

Flexible Learning Space Choice Model (FLSCM)

for Student Engagement and Satisfaction

by

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ABSTRACT

Adequacy of classroom learning spaces at the University of Guyana has historically been a challenge the institution faces. However, the coronavirus disease of 2019 (COVID-19) pandemic lessened the problem when the University of Guyana responded to the crisis by making rapid adjustments to continue operations online and to remain competitive while offering high-quality education. I created and implemented a flexible learning space choice model (FLSCM) to address the issues of inadequate physical learning spaces and the needs and preferences of contemporary students in the post-pandemic reality. The study used a concurrent mixed methods action research (MMAR) design to examine students' perceptions of the model and the extent of the differences in student engagement and satisfaction with the teaching model. I collected quantitative data using an online questionnaire and qualitative data using one-on-one semi-structured online interviews. I used thematic analysis to analyze the qualitative data. I also analyzed the quantitative data using descriptive and inferential statistical analysis, including bivariate correlation, independent samples t-tests, and factorial multivariate analysis of variance (factorial MANOVA). The results indicate that students perceived the FLSCM as suitable for facilitating learning, student engagement, and satisfaction.

Keywords: flexible learning, student engagement, student satisfaction, student choice, higher education

DEDICATION

I dedicate this dissertation to all who made this opportunity possible and to those
who believed in me and did not let me give up.

“What we do for ourselves dies with us. What we do for others and the world remains
and is immortal” - Albert Pike.

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CHAPTER 1

INTRODUCTION

Problem of Practice

The problem of practice for this research is the inadequacy of physical classroom spaces for teaching and learning at the University of Guyana. City et al. (2009) described a problem of practice as an observable and actionable problem within the teacher-practitioner work context that connects to a data-driven, ongoing improvement strategy. Lampert (1985) posited that knowledgeable teacher-practitioners often face practical dilemmas in the classroom, gather data on the issues through reflective practice, and commit to improving instructional practice. Therefore, lecturers must understand learning space needs in the post-pandemic classroom to enhance the learning environment for students (García-Morales, 2021). Also, a problem of practice is specific to a particular setting, stakeholders, and context, which requires an intervention to resolve the problem (Mertler, 2020). Thus, pedagogical and technological requirements are necessary when designing and implementing innovations to meet the learning needs and preferences of 21st-century learners (Mishra et al., 2020).

Before the coronavirus pandemic, the adequacy of spaces for teaching and learning was an ongoing issue for face-to-face classes. Across the university, decentralized approaches to space allocations meant each faculty used classrooms in their space first and then sought permission to use classrooms outside their respective spaces. As a result, a mindset of ownership and entitlement to the existing learning spaces (Blanchette, 2012) developed among faculties, making it difficult for the University of Guyana to be flexible and adaptable using the current physical spaces. In addition, many

complex considerations affected the allocation of spaces for classes. Some considerations include classroom location, lecturers and students with disabilities, lecturers' other job or family commitments, limited availability of multimedia equipment, chalkboards or whiteboards, air-conditioning, computer labs, space for breakout sessions in the classroom, internet, water, and stable power supply, among others. Further, lecturers limited adoption of technologies and the predominant use of teacher-centered pedagogies (Gaffar et al., 2011; Livingstone, 2015; Persaud & Persaud, 2019) allowed little student interaction, collaboration, and engagement in the classroom. These challenges led to dissatisfaction among students and staff, sometimes resulting in adverse publicity for the university.

As the coronavirus health crisis unfolded during a teaching semester in March 2020, higher education institutions had to transform their activities to provide online instruction and learning (Mishra et al., 2020). The senior management team at UOG also transitioned academic and administrative operations online. It required revolutionary changes, and the senior management team guided the process as best they could through several internal communiqués. As a result, the University of Guyana informed the educational stakeholder about investments in online learning technologies and the need to adopt online modalities supported by increased use of Moodle Learning Management System (MLMS) for content management and Zoom conferencing software for synchronous classes (Oyedotun, 2020).

During the COVID-19 period, many higher education institutions faced challenges related to the novel experience of online learning and technological complexities (d'Orville; Mishra et al., 2020), including lack of devices, access to reliable

internet, and technical problems using the learning technologies. However, higher education institutions made policy decisions to swiftly transition to the new online terrain (García-Morales, 2021). Unfortunately, there was little existing data to guide the senior management team at the UOG since there were no formal studies on teaching and learning courses online at UOG. As a result, lecturers attempted to implement the decisions with the old mindset and traditional teacher-centered pedagogical approaches.

Interestingly, similar issues in the face-to-face learning environment remained prevalent in the online learning environment used by lecturers and students (Peker & Ataöv, 2020; Wahlstedt et al., 2008). For example, some issues included lectures and students needing technical support to use computers for classes and assessments, lecturers' availability to teach only on specific days and times based on other job or family commitments, and unstable internet and power while teaching from home. In addition, Oyedotun (2020) also reported reduced student engagement in classes, and some lecturers and students experienced extreme mental difficulties transitioning to the online environment. Therefore, the UOG did its first formal data collection exercise in March 2022 to get feedback from students and lecturers about their experiences using the online modality. Unfortunately, the university community did not receive a report on the findings, which would have supported research for future policy decisions.

Mishra et al. (2020) postulated that multimodal approaches to teaching and learning are more effective in addressing the complexities of online education. In September 2022, the University of Guyana offered classes for the first time using three options: online, face-to-face, or blended learning modalities (University of Guyana, 2022). However, the academic units with larger student enrollments remained primarily

online. There was no defined period for whether these larger units would completely return to face-to-face classes or adopt a hybrid/blended learning approach to teaching and learning. The Zoom-enabled classrooms can support the hybrid/flexible approach, allowing simultaneous (synced) face-to-face and remote live-streamed classes (University of Guyana, 2021b).

Inadequate physical learning spaces, social distancing guidelines, and increased use of online learning technologies during the coronavirus pandemic make flexible approaches a worthy consideration. However, there is a need to fully understand the learning space problem to avoid capital investments in constructing buildings or investing further in online learning technologies, which can lead to wasted resources, uneven growth, and expansion across the university (Blanchette, 2012). Therefore, this problem of practice is ideal for an action research study to make further inquiries into the learning space problem, reflect on the issue, and develop and implement an innovation to meet the teaching and learning needs of lecturers and students in the classroom (Peker & Ataöv, 2020; Wilson & Randall, 2012).

Dissertation Structure

Higher education institutions operate in a dynamic work environment that requires innovative, problem-driven models of research and learning to meet the needs of the contemporary world (Fam et al., 2020). Therefore, this dissertation follows a contemporary format intended to contribute to scholarly literature in higher education and enhance the scholarly and influential practitioner's leadership and innovative critical thinking capabilities for the future (Zambo et al., 2015). Butin (2010) described a dissertation as an in-depth and thorough examination of an issue that adds new

knowledge to ongoing scholarship. This dissertation examines students' perceptions of a flexible learning space choice model (FLSCM) and the extent of the differences in student engagement and satisfaction using the FLSCM for teaching business courses at the UOG.

This dissertation has four chapters: the introduction, monograph story, journal article, conclusion and reflection. Chapter one explains the problem of practice, followed by an outline of the dissertation structure. The chapter concludes by highlighting the contributions of this research to the field. Chapter two is a monograph story describing the research's larger, local, and personal contexts, followed by a literature review. The chapter concludes by explaining the action research cycles, learnings, research summary, and conclusion. Chapter three is a journal article and begins with an abstract, followed by the literature review and theoretical framework to support the purpose and innovation. Next, the methods, the results, the discussion, and the conclusion follows. Finally, chapter 4 summarizes the reflections of the study and the research limitations, the broader implications for policy and practice, the areas for further research, and an overall conclusion to the study. The following section highlights the contribution to the field.

Contribution to the Field

This research contributes to the literature on learning space design for teaching and learning in higher education institutions in the post-pandemic reality. The research was an exploratory study, and the intervention was innovative in the local context by teaching simultaneous in-person and online synchronous classes using a Zoom-enabled classroom. From an academic perspective, this research advanced the sociocultural learning theory, applying it using a game-based approach to understand students'

perceptions of the FLSCM and the extent of differences in engagement and satisfaction among students based on demographic factors such as gender and employment status. Finally, from a practitioner's perspective, the study provides insights that can benefit peers as they conduct their classes. It will also encourage them to undertake action research within their professional practice aimed at data-driven improvement strategies.

The insights from this study allow the researcher to disseminate the findings to peers and other stakeholders in the university community and, on a larger scale, to influence public policymakers. Also, understanding business students' perceptions of the flexible learning space choice model and their engagement and satisfaction are essential for strategic decision-making by the university's senior management. In addition, universities and colleges can take advantage of the new capabilities of an FLSCM to address physical space restrictions given the increasing demands on enrollment and safety protocols in place while still meeting learners' different educational requirements.

Nationally, the education system continues to use a traditional mass educational approach to learning. However, catalysts for both revolutionary and evolutionary changes in the sector are the rapid pace of development in technology, coupled with newer forms of knowledge transference. The FLSCM can help educational stakeholders (parents, educators, instructional designers, researchers, higher education administrators, public policy officials, and non-governmental organizations) understand the benefits of adopting flexible learning spaces at all levels of the educational system.

The FLSCM provides an alternative to the existing in-person or online models that lack flexibility and convenience to meet the personal realities of students, such as varying learning needs, as well as the social realities, such as the availability of

transportation in their communities, the ability to pay to travel to attend in-person classes, the availability of learning materials and technology, and the infrastructural setup for internet and power in the various regions in Guyana. The simplicity and flexibility of the FLSCM model make it readily implementable on a large scale within the university and nationally. The significant challenge for realizing the above contribution and incorporating such a model is the high initial investment cost and dependency on proper infrastructural support, including internet access and a stable power supply. In the next chapter, a monograph story outlines information about the research's larger, local, and personal contexts and a literature review to support the study. Finally, it explains action research and the findings from two previous action research cycles.

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CHAPTER 2

THE MONOGRAPH STORY: THE IMPORTANCE OF LEARNING SPACE DESIGN IN THE NEW REALITY

This chapter is a monograph story. First outlined are an introduction, a description of the research's larger, local, and personal contexts, and the literature review. Finally, the chapter explains the action research cycles, learnings, research summary, and conclusion.

Rittel and Webber (1973) identified wicked problems as unique, complex, and challenging issues within the societal system that are difficult to solve. Thus, a wicked problem in education is learning space design because attempting to solve one aspect of the educational problem causes other problems in the extensive, interconnected societal networks. In addition, wicked problems affect stakeholders in various contexts, each having multiple interpretations in framing the problem (Munneke et al., 2007). Therefore, actions to rectify a wicked problem are subjective, ambiguous, and stakeholder-dependent (Barrett, 2012).

Learning space design as a wicked problem entails education stakeholders holding a broad point of view to allow for the comparison of multiple perspectives through action research, where there is a continuous process of new findings, which bring a unique and diverse perspective and responses to the problem. Therefore, interdisciplinary thinking and continually reassessing proposed solutions based on the context and situation are essential. However, the solution's long-term impact (good or bad) is irreversible. Therefore, educational stakeholders must be innovative in developing and implementing solutions (Jordan et al., 2014) that meet the needs of students and create an effective learning environment. Meyer et al. (1992) highlighted that nations believe an investment

in education raises national productivity. Thus, investment in large-scale mass education was the key to increasing human capital. However, despite the different human and physical resource needs, nations did not have culturally relevant education systems and learning spaces but developed similar educational models and practices. For example, the design of traditional learning spaces with single cells, like an egg crate, suggested factory-style learning (Smardon et al., 2015). However, educational systems are undergoing rapid transformation, requiring learning spaces to adapt to the changing reality, inclusive of learner-centered pedagogy and instructional technologies (Adedokun et al., 2017).

Fullan et al. (2015) posited that external accountability in educational systems is a mechanism to reassure the public through transparent means that the educational systems are performing according to societal expectations. However, Hochschild (2003) indicated that economic circumstances and social differences create educational differences across schools. Therefore, Fullan (2015) emphasized that sustaining teachers' commitment to education and enhancing students' learning and development requires a localized approach. Further, Berliner (2002) stated that there is the power of context, where the problem of replication to achieve consistency of effects across educational sites is difficult because each local context requires different programs, personnel, teaching methods, budget, leadership, and community support. The following section describes this research's larger, local, and personal contexts.

Larger Context

The University of Guyana is Guyana's only national higher education institution, established by an Act of Parliament in April 1963 with the following Mission: "To

discover, generate, disseminate, and apply knowledge of the highest standard for the service of the community, the nation, and of all mankind within an atmosphere of academic freedom that allows for free and critical enquiry” (University of Guyana, n.d.). Its aim is “to provide a place of education, learning, and research of a standard required and expected of a university of the highest standard, and to secure the advancement of knowledge and the diffusion and extension of arts, sciences and learning throughout Guyana” (University of Guyana Act, 1963). University of Guyana operations began on October 1, 1963, in the compound of the nation’s premier secondary school, Queens College, because finances to build a campus were inadequate. Classes began on October 2, 1963, from 16:00 to 22:30 hours, offering undergraduate courses in the Faculties of Arts, Natural, and Social Sciences. There were 164 students enrolled, and from those early days, there was difficulty securing classrooms to teach, and the environment was not conducive to learning. Menezes (2016) described the Queens College days as “stairs and rooms smelling of boys, stale buns, split sweet drinks, and assorted vermin” (p. 5).

The Booker Group of Companies donated approximately 56 hectares of land for a campus at Turkeyen, 8km east of the capital Georgetown in 1963, and construction began on January 2, 1968. By 1970, the campus relocated to its present site with an approximate enrollment of 1000 students in the Faculties of Arts, Natural Sciences, Social Sciences, Education (established in 1967), and Technology (established in 1969). However, despite this new location, the new buildings were inadequate because there was overcrowding in the new classrooms (Menezes, 2016).

In the ensuing years, several faculties developed, renamed, merged, or split, including the Faculty of Agriculture (established in 1977) and Forestry (established in

1987), the College of Medical Sciences (outgrowth from Natural Sciences in 1981 and formerly known as Faculty of Health Sciences up to 2020), Institute of Distance and Continuing Education (established in 1976 formerly a Department of Extra-Mural Studies), Faculty of Earth and Environmental Sciences (established in 2000), Faculty of Education and Humanities (Arts and Education merged in 2003), School of Entrepreneurship and Business Innovation (an outgrowth of Department of Business and Management Studies from Faculty of Social Sciences in 2017), Faculty of Engineering and Technology (renamed in 2018). In 2000, the campus expanded with the addition of the Berbice Campus at Tain, Corentyne, and in 2006 the Johns Science Centre at Johns, Corentyne (Menezes, 2016; University of Guyana, n.d.).

The Inter-American Development Bank (IDB) provided financial assistance to erect several new buildings between 1989 and 1993, including an herbarium, a Law and Management building, the Faculty of Agriculture, a Computer and Learning Resource Center, the Centre for Information Technology, and the Cheddie Jagan lecture rooms (Menezes, 2016). Further, in 2011, World Bank financing helped to improve the infrastructure and learning environment of the Faculties of Health Sciences, Natural Sciences, and Technology at the University of Guyana (World Bank, 2011). However, upon reflection, the improved infrastructure of the science buildings eliminated large classroom spaces and created smaller rooms, which made these faculties also dependent on shared spaces usually used by the Faculties of Education and Humanities, Social Sciences, and the School of Entrepreneurship and Business Innovation (formerly under Social Sciences), which did not benefit from the world bank funded upgrades.

The university is in its 59th year of operation, with approximately 10,000 enrolled students and 1,000 academic and support staff. The university offers over 150 undergraduate and graduate programs in 60 disciplines across eight (8) faculties and 12 institutes (University of Guyana, 2023). The main sources of income for the university are government subsidies, tuition fees, income from commercial activities, grants, and donations. However, underfunding has made it difficult to maintain the library and laboratories, repair infrastructure and buildings, adequately equip faculties and classrooms, and provide competitive remuneration to attract and retain highly qualified lecturers (University of Guyana, 2010).

In April 2021, the UOG, through a major philanthropic donation, launched a Zoom room project, which represented the beginning of a transformation process as the university transitioned to a hybrid/blended-learning architecture (University of Guyana, 2021b). The UOG set up the Zoom rooms in locations across the two main campuses and extra-mural centers, allowing for classes to be face-to-face and live-streamed online, providing that there was internet bandwidth (University of Guyana, 2021b). The Faculty of Social Sciences and School of Entrepreneurship and Business Innovation were among the initial academic units outfitted with the Zoom room conferencing facilities.

Local Context

The research context was the Faculty of Social Sciences (FSS), where I conducted Cycle 0 and 1, and the School of Entrepreneurship and Business Innovation (SEBI), where I conducted the dissertation in practice research. I served administratively as Assistant Dean in the FSS, and part of the core responsibilities were timetabling classes in the physical spaces. In 2019, the Faculty of Social Sciences (Turkeyen campus) had

the largest student enrollment. There were 2,215 enrolled students, with 933 new students (241 males and 692 females) and 1,282 continuing students (372 males and 910 females) (University of Guyana, 2021a). The faculty had six departments offering undergraduate and graduate programs in several disciplines, including communication studies, economics, law, public management, international relations, social work and sociology, business administration, and public administration. In addition, approximately 39 full-time and 38 part-time lecturers were teaching over 200 courses. The class sizes for introductory level courses averaged between 600 and 1000 students; second-year and third-year courses averaged 150 and 300 students, while fourth-year courses averaged 60 and 150 students. The only space under the faculty's control but shared with other faculties were three classrooms dubbed 'the stables' because of the design, which could accommodate approximately 40, 30, and 20 students each. Other shared spaces included a large lecture theater that accommodated approximately 300 students, a mid-sized lecture theatre that accommodated approximately 200 students, and a smaller-sized lecture theater that accommodated approximately 100 students, along with several smaller classrooms.

