a composite description of the experiences of the students (Moustakas, 1994). The focus was on understanding the meaning of the students' experiences by analyzing the data iteratively and identifying emerging themes that captured the composite experiences of the students and the nature of their lived experiences (Moustakas, 1994). The students' own voices were used to highlight their experiences and reflections throughout the findings.

To capture the students' experiences, the research questions were aligned with the data sources. Qualitative data about the factors that shaped student experiences, including the perception of student engagement, course structure, technology use and learner autonomy in online learning, were collected via document analyses, individual semi-structured interviews and course observations.

Participants

The study focused on the experiences of 10 students enrolled in an asynchronous

online, introductory computer science course in the professional studies college at a private, urban university in the Northeast United States. All participants of the study were matriculated in undergraduate degree programs and enrolled in the asynchronous online, introductory, computer science course in the fall 2021 semester. The participants were selected through purposeful, convenience and snowball sampling. First purposeful sampling, was used to identify a specific asynchronous online course, deliberately selected to adequately capture the heterogeneity in the population of online students (Maxwell, 2013). A purposeful sampling strategy allowed for the selection of specific student participants that could provide information relevant to the research questions (Creswell & Poth, 2018). Once access to the course was secured, a convenience sample was employed to interview students who were accessible to the researcher based on the responses to the requests for interviews. To further facilitate the data collection, snowball sampling was employed to recruit additional participants. Initial student interview participants recommended and helped to identify additional study participants who were enrolled in the course and fitted the research criteria.

Instruments

The data collection instruments were document analyses, interviews, observations and field notes, designed by the researcher and guided by the research questions, related literature and the constructivist paradigm. The document analysis focused on the review of key course documents such as course syllabus, modules, materials, assignments and rubrics, as well as the online learning platform. The interview questions explored the learner-centered, collaborative approach of the constructivist framework on how knowledge is constructed. The questions examined

the roles of student engagement, course structure, instructional technology and learner autonomy in the online environment. Observations occurred as a complete observer in the asynchronous online course. The observations provided an opportunity to fully observe participants in the online setting and, as a result, limited ethical consideration associated with student behavior when students are aware that they are being observed.

Data Collection Procedures

Potential participants were recruited via email and course announcements, which included a description of the study, time commitment and student responsibilities.

Document analysis was the first data collection instrument and occurred in the fall 2021 semester. This was supported by participants' interviews, which occur concurrently with any subsequent document analysis and online observations. During the data collection, participants were engaged with follow-up questions for clarification on the recorded data. Participants were also included in the data validation to reflect on the accuracy of the account. After the data collection, the preliminary analyses with themes, attached to the transcript data, were taken back to available interview participants to validate how well their experiences were represented in the data analysis (Creswell & Poth, 2018).

Definition of Terms

The operational definitions of the key terms used in this study are as follows:

Asynchronous Learning: Asynchronous learning is instruction that occurs on an open time schedule. The term is generally applied to instruction and learning that occurs in different locations and at different times. In the asynchronous model, students access the course and complete assignments on their own schedule (Great Schools Partnership, 2014).

Course structure: The course structure is defined as the content, modules and assignments organized to create a learning path for students. In an online learning environment, the course structure typically includes a Learning Management System, a portal where students can access the course content, interact with the instructor and peers and monitor progress. The instructional mode of delivery can be synchronous, asynchronous or hybrid (Friedman & Moody, 2020).

Education Technology: Education technology (Ed Tech) is the teaching and learning hardware and software used to facilitate technology-enabled instruction. Ed Tech facilitates collaboration and increases student engagement in active and interactive learning environments (Top Hat, 2021).

Learner Autonomy: Learner autonomy is the extent to which the learner manages the learning experiences, engages with the subject matter and evaluates the decision of the learning program without the intervention of the instructor between learner and content (Keegan, 2005).

Online Learning: Online learning is defined as education delivered to students, separated from the instructors, using one or more technologies (National Center for Education Statistics, 2020).

Student Engagement: Student engagement refers to the degree of active participation in the course and the level of student-student, student-instructor and student-content interaction exhibited by students. Student engagement has also been defined as students' levels of interest and motivation to learn course topics (Briggs, 2015). The common types of student engagement are behavioral engagement, which refers to student's participation level and involvement in the social aspects of

learning, emotional engagement, which refers to student attitudes towards the academic experiences, and cognitive engagement, which refers to student motivation and ownership of their learning goals (Great Schools Partnership, 2014).

Traditional Face-To-Face Learning: Traditional Face-To-Face (F2F) learning is an instructional method where students are taught the course content at a specified date and time in physical proximity to the instructor. F2F instructions allows for physical student-instructor and student-student interactions (Great Schools Partnership, 2014).

Synchronous Learning: Synchronous learning is instruction that is paced on a specific time schedule despite not being in physical proximity. The term is applied to forms of instructions that occur at the same with the aid of technology-enabled devices (Great Schools Partnership, 2014).

Conclusion

Chapter one provided insights into the purpose of the study and highlighted the significance of researching students' experiences in online courses. Chapter two will review how this study aligned with the constructivist theories and will explain how the constructivist theoretical framework guided the organization of this research. Chapter two will also synthesize the existing literature on this research, demonstrate how this study was supported by the prior research and provide a basis for further exploration of learning in the absence of physical co-presence.

CHAPTER 2

Introduction

The purpose this study was to research the experiences of students enrolled in online learning courses at the professional studies college of a private, urban university in the Northeast United States. The study explored students' perceptions of their online courses and the factors that shaped their experiences. The research sought to inform the practice of online course development and implementation and to assist faculty and instructional course designers in understanding the factors that contributes to students' experiences.

Chapter one provided the context and the purpose of the study and outlined the significance of the study in understanding students' experiences in online courses. Chapter one also defined the theoretical and conceptual frameworks and the research questions that guided the study. Chapter two further analyzes the constructivist theoretical framework in the context of online learning, reviews the related literature and identifies emerging categories in the existing research on learning in an online environment.

Theoretical Framework

Constructivism Learning Theory

The study was guided by the constructivist theoretical framework. Constructivist theory posits that learners are actively involved in the learning process and in the construction of meaning and knowledge. The major constructivist theorists hypothesized within the contexts of cognitive development and social interaction, contexts that are explored in online learning. Dewey's (1938) social and cognitive constructivist

perspectives theorized that education and inquiry should be integrated with real experience. Bruner's (1971) social constructivist theory posited that learning is an active process in which learners create new concepts based on prior knowledge. Piaget's (1977) cognitive constructivism proposed that cognitive development is largely independent, and the interaction of experiences and ideas is critical in the creation of knowledge.

Vygotsky's (1978) social constructivism focused on interaction and collaboration between peers and theorized that knowledge is co-constructed as learners engage in the learning process and learn from one another.

These constructivist theorists present that learners make meaning through social interaction as well as knowledge engagement (Schrader, 2015). Primarily, constructivist theory suggests that students have ownership of their learning and assessment. As a learner-centered approach, one of the goals of constructivism is to create a meaningful, communicative and collaborative environment (Gold, 2001). Thus, constructivist learning is reliant on the reciprocal interaction between students and instructors, and within student groups in order to co-construct learning and by default, to increase engagement, learning, and perceived satisfaction. The constructivist model provides a theoretical basis for studying learning, including the roles of learners, instructors and technology, in online environments.

Although the constructivist framework focuses on the learners' control of knowledge acquisition, the theory also emphasizes the facilitating role of the instructor. Therefore, to foster this engagement, the online instructor is responsible for creating approachable, communicative and collaborative learning conditions in the online environment (Schrader, 2015). Gold (2001) also referenced the importance of the role of

the online instructor as facilitatory in three distinct roles – organizational, social and intellectual. The organizing role is centered on the course structure, objectives, procedures and timelines. In the social role, the instructor is responsible for creating an approachable, communicative and appropriate online environment. The intellectual role is focused on the process of learning and understanding the course content through assignments, questions and other course structures. In effect, the role of the constructivist instructor is to facilitate the learning process.

The online peer interactions, afforded by technology and social media, expose students to multiple perspectives, which allow for deeper understanding (Gold, 2001). Further, information and communications technologies provide students with increased access to content, support greater autonomy in learning and allow for deeper thinking in the construction of knowledge. Essentially, education technologies used in online learning alter the ways in which students communicate, collaborate, construct knowledge, and as a result support the constructivist approach. In online environments, knowledge is extended where there is communication, dialogue and engagement in a learning community. Information and communications technologies extend classroom boundaries, create new learning communities and access diverse collaborators in the learning process (Schrader, 2015). Therefore, given the evolving technology and media tools available in online learning environments, the constructivist learning paradigm must evolve to promote learning using new media (Schrader, 2015). In examining the link between constructivism and social media, Schrader posits that media shapes how the current generation of learners learn and know and enhances the opportunities for knowledge evolution. Further, the cognitive processes of assimilation of information, the

accommodation of new experiences and the appropriation of new skills all evolve with interaction with online media and are mediated by technology (Schrader, 2015).

Thus, constructivism, as a theoretical framework, can explain the scaffolding support required in education to construct knowledge and meaning in an environment enabled by technology. Technology and media, as mediums of learning, provide greater opportunities for interpersonal interaction and for co-construction of knowledge. New technology and media “augment cognitive and sociocultural theories of learning, not so much by expanding the theories, but by expanding their reach, affording more communities to be joined together in constructivist learning” (Schrader, 2015, p.33).

This study fitted with the prior research on constructivism in exploring how learners learn but, although constructivism is widely discussed in the context of the standard learning process, the framework is underexplored in the context of technology-enhanced online learning. Prior research on the constructivist framework has demonstrated the need for extending the research on the constructivism in the context of online learning which allows students to create knowledge in the absence of physical co-presence. Therefore, the study sought to explore, in the context of the constructivist learning theories, how students’ learning experiences are shaped by these online learning communities. The theoretical concepts of cognitive and social constructivism (Table 1) “is the psychological foundation and explains the theoretical scaffolding necessary to construct new meaning in education created by the abundant and novel building blocks of technology” (Schrader, 2015, p.32).

Table 1*Theoretical Framework, Constructs and Applications*

Framework	Construct	Application
Constructivism	Cognitive Constructivism (Dewey, 1938) (Piaget, 1977)	Meaningful, communicative and collaborative online environment Co-construction of knowledge Intellectual role of the instructor in enabling understanding of the course content using the course structures New technology allowing for deeper reflection in the construction of knowledge Technology extending classroom boundaries, creating new learning communities and accessing diverse collaborators
	Social Constructivism (Bruner, 1971) (Vygotsky, 1978)	Online interactions allowing for deeper understanding of the content Online interactions facilitating more diverse perspectives and interpretations Faciliatory role of the constructivist instructor in enabling organization, social and intellectual interactions Intellectual role of the online instructor in the defining learning process and supporting outcomes

The literature review included studies grounded in constructivist learning theory.

The organization of the literature was guided by the components of online learning

environments that extend the scope of constructivist learning, augment the cognitive and sociocultural context of constructivist learning, affect learner development and facilitate knowledge construction. The following categories emerged in the review of the related literature and was used to organize the literature review - engagement in the online environment, online course structure, education technology in online instruction and learner autonomy in the online environment.

Review of Related Literature

The literature review focused on studies of students enrolled in online courses, was based on a systematic database search of EBSCOhost, ERIC (EBSCO), ERIC (ed.gov) and JSOTR databases conducted in 2021 and included peer-reviewed articles published between 2000 and 2021. The review referenced online course descriptors, including terms such as engagement, *engaged theory*, *engagement theory*, *community of inquiry*, *learning community*, *online course organization*, *course content*, *information and communication technology*, *self-regulation*, *self-direction* and *self-assessment*. The literature search was further refined to include research that was guided by the constructivist framework or by theoretical concepts that aligned with, or are grounded, in social and cognitive constructivism. The literature review highlighted relevant findings in the following areas: *student engagement*, *online course structure*, *education technology*, and *learner autonomy*.

Engagement in the Online Environment

Engagement in an online course refers to interaction, connection and active participation in the course. The literature reviewed in this section focused on relational interaction, such as student-instructor, student-student and student-course interaction, that

shaped the experiences of students enrolled in online courses.

In a study that examined students' perceptions of online learning and instructional tools, Armstrong (2011) theorized that online engagement and communication were important to student learning and success. The researcher used interviews, think-aloud observations and online focus groups to gathered data from 16 participants who were previously enrolled or were currently enrolled in online courses. The framework of approach to learning was used to guide the data analysis. The approaches to learning as described in the literature were deep – where learners are able to organize information, critically examine ideas and make meaningful connections that promote learning, strategic – where learners aim for the highest possible grade by employing effective study and time management approaches and surface – where learners emphasize the replication of information. The requisite regulation integral to the approaches to learning is consistent with the social constructivist theory of self-regulation. Self-regulation, as defined by social constructivists, is the process where students attain beliefs about their abilities and competencies, evaluate the structure and difficulty of learning tasks, and develop strategies to accomplish goals (Schunk & Zimmerman, 2003). The findings by Armstrong (2011) revealed that although participants considered online learning to be a convenient alternative, students were apprehensive about instructor engagement and indicated that the quality of instructor communication was valuable to the students' experience. Faculty's absence from the educational conversation resulted in perceived reduction in academic quality. In essence, communication and engagement in the educational conversation were important to the perceived academic quality, which in turn influenced the participants' approaches to learning.

The significance of student engagement in shaping students' experiences in online courses was also explored by Blackmon and Major (2012) who examined the factors that impacted the online classroom. Using a qualitative research synthesis of peer-reviewed articles, including interview data and comments from students describing their online experiences, the researchers aggregated the finding into themes and subthemes. Guided by engaged theory, more specifically the theory of constitutive abstraction, the researchers suggested that the students, enrolled in online environment, experience learning more conceptually and intellectually. Engaged theory is consistent with the constructivist approach in that it emphasizes the social and cognitive processes required for engagement in learning enabled by technology. The findings showed that the instructor's accessibility and ability to provide students connections with peers had a strong influence on students' experiences. This implies that although students are responsible for interaction in an online environment, students enrolled in online environments experience learning more abstractly and cognitively and the ability of the instructor to create an interactive, learning experience influenced student engagement.

Similarly, research by Jaggars and Xu (2016) demonstrated a correlation between students' interactions and performance in online courses. In an effort to understand how online course design and instructional features influence student-level outcomes, Jaggars and Xu (2016) examined the relationship between course grades and interpersonal interaction in online courses. Using anonymized data from students enrolled in different online course sections across a state system of community and technical colleges, as well as interviews from instructors and students, the researchers discovered a significant correlation between interpersonal interaction and course performance in online courses.

The finding showed that although students valued courses that leveraged learning technologies, were well-designed and included defined objectives, the interpersonal interactions were what predicted students' outcomes.

The implication of student engagement to students' experiences in online courses was also reviewed by Hugg Blakey and Howell Major (2019) who examined students' conceptualization of engagement in online courses. The researchers, using a qualitative research methodology, underscored the limitations in the qualitative research literature on student engagement in an online setting. Guided by the framework of engagement theory, they explored the concepts of cognitive, emotional, behavioral and agentic engagement in online courses. Engagement theory is consistent with constructivist approaches in that it emphasizes peer collaboration and education communities (Kearsley & Shneiderman, 1998). The researchers used open-ended interviews questions, related to the four-component model of student engagement in online courses, to examine students' definitions of engagement and students' descriptions of online course attributes as it related to their levels of engagement. The findings revealed themes associated with students' perceptions of engagement and the specific engagement types that facilitated learning. Students perceived engagement as active participation between students and faculty and indicated the importance of cognitive engagement, represented as student's motivation and approach, to the learning experience. The findings also showed the importance of emotional engagement, characterized as the student's view of the course and the importance of learning, to the learning experience. Essentially, to demonstrate engagement and establish ownership of the course, students had to be motivated to engage and had to understand the importance of the learning in the online course.

The significance of learner engagement was also explored by Zhang et al. (2020) in a quantitative study aimed at identifying student-based perceptions of online learning. The researchers interviewed undergraduate business students enrolled in online courses at a California state university and explored factors that were important to the success of the students. The findings revealed that online social comfort was important for students enrolled in online courses. Online social comfort refers to the student's degree of comfort and security in participating in online discussions (Zhang et al., 2020). The researchers found that student's perception of online learning comfort was a significant factor in determining whether the student enrolled and subsequently engaged in online courses and that student engagement can be facilitated by instructors that provide an interactive online environment that encourages participation.

The research studies presented thus far highlighted the implication of engagement in supporting learners in online environments. Collectively, the findings provided a basis for further exploration of the significance of interaction in online courses and for review of how the online course structure can support student engagement in the absence of physical co-presence.

Online Course Structure

The existing research literature also indicated that course structure was important to students' experiences in online courses. Course structure refers to the design, content, modules and assignments as well as the objective, requirement and assessment aspects of the course organized to create a learning path that promotes student learning (Moore & Keegan, 1993). This section explored the findings in the existing research literature on students' perceptions of the impact of course structure on the quality of the online

learning experience.

The implications of course structure to online learning environments was supported by Yang and Cornelius (2004) who established that course organization was important to students' experiences in online courses. In a qualitative study, using course documents, observations and interviews with participants enrolled in online courses at two different universities, the researchers examined the quality of online courses and the factors that influence students' online experiences. Data analysis, which was conducted simultaneously with data collection, was done through extensive coding of the interviews and transcripts. The findings of the research revealed that course structure including course design, navigation ease, internet connection stability and asynchronous online participation contributed to positive experiences for students. The perceived significance of course structure to an effective online experience indicated that students attributed well-design course to positive experiences in online courses.

Similarly, in the study that examined students' perceptions of online learning and instructional tools, Armstrong (2011) validated the significance of online course structure to student learning and success. The researcher found that the lack of organizational structure was a factor that decreased the learning experience. The findings showed that the structure of the learning environment, attributes of online assessments and the perceptions of the academic rigor of the online environment shaped students' approaches to learning. In addition, poorly design course content contributed to perceived negative experiences in online courses. This research aligns with studies that indicate that the layout of the course does have an impact student's satisfaction.

Gray and DiLoreto (2016) also explored the relationship between course structure

and perceived learning and student satisfaction in online learning environments. In research focused on improving online education and on informing practices for increasing retention in online learning, the researchers hypothesized that course structure would have a statistically significant impact on both perceived student learning and student satisfaction. Using an online survey instrument to collect data from 187 participants enrolled in a minimum of one online course, the researchers explored the impact of course structure, learner interaction and instructor presence on student learning and satisfaction. The findings showed that, although mediated by student engagement, there was a significant and positive correlation between course structure and perceived student learning and course structure and student satisfaction. The research aligns with the studies that indicate that well-structured course design is important for student satisfaction and perceived learning in online learning environments.

Eom and Ashill (2016) also highlighted course design as a critical success factor that must be effectively managed to realize the full potential of online learning. Grounded in constructivist learning theory, the researchers examined the determinants of student's perceived learning outcomes and satisfaction in online courses. The study was based on the responses on 372 participants who had completed at least one online course at a university in the Midwestern United States. The findings revealed that course design was the strongest predictor and had a positive significant relation with students' learning outcomes and satisfaction. Students who had a positive perception of course design reported higher learning outcomes and higher levels of satisfaction. This implies that students' perceptions of overall course usability are correlated to student satisfaction and learning and that a more logical and organized course layout was linked to higher student

satisfaction with learning in the online course (Eom & Ashill, 2016).

These research studies highlighted the correlation between course design and students' experiences in online courses. The findings demonstrated that online course structure influence students' experiences and have implications for how course design can leverage technology to enhance learning experiences in online environments.

Role of Technology in Online Instruction

The role of technology in shaping students' experiences in online course also emerged as a recurring category in the literature reviewed. Fundamentally, instructional technology enables the implementation of constructivist approaches. Instructional technologies change how content is delivered, alter the ways in which students interact with the course and transform how students learn in online courses. The research literature, on the role of education technology in online instruction, reviewed the intentional use of technology to support the course content, demonstrated how students perceive technology implementation in online courses and examined how technology is leveraged to support student learning.

The role of technology on students' participation in an online learning environment was explored by Vonderwell and Zachariah (2005). Using a case study qualitative approach and guided by cognitive load theory, the researchers reviewed the factors influencing participation of students enrolled in online graduate courses at a Midwestern university in the United States. Although cognitive load theory is based on the assumption that human cognitive architecture is limited in the amount of information that can be processed in working memory at any given time and suggests that constructivist strategies facilitate information overload (Kirschner, 2002), constructivist

approaches, such as problem-based and inquiry-based learning, support conditions for human data processing. Hmelo-Silver et al. (2007) suggest that scaffolding, used extensively in constructivist learning approaches, can reduce the cognitive load by allowing learners to focus on tasks relevant to the learning goal and as a result learn in more complex domains. The findings indicated that the characteristics of course technology and interface influenced online learner participation and learning outcomes. Further, the researchers established that students' technology skill levels influenced the level of student participation and their reflective focus in the course. Consequently, the appropriate level of technology used, including pedagogically user-friendly online technology interfaces, can result in more in-depth reflections and problem-solving approaches. The study implied that students need to be prepared for technology in online learning and that monitoring student patterns of participation can assist with identifying students' needs and supporting student learning in online environments.

Armstrong (2011) also posited that, undergraduate students' perceptions of online learning environment and tools influenced their approach to learning. The researcher found that students' perception of the value of technology used in the course depended on the speed and consistency of communications enabled by the technology and on the instructors' technology skills. The findings showed that participants' perceptions of negative characteristics of technology were attributed to the use and implementation of the tool and were not inherent to the technology itself. This suggested that the value of technology use in online courses was not necessarily attributed to the actual technology tool used but was based on the implementation and the quality of communication enabled by the technology tool.

The research by Rubin et al. (2013) also supported the effect of technology, leveraged to mediate online learning, on the community of inquiry (CoI) and on student learning and satisfaction with online courses. Using participants enrolled in online course at a large Midwestern university, the researchers focused on two of the more popular common Learning Management Systems (LMS) used to provide course content and to communicate with students. Regression analyses were used to determine the effect of the LMS affordances, including ease of communication and ease of navigation, on learning outcomes and course satisfaction. The research was guided by the CoI framework, a collaborative constructivist model that perceives online courses as effective when instructors and students form an online learning community consisting of teaching presence, social presence and cognitive presence. Teaching presence was defined as the instructors' organization and design of course materials and guidance for interaction to support learning. Social presence referred to the connection between students in an online course and cognitive presence described students' intellectual engagement with the course concepts and abilities to develop competence. The findings revealed that students' perceptions of the potential of the LMS predicted teaching, social and cognitive presence. Further, the researcher found that technology was important to building an online community, facilitating the teaching, social and cognitive presence and promoting satisfaction with online courses. The perception of technology affordances, in supporting the online course, had significant independent effects on teaching presence, with ease of communication and navigation predicting teaching presence and ease of communication predicting social and cognitive presence. In effect, the technology used to teach online courses is important to the teaching and learning experience.

These research studies on the role of technology underscored the value of the intentional use of technology to leverage course content and to support learning in online environments. The use of technology gives students the latitude to control the learning process and impacts learner autonomy in the online environment.

Learner Autonomy in the Online Environment

Learner autonomy was another significant categorization that emerged from the literature review. In an era where online courses may be the only option for a heterogeneous group of students who may not necessarily have the online experience, the self-efficacy skills or the self-regulation tools required for learning in online environments, learner autonomy examines the perception of the roles of students and instructors in autonomous learning. In online learning environments, students are expected to take a more proactive approach to their education, and course outcomes depend heavily on students' attitudes towards online learning. Learner autonomy is contingent upon the learners' abilities to create structure and manage learning by developing learning plans, finding resources that support learning and employing self-evaluation techniques (Moore, 1972).

The implications of learner autonomy in online environments were examined by Howland and Moore (2002). A qualitative research methodology, utilizing 12 open-ended questions, was employed to understand the students' experiences and perceptions in online course environments. The researchers concluded that students who were more proactive and independent learners had more positive experiences in online courses. The findings revealed participants' emphasis on time and task management and information organization was conducive to experiences in online courses. Further, components of

learner autonomy, including self-management, self-reliance and self-motivation as well as accurate expectations of learners' responsibilities, were important factors in successful online learning experiences. The findings showed that students who exhibited the attributes of constructivist learners, including self-regulation and self-direction, reported positive experiences in their online courses.

The research by Armstrong (2011), also analyzed student-preferred level of autonomy. The researcher posited that although independence and self-regulation were the primary reason students enrolled in online courses, students indicated the need for direction on course assignments, assessments and access, and expressed concerns with self-directed learning. The findings further revealed that faculty communication and participation were important for higher level learning in an environment characterized by autonomy.

Hixon et al. (2016) also researched the differences in the perceptions of course quality based on students' levels of online course experience. The researchers examined whether students, based on the extent of previous experience in online courses, perceived the quality of online courses differently. The theoretical underpinning of the research was self-efficacy theory, which suggests that self-efficacy is a strong predictor of student success. The participants were 3160 students, previously or currently enrolled in on-line, for-credit courses at 31 universities in the United States. The study employed a quantitative methodology to explore factors that impacted students' perceptions by analyzing data collected from three levels of online course experience – experienced online students (enrolled in seven or more online courses), intermediate online students (enrolled in three to six online course) and novice online students (enrolled in three or

fewer online courses). The findings suggested that there were variances in students' expectations of course components and perceptions of course quality based on online experience levels. Further, the research highlighted several survey elements where the perceptions of the quality of the online course and the importance of assessments and instructional materials differed based the students' previous online course experiences. The study implied that the student's level of previous course experience influenced learner autonomy and perceptions of course quality.