After the first two research cycles, I no longer held that administrative position in the Faculty of Social Sciences. Therefore, the local context for the intervention cycle of research was the School of Entrepreneurship and Business Innovation (SEBI), where I am a lecturer. Established in 2017, the SEBI comprised the Department of Business and Management Studies (formerly in the Faculty of Social Sciences) and the tourism studies program (formerly in the Faculty of Education and Humanities). According to the University of Guyana (2017), the SEBI envisaged contributing to Guyana's

entrepreneurial and innovation culture by liaising with the business community to address business sustainability and economic development issues through collaborative research, education, and training.

The SEBI has the second-largest student enrollment, with approximately 1000 registered new and continuing students. Table 1 shows the enrollment of new and continuing students in the SEBI between the academic years 2016 to 2021. The school has four departments offering seven undergraduate programs: accounting, entrepreneurship, finance, management, marketing, supply chain management, and sustainable tourism management. In addition, there are three graduate-level programs in supply chain management, procurement management, and entrepreneurship and innovation management. General undergraduate class sizes range between 200 and 400 for first- and second-year courses, while third and final-year courses averaged 40 and 250 students. There are over 150 courses offered per academic year, staffed by approximately 25 full-time and 30 part-time lecturers.

Table 1*Enrollment of New and Continuing Students in the School of Entrepreneurship and Business Innovation*

Year	New			Continuing			Grand Totals		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
2016-2017	111	243	354	170	357	527	281	600	881
2017-2018	114	209	323	192	416	608	306	625	931
2018-2019	135	279	414	207	431	638	342	710	1052
2019-2020	141	254	395	235	525	760	376	779	1155
2020-2021	95	189	284	184	434	618	279	623	902
2021-2022	153	337	490	226	499	725	379	836	1215

Since the pandemic began, SEBI has conducted synchronous classes primarily using Zoom conferencing software, with course content shared via Moodle Learning Management System (MLMS). However, some issues informally reported by students using the online space include clashes between classes scheduled simultaneously, unreliable internet facilities, difficulties using the Moodle learning management system and other technical applications, lack of peer interaction, and problems with the teaching and assessment approaches used by some lecturers.

There are a few classes held face-to-face. However, physical spacing constraints will worsen if many classes return to this modality, as the six-foot social distancing requirement remains in effect. The only space controlled by the SEBI is a two-story building, with each story divided into three sections with movable wall separations. Each

section could only accommodate approximately 40 students under normal conditions. Other faculties manage other shared spaces, but the spaces are not readily available, and permission is required to use the spaces. It led to some faculties having free space while others faced physical space constraints. The space ownership mentality among faculties affects organizational flexibility and efficiency. In the next section, I recount my situation as a business student and later as an Assistant Dean and lecturer.

Personal Context

I am interested in learning space design because of my experiences as a business student at the University of Guyana (UOG) from 2004 to 2007. Sometimes I had to stand outside a classroom to listen to the lecture because the room had no space to accommodate more furniture. I remembered this vividly in a taxation class, where the lecturer was working on a calculation question on a blackboard while I was standing outside listening but unable to see and follow the steps. On occasions, when I reached class early to secure a chair, sometimes the rooms were hot because there was no air-conditioning, and students were trying to fit themselves in the cramped spaces. If students wanted to go to the washroom during the lecture, several would have to move to allow one student to pass, distracting their colleagues and disrupting the lecturer's flow.

Also, during my time as a student, most lecturers used teacher-centered approaches to teaching, where they would dictate material or write on a blackboard. Some used PowerPoint slides to present and explain the lecture notes, and I had to make notes. Unfortunately, I learn best with a kinesthetic-tactile learning style and would have liked to be engaged in practical activities coupled with visual demonstrations rather than just listening. Similarly, my peers would have each had a different learning style. Classes

could have been better for students by using a student-centered approach, allowing students to engage with the lecturer and their peers to understand the content and its application to the work environment.

Besides that experience, I can attest that as a student and even as a lecturer, taking public transportation to campus was difficult, and sometimes, I reached classes late. Also, to get home after evening classes, I sometimes had to walk from buildings at the back of campus to the front to get public transportation. I feared thieves would snatch my cell phone and laptop bag. Unfortunately, there was no burglar alarm system on the campus. In addition, after a specific time in the evenings, approximately 20:30 hours, it was difficult to get public transportation on the campus grounds, so most of my colleagues and I left classes around that time, even though the lecture was still in progress. Getting home timely and safely was paramount to learning during those times.

As Assistant Dean in the Faculty of Social Sciences (FSS), I allocated classroom spaces as part of my administrative function. Managing the limited classroom spaces, large class sizes, varying combinations of program courses, and several lecturers' requests for specific classrooms at specific times made the manual space management process more challenging. Most of the programs offered had a set program outline, meaning students did not have choices in the courses chosen. Most classes had to be scheduled in the evening hours between 17:00 hours to 21:00 hours to accommodate working students. Some lecturers' requested specific teaching times, and because of the limited physical spaces on campus, the rooms assigned had inadequate seating capacity.

In some cases, students moved the furniture to other classrooms. Also, the limited time and space for scheduling classes led to clashes in scheduled classes for students who

took a reduced course load, repeated courses, or advanced students not on a regular program schedule. In addition, consideration had to be given to lecturers and students with disabilities to access classes and take assessments. Unfortunately, at that time, few support mechanisms for persons with disabilities were available at the university. These challenges affected teaching and learning, lecturers' and students' morale, and led to negative publicity for the UOG. The literature review below outlines the issues and best practices in learning space design in higher education.

Literature Review

Complex systems have structure and embody interaction between the components (Cilliers, 2001). Learning occurs in these complex, dynamic ecological systems (Dewey, 1997; Lee, 2010; Lemke, 2000) through different home, work, and school institutions. Signs and tools used in the varying institutions mediate interactions and organize the cultural life of people and the way they think as a collective and individually (Wells, 2007). In the educational system, learning spaces, pedagogical approaches, and the curriculum act as signs and tools in the co-construction of knowledge, where artifacts and language help learners develop an understanding of their world.

Generally, higher learning institutions have considered learning space design independent of teaching, learning, and research activities. Therefore, maximizing the use of space often conflicts with institutional objectives such as teaching and learning and other services (Temple, 2008). Universities make space planning decisions for different spaces based on academic disciplines, such as general-purpose facilities, specialist facilities, and other non-teaching facilities, such as offices (Space Management Group, 2006). Universities allocating space for teaching and learning considered the type of

space, location, and available time with little concern for how students learn, the teaching activities, staff-to-student ratios, and work area per student (Temple, 2008).

Oblinger (2005) indicated that building and renovating learning spaces and designing and maintaining them are significant investments designed to span 50 to 100 years. Therefore, space management entails the optimized use of space to reduce costs. The management of higher education institutions needs an institutional vision to guide campus master planning and the design of university buildings to improve teaching and learning, research, administration, and community building through social spaces (Temple, 2008; Wilson & Randall, 2012). In addition, space management decision-making in public higher education institutions needs to consider alternatives and reasons for preferences in using space (Blanchette, 2012) because the cost of wasted space is the second highest in education after salaries (Ibrahim et al., 2012). Therefore, space management is essential for cost minimization and efficient and effective resource allocation.

Space management makes the most efficient use of space, equipment, and furniture (Abdullah, 2012). However, sometimes there needs to be complete information when making space allocation decisions, such as where classrooms should have furniture, but students moved the furniture elsewhere without authorization. Blanchette (2012) discovered that many space-related issues arise from inefficient use and political and cultural perceptions. For example, lecturers and students equate the quantity of space allocated with power and prestige; when given more space, one feels more powerful. Also, the quality of space shows value within the organizational culture and represents

institutional priorities. The more developed each space or, the more amenities in each space show its importance.

Universities must be creative and innovative in building or reconfiguring learning spaces to meet contemporary students' different learning needs and expectations (Peker & Ataöv, 2020; Wilson & Randall, 2012). Learning spaces include the full range of places where learning through social interaction, collaboration, and individual studies occurs, including physical, virtual, formal, informal, indoor, or outdoor spaces (Peker & Ataöv, 2020; Wahlstedt et al., 2008). Universities should create or reconfigure learning spaces to be student-centered, equipped with the technology and materials to support multidisciplinary learning and pedagogy, comfortable, functional, secure (physical security and network security), multipurpose, and accessible to persons with disabilities (Oblinger, 2005; Wilson & Randall, 2012).

Kennedy (2001) suggested that spaces should have a dual purpose to meet educational and operational needs, such as using the space for a class or converting it for a debating competition. Oblinger (2005) shared a similar view that learning spaces should be flexible and reconfigurable for curricular and non-curricular activities. However, Rook et al. (2015) found that the design process includes architects, project managers, contractors, and top administrators in building learning spaces but excludes learning theory experts. The authors argued that learning theory experts can insert implicit learning design principles into the learning space design process. Oblinger (2005) posited that it could be challenging to align the diverse perspective of the constituents but suggested that it is essential that all constituents understand the learning philosophy of

the institution and its programs, analyze the current space use and future needs, and incorporate design principles considering the learning modes.

Higher education institutions face significant economic, pedagogical, and scheduling implications when designing and renovating learning spaces (Adedokun et al., 2017) to meet learners' needs. Contemporary learning spaces should promote collaborative learning through open, flexible, and diverse designs combining physical infrastructure and digital technologies (Rook et al., 2020). Physical learning spaces provide structures and tools, greater chances of interaction, and synchronous times for teachers and learners to become receptive and mentally focused on teaching and learning (Wahlstedt et al., 2008). However, virtual learning spaces where technological devices such as notebooks, laptops, and smartphones allow learning to occur anywhere on or off-campus, without a physical presence, pose challenges (Peker & Ataöv, 2020; Wahlstedt et al., 2008). These challenges include the absence of varying teaching approaches, unsuitable learning material, difficulties measuring and evaluating learning outcomes, restricted or limited interactions, usability issues, heavy investment in learning platforms, hardware, and software, and problems for learners to mentally focus on learning (Wahlstedt et al., 2008). In addition, Wilson and Randall (2012) also conducted a pilot study on user-centered design and flexibility of contemporary learning spaces where teachers used a hybrid learning format and found that teachers required initial and ongoing technological and pedagogical support to enhance students' learning experiences. The following section explains action research and learning from the previous cycles.

Action Research Cycles and Learning

This research used a practical action research approach to understand learning space needs in the post-pandemic classroom to improve the learning environment for the students and lecturers. Plano Clark and Creswell (2015) posited that practical action research involves small-scale research focused on an immediate practice problem, undertaken by a practitioner within a practice setting, aimed at improving practice. Educators do practical action research with students and colleagues to identify a local-level problem of practice, collect and analyze information on the problem, and implement an innovation to resolve the problem.

Gay et al. (2012) identified several underlying assumptions for implementing practical action research, including that teacher-researchers must have the autonomy to determine the nature of the action research investigation to undertake; teacher-researchers must systematically and critically reflect on the action research process for professional development and continuous improvement in teaching and learning; and teacher-researchers must choose an area of focus, determine data collection and analysis techniques, and develop action plans to improve the situation. Herr and Anderson (2005) described the action research process as iterative, flexible, and reflective, aimed at improving practice, developing individuals, or transforming practice and participants. For example, a researcher first encounters a problem in the workplace, reflects on the information known about the problem, and explores possible ways to resolve the problem. Then the researcher collects and analyzes data to understand the problem, intending to undertake actions to improve the situation.

Davis (2008), Dick (2014a), and Noffke (2009) posited that action research is a knowledge-generating activity. It can connect theory and practice, improve educational practice, empower teachers, and promote professional growth opportunities and social justice (Mertler, 2020). Herr and Anderson (2005) posited that action research dissertations force action researchers to think not only about knowledge generation in the local setting (local knowledge) but also about transferring the knowledge to other social settings (public knowledge). Further, action research dissertations contain a local perspective, which traditional research does not usually provide. Also, action research studies are more practical than traditional research, and the researcher plays a more integral role in the action research process (Mertler, 2020).

The education doctorate (EdD) in leadership and innovation at the Mary Lou Fulton Teachers College at Arizona State University (ASU) follows the Carnegie Project on the Education Doctorate (CPED) design principles. One program component is cycles of action research (CAR) over three years, which provides an opportunity to develop as a research professional and culminates in an action research dissertation (Buss et al., 2014). The first action research cycle was Cycle O, where the limited scope of the work included four interviews focused on reconnaissance to support the problem of practice (Buss, 2018) and an initial solution to explore in Cycle 1.

Exploring a solution to the problem was the focus of Cycle 1. The limited scope included three lecturers and a small group of students. The limited scope allowed me to focus on developing knowledge of designing instruments (Buss, 2018). Exploratory research on the intervention was to understand users' perceptions and support needed to implement the innovation in the dissertation in practice. After cycle 1, I revised the

research questions, the interview prompts and developed a new survey instrument. Also, I pilot-tested the game-based component of the intervention with a small group of students in a course I was teaching the semester before implementing the intervention. The final action research cycle was the dissertation in practice. I implemented the intervention, collected the data, analyzed it, and wrote a comprehensive dissertation based on the work of various action research cycles. Chapter 3 outlines the dissertation in practice. The following section outlines the learnings from Cycles 0 and 1.

Action Research Cycle 0

I conducted a reconnaissance study (Cycle 0) in Spring 2021 to explore the learning spaces, learning modalities, and pedagogical approaches experienced by students in Faculty of Social Sciences (FSS) courses before and during the COVID-19 pandemic.

The research questions that guided Cycle 0 were:

RQ1: Before COVID-19, what learning spaces, learning modalities, and pedagogical approaches did students experience in the Faculty of Social Sciences courses at the University of Guyana?

RQ2: During COVID-19, what learning spaces, learning modalities, and pedagogical approaches do students experience in the Faculty of Social Sciences courses at the University of Guyana?

I conducted this study using a qualitative research design, which meant I collected text data, analyzed, and reported the data to explore participants' perspectives and answer the research questions (Plano Clark & Creswell, 2015). I developed an interview schedule to address the research questions. There were nine semi-structured interview questions to understand students' experiences with the learning spaces, learning styles, and

pedagogical approaches used by their lecturers before and during the COVID-19 pandemic. Examples of questions in the interview schedule include: *What was your experience of the learning spaces used for your classes?; What teaching approach used by your lecturer made you feel like you learned the most?* (see Appendix A).

The study population was students in the Faculty of Social Sciences, 18 years or older, who experienced classes face-to-face before the COVID-19 pandemic and had online classes during the COVID-19 pandemic. As already mentioned, I limited the Cycle 0 study to four participants. Therefore, purposive sampling helped to select participants deemed appropriate for the study (Plano Clark & Creswell, 2015) to generate in-depth information and understand individual experiences (Ivankova, 2015). Purposive sampling allowed for the selection of students from different programs, gender, and employment status who had experienced classes before and during the COVID-19 pandemic. Also, this sampling technique was a timely and cost-effective way to reach the participants since I communicated with them often on student matters.

Invitations to participate in this study went to ten elected student representatives and high-performing students in the Faculty of Social Sciences. Four students ($n = 4$) indicated their ability and willingness to participate. I conducted one-on-one interviews, meeting with participants individually, asking questions, and recording the answers (Creswell & Guetterman, 2019). I conducted the interviews virtually using the Zoom platform since the time to complete Cycle 0 was short, and the university was on lockdown because of the COVID-19 pandemic. Then I transcribed the interviews and sent the transcripts to each participant for them to verify the accuracy of the data.

Participants requested no changes. Each transcript used pseudonyms to ensure anonymity.

The participants were each enrolled in different programs within the FSS, namely economics, law, public management, and international relations. The sample comprised 50% ($n = 2$) male students and 50% ($n = 2$) female students; 50% ($n = 2$) of the students were in the third year of their program, while 50% ($n = 2$) were in the fourth year; 50% ($n = 2$) of the students were full-time employed, and 50% ($n = 2$) were not employed.

Qualitative data analysis included using Microsoft Word to code the interview transcripts line-by-line using gerunds. This data-driven approach allowed me to remain open to the data and discover ideas, as suggested by Charmaz (2014). Then, focused coding helped to aggregate into categories used to develop themes. This process was iterative because I had to read the data multiple times to ensure that the coding captured the essence of the participants' responses.

Findings

Two key themes identified from the qualitative data analysis included: *challenges with the learning environment* and *student interaction and engagement*. The following sections describe each theme and supporting evidence from the data analysis.

Challenges with the Learning Environment. All participants ($n = 4$) experienced challenges in the face-to-face classroom and online learning environment, but the nature of the challenges varied. Participants ($n = 4$) reported concerns about the physical classroom space, furnishing, and environment, which were not conducive to learning, such as the humidity, lighting, size of the rooms for lectures, and inadequate furniture. Participant 1 indicated, “the space was always the issue. There were times

when the classrooms were cumbersome, and it was difficult to move to the washroom without disturbing other students and the lecturer.” Also, participant 2 reported:

We often had to compete with other students to secure a classroom for tutorials. Sometimes we stood outside the class and waited until the lecturer finished to get the room to use. Sometimes when we found classrooms, they were too small for the class, and some had to stand at the back.

In addition, participant 3 indicated:

The environment in physical spaces played a crucial role psychologically because when it was hot, we could not concentrate on what was being taught but focused on keeping cool in such a humid environment. Now I see that things have changed in my last year, we now have air-conditioned rooms, and the lighting is better, but the space in and of itself remains the same.