The importance of learner autonomy as a factor in the online learning was also highlighted by Fotiadou et al. (2017). In a quantitative study, guided by Moore's theory of transactional distance, the researchers examined the relationship between learner autonomy and aspects of the online learning process. The participants were 100 postgraduate students enrolled in online courses the Hellenic Open University, the first and only open distance education university in Greece. The findings showed a positive correlation between learner autonomy and both student-student and student-instructor interaction. This implied that learner autonomy was a significant requirement for distance learning but that learner autonomy was dependent on the learning environment and as a result, innovative, learner-centered methods should be employed to support learner autonomy.

Landrum (2020) also reviewed learner autonomy in online course and examined students' self-efficacy and self-regulation skills in online courses. Self-regulation refers to the student's ability to manage and implement processes conducive to learning (Bandura, 1977). Using a quantitative research methodology, the researcher used a Pearson correlation and regression analyses to investigate how the measures of self-

efficacy and self-regulation correlated to student satisfaction. The researchers conceptualized that the only significant predictors for perceived satisfaction with the online platform were self-regulated learning strategies and self-efficacy. The correlation analysis revealed positive and significant correlations between LMS self-efficacy, learning self-efficacy, self-regulation, and time management with perceived satisfaction and usefulness. This implied that students, who have greater confidence to learn online and adopt online learning strategies, had higher satisfaction with the online platform.

In summary, learner autonomy, specifically students' attitudes, proactive approaches, self-management and self-regulation skills, as well as the tools required to support autonomous learning, have implications for learning experiences in online environments.

Conclusion

The increasing significance of and reliance on the online learning methods have underscored the importance of researching students' experiences in online courses. Chapter two validated constructivism as a theoretical framework for analyzing students' experiences in online learning. The review of the related literature revealed the role of engagement, online course structure, technology use in online instruction and learner autonomy in understanding online course practices that enhance instructor effectiveness, increase student learning and promote student satisfaction and success. Chapter three will focus on the heuristic methods and procedures and the data analysis required to capture and explain the combined students' perceptions of their online courses and the factors that shape their experiences.

CHAPTER 3

Introduction

The purpose this study was to research the experiences of students enrolled in online learning courses at a private, urban university in the Northeast United States. The study explored students' perceptions of their online courses and the factors that shaped their experiences. The research sought to inform the practice of online course development and to assist faculty and instructional course designers in understanding the factors that contributes to students' experiences. The use of online learning as an alternate learning modality has increased over the last three decades but the research of online learning has focused primarily on comparisons with the traditional face-to-face course format and the existing research literature has mainly highlighted quantitative studies that examined student outcomes in online courses. Factors that create the optimal conditions for learning as perceived by students need further research.

Chapter two analyzed the constructivist theoretical framework guiding the study, reviewed existing studies and identified the emerging categories in the related literature. Chapter three focuses on the research methodology for the data collection and data analysis necessary for examination of students' collective experiences in online environments.

Methods and Procedures

The study was a qualitative descriptive case study research methodology that examined the commonality of the experiences of students enrolled in undergraduate online courses. A qualitative research of a single case was used to describe students' lived experiences and their own voices were used to highlight these experiences and

reflections throughout the findings. The unit of analysis for this research study was the experiences of a heterogeneous group of students enrolled in an asynchronous online, introductory computer science course in the professional studies college at a private, urban higher education institution.

A qualitative research methodology was appropriate for this study because the research focused on students' perspectives and developed a composite description of the experiences of students within a specific context (Creswell & Poth, 2018). In effect, students' perceptions of their experiences and the processes that facilitated the quality of student learning cannot be captured quantitatively. Further, as a research methodology, case study qualitative research explores a contemporary phenomenon within a specific context, bounded by time and activity. The primary goal of a case analysis is to understand and describe the phenomenon in a single, bounded context (Yin, 2014). The case study research was appropriate, since this study focused on the exploration of a real-life phenomenon bounded by time and place. The study examined the experiences of a group of students enrolled in an asynchronous online, introductory computer science courses in the professional studies college at a private, urban higher education institution.

Research Questions

The study examined the experiences of students enrolled in online courses and explored the factors that affect students' perceptions of their online environments. The study was guided by the following research questions:

- 1) How do undergraduate students enrolled in the professional studies college at a private, urban higher education institution describe their experiences in online courses?

- 2) What factors shape the experiences of undergraduate students enrolled in online courses in the professional studies college at a private, urban higher education institution?

Setting

The field setting for the study was the professional studies college at a private, urban university in the Northeast United States. The university is a metropolitan and global university, has campuses located in a major metropolitan area in the United States and spans its reach globally, through collaboration with other higher education institutions and study abroad opportunities. The university has a total undergraduate enrollment of 17,088 across six colleges. Undergraduate students are primarily enrolled in face-to-face programs but the university course offerings also include an online curriculum of synchronous, asynchronous and rotating hybrid online courses. The college included in this case study focuses on career-driven, professional studies educational programs.

The case study included students enrolled in an asynchronous online, introductory computer science course in one department of the college. Access to site and participants was granted and guided by the university's Institutional Review Board and permission to the students and instructor was approved by the department chair. The research was conducted at a university I was affiliated with so, to minimize the inherent power imbalance in the researcher-student relationship none of the students currently enrolled in my course were recruited to participate in the study.

Participants

The participants in the study were selected from students matriculated in

undergraduate programs and enrolled in an asynchronous online, introductory computer science course in the fall 2021 semester at the university. The participants were selected through purposeful, convenience and snowball sampling. First, purposeful sampling was used to identify a specific asynchronous online course, deliberately selected to adequately capture the heterogeneity in the population of online students (Maxwell, 2013). A purposeful sampling strategy allowed for the selection of specific student participants that could provide information relevant to the research questions (Creswell & Poth, 2018). Once access to the course was secured, a convenience sample was employed to interview students who were accessible to the researcher based on the responses to the requests for interviews. To further facilitate the data collection, snowball sampling was employed to recruit additional participants. Initial student interview participants recommended and helped to identify additional study participants who were enrolled in the course and fitted the research criteria.

The study focused on the experiences of 10 students enrolled in an asynchronous online, introductory, computer science course with a single professor in the professional studies college at a private, urban university in the Northeast United States. There were three male and seven female students with majors in Administrative Studies, Business, Criminal Justice, Homeland Security, and Legal Studies. One student was an undecided major. Since this introductory computer science course is a prerequisite required for the majors, the students enrolled in this course are primarily freshmen and sophomore students. The senior students interviewed in the study were enrolled in the course as an elective. The participants own voices were used to highlight their experiences.

To protect the identity of the participants, all data collected and any references to identifiable course information as well as references to the instructor and the department were anonymized. Further the names of interview participants were redacted using an algorithm that allowed the researcher to protect participants' identities but still be able to reference the data collected to maintain the integrity of the study. Participants' demographics are captured in Table 2.

Table 2

Participants Demographics

Pseudonym	Gender	Academic Year	Major
Chad	Male	Freshman	Business
Chloe	Female	Sophomore	Undecided
Finn	Male	Freshman	Undecided
Gia	Female	Senior	Legal Studies
Jade	Female	Freshman	Administrative Studies
Olivia	Female	Sophomore	Homeland Security
Pio	Male	Freshman	Business
Rose	Female	Freshman	Legal Studies
Violet	Female	Senior	Criminal Justice
Wynn	Female	Senior	Legal Studies

Data Collection Procedures

Yin (2014) recommended setting up a detailed case study protocol and database to track the data collection. In this study, the data collection instruments were document analyses, interviews, asynchronous online course observations and field notes. The document analysis, interview and observation protocols were designed by

the researcher and were guided by the research questions, related literature and the constructivist paradigm. The interview questions explored the learner-centered, collaborative approach of the constructivist framework on knowledge construction and examined the roles of the student, instructor, course structure, educational technology and learner autonomy in the online environment. All data collected was organized in a data collection matrix to facilitate the identification and systematic analysis of the data (Miles et al., 2014).

Document Analysis

Document analysis (see Appendix C), the first data collection instrument, captured data generated from the review of course documents such the course syllabus, modules, materials, assignments and rubrics as well as the digital learning platform and learning management system (LMS). Access to course documents was granted by the faculty teaching the course. Document analysis, as the first data collection point, gave the researcher an opportunity to gain perspective into the course content, design and terminology and to attain valuable sources of data that were not available from the other data sources to answer the research questions. Further, this allowed the students additional time for interactions in the course before the interviews and observations were conducted. Document analysis, as a component of this case study research was used to triangulate findings gathered from the interview and observation data sources. When used in triangulation, document analysis can clarify and expand on findings and help to minimize bias (Frey, 2018). The timeframe for the data collection via document analysis was the fall 2021 semester.

Interviews

The interviews, also primary data collection instruments, were conducted after the initial document analysis and concurrent with any subsequent document analysis. The interview protocol was best suited for this study because interviews allow for further exploration and understanding of research participants' experiences in the phenomena being studied (Creswell & Poth, 2018). The interviews provided detailed insights into students' perspectives of the student-instructor-content engagement, course design structure, use of educational technology and learner autonomy. Seidman (2006) also purported that in-depth interviewing provides researchers with access to the context of students' lived experiences and a way to understand the meaning of students' behaviors. Interviewing provided an optimal avenue of inquiry to examine students' subjective understanding of their experiences in the classroom, as well as the meaning they made of the experiences (Seidman, 2006). Interviewing, when used in triangulation helped with understanding students' online education experiences. The interviews established the context of the participants' experiences, explored the details of the students' experiences and provided an opportunity for students to reflect on these experiences (Seidman, 2006).

The interview protocol included 12 semi-structured, open-ended questions (see Appendix D). Questions one through four focused on students' perceptions of their experiences in the online course. The interview questions focused on the individual experiences of students with the instructor, other students, course structure and educational technology. In responding to question five through 12, students were asked to think about the factors influenced their experiences in online courses. The

semi-structured, open-ended nature of the interview questions provided participants with the flexibility in sharing and expanding on their experiences. The questions were useful for collecting in-depth participant perceptions of their online course experiences and provided additional perspectives enabled by the interaction and exchange of a facilitated discussion.

The interview instrument was field-tested by a small group of peers, with knowledge of online learning, to authenticate word choice, confirm the appropriateness of the questions and determine any issues that the student participants may experience when responding to the questions. To further establish that the interview protocol met the research requirements, the field-testing focused on reviewing the questions to maintain authenticity and resolve any biases, repetitions and ambiguity.

Interviews were conducted using a secure audio-conferencing platform, were approximately 45 – 60 minutes each and were recorded for later transcription and coding. During the data collection, participants were provided with follow-up questions for clarification on the recorded data and were included in the data validation to reflect on the accuracy of the accounts. After the data collection, the preliminary analysis with themes, attached to the transcript data, were taken back to a subset of the interview participants to validate how well their experiences were represented in the data analysis (Creswell & Poth, 2018). The timeframe for the data collection via interviews was the fall 2021 semester.

Asynchronous Online Observations

Asynchronous online observations were another key data collection instrument,

which occurred concurrently with the participant interviews and conducted after the first half of the course to document student participation over an extended period. The observations examined the course design and interaction components, including learner engagement and instructor presence, used to promote asynchronous teaching and learning. The data collected from the asynchronous online observations were used to support or challenge insights obtained from the document analysis and interviews and provided additional perspectives on student-instructor-content engagement, course design structure, educational technology and learner autonomy.

Observations are one of the multiple forms of data collection recommended by Yin (2014) in case study data collection to capture interactions and events in the physical research setting, to provide a more comprehensive understanding of students' dynamics in the course and to understand the 'why' of the phenomenon. In effect, the asynchronous online observations were valuable data collection tools that provided a deeper understanding of student participation in the online setting. Data generated through observations supported data triangulation as the case study findings were supported by multiple sources of evidence (Yin, 2014).

The timeframe for the data collection via observations was the fall 2021 semester. To observe the asynchronous online course site, permission for access to the Canvas course was granted by the department chair and the faculty teaching the course. The permission request outlined the duration of the observation, the courses to be observed and the process of the observation. As the asynchronous course was examined, the observation protocol was used to determine which indicators were included in the course. Since all observations were conducted in an asynchronous online environment, the

researcher was a complete observer, was not an active participant and was not seen by the student participants (Creswell & Poth, 2018). This provided an opportunity to fully observe participants in the online setting, as well as limit the ethical consideration associated with student behavior when students are aware that they are being observed.

The observation protocol (see Appendix F) was guided by the research questions and the categories identified in the literature review. Observations were based on an interactive coding system that recorded student engagement via discussion posts and course activity during a specific time interval - the duration of the course in the fall 2021 semester. Observations focused on students' engagement from the instructor view, including interaction with instructor, other students and instructional technology as well as access to the course content and instructional methods from the student view. Field notes guided by the observation protocol were used to document the findings, from the review of the LMS site and the online learning platform, and were later transcribed and coded for analysis.

To mitigate many of the challenges associated with document analyses, interviews, observations, access to course structure and materials were negotiated prior to data collection, inclusion and exclusion criteria were defined and adequate timeframes for review and synthesis were allocated (Creswell & Poth, 2018). Application for approval from the university's Institutional Research Board (IRB) was submitted and certified in September 2021 and approval was granted at the end of October 2021. Once IRB approval was secured, preliminary access to the research site and data collection as well as the iterative analysis commenced in November 2021 and continued until the end of December 2021. Initial drafts as well as subsequent and final revision of the narrative

continued in January 2022 with a target completion date of February 2022.