In the online environment, participants ($n = 4$) reported that their attention span was shorter than face-to-face as they often faced distractions in the office, at home, or on social media. Further, internet and power outages affected their learning experience. For example, participant 1 reported, “most times when I have Zoom classes with my lecturer, I am at the office. I am there signed in, but I focus on the office work in front of me.” Further, Participant 1 indicated, “in the physical classroom environment, I was more focused on the teaching that was taking place at that moment. The distractions in the online environment far outweighed those when interacting with colleagues in the physical environment.” In addition, participant 2 reported:

Due to the time of classes, I log in to classes on my cell phone while in public transportation, which makes learning difficult because I must be careful to hide my device from robbers, and the transportation sometimes has loud music playing or passengers talking, which was not the best environment for learning.

Internet connectivity at home was a challenge for the students and their lecturers.

Participant 4 reported:

There was no support for learning during the COVID-19 pandemic because disrupting the lecturer affected the teaching time. Sometimes the internet connection would drop, and I missed something the lecturer said. It would be hard to pick up from that point because it was inconvenient to stop the lecturer and disrupt the hundreds of other students asking the lecturer to repeat a point. Sometimes I had blackouts [power failure] and could not attend classes.

The findings indicate a need to ensure that physical and online learning spaces have adequate resources and can accommodate classes allowing users to navigate and use the spaces for teaching and learning purposes. In addition, there is a need to ensure that the physical learning spaces are comfortable and conducive to learning by addressing the temperature and lighting. Also, there is a need to ensure accessibility in online spaces, especially for students who face internet and power outages or have work and family commitments during synchronous classes.

Student Interaction and Engagement. All participants ($n = 4$) reported that learning occurred by listening, discussing, and clarifying topic areas with lecturers and peers in the face-to-face classroom environment and by seeing facial expressions and gesticulations. For example, participant 1 indicated, “being in the physical classroom and

interacting with lecturers and peers has been the culture from nursery to university. I consider the face-to-face learning experience the best for me: learning through participation and interaction.” Similarly, participant 2 indicated:

Communication, to me, is not only what is being spoken but also what is being shown. I enjoyed being in the physical classroom with colleagues. In that space, you can interact with your colleagues on a level that mere words or just us talking at each other through a device instead of talking with each other could not really and truly explain.

Participants preferred face-to-face classes because they could focus better in the classes. In contrast, in the online learning space, all participants ($n = 4$) indicated that their attention span was shorter because it was challenging to focus on the teaching while listening through a device. Participant 1 indicated:

In a face-to-face class, you can focus at least 95% on what is being taught. However, being taught online makes it hard to focus because you are not seeing the teacher physically, and you are not getting a chance to interact with your colleagues as you would want in the face-to-face space.

In addition, participants ($n = 2$) reported that learning occurred in informal spaces, such as when leaving campus and traveling on public transportation; the conversations sometimes centered on the lecture. Also, experienced peers shared examples and ideas between classes while waiting on the campus walkways or under trees.

In face-to-face classes, students formulated ideas on the spot, and there was rich engagement through analytical exchanges for real-time learning, making the discussions more authentic. However, students attending classes after work found it hard to

concentrate in face-to-face classes. Participant 2 indicated, “most persons in my cohort were working professionals. We arrived at classes straight from work very tired, counting down the time for the lecture to finish so we could go home to eat and rest.”

Participants reported that review and breakout sessions using the Zoom platform helped with learning in the online learning environment. However, participant 2 reported, “there was a high percentage of non-participation by persons when placed in breakout sessions.” In addition, participants reported that in the online learning environment, there was a post-learning experience because they learned after the class through self-learning tools aided by YouTube videos ($n = 2$) or called colleagues via telephone to discuss the material ($n = 1$).

Most lecturers used a teaching-centered approach, focusing on covering the lesson’s content. However, participants described face-to-face teaching and assessment as better than online. Participants ($n = 2$) described the online classes as monotonous.

Participant 1 indicated:

In the face-to-face classes, when you look at some of your teachers, you can tell whether they were passionate about the content being taught or trying to cascade to you... online, it is monotonous because the teacher is teaching, but you do not get to see the interaction, the communication, or the exchange.

Similarly, participant 2 indicated, “sometimes I logged into online classes for attendance, but I am physically and mentally absent because the lecturer was reading the PowerPoint slides or notes, and I could read it myself, in my own time.”

The findings suggest a need to design learning activities for student interaction and to meet diverse needs and learning styles. Also, integrating updated learning

technologies and applications into teaching and learning keeps students engaged during and outside class times. Further, the findings also suggest that lecturers may need professional development training on teaching in higher education.

Learnings

During Cycle 0, I did interviews with students, and during the process, I learned the importance of asking probing questions to get more details from the participants. I recognized that I only collected qualitative data by interviewing students. However, I did not capture lecturers' experiences with the learning spaces and the teaching approaches used before and during COVID-19. Therefore, I collected qualitative and quantitative data from the lecturers' and students' perspectives in the following action research cycle.

The limited scope of Cycle 0 makes the findings specific to the context and not generalizable to other settings. One major constraint to this research was that the university was still on lockdown because of the COVID-19 pandemic. In addition, participants' bias might have affected this cycle if participants responded favorably to the learning experiences accustomed to in the past.

Cycle 0 Research Summary

Cycle 0 explored the learning spaces, learning modalities, and pedagogical approaches experienced by students in Faculty of Social Sciences (FSS) courses before and during the COVID-19 pandemic. I used a qualitative research design for data collection by interviewing students. The two key themes developed using a data-driven approach included: *challenges with the learning environment* and *student interaction and engagement*. The findings support the need to address the problem of practice and to find a solution that addresses the functionality of the learning spaces to make them usable,

comfortable, and accessible to students with diverse needs and varying learning styles (Oblinger, 2005; Wilson & Randall, 2012). Related to the findings is the need for incorporating learning technologies into the learning spaces and professional development training to undertake teaching in higher education. I focused on the physical and online learning spaces, but participants also recognized informal learning spaces as essential for exchanging knowledge.

The data indicated limitations in the physical spaces and controllable factors (noise) and uncontrollable factors (internet and power outages) affected the online infrastructure. Building construction and investments in equipment needed include generators, solar power, uninterrupted power supply batteries, and increased internet bandwidth, but these were beyond the scope of my professional practice. Therefore, consideration had to be given to using the existing physical and online infrastructure more efficiently, as Abdullah (2012) suggested. As a result, I conducted another action research cycle to explore users' perceptions of a blended learning environment and determine the support users need to implement such an approach.

Action Research Cycle 1

I conducted Cycle 1 action research in Summer 2021 to explore users' perceptions of a blended learning environment for teaching courses in FSS post-COVID-19. The research questions that guided Cycle 1 were:

RQ1: What are the users' perceptions of blended learning for courses taught in the Faculty of Social Sciences at the University of Guyana?

RQ2: What support may users need to implement a blended learning environment?

I conducted this study using a concurrent mixed-methods action research design, which meant I collected qualitative and quantitative data simultaneously to get multiple perspectives and answer the research questions (Ivankova, 2015). I developed an interview schedule to collect qualitative data to address the two research questions. There were six semi-structured interview questions to understand lecturers' perceptions of blended learning for teaching courses and to identify the support lecturers need to implement blended learning in the post-COVID-19 environment. Examples of questions in the interview schedule include: *How would you feel if courses were offered using a blended learning space (some in-person teaching with some online teaching)?*; *What support may be needed if your courses were offered in a blended learning space?* (see Appendix B).

In addition, I collected quantitative data using an existing questionnaire by Balci (2017). I used face validity to assess the instrument by having two non-expert lecturers check it for the language's readability, formatting, and clarity to suit the local context (Oluwatayo, 2012). I adjusted the statements to clarify the language, such as instead of saying online platform, I adjusted it to indicate Moodle platform. There were three constructs with items adapted to suit the study investigating students' perception of (a) classroom learning, (b) blended learning, and (c) online learning. The questionnaire consisted of 45 statements on a closed-response rating scale and seven demographic items. Examples of statements in the survey include: *Discussions in the classroom are good*; *Online studies satisfy my needs*; *Online learning is an effective system* (see Appendix C). The study used a six-point Likert scale, without a mid-point, from *strongly*

disagree to strongly agree. I used Qualtrics experience management software to administer the online questionnaire.

The study population was lecturers and students in the Faculty of Social Sciences, 18 years or older, who experienced face-to-face and online classes before and during the COVID-19 pandemic. As mentioned, I limited the Cycle 1 study to three lecturers and a small group of students. Therefore, convenience sampling allowed the researcher to select the participants who were available and accessible (Plano Clark & Creswell, 2015) and willing to participate in the study (Ivankova, 2015). This sampling technique was a timely and cost-effective way to reach the participants since the university was still operating virtually because of the COVID-19 pandemic.

I invited Faculty of Social Sciences lecturers to participate in the interviews via email. As a result, three lecturers ($n = 3$) indicated their ability and willingness to participate. Similar to Cycle 0, interviews with the lecturers in FSS were conducted virtually using the Zoom platform since the time to complete Cycle 1 was short, and the university was on lockdown because of the COVID-19 pandemic.

I transcribed the interviews and sent the transcripts to each participant for them to verify the accuracy of the data. Participants requested no changes. Each transcript used pseudonyms to ensure anonymity. The participants were three females ($n = 3$) from the communication studies, social work, and sociology disciplines. Two participants had over 11 years of employment with the university, while the third had over six years.

I made a recruitment post to invite students to participate in the survey via a message posted on the FSS Facebook student group, and I sent a follow-up message three days later. The criteria for recruitment required that participants be 18 years or older and

should have experienced classes before the COVID-19 pandemic (face-to-face classes) and during the pandemic (online classes). Thirteen students ($n = 13$) emailed me, indicating their ability and willingness to participate in the survey. I emailed them the consent form and the link to the online questionnaire. All participants completed the survey ($n = 13$). The sample comprised 46% ($n = 6$) male students and 54% ($n = 7$) female students; 23% ($n = 3$) of the students were in the second year of their program, 31% ($n = 4$) of the students were in the third year, while 46% ($n = 6$) were in the fourth year. Also, 69% ($n = 9$) of the students were full-time employed, and 31% ($n = 4$) were not employed.

Like Cycle 0, qualitative data analysis included using Microsoft Word to code the interview transcripts line-by-line using gerunds. Then, focused coding helped to aggregate into categories used to develop themes. This process was iterative because I had to read the data multiple times to ensure that the coding captured the essence of the participants' responses.

Finally, I used pre-populated charts and tables generated by the Qualtrics software to analyze quantitative data, including percentage frequency distribution and basic descriptive statistical analysis, such as the mean and standard deviation.

Findings

The quantitative data analysis from the survey found that participants agreed with classroom, blended, and online learning. Participants favored classroom learning ($M = 4.38$, $SD = 1.05$), than online learning ($M = 4.34$, $SD = 1.33$) and blended learning ($M = 4.20$, $SD = 1.39$). The results indicate a need to address the slightly lower perception of online and blended learning.

Four key themes identified from the qualitative data analysis included: *challenges with the learning environment, student interaction and engagement, perception of blended learning spaces, and ongoing training and support*. The following sections describe each theme and supporting evidence from the data analysis.

Challenges with the Learning Environment. Access to reliable internet for online classes was challenging ($n = 3$). Participant 3 described internet connectivity as “Horrible. Horrible, to say the least.” Similarly, participant 2 stated, “many times, even if you want to make yourself available for students who are doing their assessments online, you may be on the road, traveling, elsewhere, and internet data is expensive.” Also, participant 1 suggested, “I do not know if the university would be able to make some kind of data available so that lecturers can use wherever they are, but the Internet service is very unreliable.” Participants ($n = 2$) suggested that the university explore internet service agreements with network companies or give lecturers a built-in internet data device to access the internet anywhere.

In addition, navigating and using the Moodle platform was challenging ($n = 2$). Participant 1 posited, “some students, who are not familiar with the technology, often do not know how to submit the essays or time run out and they cannot submit the tests.”

Also, participant 2 posited:

You have so many options on Moodle, and sometimes the options are ambiguous. For example, if I want to secure my test and have the students write on the Moodle platform, I must search to ensure I click in HTML or whatever format.

The findings indicate a need to ensure accessibility in online spaces, especially for lecturers and students who face challenges with reliable internet connection. Also, there

is a need to ensure that the learning platforms are easy to navigate and use for teaching, learning, and assessment purposes.

Student Interaction and Engagement. It is easier to facilitate peer interaction and participation in classroom activities. Assessing learning is challenging when lecturers cannot observe students and students do not actively interact and participate in online learning activities ($n = 3$). Participant 1 posited

Online, you do not get to hear some students because they are always not responding, and you have only a few who would respond all the time, while in face-to-face classes, you can always pick up a non-verbal clue from your students' expressions that he or she is puzzled.

Similarly, participant 2 posited, "...in person teaching gives you a better way to interact with students. It also allows you to observe and assess students... behind the screen, you cannot observe their body language, expressions, and cues, which is all part of effective communication." Further, participant 3 indicated, "in the online space, most of the collaborative work students undertake is done asynchronously so you cannot always gauge participation levels unless a student reports that another is not pulling their weight."

Related to this is the difficulty supervising online tests and assessments ($n = 2$). Participant 1 reported, "students would have the opportunity to open two devices simultaneously or have somebody in the background when completing an assessment. They do not have the same advantage when they are in class, face-to-face being invigilated." Meanwhile, participant 2 indicated:

Sometimes students are confused by the question and may be unable to contact the lecturer to clarify, so the answer could very well be out of context with what the question is asking, which could put the students at a disadvantage. Another online weakness is that students can utilize two devices when attempting tests.

The findings suggest a need to design learning activities for student interaction and to meet diverse needs and learning styles during and outside class times. Lecturers can integrate updated learning technologies and applications into teaching and learning to keep students engaged during and outside class times. Further, the findings suggest that the university may need to invest in examination-proctoring software.

Perception of Blended Learning Spaces. All participants ($n = 3$) supported blended learning spaces to offset the challenges experienced in using classroom and online learning spaces. Participant 1 posited:

I am 100% supportive of blended learning spaces. I would be most comfortable doing my lectures online, small group tutorials face-to-face, and final assessments in-person and invigilated... the tutorials can be done at the university in small spaces.

People will be able to space out because we have no control over when COVID-19 will end, and even after COVID-19, blended learning is the way to go, and I support it 100%.

Also, participant 2 posited, “Blended learning spaces would be great because some courses require face-to-face, and some aspects can be done online. Also, we are in a competitive environment, and we must consider offering courses at times and modalities convenient to persons.” Further, participant 3 posited:

Blended learning would be excellent. The only difficulty would be getting students to understand how to use the Moodle platform off campus. Moreover, lecturers must understand how to incorporate blended activities in teaching... It will aid in dealing with the space challenges on campus and allow students to connect to a wealth of information using the internet, including simulations and many different things outside the classroom.

The findings indicate that lecturers support blended learning spaces to overcome the physical space constraints at the university. In addition, online tools such as the Moodle learning management system will assist with content management, and other instructional tools such as simulations will enhance the learning experiences. However, lecturers and students need training and support to implement blended learning spaces.

Ongoing Training and Support. All participants ($n = 3$) indicated a need for ongoing pedagogical training and real-time technical support to implement blended learning. Participant 1 posited:

Training should be ongoing, and one-on-one or small group training... we should have training for lecturers on setting online assessments because we cater to people of varying ages and technological knowledge. Therefore, we cannot take for granted that online works for everyone.

Similarly, participant 2 posited, “we have to be trained and not just one-stop training, but continuous training to ensure that we are up to speed with technological advancements to deliver our courses more articulately and effectively.”

In addition, participant 3 indicated:

A team of people is needed to assist with planning and designing courses for blended learning, including pedagogical support such as content specialists, instructional designers including animators, and technical support in terms of the different tools and applications that could be used on the Moodle platform to help lectures make their content more engaging. Also, we need more supportive tools, such as an interactive hub, where we can find manuals, videos, and applications to support learning.

Training areas suggested by participants were the use of Moodle ($n = 2$), student engagement strategies ($n = 2$), and setting and securing online assessments ($n = 2$).

Support mechanisms suggested by the participants were reliable internet ($n = 3$), 24-hours technical support virtual helpdesk ($n = 2$), mentors to help students with challenges ($n = 1$), and handbooks on using Moodle ($n = 1$).

The findings indicate that implementing blended learning spaces requires planning and designing with instructional designers, content specialists, and technical support. In addition, it requires ongoing training and support to meet the needs of users with different learning styles and technological capabilities. Also, the online platforms and tools must be easy to navigate and use. Further, the health and safety of users are essential in physical classroom spaces.

Learnings

During Cycle 1, I collected and analyzed qualitative and quantitative data concurrently, while in the previous cycle, I only collected and analyzed qualitative data. Two things that went well during Cycle 1 were that I learned to use Qualtrics experience management software using YouTube videos. I also learned more about initial coding,

focused coding, categories, and themes. However, I used a manual process to do coding, which was tedious with multiple interview transcripts. In the future, I will explore using HyperRESEARCH, a qualitative analysis software.

I also recognized that the questionnaire used during Cycle 1 had too many items for the constructs. During the analysis, I also recognized that some items would have been confusing from the student's perspective. I included too many demographic questions, which were irrelevant during the analysis. I thought I needed many questions to analyze and gain insight into the problem. Now, I know I did not need many questions to analyze correctly. Further, I could have analyzed better quantitative data using cross-tabulation and inferential statistics. However, I was not good with advanced quantitative analysis and had yet to complete the advanced quantitative methods course.

After data collection in Cycle 1, I attempted to do a mini-intervention in the form of a change workshop to bring together stakeholders to inform the design of blended learning spaces for teaching courses post-COVID-19. The workshop was to learn stakeholders' views on the current best practices used for teaching and the needs and resources required to create a desired learning environment and map out the support needed in the short-term, medium-term, and long-term. Six participants ($n = 6$) attended the workshop, including four lecturers, an instructional designer, and an information technology expert ($n = 1$).

Unfortunately, at this point, my mind was still on a traditional research mindset, and I could not understand why I had to do an intervention in this action research cycle. I assumed I would do an intervention only in the dissertation in practice cycle, and everything before that was supposed to be data collection using instruments only. I did

not understand that the workshop was part of my data collection process, so I missed incorporating this aspect into the study. If I had realized the relevance of the intervention in the form of a workshop, I would have conducted the workshop on blended learning and then done data collection after the intervention to determine the effects of the workshop on the participants. However, I had already collected survey and interview data before the workshop.

Cycle 1 Research Summary

Cycle 1 explored users' perceptions of a blended learning environment and the support needed to teach courses in FSS post-COVID. I used a mixed-methods action research design to collect data by administering an online questionnaire to students and one-on-one online interviews with lecturers. Quantitative data analysis used percentage frequency distribution and descriptive statistical analysis, including the mean and standard deviation. The four key themes developed using a data-driven approach included: *challenges with the learning environment, student interaction and engagement, perception of blended learning spaces, and ongoing training and support.*

Though there was a preference for face-to-face classroom learning, the findings indicate that all participants, whether students or lecturers, supported blended learning spaces to offset the challenges experienced in the classroom and online spaces. However, several issues to address before designing and implementing a blended learning space include obtaining the assistance of content specialists, instructional designers, and technical support personnel to design learning activities for student interaction and engagement both in and out of class (Wilson & Randall, 2012).

Other areas to consider in implementing blended learning spaces are access to reliable internet and ensuring that the learning spaces are healthy, safe, navigable, usable, and accessible to lecturers and students with diverse needs and varying learning styles (Oblinger, 2005; Wilson & Randall, 2012). Also, investments in online instructional technologies such as simulations and ongoing pedagogical and technical training and support to use the technologies would be required (Adedokun et al., 2017; Oblinger, 2005).

Conclusion

After cycle 1, I researched a blended/hybrid approach that was easy to implement in the local context, given the physical space constraints and the ongoing COVID-19 pandemic. I came across a study by Drea (2021), who piloted a choice model at Illinois College, allowing students the autonomy every day to choose whether to attend classes in person or online (via Zoom). I then discussed this with my LSC (Leader Scholarly Community) Chair, Dr. Stephanie Smith, and discovered that a similar model exists at Arizona State University called ASU Sync.

I held an online Zoom meeting with a technological expert and instructional designer from Arizona State University and the technical experts at the University of Guyana to discuss the technological and pedagogical needs for implementing a synchronous hybrid model at the University of Guyana. After the meetings, I recognized that investments in instructional technologies, personnel to support the blended-course design, and ensuring internet reliability were mainly beyond my control and the scope of my professional practice. Therefore, I considered the best way to use the existing infrastructure, as suggested by Abdullah (2012).

I utilized the existing Moodle learning management system and the Zoom-enabled classrooms to conduct synchronous online and face-to-face classes. In addition, I invested in a Kahoot game-based learning technology to support engagement and interactivity in the classroom. As a result, I conducted the dissertation in practice action research to examine students' perceptions and the extent of the differences in student engagement and satisfaction using a flexible learning space choice model (FLSCM) for teaching a business course at the University of Guyana.

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CHAPTER 3

JOURNAL ARTICLE: FLEXIBLE LEARNING SPACE CHOICE MODEL (FLSCM) FOR STUDENT ENGAGEMENT AND SATISFACTION

ABSTRACT

Flexible learning space choice models (FLSCMs) effectively address physical space constraints and social distancing requirements in classrooms in higher educational institutions. This concurrent mixed methods action research (MMAR) study examined students' perceptions and the extent of the differences in student engagement and satisfaction with the FLSCM by gender and employment status. The FLCM gave students the autonomy every week, for one semester, to choose a learning environment that met their needs and preferences. In addition, mediating educational technologies were used to aid the teaching and learning process.

I collected quantitative data using an online questionnaire with a Likert-type closed-response rating scale to determine their engagement and satisfaction with the FLSCM and qualitative data using one-on-one semi-structured online interviews with students to understand their perceptions of the FLSCM. I used thematic analysis to analyze the qualitative data. In addition, I used descriptive and inferential statistical analyzes to analyze the quantitative data, including bivariate correlation, independent samples t-tests, and factorial multivariate analysis of variance (factorial MANOVA).

The results indicated that students perceived the FLSCM as suitable for facilitating learning, student engagement, and satisfaction. There were no significant differences in levels of student engagement by gender and employment status. Additionally, there was no significant difference in student satisfaction by gender.

However, full-time employed students were largely less satisfied than their peers mainly because of students' prior knowledge of the topics and the lengthy duration of the classes. However, an interesting supplemental finding was that those male students became disengaged when not performing well in game-based learning activities.

KEYWORDS: Student engagement, student satisfaction, flexible learning spaces, higher education

INTRODUCTION

This chapter provides an overview of the action research study examining students' perceptions and the extent of the differences in student engagement and satisfaction using a flexible learning space choice model (FLSCM) for teaching a business course at the University of Guyana. The chapter includes the problem of practice, a purpose statement, guiding research questions, a literature review, an overview of the sociocultural theory of learning as the theoretical framework supporting the study, the methods, results, discussion, and conclusion.

Background

The education landscape is constantly changing due primarily to globalization and the rapid advancement of technology. In early 2020, the COVID-19 pandemic accelerated the change by disrupting the conventional educational system, affecting more than 1.6 billion students (more than 91 percent) worldwide (United Nations, n.d.). The pandemic exacerbated the learning crisis that countries were already experiencing and put them further off-track in achieving the United Nations Sustainable Development Goal (SDG) 4 to provide opportunities for inclusive, equitable, lifelong learning quality education (United Nations, n.d.). However, the pandemic also presented an opportunity for countries to learn from the innovations and emergency processes adopted during the crisis to scale up effective digital education solutions (d'Orville, 2020; Luthra & Mackenzie, 2020) to build educational systems that are more inclusive, efficient, and resilient (World Bank, 2020).

Guyana is a member state of the Caribbean Community (CARICOM), where the pandemic disrupted education for over five million students and two hundred thousand

teachers (CARICOM, 2020). The pandemic highlighted the challenges, which were already affecting the education sector in the Caribbean Community, such as inequalities in the educational system, especially among those who have special education needs and disabilities, those who live in remote geographical locations, and those who live in poverty and cannot access educational resources (Blackman, 2022; CARICOM, 2020). Therefore, there was an urgent need for increased technological and pedagogical innovation to make the educational system more robust and able to meet the needs of students (CARICOM, 2020). Fortunately, higher education institutions in the Caribbean were more ready to respond to the crisis by making rapid adjustments using digital technologies to continue teaching online (CARCOM, 2020) and roll out contingency plans and policies to overcome the situation, remain competitive and provide high-quality education (García-Morales et al., 2021).

The University of Guyana, Guyana's only national higher education institution, responded in several ways to ensure continued teaching and assessment of courses during and after the COVID-19 pandemic by undertaking learning support activities such as providing guidelines, tools, support services, and other learning resources. The four main areas where the university supported academic staff and students were technology, academics, administration, health and well-being.

Technology support included a laptop loan program to provide computers to vulnerable and disadvantaged students facing socioeconomic difficulties during the pandemic (University of Guyana, 2020). Other technology support included providing hardware and software resources, piloting online testing with the Moodle learning management system, and technical training for users using Moodle, Zoom, and other

teaching and assessment tools in the online and blended learning environment. Further, with external funding support, the University of Guyana launched a Zoom room project, which represented the beginning of a transformation process as the University moved toward a blended-learning architecture (University of Guyana, 2021b). The Zoom-enabled classrooms allow classes to be live-streamed from anywhere inside and outside Guyana once there is a strong internet connection.

Academic support included instructional and assessment design strategies to meet students' needs including extra time for completing course work for students who were frontline workers, a move towards continuous assessment instead of final examinations (University of Guyana, n.d.), conferences for academics and students to network and learn from researchers and other key stakeholders locally and internationally (University of Guyana, 2021c). In addition, the university's Center for Excellence in Teaching and Learning conducted over 100 training courses on teaching online, and selected staff benefitted from courses and programs on designing online instruction and assessment (University of Guyana, 2023).

Administrative support included the implementation of over 18 policy guidelines supporting the transition to online operations and the management of courses in emergency mode (University of Guyana, 2023). Some policies developed include an inclusivity, diversity, and equity policy; sexual harassment and sexual misconduct policy; a student mental health policy; and a policy for recording instructional activities. Also, there were remote/off-campus teaching and learning and non-academic virtual support services for students, such as finance, library, and examination services, and virtual orientation training for staff and students (University of Guyana, n.d.). Further, health

and well-being were paramount. Therefore, the university hired a health and safety officer, established health and safety protocols, offered counseling services, and engaged students and staff in activities geared toward mental health and stress relief (University of Guyana, n.d.).

Most administrative functions at the University of Guyana have returned to face-to-face with online options for some services. However, teaching remained primarily online or used a hybrid approach, with some classes face-to-face and some online. A significant problem faced by the university before the pandemic was inadequate physical spaces for face-to-face courses. This dissertation in practice research seeks to address this problem, as outlined in the next section.

Problem of Practice

The problem of practice this study seeks to address is the inadequacy of physical classroom spaces for teaching and learning at the University of Guyana, which has been an ongoing issue since its inception (Menezes, 2016). There was an ownership and entitlement mindset among internal units, which made it difficult for the organization to be flexible and adaptable using the existing physical spaces.

In addition to the inadequate physical classroom spaces, other related problems identified in the literature and two previous action research cycles were a need to ensure the existing physical classroom spaces were flexible, adaptable, usable, navigable, accessible, comfortable, and conducive to meet the teaching and learning needs of users. Also, there was limited adoption of technologies and the predominant use of teacher-centered pedagogies by lecturers (Gaffar et al., 2011; Livingstone, 2015; Persaud &

Persaud, 2019). These challenges led to dissatisfaction among students and staff, sometimes resulting in adverse publicity for the university.

Henriksen et al. (2020) posited that problems of practice are complex and actionable issues within a professional's work for which there is no clear answer. For example, when the COVID-19 pandemic hit in March 2020, there was a radical transformation from face-to-face teaching to online teaching using Moodle Learning Management System (MLMS) for content management and Zoom conferencing software for synchronous classes (Oyedotun, 2020). However, there were also challenges in the online learning environment, such as unreliable internet, power outages, and difficulties accessing, navigating, and using the learning platforms for teaching, learning, and assessment. Further, the online environment did not allow for much student interaction, collaboration, and engagement in the classroom (Oyedotun, 2020; Peker & Ataöv, 2020).

Cycle 1 study explored a proposed solution, blended learning spaces, which combined face-to-face and online learning. Lecturers and students supported implementing blended learning spaces. However, implementing such spaces requires the involvement of instructional designers, content specialists, and technical support personnel and ongoing training and support to design learning activities for student interaction and engagement both in and out of class (Wilson & Randall, 2012).

Understanding the learning space choices of students to address the problem and effectively meet their needs and expectations is essential in the contemporary learning environment (Adedokun et al., 2017). Students should be able to choose student-centered learning spaces equipped with the technology and materials to support multidisciplinary learning and pedagogy. These spaces should also be flexible, comfortable, functional,

secure (physical and network security), multi-usable, and designed to enable access by persons with disabilities (Oblinger, 2005; Wilson & Randall, 2012). I conducted this dissertation in practice action research cycle to examine using a flexible learning space choice model (FLSCM) to address the problem of inadequate physical learning spaces.

Purpose Statement

This action research cycle aims to design and implement a flexible learning space choice model (FLSCM) and to examine the model's effectiveness in enhancing student engagement and satisfaction. Specifically, the study will examine the students' perceptions and the extent of the differences in student engagement and satisfaction by gender and employment status of the flexible learning space choice model (FLSCM) for teaching a business course in the School of Entrepreneurship and Business Innovation at the University of Guyana. The findings of this study will inform the design and implementation of flexible learning space choice models to address the physical space limitations on campus and allow for social distancing in the classroom. Further, the findings about the FLSCM will inform the development of strategies that can enhance student engagement and satisfaction. This study will address the four research questions stated below:

Research Questions

RQ 1: What are the students' perceptions of the flexible learning space choice model (FLSCM) used for teaching a business course at the School of Entrepreneurship and Business Innovation?

RQ 2: To what extent is there a relationship between student engagement and student satisfaction with the FLSCM?

RQ 3: To what extent are there differences in (a) student engagement and (b) student satisfaction with the FLSCM by (a) gender and (b) employment status?

RQ 4: To what extent are there differences in student engagement and student satisfaction with the FLSCM by gender and employment status?

The following section provides a brief literature review on flexible learning space choice models for student engagement and satisfaction and an overview of the theoretical framework supporting the study, the Sociocultural theory of learning.

Literature Review and Theoretical Framework

This section provides an overview of the literature that guides the action research study and the theoretical framework, the sociocultural theory of learning.

Literature Review

Learning space design is a wicked problem in education; it is complex, nonlinear, and iterative, as there is no one-best solution (Rittel & Webber, 1973). For example, when the COVID-19 pandemic disrupted the traditional educational system and countries attempted to implement various solutions, it caused accelerated changes in the entire educational ecosystem, meaning education would never return to its original state before the pandemic. In addition, intensive technological integration into courses disrupted traditional course delivery models used by lecturers and students, so educational institution leaders must now embrace the lessons learned and explore new models for course delivery (Drea, 2021). However, the extent of the use of technology needs to be carefully considered, as several authors have cautioned that a new problem is looming - the widening digital divide (Blackman, 2022; d'Orville, 2020; García-Morales et al., 2021; Li & Lalani, 2020; Zhao & Watterston, 2021).

According to UNDP (2022), a pressing post-pandemic problem in Latin America and the Caribbean is the lack of adequate access to the internet and electronic devices in poor and vulnerable households. Blackman (2022) shared similar views that access to technology is the predominant means of continued education, and it is not available to children living in vulnerable households. Therefore, the educational system is facing new possibilities to do things differently and with greater flexibility to make accessibility to education easier for students (Luthra & Mackenzie, 2020).

Flexible Learning Space Choice Models

Flexible/hybrid mixed-mode education models are more effective than face-to-face or online modes and bring significant benefits (Dorn et al., 2020; Li & Lalani, 2020; Zhao & Watterston, 2021). Flexible learning space choice models (FLSCMs) help overcome the problem of space constraints and some of the difficulties experienced in the teaching and learning process since students can choose a learning space that meets their learning needs while enabling the co-existence of traditional face-to-face modes and online learning activities and resources in teaching courses (Beatty, 2019; Wilson & Randall, 2012). Also, flexible learning space choices allow face-to-face or online student contact with lecturers and peers, promoting socialization, collaboration, flexibility, accessibility, and learning resources in a technology-enhanced learning environment (Haleem et al., 2022).

Drea (2021) piloted a choice model at Illinois College, allowing students to attend classes in person or online (via Zoom). The author argued that the choice model gave students autonomy in choosing whichever learning environment was most comfortable or convenient for them and met their needs. A similar model by Beatty (2019), called the Hyflex model, allowed students to choose their mode of participation in every class that met their needs and preferences. When given the autonomy to decide where, when, and how they learn, with interesting and relevant learning materials and opportunities for socialization, students become engaged and motivated in learning (Ryan & Deci, 2017; Wehmeyer & Zhao, 2020; Zhao, 2022). In addition, learning space choice models allow the lecturer to integrate technology into the course to track student engagement, enhance

learning and reduce excessive student-to-student physical contact as per pandemic guidelines (Drea, 2021; Vargo et al., 2021).

FLSCMs allow students from lower-income, vulnerable, or disadvantaged households without access to electricity, the internet, electronic devices, or spaces to work uninterrupted to have the option of attending classroom learning. Also, FLSCMs are essential for students with learning difficulties who may struggle to work independently; thus, maintaining opportunities for classroom learning would be essential for special needs learners (Giannini & Lewis, 2020). Further, FLSCMs allow students to engage online with a global audience and are less constrained by the local contexts (Zhao, 2018a; Zhao & Watterston, 2021). FLSCMs are essential in Guyana, where some students face difficulties getting time off from their employers to attend traditional classroom-based programs (Bernard et al., 2002).

Student Engagement and Satisfaction

Learning spaces that match students' needs and learning styles and support inclusion and safety maximize students' satisfaction (Strange & Banning, 2015). For example, Loeb (2020) posited that in-person courses are more effective because being face-to-face with teachers and peers creates social pressures, motivating students to be engaged in classes. However, Li and Lalani (2020) suggested that online learning is effective as some students learn faster and cover more material because they control their pace of learning. Also, learning time can occur asynchronously without the lecturer or peers, as students learn from class content posted online, other online resources, and experts worldwide (Zhao, 2018a). However, some students find it easy to be distracted in the online learning space. Therefore, there is a need for a structured learning space using

collaboration tools, engagement methods, and technology, such as integrating games to make learning fun and engaging (Li & Lalani, 2020). For example, Kahoot game-based learning is a student response system that provides quick and easy ways to determine students' learning (Haleem et al., 2022) and to keep them engaged in the classroom.