Trustworthiness of the Design

Checking the accuracy of a qualitative account is one of the many roles of the researcher. Validation strategies, such as triangulation of multiple data sources can assist the researcher in validating the trustworthiness of the qualitative account (Creswell & Poth, 2018). Miles et al. (2014) caution against analytic bias that can invalidate findings and recommend triangulation of different data types, data sources and methods as tactics for ensuring the quality of the data and for checking findings. Triangulation by multiple methods of data collection, including interviews, observations, document analyses and field notes, was one of the strategies that was employed for ensuring the trustworthiness of this qualitative study. This allowed for corroboration from distinct sources, which enhanced the trustworthiness of the analysis (Miles et al., 2014).

In qualitative research, researcher subjectivity or bias has been identified as a specific threat to trustworthiness. Maxwell (2013) suggests that understanding how the researcher's values influence how the study is conducted and how researchers' expectations affect the conclusions of the study are important to minimizing researcher bias. Creswell and Poth (2018) recommend engaging in reflexivity as a strategy for validation in qualitative research. Miles et al. (2014) recommend checking for researcher effect on the case to assess data quality. To minimize the effect of the researcher, the intentions of the study were outlined in the consent form and at the beginning of each interview. The researcher engaged in ongoing researcher reflexivity to ensure that findings were based on participants' responses. The researcher was conscious of interactions such as affirmations with the participants, restated any participant responses

that need further clarification and referred back to the research questions during the data collection process. The researcher also maintained an audit of the data analysis, which helped to evaluate whether researcher bias influenced the study.

Miles et al. (2014) posit that qualitative researchers are solely responsible for all aspects of their research and propose that confidence in the results of a qualitative study is questioned particularly because researchers focus on findings and description much more than the procedural account of the analysis. “One of the most logical sources of corroboration is the people you have talked with and watched” (Miles et al., 2014, 270). Member checking or seeking participant feedback was also outlined by Creswell and Poth (2018) as a validation strategy - “This approach, writ large in most qualitative studies, involves taking data, analyses, interpretations and conclusions back to the participants so that they can judge the accuracy and credibility of the account” (Creswell & Poth, 2018, 340). Participant feedback was encouraged during data collection and preliminary analysis. During the data collection, interview participants were also contacted with follow-up questions for clarification on the recorded data and for reflection on the accuracy of the account. After the data collection, feedback was solicited from the available interview participants by sharing preliminary analysis with themes, attached to the transcript data, to validate how well their experiences were represented in the data analysis. Having the participants validate the interpretations and the authenticity of the findings was important to the trustworthiness of this study.

Research Ethics

The protection of the participants in the study and informed consent were prioritized (Miles et al., 2014). A letter of consent was provided to each participant

outlining the purpose of the study and their role as participants (see Appendix B). Participants were informed that all participation was voluntary and there were no risks associated with the study. To ensure a balance of the power relationships, none of my current students were included in the study. Individual names used to reference interview participants were changed to protect the students' identities and the raw data, the transcriptions and the data analysis were stored on a password-protected computer with multi-factor authentication accessible only by the researcher.

Data Analysis Approach

After data collection, audio recordings were transcribed and transcriptions were reviewed, compared to field notes and memos and edited for accuracy (Miles et al., 2014). Yin (2014) suggested that qualitative researchers document as many of the steps of the case study procedures as possible. To this end, the data was imported into a computer assisted qualitative data analysis software (CAQDAS) for tracking data collection and for coding to construct meaning of participants' experiences and perceptions.

The study first used descriptive coding as the foundation approach for the first cycle coding (Miles et al., 2014). This approach began with a start list of researcher-generated, deductive codes based on the research questions, theoretical and conceptual frameworks and literature review of online learning (Miles et al., 2014). These provisional codes were stored in the CAQDAS program prior to data collection and were used to categorize the related data, from the interviews, observations and data analyses, to detect recurring patterns. Based on the nature of the research, in vivo coding was also used to prioritize the participants' voices and capture words and

phrases from the participant's own language.

Miles et al. (2014) posit that codes, which progressively emerge during data collection, are more empirically based. The review of these emergent codes demonstrates that the researcher is open to adjusting an a priori coding system that does not fit the research data. Hence, the researchers also used inductive coding to capture codes that emerge during the data collection. To ensure that all data collected were coded, the researcher revisited the data collection matrix, field notes and memos and checked the transcripts to minimize mistakes during transcription. Codes were revised as the data collection continued. Any additional codes that emerged were analyzed and any researcher codes that were not supported by the data were removed.

Miles et al. (2014) present second cycle of coding as a way of grouping the summarized segments of data from the first cycle coding into a smaller number of categories or themes. Pattern or explanatory codes were used to identify emergent themes patterns in the data (Miles et al., 2014). In addition, the definition of codes captured in the CAQDAS were revisited and compared with the data to ensure that there were no deviations in the meanings of the codes during the coding process. The researcher engaged in continued qualitative data collection and iterative coding cycles until saturation, when no new information emerged during coding.

Delimitations

This research study was delimited by the inclusion of a sample size of 10 students enrolled in an asynchronous online, introductory computer science course in a specific college at a single higher education institution. A smaller sample size was purposefully selected to allow for a more in-depth examination of the participants'

experiences in the course. The results generated by delimiting to this group of participants provided finer details and allowed for a more specific, in-depth look in the context of this research of students' experiences in online courses. A larger sample of students enrolled in different courses would extend the scope of the study.

The subject matter of an introductory computer science course, in which the study participants were examined, lent itself to a different type of interaction in online engagement and may not be replicable in another course. The results generated by delimiting to participants in this one area allowed the researcher to look at the context and the experiences of the students in very specific ways. These participants were intentionally chosen to research online courses where faculty may have more experience with design and technology of online courses. Although not necessarily better at teaching, computer science professors may be better at designing and using an online course system and can provide a baseline to researchers for learning from students in the earliest possible online classes where a complete course module is setup in an LMS. Learning from students in an introductory, asynchronous online course is the beginning of the conversation in understanding student interaction in online courses.

Finally, students' experiences prior to enrolling in this course were not included in this study. Students' experiences with online learning as well as with the LMS or the online learning platform were not considered. Focusing on experiences in the current course will mitigate the effect of other factors related to student transition to college or online course experience. So, the exclusion of prior experience in online courses limits the scope in that there is no way as a researcher to attend to all these factors. Therefore, the scope was on a very tight sample, bounded by time, space and place and focused on

gathering in-depth information, with the realization that some factors cannot be captured in the scope of this study.

Researcher Role

The researcher was the primary research instrument in qualitative research. Researchers position themselves in a qualitative research study and communicate how their lived experiences inform the study (Creswell & Poth, 2018). The researcher in this study has a technology background, has experience as a subject matter resource in online course design and development, is a faculty in this discipline and is a researcher in education leadership. To minimize assumptions and ensure separation of researcher as a practitioner and researcher as the instrument, the researcher intentionally reviewed the course material in a systematic way and made notes during document analyses, interviews and observations. This approach helped to mitigate researcher bias and ensured a focus on the research of the subject matter, as opposed to being an evaluation as a practitioner with expertise in this area.

The interpretive nature of qualitative research means that researcher's positionality can interfere with the analysis of the data. Creswell and Poth (2018) posit that qualitative researchers need to identify their positionality in relation to the context and setting of the research. The researchers should explore their experiences with the phenomenon being researched and the effect of these experiences in shaping the researchers' interpretations of the phenomenon (Creswell & Poth, 2018). To minimize researcher effect, the researcher engaged in reflexivity or self-understanding about biases, values, and experiences that could have influenced the interpretation of the study. The researcher was authentic on the stance regarding online learning and took steps to

minimize researcher bias through full disclosure of and acknowledgment that the researcher's technology background and online experience could possibly influence the interpretation of the data collected. All interviews were recorded. Notes on researcher's perceptions and observations during the process were taken and were used to reflect on how the researcher's academic discipline and experiences could potentially influence the approach to the study and interpretation of the results. In addition, clarification from participants was also requested when there seemed to be a connection with researcher's perspectives and experiences. Restating participants' responses, confirming the accuracy of participants' responses and providing participants an opportunity to review the transcribed interviews were also used for researcher reflexivity.

Banks (1998) also discusses positionality and the concept of insider/outsider in the context of race and ethnicity and posits that the typology can be applied in different situations and was essentially a conceptualization of authentic knowledge and positionality in relation to the research. In this study, the researcher role was essentially an indigenous insider (Banks, 1998) based on experiences in online learning and teaching and on expertise in online course design, development, implementation and support. The participants in the study were more open to discussion as they perceived the researcher in this study to be a legitimate researcher with the ability to inform the study of online course design.

Validating the accuracy of the qualitative account was also an important researcher role. Creswell and Poth (2018) suggest validation strategies, such as triangulation of multiple data sources, to validate the qualitative accounts of the research participants. To capture different dimensions of the experiences of study participants, this

study employed document analyses, interviews and observations as the data collection methods.

Managing the power balance was yet another important researcher role. None of the research participants were current students or were students previously enrolled in classes taught by the researcher. Creswell and Poth (2018) suggest that researchers and participants are co-constructors of knowledge so managing the inherent power imbalance between researcher and participants in this study, by reflecting on researcher's stance, expressing a genuine interest in participants' contributions and encouraging participant dialog were all important to the researcher role.

Conclusion

The proposed research used a qualitative case study methodology, using document analyses, interviews and observations to explore the experiences of students enrolled in online courses at the professional studies college of a private, urban university in the Northeast United States. The data was coded and analyzed to identify common themes that captured the combined students' perceptions of their experiences and factors that shaped these experiences.

CHAPTER 4

Introduction

The purpose this study was to explore the experiences of students enrolled in online courses and the factors that shaped their experiences. The research study sought to understand students' experiences in online courses, to inform the practice of online course development and to provide additional data, to faculty and instructional course designers, about the factors that contribute to students' experiences. Understanding the perspectives of student enrolled in online courses is key to understanding students' experiences, is integral to student satisfaction and is important to implementing online practices that enhance students' experiences and promote learning.

To address this, the researcher chose a qualitative descriptive case study research methodology. Using a sample of students in an asynchronous online, introductory computer science course with a single professor in professional studies college of a private, urban, university in the Northeast United States, the researcher examined students' perceptions of their experiences in online courses and the factors that shaped their experiences. Chapter one outlined the purpose of the study. Chapter two provided a review of related literature on students' experiences in online courses. Chapter three described the heuristic research method and procedural analysis of data, which was collected via document analyses, individual semi-structured interviews and online course observations. This chapter starts with a description of the case which outlined the key features of the asynchronous online, introductory computer science course. A summary of the findings and themes that emerged from the data collection and analyses were also highlighted in Chapter 4. The findings were guided by the research questions:

- 1) How do undergraduate students enrolled in the professional studies college at a private, urban higher education institution describe their experiences in online courses?
- 2) What factors shape the experiences of undergraduate students enrolled in online courses in the professional studies college at a private, urban higher education institution?

Description of Case

The study focused on the experiences of undergraduate students enrolled in an asynchronous online, introductory computer science course in the professional studies college at a private, urban university in the Northeast United States. All participants of the study were matriculated in undergraduate degree programs and were enrolled in this one specific asynchronous online, introductory computer science course in the fall 2021 semester.

The asynchronous online, introductory computer science is a course requirement for students pursuing bachelor's degrees in Administrative Studies, Cyber Security, Homeland Security and Legal Studies and is a prerequisite for more advanced courses in these programs. The course is also an elective for student majoring in other academic programs in the professional studies college at the university. The course focused on using computer software applications for coursework, professional collaborations and personal use. Elements of the course include instructional and practical application of word processing, electronic spreadsheet, presentation graphics applications and database management software.

The course was organized by weekly modules in the Canvas Learning

Management System (LMS) and included an online lecture component with presentations, readings, assignments and video tutorials. The course also included a lab component with links, from an online textbook, that provided seamless access to an external digital learning platform integrated into the LMS. The links included interactive instructional materials, student access modules, assessments and study tools, available with a six-month computing access as part of the online textbook. The course was a 16-week semester long course with a total of 23 students enrolled in the course. The course was in an asynchronous online format. All modules, discussion posts, assignments and projects were open and available to students from the first day of classes on September 1, 2021 until the end of the final examination week on December 18, 2021. Students were required to interact with the course content, via weekly assignments and projects, and with peers, via weekly online discussion posts. All assignments, projects and discussions were due weekly.

Student interviews were the primary source of the data but were supported by data from the asynchronous online observations and the analysis of the course artifacts. Student interviews were conducted one-on-one via an audio-conferencing platform and focused on the experiences of the students enrolled in the asynchronous online, introductory computer science course as well as the factors that influenced their experiences. The document analyses examined the course artifacts and structure including course syllabus, materials, modules, assignments and rubrics. The online course observation captured students' and the instructor's activity in the LMS and in the supporting learning platform and were captured as LMS and Online Learning Platform activity analytics.