Digital online technologies help design solutions to match each student's knowledge and learning style (d'Orville, 2020). Incorporating digital educational technologies into teaching and learning is essential for higher educational institutions catering to Millennials, born between 1981 and 1996, and Generation Z, born between 1997 and 2012. Millennials and Generation Z students are accustomed to instant communication and feedback using applications such as WhatsApp, Zoom, Facebook, and Snapchat (d'Orville, 2020; Luthra & Mackenzie, 2020). In addition, these students are accustomed to collaboration and sharing their knowledge with others online (Luthra & Mackenzie, 2020). Further, students are more satisfied, engaged and interested in courses and learning activities, which promote a sense of interaction among members (Haleem et al., 2022; Liu et al., 2006).

An important precedent to student engagement is the design of classrooms to facilitate student interaction (Strange & Banning, 2015). Temple (2008) highlighted that university building designs need to support learning by considering the social underpinnings of learning to provide more welcoming and flexible spaces. Also, lecturers must remember that each student is unique and has varying development levels. Therefore, lecturers need to evaluate students' progress constantly and then scaffold or give them incremental adjustments in learning activities according to their needs, with tasks becoming progressively more difficult as learning occurs. Vygotsky (1978) argued

that when designing practical learning experiences, instructional decisions must align to match the type and quality of interaction within the zone of proximal development. Learning toward development levels already reached is ineffective. Interactions with more knowledgeable others should lead learners beyond their current thinking by applying learning to new tasks (Vygotsky, 1978).

Engaging with the teacher or more competent peers helps students learn best instead of working alone. However, the view of the teachers as the knowledge-holder is no longer suited to 21st-century education, as students can gain access to knowledge and learn a new skill online with a few clicks on their phone or computer. Instead, teachers should act as advisers, coaches, and facilitators of student development (Luthra & Mackenzie, 2020; Zhao, 2018a, 2018b, 2022).

Rook et al. (2015) identified the sociocultural theory of learning as a theory to consider when designing learning spaces. Grounding learning space design in sociocultural learning theories recognized the importance of social interaction for learning (Rook et al., 2015). The sociocultural theory of learning by Vygotsky contributes to research. In addition, it has practical applications to classroom teaching by understanding the qualitative behavioral changes in learners as they develop higher-order thinking skills. Vygotsky proposed that knowledge is co-constructed through the interdependence of individual and social processes (John-Steiner & Mahn, 1996). The social process refers to learning through socialization and participation in joint activities with more knowledgeable others. Several authors support this by highlighting the importance of designing learning spaces that foster socialization and community building (Alstete & Beutell, 2018; Beckers et al., 2016; Sankari et al., 2018; Temple, 2008;

Wahlstedt et al., 2008). The following section describes in more detail the sociocultural theory of learning, the overarching theoretical framework of the study.

Theoretical Framework

The theoretical perspective relevant to this action research is the sociocultural theory of learning pioneered by Lev Vygotsky. This theory informs the implementation of a flexible learning space choice model (FLSCM), incorporating student engagement strategies to examine students' perceptions of the model and determine the extent of the differences in student engagement and student satisfaction. Vygotsky posited that cultural, social, and historical interactions played a significant role in cognitive development (Polly et al., 2017). Social interactions with more knowledgeable others (adults, teachers, peers, mentors) help construct learners' cognitive abilities, and internalization of cultural concepts of language and writing facilitates the formation and development of elementary mental functions such as attention, perception, memory, and problem-solving into higher mental processes (John-Steiner & Mahn, 1996). There are three fundamental principles of the sociocultural theory of learning: (1) social interactions with more knowledgeable others are significant to learning; (2) culture-specific tools mediate learning and signs of intellectual adaptation; and (3) learning occurs within the Zone of Proximal Development (ZPD), which is problem-solving under guidance or collaboration with the more knowledgeable other (John-Steiner & Mahn, 1996).

The first principle contends that social interaction is critical for human development. Vygotsky (1978) posited that learning occurs at the social level through interactions with more knowledgeable others than internally in the individual's mind.

Learners adopt socially shared experiences learned from teachers, peers, parents, and other more knowledgeable persons, which, combined with the learner's internal processing, influences self-learning and cultural development. The second principle contends that signs and symbols (such as language, writing, number systems, and works of art) and cultural tools (such as television) facilitate the co-construction of knowledge, and the tools perform a mediating role in the social and individual learning process (Polly et al., 2017). Language is the best mediation tool as it facilitates communication with more knowledgeable others for guidance to accomplish activities. Learners construct meaning and use inner speech to solve problems independently (Robbins, 2007; Wells, 2007).

The third principle contends that learning must match the child's level of development. ZPD is a better indicator of cognitive development since it reflects what the learner has already learned compared to the potential levels of development (Vygotsky, 1978). Vygotsky (1978) indicated that ZPD is the difference between a learner's current independent problem-solving capacity and the potential level of development after problem-solving under the guidance of more knowledgeable others (lecturers and peers). Aligning instructional decisions within the zone of proximal development allows learners to develop skills they will apply independently in other situations (Vygotsky, 1978). Vygotsky outlined scaffolding as a tool for growth, where the learner completes small manageable steps while collaborating with more knowledgeable others. The learner then practices new tasks as they become more independent and proficient at earlier tasks. I will apply this theoretical framework in the discussion section. The following section will examine the research methods for this study.

Methods

This section will introduce the case study approach used in this research and describe the setting for the action research and the innovation. I then described the mixed-methods action research design, the instruments, and the population and sampling technique. Finally, I described the qualitative and quantitative data collection and analysis strategies for the dissertation in practice.

This study was a practical action research conducted to examine students' perceptions and the extent of the differences in student engagement and satisfaction using a flexible learning space choice model (FLSCM) for teaching a business course in the School of Entrepreneurship and Business Innovation (SEBI) at the University of Guyana (UOG). Practical action research involves small-scale research focused on a problem undertaken by a practitioner within a practice setting (Plano Clark & Creswell, 2015).

Case Study Approach

I use the case study methodological approach in this practical action research study. Dick (2014b) described a case study as an inquiry into a single social unit. I did this exploratory case study within the School of Entrepreneurship and Business Innovation at the University of Guyana to explore the problem of practice in-depth, operationalize the theory, and develop an appropriate intervention to impact the learning space problem positively.

Further, Dick (2014b) indicated that case studies and action research help integrate theory and practice and are adaptable to the research context. Therefore, this study followed a theory-based design, the sociocultural theory of learning posited by Vygotsky, which I applied to examine FLSCM's effectiveness in enhancing student

engagement and satisfaction for a business course taught in the SEBI at the UOG. Also, at each stage of the research process, I reflected on understanding the problem, created and implemented the innovation, and evaluated the outcomes.

Setting

The setting for this action research study was the School of Entrepreneurship and Business Innovation (SEBI) at the University of Guyana. Before the COVID-19 pandemic, classes were face-to-face on campus. SEBI had no written policy on the scheduling of classes, nor any written policy describing the programs. However, there was an implied policy that most classes were evening hours on weekdays and Saturdays during the morning and afternoon hours because most of the students were working professionals. Full-time and part-time lecturers taught by dictating notes in class or lecturing using PowerPoint presentations and sending lecture notes via email on Edmodo (a learning management platform), while only a few used the university-sanctioned Moodle learning management system. Classes were in the SEBI building and wherever shared spaces were available. However, when the COVID-19 pandemic began in March 2020, the synchronous classes used for all courses were online using the Zoom platform for lecturing. Most lecturers posted materials on the Moodle learning management system, but the implied synchronous class schedule times remained the same as in the physical classroom settings. Post-pandemic, a few classes have returned to face-to-face, while the majority remained online. However, physical spacing constraints will worsen if many classes return to face-to-face modality, as health and safety require social distancing.

Innovation

The innovation used in this study was a flexible learning space choice model (FLSCM) adapted to the local setting but like those described by Drea (2021), Beatty (2019), and the Arizona State University Sync model. The ASU Sync model is an interactive learning model where students can attend classes in person at the same time as other participants attend remotely using live lectures via Zoom. This model uses technology to enhance the active learning experience, accommodate individual learner circumstances, and allow classroom social distancing (Arizona State University, n.d.).

I held an online Zoom meeting with a technological expert and instructional designer from Arizona State University and technical experts from the University of Guyana to discuss the technological and pedagogical needs for implementing such a model at the University of Guyana. However, this infrastructural setup was expensive and required time to implement, which was not the focus of this research, nor was it something in my professional practice. Therefore, I used the existing Zoom-enabled classroom conferencing facility in the SEBI at UOG and gave students the autonomy to choose whether to attend simultaneous synchronous classes for the business course in person or online. I also used student engagement strategies aided by technology in teaching the course. For example, I used Kahoot, an interactive and game-based learning application, to create, share, and play learning games that foster individual and collaborative engagement. I piloted this Kahoot game-based application in a class taught before implementing the innovation to understand its use and gauge student interaction.

Flexible learning Space Choice Model (FLSCM)

The innovation should positively impact the physical learning space constraints, accommodate individual learning circumstances, and allow for social distancing in classrooms. Technology and learner-centered pedagogies also aim to enhance student engagement and satisfaction. The sociocultural theory of learning guided the change plan. I shared the required readings for each module in the business course with the class at least one week in advance. The live synchronous classes featured the Kahoot interactive game-based quiz (culture-specific tool) to engage students in friendly competition against their peers and to test their learning of the material covered (zone of proximal development) using multiple-choice and true-and-false quiz questions every 20 minutes of the 3-hour lecture.

Other active engagement strategies used included using YouTube videos, case studies, and real-life examples with in-person and online students discussing and sharing their experiences and thoughts on the content with their peers and with guidance from two co-lecturers (more knowledgeable others). Furthermore, I posted content for the class, including PowerPoint slides, supplementary reading materials, videos, and Zoom recordings of the synchronous classes on the Moodle learning management system. In addition, I created a WhatsApp group with the students for communication with their peers and me outside of class times.

Alavi and Gill (2017) posited that change leaders must be highly involved in the change effort to build trust and influence followers' commitment and readiness for change. I was both a participant and an observer in the innovation. First, I noted potential problems arising in the change process. Second, I assisted the participants in navigating

through the process, such as I did an online orientation session with the class in the first week to explain access to Zoom, Moodle, and the Kahoot game-based application before the commencement of the course. I also continued to do this, when necessary, throughout the semester.

Mixed Methods Action Research Design (MMAR)

The study employed a concurrent mixed methods research design, in which I collected qualitative and quantitative data independently and analyzed the data simultaneously to understand various perspectives (Plano Clark & Creswell, 2015). I obtained quantitative data from a large number of participants, while qualitative data was obtained from a smaller number of participants (Plano Clark & Creswell, 2015) to get an in-depth understanding of the FLSCM. Concurrent mixed methods allowed me to give each data type equal priority and then integrate them to discern whether there was corroborating evidence in the data obtained (Ivankova, 2015). Mertler (2020) postulated that many action research studies align better with mixed-methods research designs. MMAR draws on the synergies and strengths of quantitative and qualitative methods (Gay et al., 2012).

Instruments

I developed three data collection instruments: the interview schedule, questionnaire, and reflective journal. However, participants only volunteered to complete the online questionnaire and one-on-one virtual interview. The interview schedule had ten semi-structured interview questions examining students' perceptions of flexible learning space choices and their engagement and satisfaction with the model used for teaching a business course (see Appendix D).

In addition, I developed an online questionnaire with two constructs (a) student engagement and (b) student satisfaction. Items for the student engagement construct were adapted from an online student engagement scale (OSE) by Dixon (2015). I adapted items for the student satisfaction construct from a study by Strachota (2003). The items selected and adapted considered the research questions, the local context, and the sociocultural theory of learning framework by Vygotsky.

First, I reviewed the questions and changed the wording to suit the context of my study. Some changes included being specific about the period referenced by the question (regular basis changed to weekly, and participated actively changed to weekly). Also, I kept the question structure simple yet expanded on the questions to provide more clarity. In addition, I generalized some items to state ‘course’ sessions rather than class sessions or online sessions because the model intends to offer simultaneous ‘class’ sessions and ‘online’ sessions. Further, I aligned the wording of the items between the constructs, such as ‘website’ used for one item while ‘online learning resources’ used for another item; I standardized it to online learning resources for both items.

Second, four persons (a colleague, a family member, and two students in a class taught the semester prior to the intervention) used face validity to assess the instrument to check the readability, formatting, and clarity of the statements to suit the local context (Oluwatayo, 2012). The questionnaire comprised 22 statements on a closed-response rating scale and five demographic items (see Appendix E). I used a six-point Likert scale, without a mid-point, from *strongly disagree* to *strongly agree*. Dalal et al. (2014) suggested using a 6-point response scale for ideal points. Six-point scales direct respondents to either a negative or positive side (Taherdoost, 2019) and encourages

participants to make optimized decisions and take sides in one direction (Krosnick, 1991).

Population and Sampling Technique

The participants for the dissertation in practice were 89 students enrolled in a business course taught in the SEBI at the UOG. The class comprised 17 males and 72 females, with ages ranging from 18 years to 40 years. The students were in programs in several departments across the university, including accounting and finance ($n = 44$), curriculum and instruction ($n = 33$), economics ($n = 7$), communication studies ($n = 2$), and biology, computer sciences, and entrepreneurship ($n = 1$) each.

I used convenience sampling to select the participants who were accessible (Plano Clark & Creswell, 2015) and were willing to participate in the study (Ivankova, 2015). I used this sampling technique because it was an inexpensive, quick way to reach interested students. Also, it was the best method for me since I was the course lecturer and wanted to avoid influencing student participation in the study.

Qualitative Data Collection and Analysis

I collected qualitative data through one-on-one interviews with students to analyze research question one, which examined students' perceptions of the flexible learning space choice model (FLSCM) used for teaching a business course in SEBI. I emailed invitations to participate in the interviews to all students ($N = 89$) enrolled in a business course I was lecturing in Fall 2022 (Semester 1). I sent two follow-up emails within three weeks.

Eight students ($n = 8$) indicated their ability and willingness to participate. I emailed the participants the consent letter and mutually agreed on interview dates and

times. Six females ($n = 6$) and two males ($n = 2$) participated. Seven participants ($n = 7$) were employed full-time, and one ($n = 1$) was employed part-time. The participants were from programs in the departments of Accounting and Finance ($n = 2$), Curriculum and Instruction ($n = 4$), and Economics ($n = 2$).

I conducted semi-structured interviews virtually on the Zoom platform using an interview schedule with pre-determined questions to collect data. Where necessary, during the interview, I asked follow-up and probing questions to extend the participant's answer (Brinkmann & Kvale, 2015). Virtual interviews allowed me to record the oral responses from participants using the Zoom platform. I obtained the participants' consent to record before starting the recording. After, I transcribed the interviews and sent the transcripts to each participant for them to verify the data's accuracy. Participants requested no changes. I then used pseudonyms for each transcript to ensure anonymity.

Method of analysis

I analyzed qualitative data using thematic analysis, which entailed searching the data set to identify, analyze, and interpret patterns (Clarke & Braun, 2017). The thematic analysis examined students' perceptions of the flexible learning space choice model (FLSCM) used for teaching a business course in the SEBI. I completed the thematic analysis using six steps outlined in Braun and Clarke (2006). The steps included: (1) familiarizing myself with the data; (2) generating initial codes; (3) searching for themes; (4) reviewing the themes; (5) defining and naming themes; and (6) producing the report of the analysis. I used open coding to develop and modify codes as the analysis progressed (Maguire & Delahunt, 2017; Williams & Moser, 2019). I then analyzed and aggregated the codes to develop themes.

I developed themes using a hybrid approach posited by Proudfoot (2022), which entailed switching back and forth between deductive (theory-driven) analysis based on the theoretical framework and literature reviewed and inductive (data-driven) analysis (Clarke & Braun, 2017), generating themes from the interview text. Proudfoot (2022) posted that the hybrid approach to thematic analysis offers more rigor through mutual reinforcement. This process was recursive because I had to read the data multiple times to ensure that the coding was theory-led but also captured the essence of the participant's responses. Microsoft Word was used to aid in the coding process.

A peer debriefing strategy ensured the trustworthiness of the data collected by asking a colleague with over 25 years of institutional experience to help me reflect on the research process by reviewing and critiquing the data collection, analysis, and interpretation to ensure that personal beliefs and experiences did not skew the research.

Quantitative Data Collection and Analysis

I collected quantitative data using an online questionnaire administered to students to analyze research questions two, three, and four, examining the relationship between student engagement and student satisfaction with the FLSCM and the extent of the differences in student engagement and student satisfaction with the FLSCM by gender and employment status. I emailed invitations to participate in the survey to all students (N = 89) enrolled in a business course I was lecturing in Fall 2022, and I sent two follow-up emails within three weeks. In addition, I included the consent form and the link to the online questionnaire administered via Qualtrics experience management software in the recruitment email. I used this process to ensure students voluntarily

participated and felt no undue influence to complete the survey because I was the lecturer for the course.

Data treatment

The data obtained included information on the two constructs: student engagement and student satisfaction, and demographic data included: gender, age, employment status, number of face-to-face sessions attended, and number of online sessions attended. I exported the data to Microsoft Excel and coded the variables into numeric values. An assessment of missing data was done, and I included responses with less than 20% missing data. I then imported the data to SPSS 28 (IBM, 2022) and calculated the average for the constructs, student engagement, and student satisfaction with 11 items each. Also, I created an employment status dummy variable where I coded full-time employed students as one and others as two.