LMS Activity Analytics

Based on the total activity and last activity analytics in the LMS, all students accessed the course weekly. Students' total activity in the course LMS ranged from 10 hours to 32 hours. This interaction did not include the time spent on the external learning platform or account for time students worked on the course content, modules and assignments independent of the LMS. Interaction with the course content and the discussion posts were included in this interaction activity.

Online Learning Platform Activity Analytics

Students were required to complete assignments and projects in the online learning platform. Students also had the opportunity to review course materials as well as perform practice exercises via links to the external learning platform. There was a learning path to view student progress but, although students completed the assignments and projects in the online learning platform, all assignments and projects were submitted to a OneDrive for grading in the LMS. Analytics in the Progress App could also be used to track student engagement where students were assigned low, medium or high engagement. The analytics tracked student engagement with an algorithm that included the amount of time spent in online learning platform, the number of activities accessed and the number of times students log into platform. The analytics from the online learning platform was not specifically used in this course as validation of student engagement. However, the students credited engagement in the online learning platform for timely completion of assignments and for grade satisfaction.

Findings

During the research synthesis, four main themes emerged regarding students' experiences and the factors that shaped their experiences in the asynchronous online course. The emerging themes highlighted student factors as well as faculty and content factors that influenced students' experiences. After multiple cycles of coding, the emergent themes were: Student Independent Learning, Instructor Engagement, Online Course Design and Instructional Technology. Student-Content Interaction, Time-Management and Self-Regulation emerged as subthemes under Student Independent Learning. The subthemes, Instructor Accessibility and Instructor Modeling and Feedback emerged as specific elements under the Instructor Engagement. Course Organization and Course Layout were subthemes under Online Course Design. Navigability and Usability of the Online Learning Platform emerged as subthemes under Instructional Technology. A summary of the thematic findings and data sources are outlined in Table 3.

Table 3*Interpretative Themes*

Theme	Subthemes	Data Source	Trustworthiness
Student Independent Learning	Student-Content Interaction Time-Management Self-Regulation	Document Analysis Observations Interviews	Triangulation of Data Source Member Checking
Instructor Engagement	Instructor Accessibility Instructor Modeling and Feedback	Observations Interviews	Member Checking
Online Course Design	Course Organization Course Layout	Document Analysis Observations Interviews	Triangulation of Data Source Member Checking
Instructional Technology	Navigability Usability of Online Learning Platform	Observations Interviews	Triangulation of Data Source Member Checking

Theme 1: Student Independent Learning

The experiences of students enrolled in asynchronous online courses were shaped by their abilities to engage in independent learning. Independent learning is the students' ability to initiate structure in the course to support their learning including initiating plans for interaction with the course content, developing methods for time-management and establishing techniques for self-regulation.

Asynchronous online courses offer unparalleled opportunities for students to participate in a learning environment, when schedule and distance and more recently the Covid-19 pandemic restrictions and vaccination requirements make participating in the traditional courses difficult. The continuous access to the course was viewed by study participants as advantageous to independent learning in an online environment. However,

this unrestricted access to the course was also regarded critically by the study participants who recognized this level of autonomy was a potential barrier to learning progress if not managed appropriately. The very integral aspect of the asynchronous online learning environment perceived by study participants as important to managing assignments and time in an asynchronous online course was viewed as a challenge to learning progress in the course.

That participants thought that continuous access to the course was beneficial to independent learning but underscored the challenges of self-regulation. The findings showed that students felt that if they did not manage access according to a schedule or did not control time spent on the course, this unlimited access could be a barrier to their learning. In a transition period where Covid-19 restrictions have been lifted and students are no longer strictly at home but have to attend to other responsibilities, the stress of managing time differently resulted in procrastination in attending to and difficulty coping with the requirements of asynchronous instructions. The course observations and participant interviews underscored the benefits of purposeful student-content interaction, effective time management and intentional behavioral regulation to managing the learner independence that was necessary to manage unrestrained access to the course content.

Subtheme 1: Student-Content Interaction. Student-content interaction refers to the students' engagement with and use of the course content to advance learning in the asynchronous online environment. The findings of the asynchronous online course observations, confirmed by the interviews with the study participants, showed the importance of student-content interactions in the asynchronous online course which consisted of modules organized in an LMS and links to a digital learning platform. Since

the content was the primary avenue for course interaction, the instructor's ability to create organized and engaging content impacted study participants' experiences in the course. The findings further revealed that the level of student interaction in the course was an important factor in student progress and that course participation impacted students' experiences. Students' interactions with the course content such as engagement with course presentations, demos and practice exercises were important components particularly for more advanced course concepts.

The study participants perceived that the resource- and content-intensive nature of the asynchronous online course can provide the information necessary to facilitate learning but can also impede learning progress as result of students delaying access to the course, procrastinating on due assignments and postponing decisions to seek necessary assistance. The findings showed that consistent and timely interaction with the course needed to be prioritized and that student-content interaction was considered the most important engagement component for a course in this specific format. The participants felt that because this was an asynchronous online course, consistent and timely engagement with the course contributed to positive student experiences.

Pio* a Business major, freshman enrolled in the course as an elective highlighted the importance of interacting with the course content to manage the course load.

“It was important for me to log in a few times a week, to see when my classmates were commenting, to work on my assignments and to look for feedback from the professor, who gave feedback every week.”

Olivia*, a sophomore majoring in Homeland Security, enrolled in the course as a computer science requirement emphasized the importance of engagement with the LMS

and the online learning platform.

“And I did use LMS and the online learning platform for all the assignments and I did find it fairly easy. It was broken down into separate sections. There was a learning segment and an applying segment and then a study segment. So going through the segments definitely made sure that I had 100% grasp on what I was doing. So when it came time for tests, I knew what I was doing, and I was able to ace the tests and fly through without any hesitation”

The findings underscored the importance of student-content interaction to managing the course load and showed that this interaction positively enhanced students' experiences in the asynchronous online course especially in a technology-driven course facilitated by an LMS and an online learning platform. The study participants highlighted that the continuous access to the content for the entire semester precipitated the need for time-management in the course to construct knowledge and complete assignments.

Subtheme 2: Time-Management. The participants in the study underscored the importance of time-management to manage independent learning, the basis of asynchronous online courses. The participant interviews revealed that the autonomy that is so appealing in asynchronous online courses can hinder the accomplishment of course requirements and assignments. Interview participants highlighted the importance of the syllabus page in the LMS to track due dates and the merit of creating a schedule for managing course requirements. The study participants revealed that the intensity of the content in the asynchronous online course underscored the importance of interspersing tasks throughout the week before the submission deadline. Further, the instructor providing access to all modules and assignments at the beginning of the course allowed

for time and schedule management.

When asked about the course load and the time allocated to learning the content and completing assignments, Gia*, a Legal Studies major for whom this was a program elective, expressed the importance of creating and maintaining a course management and tracking schedule to assist with management of the online course assignments.

“At first, it was a little much because they were about seven assignments to begin with. And I really hadn't set myself a schedule. It was a little overwhelming. I definitely had to spend a lot of time trying to get all the work done on time. But as the semester went on, the assignments got more manageable. The workload was a bit more manageable with a schedule.”

The finding showed that students who identified the importance of creating a time-management schedule early in the course had more positive experiences. This was highlighted by Jade* a freshman majoring in Administrative Studies who was able to get back on track and have a positive experience in the course after creating a schedule.

“The first two weeks, I didn't really know how to manage my time. I was still trying to get the hang of the course. And it was a lot. But after that, I just started scheduling and doing assignments earlier. I would do an assignment in the previous week. I would do an assignment each day for the next week. All the assignments were due on Tuesdays of each week. I would start doing the assignments ahead of time each day, then on the Tuesday, I would only have about two assignments that I had left to complete. Doing it that way, I was able to balance my time instead of trying to complete everything on one day. This way it was much easier to manage.”

Allocating time to learn the course content and complete the assignments were key findings that highlighted the requisite student time-management required for learning progress in an asynchronous online course. The study participants highlighted that to be effective at time-management in an environment characterized by autonomy, students needed to employ different self-regulation techniques to stay on schedule in the course.

Subtheme 3: Self-Regulation. The interview participants emphasized the importance self-regulation in the asynchronous online course and how self-monitoring, self-instruction and self-reinforcement, all components of self-regulation, impacted their experiences in online courses. The study participants underscored the importance of goal-setting and organization to managing the course load and ultimately, learning with minimal intervention in an asynchronous online environment characterized by self-instruction. Participants revealed that their experiences with the extensive course load, characteristic of online course and very evident in the asynchronous online, introductory computer science course in the study, can not only be overwhelming but can impede learning in an asynchronous online environment. The participants highlighted the importance of the goal setting, information transformation and assignments analysis to maintaining focus in the course. The findings showed that factors such as a syllabus page with assignments and due dates and a rubric that outlined the expectation for each assignment facilitated self-regulation. Violet*, a senior student emphasized the importance of self-regulation to maintain a positive experience in online course.

“In the beginning, I was able to manage my time but it became very challenging to maintain focus in the course as the topics got harder. Finding time to complete the practice drills was harder and turning in the assignments on time was more

challenging. I was definitely distracted by other things at work and at home and needed to work on staying focused.”

The findings highlighted the importance of self-regulation to maintaining engagement in the course. Further, Chloe* and undecided major who enrolled in this course as an elective suggested that assignment submissions could have been better managed through early and consistent assessment of weekly progress relative to required weekly course requirements.

“I sometimes felt like I needed additional time, if I waited until the last minute and if there were a lot of assignments that week. For some of the assignments, I would submit after the due date. The professor accepted late assignments, but there were a few points taken off for late assignments that I should have been able to do on time.”

Further, whether it was completing an assignment on time, participating in a discussion or securing the required grade on an assignment, the study participants indicated that self-regulation allowed them to review their learning goals, organize information, evaluate their learning progress and make the requisite adjustment required for the attainment of their learning goals.

The study was intentional on focusing solely on the experiences of student but in addition to the student-controlled factors that supported the independent learning, including student-course interaction, time-management and techniques for self-regulation, the findings also identified instructor-controlled factors that impacted students’ experiences. The study participants highlighted the importance of instructor engagement specifically, instructor accessibility, modeling and feedback as key

components that impacted how student interacted with the course content and how they were supported in the online environment.

Theme 2: Instructor Engagement

Instructor engagement refers to the instructor's ability to enable and model interaction in the online environment. The findings showed that this was particularly important to the students in an asynchronous online course since there were no regularly scheduled lectures or interactions with the instructor. The study participants all felt that the level and type of instructor's engagement shaped their experiences in the online course. The interview participants underscored the importance of instructor engagement to defining course requirements and to reducing ambiguity of course assignments. Instructor presence in the discussion was also highlighted in the findings.

Subtheme 1: Instructor Accessibility. The online course observations showed some student-student interaction in the course but although students valued the community of inquiry established by peers in the discussion posts, the interview participants assigned greater emphasis on instructor presence and accessibility during the semester. Instructor presence in the course resulted in increased communication regarding weekly assignment requirements and kept students on track. Instructor's identification of instances where students deviated from the requirements, clarification of the grading rubric and affirmation to students meeting or exceeding course requirements contributed to positive student experiences and kept students engaged in the course. Further, instructor availability to communicate with student, to respond to questions and to assist in the resolution of issues were important factors to the course experience in an asynchronous online course. Pio* emphasized the importance of the instructor

accessibility to assist with the resolution of technical issues in a course enabled by technology.

“The instructor was very available for assistance or to answer questions or to direct you to the right support. There were a few times I was having issues with my online connection to the software. He connected me to the support team. I called them and they answered right away and helped me. Using a secure remote support software to establish a remote connection into my computer, they were able to fix it. This ability to have a remote connection to solve technical issues was very important since this was an online course. This happened at least two times this semester. It is helpful that when you email the professor, you got an almost immediate response.”

The findings showed that an instructor who was available via, online discussion or via email in the LMS, to provide assistance to students or to respond to questions enhanced students’ experiences in an online course enabled by technology. Further, the participants highlighted that instructor accessibility also impacted instructor engagement particularly instructor modeling and feedback in a course facilitated by technology. It was important to the experiences of students that they were able to see how the instructor interacted with the online content and that the instructor provided information on student progress against the requirements of the course.

Subtheme 2: Instructor Modeling and Feedback. Instructor modeling emerged as an important factor to students’ effectiveness at managing assignments, gauging learning and tracking progress in the course. The study participants discussed the importance of instructor’s presence and felt that the ability of the instructor to enable and

model engagement through participation, feedback and grading was important to their experiences in the online course. The interview participants noted that increased level of instructor modeling and feedback were integral to their ability to manage assignments and track progress in the course. Rose*, a legal studies major taking this course as an elective, underscored the importance of instructor's presence and feedback.

“The professor notice that on one assignment, I misunderstood the instructions and immediately reached out. Instead of sending the actual project, I sent the summary report from the online learning platform. The professor was understanding and fair, there was no hesitation with communication. This made it a lot better, especially since I didn't even need to notify the professor. The professor noticed that my work was missing and contacted me.”

Although students felt that the student-student interaction made the experiences in the course more relatable, the findings showed that students valued the student-instructor interaction. The subject matter of this introductory computer science course as well as the intensity and load of the asynchronous online course was not conducive to establishing the community of learning with other students. The study participants acknowledged that the interaction between students created a community of inquiry where students were able to share their experiences and relate to other students with similar challenges or successes. However, although the participants recognized that student-student interaction was helpful in alleviating the isolation that can be experienced as part of an online course, they confirmed that student-student interaction was limited to a very specific and small part of the course, the discussion posts, and was not perceived as valuable as the student-instructor interaction. Wynn* a Legal Studies major enrolled in the course as an elective,

emphasized the significance on instructor modeling over student interaction.

“Our interactions with other are basically through discussions. And we just basically answer each other's discussion posts. We just say what we think after reading the other person’s discussion and I think it's not that helpful. It's just okay. I think that it would have been more helpful if we could ask, the instructor or other students, questions and the instructor or other students responded to peer questions. So, in the discussion posts, provide an opportunity to ask questions which would have been more interactive.”

This findings regarding the value of instructor modeling over student interaction was also supported by the course observation of the discussion posts. The study findings showed that it was important to establish a community of inquiry centered on the course instructor. Students also felt that the emphasis on student-instructor interaction during discussion posts and projects contributed to positive experiences with the course. Instructor modeling extended the community of inquiry and provided an avenue for students to comprehend the course requirements, understand when they deviated for an assignment and recognize when they were on track with course objectives.

The implications of instructor engagement highlighted in the study, also showed how instructor accessibility, modeling and feedback were enabled by online course design. The findings demonstrated that online course design can be leveraged to enable student-instructor engagement in an asynchronous online environment.

Theme 3: Online Course Design

Study participants underscored how the perceptions of navigability and ease of use of the course affected their experiences in online courses. Students reported that

highlighting student training modules for the LMS in the initial course announcement and providing user guides for the supporting learning technology in the course home page increased their perception of navigability and ease of use. Further, the design of the online course, including the organization of the pages and the layout of the modules, affected the navigability and ease of use and impacted students' interaction in online courses. A well-designed course with structured modules and pages in the LMS as well as effective and functional links to the supporting instructional technology contributed to navigability and ease of use in the course.

Subtheme 1: Course Organization. The document analyses and the course observations provided an opportunity to navigate through the course, from the instructor's perspective and from the student's view, to review the way the course modules, pages, discussions and assignments were organized. The study participants emphasized the need for navigable course organization and an intuitive, easy-to-use LMS and technology platform in supporting a course format that allowed access by the students at different times based on their specific schedules. The students also highlighted the relevance of organizing the course in the LMS so that the instructions and the labs, necessary for this specific online, introductory computer science course, were integrated with the online learning platform. This integration supported a seamless transition from the LMS to the online learning platform and was critical factor that impacted how students managed learning in the online environment.

Gia* a legal studies major, who enrolled in this course as an elective, expressed that since this was a more technical course that included an online textbook and links to an online learning platform, it would have been a lot harder to learn online if the course

was not well-designed and organized.

“Course design is very important, because it definitely helped when I'm trying to see what's due. It helped me keep on track, so I'm not missing any assignments.

The organization of this particular course was very good because everything was posted with due dates on the calendar. I could always check that to see if I was missing anything or to see what I needed to do.”

One of the study participants, Chloe* articulated how course organization helped her to manage the assignments.

“Having the assignments laid out was really helpful, because if I had a lot of work for my other classes for the following week, I could see how many assignments were due for this class, kind of plan it out and decide if I needed to address the assignments in this class earlier.”

The findings showed that participants credited course organization for being able to easily find and manage course information in the LMS and the online learning platform. In addition, an organized course in conjunction with a modular course layout facilitated navigation in the course.

Subtheme 2: Course Layout. The findings showed the layout of the modules in the LMS supported the autonomy necessary for participation and learning progress in an asynchronous online course and was even more relevant in a course that was technology-intensive. The course primarily reviewed four different application software and the findings showed that students valued that the course included well-defined objectives that mapped to distinct modules for each application software. The findings showed that the modular course layout advanced student autonomy and self-instruction and was

associated with the students' abilities stay on schedule, to revisit past components or to advance to upcoming components. Finn*, a freshman with an undecided major outlined the importance of course layout to completing the assignments in the course and highlighted course layout as an important factor that influenced experiences in the asynchronous online course.

“I always thought that the discussions were pretty straightforward because they were labeled differently in the LMS. If something was an assignment that I had to use via the online learning platform, it was labeled differently. I was able to figure out what were the discussions and what were links to the online learning platform. And even on the page itself, there were separate tabs for the modules. It definitely did make it easier for me to find everything.”

The study participants also attributed a modular course layout to balancing the load of this course with other commitments. Olivia* attributed the course layout for finding information on the weekly modules and for understanding the weekly requirements.

“It did make school a little bit easier since I am working fulltime. It helped relieve the stress of having to do homework knowing that I had everything there laid out for me. I just had to log in and do the assignments.”

Gia* also emphasized the importance of the layout of distinct components of the course to track progress against the course requirements.

“The organization of the syllabus page with due dates was quite helpful. I did not have to keep referring back to the syllabus file to see where I was with the course assignments. The syllabus page in the LMS broke it down for you, so I could see

the due dates for each assignment.”

The findings showed that accessibility and ease of navigability of the course were attributed to the course organization and the module layout. Course design was significant to implementing and supporting the instructional technology by ensuring the effective integration of the LMS with the online learning platform.

Theme 4: Instructional Technology

Using an LMS and an online integrated learning platform emphasized the importance of instructional technology in the asynchronous online course. The observation, document analysis and participant interviews highlighted the roles of the LMS and the instructional technology in supporting this specific introductory computer science course in an asynchronous online format. The findings from the different data collection methods highlighted the intentional use of the instructional software in enabling the online instruction and in supporting student learning. The use of instructional technology, specifically the LMS and online learning platforms, was a significant factor in the implementation of the constructivist approach in the online environment and transformed how students interacted with the course content and subsequently, impacted how students constructed knowledge.

Subtheme 1: Navigability. The findings showed that the effective use of technology affected the navigability and ease of use and affected students’ experiences in online courses. An LMS that was easy to access and links that were functional provided for a more positive student experience. Navigable course content with operative and effective links provided an online platform that allowed students to meet their learning goals. The findings also showed that implementing supporting technology with practical

links enabled the instructor to facilitate understanding of more complex concepts and supported students' learning effectiveness. The ability to navigate the instructional technology, the LMS and online learning platform, with minimal hindrances enabled the constructivist approach to learning that is so important to the learner autonomy in asynchronous online courses. Pio* a freshman highlighted the importance of ease of navigability in a course enabled by technology.

“It was really easy. If you just went to the online textbook, everything was right there. It was very easy to access. Once you clicked the link, you were able to navigate to the module for the week which had the step by step instructions that we needed to do for that week. That was very helpful.”

The findings demonstrated that intuitive technology supported ease of navigation and increased student's confidence in accessing and using the online learning platform to facilitate the completion of the instructional and assessment components of the course.

Subtheme 2: Usability of Online Learning Platform. The findings from the different data collection methods highlighted the intentional use of the learning software in enabling online instruction. The finding showed that the instructional technology facilitated student engagement in the online environment and supported the level of learner autonomy required in the online course. The online learning platform allowed the instructor to include engaging assignments that advanced student learning progress. The study participants all highlighted the use of the online learning platform as integral to practicing technical skills and reported that the practice modules in the online learning platform contributed to positive experiences and to learning. The study participants confirmed that the usability of the learning platform was a significant factor that

contributed to their experiences. The usability of the learning platform allowed for construction of knowledge by providing by access to the practice modules and assignments which in turn enabled students to engage in more independent learning, complete assignments more effectively and get better grades.

The findings highlighted that the unique use of the instructional technology employed in this course was particularly useful. Rose*, a legal studies major who enrolled in this course as an elective, confirmed the implementation and usability of the learning platform as a significant factor that contributed to positive experiences in the course.

“The online learning platform was very easy to navigate, especially when the professor notifies you of what you're specifically doing and everything is broken down. I really preferred using the online learning platform over the LMS to go through the assignments. I think it worked better especially since this was a computer science course. Of course, for a different course like philosophy it may not be, but it was really beneficial when learning computer science.”

The findings also emphasized that the practicality of the online learning platform, including clear instructions for use, was valuable in an introductory technology course like this asynchronous online, computer science course. Chad*, a freshman who initially had difficulty finding the assignments emphasized how the instructions on how to use the link to the online learning platform facilitated access and instruction.

“At first, I thought it was a little difficult to find the projects. But then, as I got used to it, I started to find them quicker and easier. I actually read the modules on the learning platform and it really helped me to get through the assignments,

which were not that easy. Once I got used to using the software, it was easier and easier each week.”

The findings highlighted that the instructional technology employed in this course, although operational in different academic courses, was particularly functional as employed in this course. Jade* indicated that understanding how to use the instructional technology enhanced her learning experience in the course.

“I feel like the instructional technology was more hands on than the discussion posts, which had mostly articles and videos. Actually, in the online learning platform, it was like putting what you watched and read in the discussion posts into action. I felt it actually was where the learning was, where I would say I was able to learn.”

The findings highlighted constructivism in asynchronous online learning and the role of independent student learning for knowledge construction an environment facilitated by technology. The finding also highlighted the role of the constructivist instructor enabled by instructor’s accessibility, modeling and feedback. The findings further highlighted the facilitatory role of the instructor in designing a course that was organized with a modular layout and facilitated understanding of the course instructions and assignments. Finally, the study highlighted how the intentional use of instructional technology can extend classroom boundaries, provide access to diverse students and allow remote learners to engage in knowledge creation.

Conclusion

The students’ experiences in the asynchronous online course depended primarily on independent student learning, interactions with the instructor, effectiveness of the course design and navigability of the supporting instructional technology.

The findings supported the literature which showed that in online learning courses, specifically in asynchronous online learning courses, students experience learning in ways that are more abstract and require a certain level of accessibility to support their independent learning. The findings highlighted that while learning goals are achievable in an asynchronous online environment, independent learning and self-regulation are necessary for making the learning connections and tracking learning progress. Student engagement was driven by the ability to connect with the instructor, via communication tools such as email and discussion posts. Further, the ability to interact with the course highlighted the importance of the course design in creating an accessible and navigable online environment. Finally, access to the supporting technology in online learning, specifically in asynchronous online courses, may be more difficult to navigate and it is important that instructors create an online environment that is supportive of students as they develop new skills.

The findings showed that instructors have to be intentional about the use of instructional technology in course design and in modeling engagement in an environment, enabled by technology with no physical co-presence. Although students were responsible for their learning management and self-regulation in an asynchronous online environment, they experienced learning when the instructor designed a course that facilitated learning and implemented technology infrastructure that enabled interaction.

CHAPTER 5

Introduction

The study was a qualitative descriptive case study that examined the commonality of the experiences of students enrolled in an asynchronous online, introductory computer science course. The study also explored the factors that impacted students' perceptions of their experiences in the online environments. A qualitative research of a single case was used to describe students' lived experiences and their own voices were used to highlight the experiences and reflections throughout the findings. The unit of analysis for this research study was the experiences of a heterogeneous group of students enrolled in an asynchronous online, introductory computer science courses in the professional studies college at a private, urban higher education institution.

Guided by the rationale for the study from chapter one and the theoretical framework and the literature review outlined in chapter two, chapter three outlined the research methodology, the description of the participants and the data collection procedures of the study. The description of the case as well as the findings which highlighted four emergent themes from the data analysis – Student Independent Learning, Instructor Engagement, Online Course Design and Instructional Technology – were outlined in chapter four.

The study addressed two research questions. The first research questions explored how undergraduate students, enrolled in the professional studies college at a private, urban higher education institution describe their experiences in online courses. The second research questions explored the factors that shaped the experiences of these undergraduate students enrolled in online courses in the professional studies college at a

private, urban higher education institution. Chapter 5 presents the interpretation of the findings, the relationship to the prior research, the limitations of the study and the implications for the future practice and research.

Interpretations of Findings

Research Question 1

The first research question examined the experiences of students enrolled in online course in the professional studies college at a private, urban higher education institution in the Northeast United States. The data analysis showed that asynchronous online learning environments can facilitate the constructivist approach to knowledge creation. Constructivism posits that learners actively construct knowledge instead of passively assimilating information presented in the learning environment and the independent learning highlighted by the study participant was beneficial for active involvement in knowledge construction and ultimately learning. In asynchronous online courses, students who exhibit the characteristics of constructivist learners had more positive experiences and advanced learning goals.