Method of analysis

The method of analysis used included descriptive and inferential statistical analyzes to answer three of the four research questions. First, I used a bivariate correlation to determine the extent to which a relationship exists between student engagement and student satisfaction with the FLSCM. Bivariate correlation was most appropriate as the research question (RQ2) looked at the relationship between two variables (student engagement and student satisfaction). Second, I used independent samples *t*-tests and descriptive statistics to determine the extent to which there were differences in (a) student engagement and (b) student satisfaction with the FLSCM by gender (males and females) and employment status (full-time employed and other

students). Independent samples *t*-tests were most appropriate as the research question (RQ3) compared the means of two mutually exclusive groups.

Additionally, I used factorial multivariate analysis of variance (factorial MANOVA) and descriptive statistics to determine the extent to which there were differences in student engagement and student satisfaction by employment status (full-time employed, part-time employed, and not employed) and gender (males and females). Factorial MANOVA was most appropriate as the research question (RQ4) had two or more categorical independent variables (employment status and gender) and two dependent variables (student engagement and student satisfaction).

Results

I presented the qualitative and quantitative results in the two sub-sections below.

Qualitative Results

Two key themes developed from the qualitative data analysis include: *facilitating students learning* and *participatory learning and support systems*. The following sections describe each theme and supporting evidence from the data analysis.

Facilitating students' learning

The FLSCM allowed students to choose an accessible and comfortable learning environment that met their needs. Participant 1 reported:

I could stay at work, join online and still listen and contribute to the class discussion, even though I had work duties that I needed to perform... I could still contribute and learn like anybody else would in the class.

Similarly, participant 3 stated, "I attended one face-to-face class as well as online classes...If I could not make face-to-face classes, I did not have to miss the class entirely." In addition, participant 5 indicated:

I was satisfied because I got to choose how I wanted to attend classes. Some days, if I was tired, it allowed me to choose whether I put in extra effort to go to the campus or go home and take an hour to rest before classes.

Another view about the FLSCM was that it allowed students living or working far from campus to choose a learning space that met their needs. According to participant 7, "I was working, and it was challenging getting time off to travel to campus to make it to class on time." Further, participant 7 commented, "Persons who lived closer to campus

could take the course in person, but those who live far away from campus, like me, could take online classes.”

A third view was that the FLSCM addressed the challenge of accessing transportation to and from campus. For example, participant 2 explained, “I do not have transportation. I care for my husband, who met in an accident two years ago, and my two small kids. I could not go for face-to-face classes and leave them alone at home, so online classes were convenient for me.”

In addition, the FLSCM catered to different learning styles and learning needs. For example, participant 8 stressed, “I like in-person classes because I focus more. Online does not work for me. So I needed in-person classes.” Participant 4 expressed similar views:

I am a visual learner. I prefer to converse and see the lecturers and my colleagues' facial expressions, so I attended some classes on campus. Then I did the latter set of my classes online at home because I was under pressure from other course deadlines. Online studying was new for me, especially adjusting to the technology and online process... but online was okay because I could still participate in class from home.

However, while the FLSCM facilitated students learning, there were challenges with the learning environment, whether on campus or online, including unstable internet, power disruptions, and distractions, such as noise or work. For example, participant 1 indicated, “I was planning to go campus for a class, but because of a blackout [power outage] on campus, I did not bother to go there.” Participant 3 also shared this view:

Twice my friends and I were headed to the face-to-face class, and we had to turn back. Once, it was raining heavily, and another time there was a blackout [power outage]. Right there and then, we could have taken out our cell phones and still be in class.

Similarly, participant 5 stated, “I attended online and in-person classes. The in-person session was great because I interacted with my lecturers and class members. The online aspect was not bad, except on days when I had terrible internet.” Also, participant 7 commented, “My internet was slow. As a result, I sometimes missed things, so I had to self-study to understand the topic.”

Regarding the distractions in the learning environment, participant 2 stated, “I have kids, and there was a lot of noise in my background, so I did not participate in class discussions.” Participant 6 expounded on this point, indicating:

Online has been satisfying because I could do a lot and still be in class... However, it was noisy in my home. I have children, and some days I would cook dinner while attending online classes... my phone would typically be on top of the microwave, and I would glance at the slides. Sometimes my kids would come running to me, and my husband would call me for something.

However, while there were distractions in the learning environment at home or work, some participants still participated actively in classes. For example, participant 6 stated, “When the Kahoot game started, sometimes I would run from one end of the kitchen to the other to ensure I was on the device to answer the question as soon as possible.”

The findings suggest that the FLSCM facilitated students' learning because they had the autonomy and choice to select a learning environment that was accessible, comfortable, and convenient, which met their diverse learning needs and preferred learning styles. The FLSCM also helped to address some challenges experienced in the learning environments, such as power disruptions, unstable internet, and distractions. However, in some cases, students could not choose an alternative learning environment because of work or personal circumstances.

Participatory learning and support systems

Students were engaged and satisfied with the FLSCM because of the participatory learning activities and support from more knowledgeable others (lecturers and peers), supported by mediating educational technologies, such as the Kahoot game-based learning application and Moodle learning management system.

First, the course delivery method, the relatable examples of situations locally and internationally, and the interactive class discussion among lecturers and peers supported their learning. For example, participant 1 stated, "the lecturers gave realistic examples that I was able to apply based on my experiences at work." Similarly, participant 6 indicated:

There was a lot of participation. I liked that the classes were not based on everything on the PowerPoint slides but used real examples and scenarios to explain the course. The course was more friendly, and it made me feel comfortable speaking up in class and sharing my point of view.

In a like manner, participant 4 commented:

The lecturers went in-depth into explanations, made connections with real-life situations to us, and explained things not only locally in Guyana but made connections to things internationally that we were knowledgeable about, which helped us understand the content being delivered.

In addition, participant 7 explained, “The class discussion made the course more interesting and engaging when students shared their different perspectives, experiences, and understanding of what the lecturer explained.”

Second, the Kahoot game-based learning application and information posted on the Moodle learning management system, including YouTube videos and Zoom class recordings, were mediating educational technologies that supported learning. Also, the Kahoot game application created enthusiasm and excitement among the students to be involved in the class. For example, Participant 3 reported:

We played a game using the Kahoot app, and that game ensured we did not lose focus. The minute we lost focus, it meant we could not answer our questions correctly. Also, the game was engaging because it was entertaining. I was excited, and I looked forward to it every week.

Similarly, participant 1 stated:

The Kahoot motivated me to attend classes every week because I was vying against my classmate for the top spots...It gave me the extra push to be there every week on time and stay focused the entire class even though I might have had other obligations ...It was satisfying because I felt I was accomplishing something despite no trophy or award.

Although there was enthusiasm and excitement to participate in the game, learning also occurred. For example, participant 1 indicated, “Also, questions on the game stuck with me so that when it was time for a class test, I remembered similar things were in the game, so I applied myself like that.”

However, different learning styles could account for varying views on the effectiveness of mediating technologies. For example, participant 4, who indicated he was a visual learner, stated:

The recordings posted on Moodle were a great help. When I read through the notes and then watched the class recording, I got a more precise understanding because I may have missed some of the discussions during the class, which I was able to see there.

Similarly, participant 2 indicated:

The course was a lot of content for me, and I do not like reading. I teach Math, so I like Math, but the reading to me was a lot. When I listened in class, I did not understand, which made it difficult for me to get the answers, so I was slow when participating in the Kahoot game in class... The videos shown in class helped me relate to the content, and when I viewed the class recordings on Moodle, I could understand.

However, despite the participatory learning activities, students reported losing focus in the classes for different reasons. The male participants reported losing focus on the class when they did not perform well in the game-based activities. Participant 4 reported, “When I did the Kahoot game, and I got a question wrong, it threw me off track

a little for some reason. I tended to give up because I did not like losing.” Similarly, participant 1 stated:

If I did poorly in the Kahoot game any week and realized I was at the bottom and there was no way of getting up, my mind strayed away. I did not focus on the last few questions, even though I knew I could answer them. I knew it would not carry me up in ranking, so it just made me lazy in the final parts of the class.

On the other hand, the female participants reported losing focus on the class because they already possessed prior knowledge in the area, and the classes were too lengthy. For example, participant 5 stated:

Some of the content in the course I covered in secondary school. Also, I am a business teacher, and some of the content I already knew, so I did not put much emphasis on listening or learning because I already had the knowledge.

Participant 7 expressed similar thoughts:

My experience with the course was good, but it was challenging to stay focused because I was in the business stream in secondary school, and I already had knowledge of most of the stuff that was being taught in the course... also, it was a task to focus for three hours straight on one course.

Nevertheless, the reported performance of the students told the story of the effectiveness of the FLSMC in aiding their learning. For example, participant 4 stated, “The most satisfying to me was my grades. When I knew that, I put in the work and saw the results at the end of the test.” Similarly, participant 8 said, “My grades were the most satisfying aspect. I never knew I could do so well in tests until this course.”

Students were engaged and satisfied with the FLSCM because of the participatory learning activities, the method of course delivery, and social interactions with more knowledgeable others (lecturers and peers). In addition, the mediating educational technologies kept some students focused and engaged in classes and supported learning outside of classes. An interesting finding was that the male participants lost focus on classes when they were not performing well on the Kahoot game-based activity, while the female students reported losing interest in classes if they had prior knowledge of the content and the class duration was too long to maintain focus.

Quantitative Results

The analysis of quantitative data addressed research questions two, three, and four, and included descriptive statistics, bivariate correlation, independent samples t-tests, and factorial MANOVA. In addition, the sample data included student engagement, student satisfaction, and demographic information for 49 students from SEBI, University of Guyana, enrolled in a management class. The sample comprised 24% ($n = 12$) male students and 76% ($n = 37$) female students. The ages of the students ranged from 18 to 40 years, with the average age being 24 years. Also, 59% ($n = 29$) of the students were full-time employed, 23% ($n = 11$) were part-time employed, and 18% ($n = 9$) were not employed.

Descriptive Statistics

Overall, students were both engaged and satisfied with the FLSCM, though male students were slightly more engaged and satisfied than female students. Student engagement was marginally better for males ($M = 5.45$, $SD = 0.43$) than for females ($M = 5.13$, $SD = 0.59$). Also, student satisfaction was slightly better for males ($M = 5.59$, $SD =$

0.35) than for females ($M = 5.39, SD = 0.52$). The results indicate a need to address female students' slightly lower average engagement and satisfaction in the learning environment.

Overall, students were both engaged and satisfied with the FLSCM, though part-time employed students were slightly more engaged and satisfied than full-time employed and not employed students. Student engagement was slightly better for part-time employed students ($M = 5.64, SD = 0.42$) than for full-time employed students ($M = 5.10, SD = 0.55$) and not employed students ($M = 5.02, SD = 0.59$). Also, student satisfaction was slightly better for part-time employed students ($M = 5.81, SD = 0.23$) than for full-time employed students ($M = 5.30, SD = 0.52$) and not employed students ($M = 5.41, SD = 0.42$). The results indicate a need to address the slightly lower average engagement and satisfaction of full-time and not employed students in the learning environment.

Bivariate Correlation

The second research question examined the extent to which there is a relationship between student engagement and student satisfaction with the FLSCM. A very strong, positive relationship exists between student satisfaction and student engagement ($r = .81, p < .001$). The university should address student engagement and/or student satisfaction, as either variable is likely to increase as the other increases.

Independent samples t-test

The third research question examined the extent to which (a) student engagement and (b) student satisfaction differed between males and females with the FLSCM. I used an independent samples *t*-test to determine if there was a difference in average student

engagement and student satisfaction between male and female students with the FLSCM. I compared the average student engagement for male students ($M = 5.45$, $SD = 0.43$) to that for female students ($M = 5.13$, $SD = 0.59$). Male students were not significantly more engaged than female students ($t_{47} = 1.73$, $p > .05$, $d = 0.57$). Similarly, I compared the average student satisfaction for male students ($M = 5.59$, $SD = 0.35$) to the average student satisfaction for female students ($M = 5.39$, $SD = 0.52$). There was no difference in student satisfaction by gender ($t_{47} = 1.25$, $p > .05$, $d = 0.42$). Overall, the results indicate no significant difference in student engagement and student satisfaction by gender with the FLSCM.

Additionally, the third research question examined the extent to which (i) student engagement and (ii) student satisfaction differed between full-time employed students and other students (part-time employed and not employed) with the FLSCM. An independent samples t -test of student engagement and student satisfaction by employment status is in Table 2. I conducted an independent samples t -test to determine if there was a difference in average student engagement and student satisfaction between full-time employed students and other students (part-time employed and not employed students) with the FLSCM at the university. I compared the average student engagement for full-time employed students ($M = 5.10$, $SD = 0.55$) to that of other students ($M = 5.36$, $SD = 0.58$). Full-time employed students were not significantly less engaged than other students ($t_{47} = 1.58$, $p > .05$, $d = 0.46$). Similarly, I compared the average student satisfaction for full-time employed students ($M = 5.30$, $SD = 0.52$) to the average student satisfaction for others ($M = 5.63$, $SD = 0.38$). There was a significant difference in student satisfaction by employment status ($t_{47} = 2.41$, $p < .05$, $d = 0.70$). Overall, the

results indicate no significant difference in student engagement by employment status with the FLSCM. However, there was a significant difference in student satisfaction by employment status with the FLSCM, where full-time employed students were largely less satisfied with the FLSCM than their peers. Therefore, measures are needed to improve the satisfaction of full-time employed students in the learning environment.

Table 2

Independent-Samples T-Test Student Engagement and Student Satisfaction for Full-Time Employed Students vs. Other Students

		t-test for Equality of Means					
	Employment Status	Mean	Std. Deviation	Mean Difference	t	df	Sig. (2-tailed)
Student Engagement	Full-Time Employed (n=29)	5.1	.55				
	Other Students (n=20)	5.36	.58	-.26	-1.58	47	.12
Student Satisfaction	Full-Time Employed (n=29)	5.3	.52				
	Other Students (n=20)	5.63	.38	-.33	-2.41	47	.02

Factorial MANOVA

The fourth research question examined the extent to which there were statistically significant differences in student engagement and student satisfaction with the FLSCM by gender and employment status. Descriptive statistics for average student engagement and student satisfaction by gender and employment status are in Table 3. Overall, male

students were more engaged and satisfied with the FLSCM than female students. Also, part-time students were more engaged and satisfied with the FLSCM than full-time and not employed students. For example, male students who were full-time employed and not employed were more engaged with the FLSCM than female students, and male students who were full-time employed were more satisfied with the FLSCM than female students. However, female students who were part-time employed were more engaged and satisfied with the FLSCM than male students.

Additionally, female students who were not employed were more satisfied with the FLSCM than male students. Therefore, the university should take measures to address the lower average engagement of female students who were full-time employed and not employed in their learning environment. Additionally, the university should take measures to address the lower average satisfaction of female students who were full-time employed and male students who were not employed in their learning environment.

Table 3

Descriptive Statistics of Student Engagement and Student Satisfaction by Gender and Employment Status

	Gender	Employment Status	Mean	Std. Deviation
Student Engagement	Male	Full-Time Employed (<i>n</i> =6)	5.41	0.41
		Part-Time Employed (<i>n</i> =4)	5.56	0.60
		Not Employed (<i>n</i> =2)	5.37	0.24
		Total (<i>n</i> =12)	5.45	0.43
	Female	Full-Time Employed (<i>n</i> =23)	5.02	0.56
		Part-Time Employed (<i>n</i> =7)	5.69	0.33
		Not Employed (<i>n</i> =7)	4.92	0.63
		Total (<i>n</i> =37)	5.13	0.59
	Total	Full-Time Employed (<i>n</i> =29)	5.10	0.55
		Part-Time Employed (<i>n</i> =11)	5.64	0.42
		Not Employed (<i>n</i> =9)	5.02	0.59
		Total (<i>n</i> =49)	5.21	0.57
Student Satisfaction	Male	Full-Time Employed (<i>n</i> =6)	5.53	0.42
		Part-Time Employed (<i>n</i> =4)	5.77	0.27
		Not Employed (<i>n</i> =2)	5.41	0.19
		Total (<i>n</i> =12)	5.59	0.35
	Female	Full-Time Employed (<i>n</i> =23)	5.25	0.53
		Part-Time Employed (<i>n</i> =7)	5.83	0.23
		Not Employed (<i>n</i> =7)	5.42	0.48
		Total (<i>n</i> =37)	5.39	0.52
	Total	Full-Time Employed (<i>n</i> =29)	5.30	0.52
		Part-Time Employed (<i>n</i> =11)	5.81	0.23
		Not Employed (<i>n</i> =9)	5.41	0.42
		Total (<i>n</i> =49)	5.44	0.49

I conducted a factorial MANOVA to determine the effect of gender and employment status on student engagement and student satisfaction. Gender did not have a significant effect on student engagement and student satisfaction ($p > .05$). Similarly, employment status did not have a significant effect on student engagement and student

satisfaction ($p > .05$). The model revealed there was not a statistically significant interaction effect between gender and employment status ($F_{4,84} = .889, p > .05$; Wilks' $\Lambda = .474$). Overall, there was no significant difference between male and female students and full-time, part-time, and not employed students' engagement and satisfaction with the FLSCM.

Discussion

The study examined students' perceptions and the extent of the differences in student engagement and satisfaction by gender and employment status of the FLSCM for teaching a business course in the SEBI at UOG. The qualitative and quantitative results addressed the research questions, including the students' perceptions of the FLSCM and the extent of the differences in student engagement and satisfaction with the FLSCM by gender and employment status.

Perceptions of FLSCM

The insights into the qualitative and quantitative results indicated that the students were receptive to the FLSCM. The quantitative results indicated that students highly agreed with the FLSCM on the constructs of engagement and satisfaction. Similarly, the qualitative results indicated that students held positive views of the FLSCM. The FLSCM facilitated students learning and allowed students the autonomy to select a learning environment that matched their needs (Beatty, 2019; Drea, 2021). Students appreciated the opportunity to choose learning environments that were accessible, comfortable, and convenient without the added pressures of asking for time off from work or accessing transportation and traveling long distances to campus. In addition, students could rest before classes, take care of their family members, and choose a learning environment that, in their opinion, was best suited to their different learning styles and learning needs.

Students had a choice to attend classes on campus if their home or work environment was not conducive to learning. However, some students with personal or work circumstances could not choose an alternative environment. Therefore, posting lecture materials, videos, supplemental reading materials, and Zoom class recordings is

helpful, as learning occurs asynchronously (Zhao, 2018a) at a more convenient time and place.

The challenges encountered were access to reliable internet, power outages, and disruptions in the learning environment. Internet access is a problem that affects many households, with those living in remote geographical areas or poor and vulnerable households unable to access reliable internet (Blackman, 2022). Also, power disruptions often occur unexpectedly. During the implementation of the FLSCM innovation, power disruptions affected two class sessions on campus, which also affected the internet. Unfortunately, the backup generator powering the SEBI building was not functioning. Infrastructure investments at the national level are required to address the challenges of the internet and power. Students can invest in solar-powered systems, generators, or uninterrupted power supply batteries. However, with the FLSCM, the Zoom-enabled classrooms must always have reliable internet and stable electricity because that is the hub connecting the lecturer with the face-to-face and online students.

Student Engagement and Satisfaction

There was a positive relationship between student engagement and student satisfaction, meaning that as one variable increased or decreased, so did the other variable. Therefore, emphasis on increasing student engagement will likely increase student satisfaction. The FLSCM allowed for learning to occur through participatory learning activities (zone of proximal development), interactions with more knowledgeable others (social and cultural sources), and learning mediated by educational technologies (tools and signs) (John-Steiner & Mahn, 1996). Mediating educational technologies such as the internet, electronic devices, and learning software were a reliable

source of positive change in learning (Shabani, 2016). These results substantiated the principles of the sociocultural theory of learning (Vygotsky, 1978), where students could socialize with the lecturers and their peers, which made it comfortable for them to engage in discussions and participate in learning activities, thereby feeling more motivated to learn (Ryan & Deci, 2017; Wehmeyer & Zhao, 2020; Zhao, 2022).

The quantitative results indicated that students were engaged and satisfied with the FLSCM, though male students were slightly more engaged and satisfied than female students. As indicated by some participants, the female students lost focus in classes because of prior knowledge of the topics. Prior knowledge of the topics relates to the argument by Vygotsky (1978) that learning is ineffective at development levels already reached. Therefore, prior knowledge on the topic could be why female students have slightly lower average engagement and satisfaction with the FLSCM. Students familiar with a topic need learning activities that carry them beyond their current level of thinking.

The lengthy class duration could also explain the female students being less engaged and satisfied with the FLSCM. The traditional timetabling of classes, where students attend classes online at the same time as they would in a face-to-face setting, continued into the post-pandemic online learning environment. Everything stayed the same in the delivery of courses, except that some students were not in the same space as their lecturers and peers. Dorn et al. (2020) deemed this timetabling model less effective, as less personal interaction and learning resulted in stress and disengagement among students (Darby, 2020; Zhao & Watterston, 2021). The timetabling of classes should be flexible, splitting classes over two or more days of no more than two hours per session.

Flexible timetabling would consider the needs and availability of students rather than locking students into one fixed time to attend classes. Future research should address newer models of timetabling to meet the differing needs of students.

Interestingly, even though the male students were more engaged and satisfied with the FLSCM, the qualitative data indicated that males were more likely to lose focus on classes when they did not perform well in the Kahoot game-based learning activities. The results indicated that the game-based activity increased male competitiveness more than the females. Future studies are required to understand game-based learning activities and the extent of the difference in male and female responsiveness.

Also, the quantitative results indicated that part-time employed students were slightly more engaged and satisfied than full-time and not employed students. Full-time employed students being less satisfied with the FLSCM than their peers could be because of work or personal circumstances, such as taking care of family members, working late, or having distractions in their learning environment, which did not allow them to choose an alternative learning environment. Additionally, students had multiple learning styles, requiring different pedagogical approaches to meet their learning needs.

Traditional teacher-centered teaching is inappropriate for online learning because of limited socialization and collaboration (Polly et al., 2017). Arnove (2020) posited that the post-pandemic educational approach should not return to the banking model of education described by philosopher Paulo Freire (2000) or the deficit approach to teaching and learning described by Paris and Alim (2014). These approaches view the students as deficient or empty vessels, with teachers and researchers having to ‘deposit’ information that students receive, memorize, and repeat (Zhao, 2020). Instead, new forms

of pedagogy should help students develop their skills rather than memorize (Zhao, 2018a).

Several studies (Alstete & Beutell, 2018; Casanova et al., 2018; Rook et al., 2020; Strange & Banning, 2015) found that learning could be more effective using learner-centered pedagogies and learning technology to support interaction and participation. Students in the 21st century prefer to be engaged in student-centered, inquiry-based, authentic, and purposeful instruction. Contemporary teaching and learning should entail teachers and researchers considering pluralist, liberating, and progressive approaches to foster creativity and knowledge transformation (Leonardo, 2004). Freire (2000) posited that problem-posing pedagogy is a better approach to education that embodies communication, critical consciousness, creativity, and reflection rooted in the present dynamic reality. The FLSCM utilized some contemporary pedagogical approaches to foster student engagement and satisfaction. As a result, students were engaged and satisfied with the participatory learning activities. In addition, mediating educational technologies motivated students to study, participate in classes, and interact with their lecturers and peers. The interactions between lecturers and students created a learning environment where students felt satisfied, engaged, and interested in learning (Haleem et al., 2022; Liu et al., 2006).

Conclusion

The study indicated that the FLSCM could address the learning space problem at the University of Guyana. Students perceived the FLSCM as suitable for facilitating learning, student engagement, and satisfaction. Students welcomed the autonomy to choose a learning environment that met their needs and preferences. The FLSCM

facilitated learning and encouraged interaction among lecturers and students. Also, with the aid of mediating technologies, students were engaged with the class, which motivated them and increased their satisfaction. However, the FLSCM depended on reliable internet and stable power, which was not always available to the students and even on campus. In addition, some students could not fully take advantage of the options offered by the FLSCM because of personal or work constraints. However, they could still benefit from the flexibility and autonomy to choose a learning environment to match their prevailing circumstances than having no choice. However, I conducted this study with one course in the business school. Therefore, the findings are not generalizable as representative of the overall university settings, but the findings are transferrable to other social settings. Nevertheless, the information provided in this research will serve as a basis for future research in the local context exploring other forms of flexible learning space choice models, better utilizing the existing spaces and technologies without heavily investing in buildings, which given the future of education, may become obsolete. In addition to FLSCM, future research on flexible scheduling, asynchronous learning, and contemporary pedagogical approaches are also required to improve the quality of education delivery to students.

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Arizona State University IRB Exemption Letter (see Appendix F)

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CHAPTER 4

CONCLUSION AND REFLECTIONS

This chapter reflects on the action research study, the research assumptions and limitations, and broader implications for policy and practice. The chapter concludes with an outline of areas for future research and conclusion.

Reflections

Mertler (2020) posited that reflection is integral to action research, critically exploring processes, outcomes, and effects. This action research study sought to address the problem of inadequate physical classroom spaces at the University of Guyana. At the time of commencing the doctoral program, I was an Assistant Dean in the Faculty of Social Sciences, and timetabling classes in the limited physical spaces for the various programs and courses offered by the faculty was part of my duties. This tedious and time-consuming task occurred for several weeks every semester. Then the COVID-19 pandemic disrupted operations, and classes shifted to online modality. Surprisingly, some of the same complaints experienced in the physical classroom manifested in the online environments, including the need for pedagogical and technological support and unstable internet and power. The main reason for this was because the traditional timetabling and teacher-centered pedagogical approaches continued into the online environment. The only change was the use of Zoom conferencing software for synchronous classes.

Mertler (2020) indicated that a practitioner-researcher engages in reflective practice throughout the action research process. This study involved two cycles of action research (Cycles 0 and 1) and the dissertation in practice. I reflected on my actions, the outcomes, and what I could improve for each research cycle. My role in this study was as

a researcher and a practitioner. First, I collected and analyzed qualitative and qualitative data, which included designing and administering the research questionnaires and conducting semi-structured interviews. Then I analyzed, interpreted, and reported the data. Next, as the practitioner, I created and implemented the innovation in the classroom. Then, I gathered feedback on the effectiveness of the innovation and made recommendations for future iterations.

Cycle 0

According to Butin (2010), doctoral students often struggle to concentrate on a specific and detailed event, idea, or context for their dissertation. Cycle 0 was a reconnaissance study conducted to gather data to understand the problem of practice and to propose an initial solution. The reconnaissance study explored the learning spaces, learning modalities, and pedagogical approaches experienced by students in the Faculty of Social Sciences (FSS) courses before and during the COVID-19 pandemic. At the time of conducting the research for Cycle 0, I was not sure which direction my research should take and what precisely to focus the research on, so I ended up collecting data on three broad areas: (3) learning spaces, (3) learning modalities and (3) pedagogical approaches.

I collected data by interviewing students who experienced classes before and during the pandemic because classes were face-to-face before and online during the pandemic. The timing of Cycle 0 data collection allowed me to gather rich insights from students about the two modes of classes because of the disruption and transformation that occurred with their cohort. The only thing I would have done differently was also to interview lecturers and senior administrators to document their perspectives during this transformative period.

Cycle 1

Cycle 1 explored users' perceptions of a blended learning environment for courses taught in FSS post-COVID-19 and the support required to implement a blended learning environment. Two things that went well during Cycle 1: I taught myself to use Qualtrics experience management software using YouTube videos. I also learned about initial coding, focused categories, and themes.

Upon reflection, there are two things I would have done differently in Cycle 1. First, I would not have tried to fit an existing questionnaire into my study because it did not provide the insights I hoped to get about a blended learning environment. I did not get the insights I hoped for, possibly because I was unfamiliar with doing and interpreting inferential statistics during the Cycle 1 study. I also found it challenging to connect quantitative and qualitative data effectively. Second, I now understand that I was supposed to conduct a mini intervention during the cycle. I did a workshop but did not understand the connection between the workshop and the cycle. As a result, I administered the questionnaire and interviewed participants before the workshop. In hindsight, I would have done the workshop and then collected data to explore participants' perceptions of a blended learning environment.

Dissertation in Practice

The dissertation in practice examined students' perceptions of the FLSCM for teaching a business course in the SEBI at UOG. I implemented the innovation, collected and analyzed data, reported on the effectiveness of the innovation, and recommended areas for future studies.

Dick (2014b) posited that some researchers regard action research, qualitative research, and case study methodology as lower in quality. In response, the dissertation in practice followed a concurrent mixed methods action research (MMAR) design. The MMAR approach involved collecting both qualitative and quantitative data simultaneously to get a variety of perspectives to address the research questions, including the students' perceptions of the FLSCM and the extent of the differences in student engagement and satisfaction with the FLSCM by gender and employment status.

I prepared and received IRB approval to use three data collection instruments: an interview schedule, an online questionnaire, and reflective learning journals. However, there were no volunteers to complete the weekly journals. I even offered the students the option to send me a voice note on WhatsApp if they did not want to send a weekly typewritten journal entry. Upon reflection, students might have been more apt to complete the task if I had offered an incentive or credit for completing reflective learning journals. However, because I was so integrally involved in the research, I chose not to offer any incentives or credit to influence the students' participation in the data collection.

Uncertainty in the social environment influenced the implementation of the innovation. Social ontologists recognize that social reality is dynamic (Noonan, 2008), especially amid a pandemic. The university was planning to announce a complete return to in-person, hybrid, or online classes. However, the uncertainty created by spikes in sub-variants of COVID-19 and sewage and other building repairs on campus at the time delayed plans. Therefore, at the time of implementing the FLSCM, no other class was being conducted face-to-face on campus in the evenings. There was uncertainty in the

minds of students, especially since most of them never saw the campus and they did not know the location of various buildings. I shared the campus map in the WhatsApp group chat to provide directions to students.

Also, I noticed students were skeptical about attending face-to-face because only two students showed up in person. To encourage the online students to consider following suit, I showed them the classroom and their colleagues and lecturers attending face-to-face classes. Seeing their colleagues on campus generated some interest, as I saw in the WhatsApp group students trying to encourage their peers to attend face-to-face sessions to get the experience. Six students attended in person in the fourth-class session, and there were only two to three students in the other weeks. In the final set of classes, no students showed up in person. There was one class where 35 minutes into the lecture, there was a power outage on campus, so I had to cancel the rest of the class, and I sent home the two students attending in person. In another class session, there was a power outage on campus 90 minutes before the scheduled commencement of the class, so I sent a WhatsApp message to the students alerting them that there was a power outage and that there was no guarantee of power returning in time for the commencement of class. Power did not return one hour into the class time, so I canceled that session. Fortunately, no students attended in-person classes that day because of the notice sent.

For action research studies to be successful, appropriate research designs, establishing reliability and validity of data collection instruments, and using appropriate data collection and analysis techniques were required. It is also essential to involve educational stakeholders to get multiple perspectives on the intended innovation to resolve the problem. Also, I recognized the importance of doing an intervention within

my professional practice and my resource capabilities rather than doing something in an area where I have no control over the implementation and outcome. Further, I learned that once I implement an innovation, I must communicate with the stakeholders involved, facilitate training, if required, and provide any other support necessary in the change process. Below, I outline some limitations of the research.

Research Limitations

There was an assumption that the students understood my communication with them before the commencement of the teaching semester about the dual modality of the class and the autonomy given to them to choose a mode of attendance (face-to-face or online) which matched their needs and preferences. I reiterated the availability of this option to students via WhatsApp messages during the semester. A limitation was that the face-to-face classes only took place at the Turkeyen campus (Region 4), even though the course included students registered at the Berbice campus (Region 6). Another limitation was that I advised students to attend face-to-face classes only if they had access to transportation. Classes were in the evenings from 18:00 hours to 21:00 hours because the courses cater to working professionals. Public transportation, including buses and taxis, was unavailable on campus after 18:00 hours. Therefore, the safety and security of students traveling to and from campus at night was the foremost consideration in advising students to attend face-to-face if they had access to transportation. Strange and Banning (2015) postulated that students' preference for secure learning environments precedes the need for learning environments that encourage engagement and socialization.

The available resources and prevailing circumstances during data collection and implementation of the innovation influenced the cycles of action research. In addition,

extraneous variables, such as concern for health and safety and the model's novelty, may have influenced participants' perceptions, engagement, and satisfaction with the FLSCM. Noonan (2008) posited that it is essential to reflect and consider the sociological and psychological assumptions inherent in the users' perceptions of reality and to remember that it is difficult to conceptualize the complexity of reality. Therefore, I informed students weekly about the classes on Moodle and contacted them via WhatsApp messaging.

I collected qualitative and quantitative data using convenience sampling because, as the course lecturer, I did not want to have any direct influence over students' participation in the data collection process. However, a limitation arising from using convenience sampling was that the sample was not representative of the study population. For example, students in the "not employed" group did not volunteer to participate in the interviews. Further, I drew the sample from a business course taught in the SEBI at UOG, with less than 100 enrolled students. Therefore, the research findings are not generalizable to SEBI, the university, or other settings beyond the sample, but the findings are transferrable to other social settings.

Participants' responses might have biased the research results if they responded based on what they perceived I was seeking to achieve or gave socially desirable answers. However, there was no compensation or credit for participation. Also, I tried to create an environment of trust within the class. I encouraged students to be open and honest in their responses to the online questionnaire and one-on-one interviews.

Implications for Policy and Practice

The University of Guyana operates in a highly competitive environment locally and internationally. During the pandemic, there was heavy investment in digital educational technologies (University of Guyana, 2023), and there is a need for continued investments in technologies to build an inclusive, efficient, and resilient educational system. The University of Guyana must consider students' learning needs and preferences and develop inclusive, engaging, and satisfactory flexible learning space choice models. Also, there is a need to shift from teacher-centered pedagogical approaches. Most lecturers use teacher-centered methods, so they may resist changing their teaching approach. Implementing proper change management strategies, such as facilitating shared decision-making and providing supportive conditions for education and training, can assist with changing the teaching approaches.

Herr and Anderson (2005) described the action research process as iterative, flexible, and reflective, aimed at improving practice, developing individuals, or transforming practice and participants. The FLSCM should address the physical classroom space constraints, accommodate individual learning circumstances, use technology and learner-centered pedagogies to enhance student engagement and satisfaction, and allow for social distancing in classrooms. Implications of the FSLCM in practice are that lecturers must activate a thriving mindset to create and collaborate in new ways (Akhtar & Gupta, 2020) to meet students' needs and keep them engaged and satisfied. Lecturers would need mandatory continuous professional development training to incorporate digital educational technologies and learner-centered pedagogies into the teaching and assessment process. Also, lecturers must be actively involved in ideating

and designing participatory learning activities suited to online and face-to-face environments. Participatory learning activities will include role-playing, case studies, group projects, think-pair-share activities, peer teaching, debates, demonstrations, and simulation games (Garrett, 2008) focused on knowledge transformation.

Mintz et al. (2013) posited that using data to identify learner-centered problems creates a sense of urgency and curiosity for a deeper analysis to help identify the problem. Lecturers can use models like the FLSCM to undertake action research studies within the classrooms to use data-driven improvement strategies in decision-making and share the research insights within and outside the university community to influence policymaking. However, a data use policy that guides the collection and use of data, where persons can access data securely, will be required.