In an asynchronous online course, independent learning fundamentally changed how student engaged, conceptually and intellectually, in the course in the absence of physical co-presence. In this type of course format, students approached learning conceptually and are focused on knowledge creation that would contribute to successfully course completion. In asynchronous online environments, a more proactive approach to learning characterized by purposeful student-content interaction, effective time management and intentional behavioral regulation were important to the learner independence, necessary for managing the unrestrained access to the course.

Instructor engagement was also important to students' experiences in online courses. Students enrolled in online courses, especially asynchronous online courses, required an engaging learning experience that provided structured opportunities for interacting with the course content. The ability of the instructor to model behavior and to create an online environment where students actively participated in their own learning impacted the experiences of students enrolled in online courses. In an environment characterized by autonomy, instructor accessibility, modeling and feedback addressed some of the challenges related to self-regulation and time management. It was important to students in the online environment, that the instructor was engaged and focused on creating student-centered content that facilitated knowledge construction.

Instructional technology, used as a tool in the learning process, advanced the constructivist approach and gave students the latitude to determine which information was required to complete assignments. The intentional use of instructional technology to design an online environment that was less nebulous and more focused on the construction of knowledge where students can actively manage and participate in their own learning, allowed students to experience learning in a more defined and structured way. However, although the instructional technology used in asynchronous online courses can extend the boundaries of the course and increase accessibility, it can also amplify the breadth of learner diversity. Therefore, it was important to the experiences of students in the asynchronous online course that the courses were well designed and provided adequate opportunities for engagement despite learner skill level.

Independent learning, instructor accessibility, navigable course design and the intentional use of instructional technology provided students with the ability to surmount

the challenges associated with unlimited access, time constraints and flexibility. These factors influenced how students gauged progress in the course, how they initiated the appropriate self-regulation strategies to stay on track and ultimately how they experienced learning.

Research Question 2

The second research question focused on the factors that shaped the experiences in the online course. Components of the online course that enhanced presence in the course and provided a comparable experience to being physically present at a particular day and time, as in synchronous courses or at a set location as in the traditional course format, were important factors that influenced students' experiences.

One of the main factors that affected the experiences of students in the online environment was early and continuous access to the course materials. The asynchronous online courses offered unparalleled opportunities for students to participate in a learning environment, anytime and anywhere. Having 24-hour access to the course for the entire semester supported independent learning and promoted participation and engagement. However, the unlimited access that students valued in asynchronous online courses, was also a factor that had to be managed to keep students focused and on track in a semester bounded by time. Although positively evaluated, the continuous access was also a crucial factor that was not conducive to learning in the absence of self-regulation factors such as self-instruction and self-monitoring. Unlimited access and learner autonomy, significant factors of the independent learning associated with asynchronous online learning, were potential barriers to learning progress, if not managed appropriately. Further, the perceived lack of time constraints and the associated lack of urgency exacerbated the

need for a structured schedule that supported the constructivist learning, characteristic of learners in online environments.

Other factors such as instructor's communication and interaction also created supportive experiences for the students in the course. The instructor's constructive feedback, timely grading and availability to support students were viewed positively by the students. Students had positive learning experiences when they were advised on their progress in the course and were able to find assistance when necessary. In addition, the availability of the instructor to provide access or to direct students to informational technology support for the LMS and software support for the online learning program positively contributed to students' experiences.

Factors associated with course design such as navigable links, defined modules and instructional support reinforced learning progress and limited the access challenges attributable to poor course design. A learning management system that supported efficient and modular course design was one of the main factors that enhanced learning progress. The inclusion and accessibility of comprehensible user guides and introductory tutorials in the LMS were key factors that impacted the effective use of instructional technology in an online course.

Factors associated with the supporting instructional technology also emerged as valuable to the learning experiences of students in online environments. The use of an online learning software was deemed beneficial in this technology-driven and skilled-based online course. The productive use of an online learning platform to support instruction in an asynchronous online course was not only the practical use of the platform's software and the relevance to the subject matter of the course but the

intuitiveness and navigability of the online learning platform. The usability of the learning platform was a significant factor that contributed to students' experiences because it allowed students to practice technical skills prior to completing assignments. An online learning software designed to create engaging experiences with online textbooks, practice tools and study software highlighted the importance of interactive education technology in supporting independent learning.

Implication for Theoretical Framework

The study was guided by the Constructivist Learning Theory. As presented in the review of the conceptual and theoretical framework in Chapter 2, the design of online learning has historically been technology-driven as opposed to student-centered.

However, the advancement of instructional technology has made it much easier to implement instructional technology in support of online learning to extend classroom boundaries and provide access to diverse learners.

The study provided an additional opportunity to further explore the constructivist framework and extended the research on constructivism, in the context of online learning, on how learners actively construct knowledge in environments characterized by the absence of physical presence.

The findings highlighted the learner-centered approach of constructivism where learners have ownership of knowledge creation and learning, and instructors create a communicative and collaborative environment conducive to this knowledge creation. The findings suggested that the constructivist model does provide a theoretical basis for understanding the role of students, instructors, course design and instructional technology in online environments, particularly in asynchronous online environments where the

tenets of constructivism is significantly highlighted. The findings further showed that the theoretical concepts of cognitive and social constructivism can explain the scaffolding support required to construct knowledge in a technology-enabled environment. The theoretical applications of co-constructions of knowledge, the role of the instructor in enabling understanding and the use of technology in allowing for deeper reflection in the construction of knowledge were present within the findings and aligned with the tenets of cognitive constructivism. The findings also aligned with the theories of social constructivism and highlighted the role of online interaction in allowing for deeper understanding and facilitating more diverse perspectives. The study provided an example of the facilitatory role of the constructivist instructor in enabling organization, social and intellectual interactions.

Relationship to Prior Research

This research study supported the findings of the existing research reviewed in the literature on learning in online environments. Similar to the prior research, the findings of this study highlighted the importance of independent learning, instructor accessibility, online course design and the intentional use of instructional technology in supporting student knowledge creation in online environments.

Engagement in the Online Environment

The prior research on engagement in the online environment suggested that, in an online course, the nature of the interaction is different due to the lack of presence in the same physical space (Schrader, 2015). The engagement highlighted in the prior research was supported in this study. Student-course engagement, highlighted in the findings on independent learning, and student-instructor engagement, highlighted in the findings on

instructor accessibility, supported the research literature which underscored the importance of engagement to students' experiences in the online environment. Similar to prior research (Blackmon and Major, 2012), this study showed that student engagement enabled knowledge construction and instructors' engagement established presence in the course. However, contrary to prior research (Jaggars and Xu, 2016), although student-student interaction made experiences more relatable, the avenues available for peer interaction reviewed in this study did not create a learning community that was important to students' experiences.

Online Course Structure

The findings of this research study also highlighted the importance of modular course design which was presented in the literature review of research on online course structure (Yang & Cornelius, 2004). The study supported the finding of prior research (Gray & DiLoreto, 2016) which showed that designing a course, with the level of interaction and accessibility required for online courses, was important to the learning experiences of students in online courses. In the absence of physical presence, the role of the instructor was to facilitate an academic environment that reinforced students' interaction with the course and supported students' conceptualization of the course content (Armstrong, 2011).

The Role of Technology in Online Instruction

The intentional use of instructional technology highlighted in this study, supported the findings from previous research. This study validated the existing research on the role of technology in the online environment (Rubin et al., 2013), which posited that instructional technology altered the way in which the course content is delivered,

changed how students interact in the course and enhanced how students learnt. However, the findings in this study further highlighted the use of instructional technology in enabling the constructivist approach to learning. The instructional technology used in the course, particularly the accessibility of the online learning platform in practicing drills and completing assignments highlighted the scaffolding support necessary for actively constructing knowledge in environments enabled by technology (Hmelo-Silver et al., 2007).

Learner Autonomy

The student's ability to create structure and to employ the self-regulation tools, emphasized in the prior research on the role of learner autonomy in online learning (Landrum, 2020), were also highlighted in this study. The consistent student-course interaction, effective time-management approaches and effective self-regulation strategies were important to students in an environment characterized by a high level of autonomy. Further, the findings of this study on independent learning, in an environment with continuous access to the course material, supported the findings of prior research (Fotiadou et al., 2017), which showed that independent learning is reliant on learner-centered approaches that are reinforced by the instructor.

Limitations of the Study

The subject matter of the introductory computer science course lends itself to online engagement and students taking a computer science course may be more comfortable in an online environment. Further, because the focus was on one specific course and the experiences of the students in that course, the study may be difficult to replicate. Faculty design their syllabi and modules based on varied factors, such as the

way they were trained, how they want to teach or the type of course they teach, which may not be replicated by other instructors. Outside of syllabus language, comparing an instructor's intent or their perception of student engagement was outside the scope of this particular study.

In addition, the instructional technology employed in this course, although functional for different courses across academic disciplines, may be implemented differently based on the academic course where it is used. Further, students enrolled in the same course with a different supporting software or no support software may have different experiences. Although this limited the scope in that data from participants from other courses could generate additional findings, the findings from the study was helpful in understanding the nuances of students' experiences in similar situations. While it may not be replicable, it can inform the study of other online courses or other participants in online environments.

The smaller sample size was also a key limitation of the study since the research studied the experiences within a specific population of students enrolled in an asynchronous online, introductory computer science course. As is common in most qualitative studies, the findings are not generalizable to a larger population, because of the focus on one specific class. Data from additional participants may generate additional themes and findings.

Finally, the inherent limitation of the online learning platform and the technology can limit the findings. Although designed to accelerate student learning and success by creating engaging experiences with online textbooks, practice software and study tools, the features of an online learning platform are course-specific and so the

findings on the role of independent learning, instructor accessibility, modular course design and intuitive instructional technology observed in this asynchronous online, introductory computer science course may not be replicable in other online courses.

Recommendations for Future Practice

The study explored the experiences of students enrolled in asynchronous online courses and the factors that shaped these experiences. Based on the finding, the following recommendations are appropriate.

Intentional Design of Online Courses

The study found that, no matter the reason for enrolling in online courses, student approach the courses in one of two ways – intellectually or strategically. The students, who approach the course intellectually have typically identified the value of the course to their long-term career goals and are in pursuit of knowledge creation. These students are looking to the instructor, course design, and instructional technology to support this knowledge creation. The students who approach the course strategically have already identified that the course is not necessarily related to career-goals and are primarily looking to complete the course with minimal effort and time. It is important that faculty and instructional course designer understand the relevance of the course to the different types of students who characteristically enroll. Designing an online course that understands the approaches of diverse students but geared towards knowledge creation will ensure that both classifications of students engage and learn in the course.

Ultimately, this means designing online courses that use a modular layout in the LMS to create structure and utilizing intuitive instructional technology to enhance engagement instead of developing courses that are derivatives of a traditional course format.

Collaboration between Faculty and Instructional Designers

Faculty are scholars in the academic discipline. Instructional designers are specialists in developing engaging courses that support online learning. Collaborations between faculty and instructional designers in the initial online course design and in the subsequent reviews of existing online course designs will combine the subject matter of the academic discipline with the foundational models of instructional design. This collaboration can enhance the integration of course content and instructional software platforms for the specific course type – asynchronous online, asynchronous, hybrid. This collaboration can result in designing student-centered and user-friendly online course content that is intuitive and navigable in the online platform that is meant to support the course.

Focus on Faculty Development and Oversight in Online Courses

The strength of faculty is in their academic discipline. The preferences and requirements of online learners have changed dramatically in recent years and it is important that faculty understand how to navigate this evolution. Training that focuses on online course design, allots time for product knowledge and designates sandboxes or testing environments where faculty can hone their skills in online course design, in the LMS and in the instructional technology can certainly advance how faculty approach and successfully design online courses that enhance students' experiences and support their learning goals. Further, this specific training in conjunction with formal faculty structures that provide oversight of instructional course quality can advance faculty's understanding of the nuances of the LMS, online learning platforms or instructional technology used in their courses.

Recommendations for Future Research

This study focused on the students' experiences enrolled in asynchronous online, introductory computer science courses. The subject matter of an introductory computer science course lent itself to specific engagement with the course content and the online learning platform for successful outcomes in the course. As a result, there are many opportunities for future research to build on the results from this case study.

The current study could be extended to include an additional case focused on the experiences of faculty who teach the asynchronous online, introductory computer science courses that was central to this case study. Understanding the role that the analytics from the LMS and online learning platform plays in instructor engagement, communication and modeling would be an important recommendation for future research. This would provide additional insights to understanding how instructors use the metrics from the LMS and online platform to understand student engagement and as justification for student outreach. This may further provide insights into how instructors can support the independent learning that is central to cognitive learners in asynchronous online environments.

Further, extending the cases to other forms on online learning such as synchronous online courses and hybrid courses would identify whether the factors presented by the participants' interviews and identified by the course observations are applicable to other online formats. Research on different online formats would help in identifying the singularity or generalizability of each learning format which would be instrumental in designing online course that support independent learning.