Hord & Sommers (2008) postulated that leaders require courage to make waves, take action for change, and introduce a new way of doing things. The UOG senior management should continue its policy development initiative to deal with the changing circumstances. For example, the UOG implemented over 18 policy guidelines during the pandemic to guide the transition to online operations (University of Guyana, 2023). The FLSCM would require the senior management team to continue developing policies to institutionalize flexible learning space choice models. Its benefits outweigh the alternative mono-modes of course delivery. Also, the FLSCM helps to close the gap created by the digital divide by allowing students with disabilities, students living in poverty or vulnerable conditions, students living in remote communities, and students with different learning styles to access modes of education delivery that suit their circumstances.

Suggested policies to develop include a flexible timetabling policy along with consideration for offering asynchronous courses, mandatory professional development training for lecturers, and a policy on internet and electronic communication information management. In addition, the FLSCM should incorporate flexible learning space designs to suit the learner's comfort and needs, whether engaged in the classroom, individual, or group learning. For example, the design of the learning environment needs more knowledgeable others (lecturers and peers) to be visible to assist students through social interactions. Additionally, the mediated tools for learning, such as furniture, digital education technologies, and electronic devices, should be available and adaptable to meet students' preferences and needs.

Future Studies

Researchers can conduct a similar study using the multiple intelligence theoretical framework by Garner (1983) to assess student engagement and student satisfaction based on adopting teaching methods to students' talents, knowledge, and abilities. I recommend this future study given that several students indicated they were not as engaged in the classes because of prior knowledge, having learned aspects of the course in secondary school, or having work experience teaching the topics. Learners are most likely to learn more when they connect what they already know with new information by providing multiple ways to access information to suit their varying, non-linear ways of learning.

In addition, further research can examine the extent of the differences in student engagement and satisfaction by demographic factors such as age, year of study, program, geographical location, work experience, and educational level. Also, further studies can look at the causal relationship between student engagement and satisfaction.

Future research studies on FLSCM or similar models should consider the implementation of the innovation to the broader university community and use probability sampling to generalize from the sample to the study population. For example, research studies could include examining the use of the FLSCM to meet the needs and preferences of students and lecturers in other contexts, considering the varying disciplines, levels of technological knowledge, and preferred learning styles. In addition, future research studies could explore students' perceptions of the learning environment design, such as comfort, navigation, and usability relative to learning needs and preferences. Further, including other educational stakeholders' perspectives, such as lecturers and university administrators, would provide a broader perspective on the benefits and constraints of the FLSCM model.

Conclusion

This dissertation addressed the problem of inadequate physical classroom spaces for teaching classes at the University of Guyana. The action research cycles entailed reviewing the literature, capturing the viewpoints of lecturers and students to understand the problem better, and exploring multiple perspectives on innovative responses to resolve the issue. Cycle 0 findings indicated that there were inadequate physical classroom spaces and that there were challenges in the online learning environment. Potential solutions were required to make the learning spaces usable, comfortable, and accessible to students with diverse needs and learning styles and to incorporate digital educational technologies. Cycle 1 explored perceptions of a blended learning environment, and there was general support for the innovation. However, there was a need for a learning environment that was healthy, safe, navigable, usable, and accessible.

Additionally, pedagogical and technical assistance were required to implement this approach. After the two cycles of action research, I finally began to understand and appreciate that the intervention should be within my professional practice; otherwise, I would not have the autonomy to determine the nature and direction of the research process.

The FLSCM proposes to make a positive impact on the learning space situation. FLSCM was a dual-mode learning model that allowed synchronous in-person or online classes simultaneously. It gave students the autonomy to choose a preferred mode of attendance that met their needs and preferences. However, as the lecturer, I did not have a choice. I had to be present in the classroom, using the Zoom-enabled classroom to sync the in-person class with the online class. The dissertation in practice research examined students' perceptions and the extent of the differences in student engagement and satisfaction with the FLSCM by gender and employment status.

Students appreciated the opportunity the FLSCM offered to choose a learning environment that met their needs and preferences. Also, students perceived the model as suitable for facilitating learning and encouraging interaction. In addition, mediating educational technologies kept students engaged, motivated, and satisfied with classes. By introducing the FLSCM, the university can increase enrollment because it reduces the physical space constraints. However, the uncertainty about the number of students attending face-to-face classes requires careful planning to overcome new learning space challenges.

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APPENDIX A

SEMI-STRUCTURED INTERVIEW QUESTIONS FOR STUDENTS

- IQ1.* Think about the experiences that you had as a student and describe how did you learn best?
- IQ2.* During COVID, think about your experiences as a student and describe how you learned best?
- IQ3.* What was your experience of the learning spaces used for your classes?
- IQ4.* During COVID, what was your experience of the learning spaces used for your classes?
- IQ5.* Do you feel differences in learning spaces (if any) before COVID and during COVID affected your learning?
- IQ6.* What teaching approach used by your lecturer made you feel like you learned the most?
- IQ7.* During COVID, what teaching approach used by your lecturer made you feel like you learned the most?
- IQ8.* How attentive or distracted were you in classes before COVID versus during COVID?
- IQ9.* How would you describe the ideal combined learning space and teaching approach to help you learn best?

APPENDIX B

SEMI-STRUCTURED INTERVIEW QUESTIONS FOR ACADEMIC STAFF

IQ1. a. How long have you taught in the Faculty of Social Sciences?

b. What type of courses do you teach?

c. How do you find teaching in the current learning environment?

IQ2. What are your thoughts and experiences when comparing in-person and online teaching and learning?

IQ3. Which format (in person or online) would you prefer to conduct course assessments and why? What are the strengths and weaknesses of each approach?

IQ4. What may be needed to support you with online teaching?

IQ5. How would you feel if courses were offered using a blended learning space (some in-person teaching with some online teaching)?

IQ6. What support may be needed if your courses were offered in a blended learning space?

APPENDIX C

LEARNING SPACE DESIGN IN THE NEW REALITY ONLINE QUESTIONNAIRE

Dear Student,

As you know, I am conducting a research study to explore users' perceptions of blended learning spaces for courses taught in the Faculty of Social Sciences in a post-coronavirus environment. I appreciate you taking the time to contribute to this project.

Your honest responses will help to inform classroom, blended, and online learning for courses in the Faculty of Social Sciences at the University of Guyana. Your truthful responses will also help enhance future students' learning experiences. Please be assured that your responses will be anonymous.

This survey should take about 20 minutes to complete. If you have any questions while taking the survey, please get in touch with me at ddgobin@asu.edu or (592) 696-8405.

Thank you once again.

Diana Gobin

Classroom Learning

The ten items on this page will ask you to consider how you feel about classroom (face-to-face) learning. Please read each question carefully and choose the answer that best represents the degree to which you agree or disagree with each statement.

1. Worksheets given in the classroom help me to understand what I have learned.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
2. I can easily get my questions answered during classroom learning.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
3. Classroom learning helps me understand a course's content in detail.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
4. Discussions in the classroom are good.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
5. Classroom learning is better than learning on the Moodle platform.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
6. Classroom learning helps me understand the subject better.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

7. The classroom environment with non-verbal communication is effective.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
8. Classroom learning helps me understand as it assists in retaining information about the subject.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
9. Classroom learning helps me to clarify information.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
10. Quizzes and mid-term exams during classroom learning help me to understand what I have learned.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

Blended Learning

The eighteen items on this page will ask you to consider how you feel about blended learning (some face-to-face and some online). Please read each question carefully and choose the answer that best represents the degree to which you agree or disagree with each statement.

11. Learning the content through the Moodle platform is much more interesting than the materials used in class.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
12. My motivation is low while studying on the Moodle platform.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
13. It is difficult to study on the Moodle platform.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

14. Attending classroom sessions after online preparation helps me learn more.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
15. Online learning is an effective system.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
16. I can study in a more comfortable environment using the Moodle platform.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
17. I can study in a quieter environment using the Moodle platform.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
18. Learning the subject through online activities is easier for me.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
19. Studying on the Moodle platform helps me to plan my study sessions.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
20. I can study at my own pace through the Moodle platform.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
21. I get bored when I study on the Moodle platform.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
22. The Moodle platform helps me to prepare for the course.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
23. Online practice boosts my effectiveness in the classroom.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
24. Online practice makes me more competitive in my learning.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

25. Online practice makes me spend more time on my learning.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
26. Working through a computer or mobile device provides practicality.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
27. The online platform is a useful tool for me to study on my own.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
28. It is frustrating to do tasks through the Moodle platform.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

Online Learning

The seventeen items on this page will ask you to consider how you feel about blended learning (some face-to-face and some online). Please read each question carefully and choose the answer that best represents the degree to which you agree or disagree with each statement.

29. The Moodle learning platform helps me to follow courses easily.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
30. I can get help on the Moodle learning platform whenever needed.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
31. I have internet connectivity to do online learning whenever I want.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
32. The instructions on the Moodle learning platform are adequate.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

33. I can use the Moodle learning platform easily.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
34. I find the layout of the Moodle platform quite clear.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
35. Online practice is less effective than classroom sessions.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
36. Modules /sessions on the Moodle platform are comprehensive.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
37. The course's objectives in modules on the Moodle platform are defined clearly.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
38. Learning activities in modules on the Moodle platform are explained clearly.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
39. Modules in the Moodle platform meet my study needs.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
40. Online studies satisfy my needs.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
41. I manage my studies in the Moodle platform quite well.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
42. The Moodle platform provides opportunities to do practice quizzes.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
43. I can easily submit written assignments to my	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

teacher through the Moodle platform.

44. Evaluation criteria in the Moodle platform guide me in doing course tasks/exercises.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
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45. Evaluation criteria for exercises in the Moodle platform are understandable.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
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Demographic Information

The seven items on this page will ask you for information to understand the makeup of the participants. Please read each question carefully and choose the answer that best represents you.

Age

- under 20
- 20 - 29
- 30 - 39
- 40 - 49
- 50 or older

Gender

- Male
- Female

What are you currently studying?

- Communication studies
- Economics
- Law
- Public management
- International relations
- Social work
- Sociology
- Business administration
- Public administration

What is your level of study?

- Associate/Diploma
- Bachelor
- Masters

Where do you reside?

- Region 1
- Region 2
- Region 3
- Region 4
- Region 5
- Region 6
- Region 7
- Region 8
- Region 9
- Region 10
- Foreign

What is your current year of study?

- Year 1
- Year 2
- Year 3
- Year 4
- Year 5

What is your employment status?

- Full-time employed
- Part-time employed
- Not employed

APPENDIX D

SEMI-STRUCTURED INTERVIEW QUESTIONS FOR STUDENTS

- IQ1.* How has your study program been so far?
- IQ2.* What has been your experience with this course so far?
General positives? General negatives? General comparison to other courses?
- IQ3.* What are your feelings towards classes being offered both in person and online simultaneously?
- IQ4.* What do you feel has made this course easier compared to other courses you have done?
- IQ5.* What do you feel has made this course more difficult compared to other courses you have done?
- IQ6.* What aspects of this course have been the most engaging to you?
What was engaging about them?
- IQ7.* What aspects of this course have been the least engaging to you?
- IQ8.* What aspects of this course have been the most satisfying to you?
What was satisfying about them?
- IQ9.* What aspects of this course have been the least satisfying to you?
- IQ10.* Is there anything you would like to say about doing this course or anything else in general before we end the interview?

APPENDIX E

FLEXIBLE LEARNING SPACE CHOICE MODEL FOR STUDENT ENGAGEMENT

AND SATISFACTION ONLINE SURVEY

Dear Student,

As you are aware, I am conducting a research study on a flexible learning space choice model (FLSCM). The purpose of the research is to examine students' perceptions of a flexible learning space choice model (FLSCM) and the extent of the differences in student engagement and student satisfaction with the model. I appreciate you taking the time to contribute to this study. Your honest answers will help to inform the use of a flexible learning space design for courses taught in the School of Entrepreneurship and Business Innovation at the University of Guyana.

Please be assured that your responses will remain anonymous. No one will be able to identify you or your responses, and no one will know whether you participated in the study. All information (or responses) provided will be used for statistical purposes, and the results of this study may be used in reports, presentations, or publications but only in aggregate form.

This survey should take about 5 to 10 minutes to complete. If you have any questions while taking the survey, please contact Dr. Stephanie Smith at steph.smith@asu.edu or on cell/WhatsApp (480) 720-2382 and/or Diana Gobin at ddgobin@asu.edu or on cell/WhatsApp (592) 696-8405.

Thank you for your assistance.

Diana Gobin

Student Engagement

The eleven items on this page will ask you to consider how you feel about student engagement using the flexible learning space choice model. Please read each question carefully and choose the answer that best represents the degree to which you agree or disagree with each statement.

- | | | | | | | |
|---|-------------------|----------|-------------------|----------------|-------|----------------|
| 1. I made sure that I studied on a weekly basis. | Strongly Disagree | Disagree | Slightly Disagree | Slightly Agree | Agree | Strongly Agree |
| 2. I kept on track with the weekly readings for this course. | Strongly Disagree | Disagree | Slightly Disagree | Slightly Agree | Agree | Strongly Agree |
| 3. I took notes from readings, PowerPoints, and video lectures. | Strongly Disagree | Disagree | Slightly Disagree | Slightly Agree | Agree | Strongly Agree |

4. The online learning resources, such as presentations, videos, and articles, contributed to my engagement with the course content.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
5. I participated weekly in the Kahoot game.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
6. I participated weekly in small-group discussion forums.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
7. I interacted with fellow students to better understand the class material.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
8. I interacted with the lecturer during class sessions.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
9. I participated in conversations online (chats and discussions).	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
10. I enjoyed getting to know other students doing the course.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
11. The lecture sessions contributed to my engagement with the course content.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

Student Satisfaction

The eleven items on this page will ask you to consider how you feel about student satisfaction using the flexible learning space choice model. Please read each question carefully and choose the answer that best represents the degree to which you agree or disagree with each statement.

12. I received timely feedback (within 24 - 48 hours) from my lecturer.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
13. I received timely feedback (within 24-48 hours) from other students.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
14. The online learning resources, such as presentations, videos, and articles linked to this course, facilitated my learning.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
15. The Kahoot game in this course facilitated my learning.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
16. I was able to get individualized attention from my lecturer when needed.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
17. This course created a sense of community among students.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
18. I was able to share my viewpoint with fellow students.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
19. The lecturer encouraged communication in the course.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
20. This course encouraged students to discuss ideas and concepts with other students.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
21. I received clarification from fellow students when needed.	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

22. I would like to take another course offering the weekly flexibility of face-to-face or online attendance.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
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Demographic Information

The five items on this page will ask you for information to understand the make-up of the participants. Please read each question carefully and choose the answer that best represents you.

1. Which of the following do you most closely identify yourself as?

- Male
- Female
- Other/non-binary

2. What was your age on your last birthday? (Dropdown Format)

▼ 18 ... 90

3. Employment Status What is your employment status while being a student enrolled in this course?

- Full-time employed (work 40 or more hours per week)
- Part-time employed (work less than 40 hours per week)
- Not employed

4. How many times did you attend face-to-face sessions for this course? (Dropdown Format)

▼ 0 ... 13

5. How many times did you attend online sessions for this course? (Dropdown Format)

▼ 0 ... 13

APPENDIX F

INSTITUTIONAL BOARD REVIEW EXEMPTION LETTER

EXEMPTION
GRANTED

[Stephanie Smith](#)

[Division of Educational Leadership and Innovation - West Campus](#)

-

Steph.Smith@asu.edu

Dear [Stephanie Smith](#):

On 8/2/2022 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Flexible Learning Space Choice Model (FLSCM) for Student Engagement and Satisfaction
Investigator:	Stephanie Smith
IRB ID:	STUDY00016327
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none">• Diana Gobin consent_interview 30-07-2022.pdf, Category: Consent Form;• Diana Gobin consent_journal 30-07-2022.pdf, Category: Consent Form;• Diana Gobin consent_survey 30-07-2022.pdf, Category: Consent Form;• Diana Gobin recruitment_methods_email 30- 07- 2022.pdf, Category: Recruitment Materials;• Diana Gobin supporting_documents_interview 30-07- 2022.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);• Diana Gobin supporting_documents_journal 30- 07- 2022.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);• Diana Gobin supporting_documents_survey 01- 08- 2022.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);• Letter to Dr Marsh Ethics Review Initial approval with names and titles.pdf, Category: Off-site authorizations

(school permission, other IRB approvals, Tribal permission etc);

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 8/2/2022.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

If any changes are made to the study, the IRB must be notified at research.integrity@asu.edu to determine if additional reviews/approvals are required. Changes may include but not limited to revisions to data collection, survey and/or interview questions, and vulnerable populations, etc.

REMINDER - - Effective January 12, 2022, in-person interactions with human subjects require adherence to all current policies for ASU faculty, staff, students, and visitors. Up-to-date information regarding ASU's COVID-19 Management Strategy can be found [here](#). IRB approval is related to the research activity involving human subjects, all other protocols related to COVID-19 management, including face coverings, health checks, facilities access, etc. are governed by current ASU policy.

Sincerely,

IRB Administrator
cc: Diana Gobin

BIOGRAPHICAL SKETCH

Diana Devika Gobin is a lecturer in the School of Entrepreneurship and Business Innovation at the University of Guyana. Diana has over 15 years of experience lecturing in higher education and spent several years in higher education administrative roles. Diana has an International MBA specializing in Entrepreneurship and Innovation from the University of the West Indies and a Bachelor of Social Sciences in Management from the University of Guyana. Diana's research interests include motivation and organizational commitment, leadership, business innovation, education technology, and innovations in higher education.