Finally, extending the research to other courses that are not technology intensive

would provide insights into whether the themes and factors that emerged are similar in studies of other online courses. Extending the research to non-technology based courses would provide an understanding of how students experience learning in online courses design by faculty from varied disciplines. The research of online course design and engagement in online environments by faculty from different disciplines would provide additional information on how online courses are designed, how instructional technology is used and how faculty engage and communicate with students to support independent learning. This would provide additional information to researchers on which approaches from the different disciplines are perceived by student as advancing knowledge creation in technology-enabled environments with no physical co-presence.

Conclusion

The study showed that there is an inherent benefit of hearing from students' experiences, particularly since universities are increasingly providing additional online course offerings. The study suggested that student interaction and engagement are different in an environment enabled by technology with no physical co-presence. Although the accessibility of the online environment can allow students to construct knowledge, students can also struggle with the self-direction and self-regulation necessary for making learning connections. In addition, to advance learning communities in an online environment, the instructor must be accessible to model interaction and provide feedback. Further, designing a course that is effectively integrated with instructional technology allows students to adequately access and process the information necessary to complete course requirements. Positive experiences in the online environment are dependent on independent student learning, purposeful interaction with

the course content, deliberate time management and conscious application of self-regulation skills.

APPENDIX A: IRB APPROVAL



Federal Wide Assurance: FWA00009066

Oct 25, 2021 11:08:40 AM EDT

PI: Glenda Lugo
CO-PI: Ceceilia Parnther
Ed Admin & Instruc Leadership

Re: Expedited Review - Initial - **IRB-FY2022-87** *A Qualitative Case Study of Students' Perceptions of Their Experiences in Undergraduate Online Courses*

Dear Glenda Lugo:

The St John's University Institutional Review Board has rendered the decision below for *A Qualitative Case Study of Students' Perceptions of Their Experiences in Undergraduate Online Courses*. The approval is effective from October 22, 2021 through October 21, 2022.

Decision: Approved

PLEASE NOTE: If you have collected any data prior to this approval date, the data must be discarded.

Selected Category: 7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Sincerely,

Raymond DiGiuseppe, PhD, ABPP
Chair, Institutional Review Board
Professor of Psychology

Marie Nitopi, Ed.D.
IRB Coordinator



APPENDIX B: LETTER OF CONSENT

You are invited to participate in a study on students' experiences in online learning. The purpose of the study is to examine the factors that shape the experiences of students enrolled in online courses at the professional studies college of a private, urban university in the Northeast United States. This study will be conducted by Glenda Lander Lugo as part of her doctoral dissertation in The School of Education at St. John's University. Her faculty sponsor is Dr. Ceceilia Parnter, Assistant Professor, The School of Education at St. John's University.

As part of this study, I will be interviewing undergraduate students enrolled in an asynchronous online, introductory computer science course with a professor in the professional studies college. If you agree to participate, you will be asked to participate in one interview, which consists of a series of open-ended questions regarding your experiences in the asynchronous online course. You may also be asked to participate in one additional follow-up interview for further verification of your responses. The document analyses, interviews and asynchronous observations will be conducted in fall 2021. The interviews will be conducted remotely via audioconferencing and will last approximately 45 - 60 minutes. The recordings and transcripts, enabled during the interviews, will be encrypted and stored on a secure, password-protected OneDrive and access, after the interview has ended, will be limited to the Principal Investigator.

The information acquired through this study seeks to inform the design of future online courses. Participation in this study is voluntary. You may decline to answer any question and/or discontinue your participation at any time. There are no personal benefits

to participating in this study and there are no perceived risks to participating in the study. Nonparticipation or withdrawal will not affect your grades or academic standing. Confidentiality of the research records will be strictly maintained. Your individual identity in the audio recordings, transcriptions and publications will be kept anonymous and separate from the consent form. The course information will be redacted to protect the identity of the faculty and participants. The data will be retained until the completion and/or publication of the study, will be encrypted and will be stored on a secure password-protected computer available only to the Principal Investigator. You may contact the Principal Investigator, if you are interested in securing a copy of the results.

If you have any questions regarding your participation or the study, you may contact the principal investigator, Glenda Lander Lugo at 718-990-2065 or landerlg@stjohns.edu or the faculty sponsor, Dr. Ceceilia Parnter at 718-990-1305 or parnthec@stjohns.edu. For questions about your rights as a research participant, you may contact the Institutional Review Board at St. John’s University, Dr. Raymond DiGiuseppe at 718-990-1955, digiuser@stjohns.edu or Dr. Marie Nitopi at (718)990 1440, nitopim@stjohns.edu.

Your signature acknowledges receipt of a copy of the consent form as well as your willingness to participate.

_____ I agree to be audio recorded

Printed Name of Participant

Signature of Participant

Date

Glenda Lander Lugo
Ed.D. Candidate, Principal Investigator

Signature of Investigator

Date

APPENDIX C: DOCUMENT ANALYSIS PROTOCOL

Date/Time of Document Analysis:

Documents Analyzed:

Course syllabus
Course materials
Course assignments
Course rubric

Scope of Data Analysis:

Course Syllabus:

Inclusion of lesson plans, goals, assignments and deadlines

Course Materials:

Inclusion of required materials
Access to course files, supporting technology and links

Course Assignments:

Inclusion of assignments requirements and timelines
Accessibility of gradebook, grading criteria and feedback

Course Rubric:

Inclusion of expectations and assessments
Performance criteria
Rating scale
Indicators

Summary of Document Analysis:

APPENDIX D: INTERVIEW PROTOCOL

Date/Time of Interview:

Location of Interview:

Participants:

Thank you for participating in the study on students' experiences and online learning. The purpose of the study is to research student's perception of their experiences in online courses. The research seeks to inform the study of course design. In this discussion, I will ask you questions related to your experiences in the asynchronous online course, and the factors that shape these experiences.

Thank you for signing the electronic consent form that was emailed to you prior to this meeting. As a reminder, participation in the interview is voluntary. You may decline to answer any question and/or discontinue your participation at any time. All participant information that is discussed and course data captured during this interview is strictly confidential. By agreeing to participate in the study, you are agreeing to this confidentiality.

Questions 1 – 4 will focus on your perceptions of your experiences in the online course. In responding to question 5-12, think about what factors influenced your experiences in online courses.

1. Why did you enroll in the online course? Expand on your experience with the course format.
2. How closely was the course content, assignments and discussions aligned with the course objectives?
3. How was your experience with the online course load? Were you able to manage

your time in the course? Discuss whether you had enough time to learn course content and complete assignments.

4. What was your experience with instructor and student-instructor communication? How available was the instructor via email or online discussion?
5. What was your experience with instructor grading and feedback? Was it constructive, timely, and helpful? Can you provide some examples?
6. What was your experience interacting with other students? Discuss an opportunity you had interacting with another student. How did this influence your experience in the course?
7. How was your experience with the online course design? Discuss the layout, graphics, assignments, discussions, user friendliness, and ease of navigability.
8. What was your experience with the course structure? How closely was the course content, assignments and discussions aligned with the course objectives?
9. Expand on your experience with the Learning Management System (LMS) used in the course. How often did you login in and complete your assignments?
10. Was other technology used in the course? If so, how helpful was the other technology in enhancing your experience in the course?
11. What was your experience with technical support during the times you accessed the course? Was there any other support available?
12. What other factors determine the quality of your online course? What could you do, as a student, to improve the quality of your online education?

Thank you for sharing your experiences with me. Is there any additional information that you would like to share?

APPENDIX E: CROSSWALK TABLE

Interview Question-Research Question-Related Literature-Theory

Interview Questions	Research Question	Related Literature	Theoretical Construct
1. Why did you enroll in the online course? Expand on your experience with the course format.	How do undergraduate students enrolled in the professional studies college at a private, urban higher education institution describe their experiences in online courses?	Online Course Structure	Cognitive Constructivism - Knowledge is co-constructed;
2. How closely was the course content, assignments and discussions aligned with the course objectives?	How do undergraduate students enrolled in the professional studies college at a private, urban higher education institution describe their experiences in online courses?	Online Course Structure	Cognitive Constructivism - Goal of Constructivism is to create a meaningful, communicative and collaborative environment.
3. How was your experience with the online course load? Were you able to manage your time in the course? Discuss whether you had enough time to learn course content and complete assignments.	How do undergraduate students enrolled in the professional studies college at a private, urban higher education institution describe their experiences in online courses?	Learner Autonomy	Cognitive Constructivism - Learning is an active process in which learners create new concepts based on prior knowledge
4. What was your experience with instructor and student-instructor communication? How available	How do undergraduate students enrolled in the professional studies college at a private, urban higher education	Engagement in the Online Environment	Social Constructivism - The role of the constructivist instructor as facilitatory in three distinct

Interview Questions	Research Question	Related Literature	Theoretical Construct
was the instructor via email or online discussion?	institution describe their experiences in online courses?		roles – organization, social and intellectual
5. What was your experience with instructor grading and feedback? Was it constructive, timely, and helpful? Can you provide some examples?	What factors shape the experiences of undergraduate students enrolled in online courses in the professional studies college at a private, urban higher education institution?	Engagement in the Online Environment	Social Constructivism - The role of the online instructor is on the learning process and outcomes
6. What was your experience interacting with other students? Discuss an opportunity you had interacting with another student. How did this influence your experience in the course?	What factors shape the experiences of undergraduate students enrolled in online courses in the professional studies college at a private, urban higher education institution?	Engagement in the Online Environment	Social Constructivism - Online, peer and content interactions allow for deeper understanding of content and facilitates more diverse perspectives and interpretations
7. How was your experience with the online course design? Discuss the layout, graphics, assignments, discussions, user friendliness, and ease of navigability.	What factors shape the experiences of undergraduate students enrolled in online courses in the professional studies college at a private, urban higher education institution?	Online Course Structure	Cognitive Constructivism - The intellectual role is focused on the process of understanding the course content through assignments, questions and other course structures
8. What was your experience with the course structure? How closely was the course content,	What factors shape the experiences of undergraduate students enrolled in online courses in the professional	Online Course Structure	Cognitive Constructivism - The intellectual role is focused on the process of understanding the

Interview Questions	Research Question	Related Literature	Theoretical Construct
assignments and discussions aligned with the course objectives?	studies college at a private, urban higher education institution?		course content through assignments, questions and other course structures
9. Expand on your experience with the LMS. How often did you login in and complete your assignments?	What factors shape the experiences of undergraduate students enrolled in online courses in the professional studies college at a private, urban higher education institution?	Technology in Online Instruction/ Learner Autonomy	Cognitive Constructivism - New technologies allow for deeper reflection in the construction of knowledge
10. Was other technology used in the course? If so, how helpful was the other technology in enhancing your experience in the course?	What factors shape the experiences of undergraduate students enrolled in online courses in the professional studies college at a private, urban higher education institution?	Technology in Online Instruction	Cognitive Constructivism - Media and technology extend classroom boundaries, create new learning communities and access diverse collaborators in the learning process
11. What was your experience with technical support during the times you accessed the course? Was there any other support available?	What factors shape the experiences of undergraduate students enrolled in online courses in the professional studies college at a private, urban higher education institution?	Technology in Online Instruction	Cognitive Constructivism - The constructivist learning paradigm must evolve to promote learning using new media
12. What other factors determine the quality of your online course? What could you do, as	What factors shape the experiences of undergraduate students enrolled in online courses in the professional	All	Social and cognitive constructivism

Interview Questions	Research Question	Related Literature	Theoretical Construct
a student, to improve the quality of your online education?	studies college at a private, urban higher education institution?		

APPENDIX F: OBSERVATION PROTOCOL

Date/Time of Observation:

Participants Observed

Scope of Observations/Indicators: (Observations will be conducted in the Asynchronous Online Canvas Course)

Student engagement through asynchronous course facilitation (Armstrong, 2011; Blackmon & Major, 2012; Hugg Blakey & Howell Major, 2019; Jaggars & Xu, 2016; Zhang et al., 2020):

- Instructor's periodic announcements to course participants
- Instructor's promotion of interaction via discussions or collaborations
- Instructor's modeling of expected interaction and demonstration of online dynamics
- Student's participation in community of inquiry including discussions and collaborations
- Instructor's response to student's communication in a reasonable timeframe

Course content viewed as student user (Armstrong, 2011; Eom & Ashill, 2016; Gray & DiLoreto, 2016; Yang & Cornelius, 2004):

- Access to course syllabus, resources and course materials in Canvas
- Inclusion of clear objectives and support for online interaction
- Presence of consistency in course layout, design and links
- Prompt grading of activities and assessments

Technology use through Canvas course structure and activity metrics (Armstrong, 2011; Rubin et al., 2013; Vonderwell & Zachariah, 2005):

- Presence of consistency in Canvas accessibility and navigation
- Integration of course content in Canvas including the use and presentation of multimedia
- Appropriate use of technology
- Inclusion of instructions/resources for technical support

Learner autonomy through activity metrics and assignments (Armstrong, 2011; Fotiadou et al., 2017; Hixon et al., 2016; Howland & Moore, 2002; Landrum, 2020):

- Demonstration of active and consistent participation in the course
- Opportunities for learning activities that support independent student-instructor-content interaction
- There were many opportunities for learning activities
- Meaningful feedback on assignments and course activities

Summary of Observations:

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