

LIBRARY SPACE AS A TEACHING AND LEARNING

RESOURCE: THE EXPERIENCE OF ONE CLASS

Margaret Adeogun

Andrews University, Berrien Springs Michigan

Abstract

Academic libraries today are asked to justify the value they bring to the advancement of learning. The challenge for accountability has pressured many libraries to examine anew how students learn and the best approaches to 21st century learning environment. Libraries are re-examining their assets – information materials, services, abilities and skills, and particularly, the library space. They are deliberating on how they can better support a learning environment that is geared toward knowledge-building and reflects a need for flexible space, time, people, and technology. Library space has turned out to be the library's most cherished resource. Despite the fact that information items and databases are readily accessible to patrons outside the library building – a situation that could minimize their visits to the library – most academic libraries that have repurposed their spaces for social and academic explorations are experiencing an upsurge in traffic of students. In order to meet the needs of the knowledge society, teaching faculty are beginning to cherish the importance of experiential learning to prepare their students for a knowledge capitalist society where knowledge is the acme of the economy. They now realize that experiential learning does not take place within the confines of a classroom, but in an open environment with varied resources and technology that stimulate students to think, explore, and create. This is why library spaces are becoming attractive to the teaching faculty as spaces of value, if so designed for exploration, hands-on learning, and collaboration for knowledge-building. This paper reviews the teaching and learning experiences of faculty and students' use of the James White Library Innovation Lab as a teaching and learning space for INEN 221-001 Introduction to Innovation & Entrepreneurship: Foundations of Play.

Key Words: Higher Education (HE), pedagogy, library spaces, learning spaces, group study, learning commons, collaboration, partnership, exploratory learning, knowledge society.

Introduction

The paradigm shift from teaching to innovative learning strategies that are inquiry-based and promote engagement is the evolving pedagogy that equips students with skills to construct meaning. This is the primary goal of undergraduate education (Barr & Tagg, 2003). The knowledge-age students need learning experiences for developing creativity and problem-solving skills in order to survive the knowledge capitalist society that will eventually become their place of work and existence. The teaching faculty in the typical academic community have realized that a learning pedagogy that supports creativity and problem-solving cannot be effectively delivered in the traditional classroom environment (Biggs, 2003). They need a strong structure for cross-disciplinary academic partnerships across the campus community (Butler, Lauscher, Jarvis-Selinger, & Beckingham, 2004). Hence the need for a strong partnership between the library and the teaching faculty to explore the library as a participatory teaching and learning space. Librarians are re-thinking their services. They are making inquiries as to how students learn and exploring new ways to design services and spaces to meet students' needs in ways that contribute to their success.

James White Library Context

The James White Library (JWL) provides services and resources that engage and boost the teaching, learning, and research activities of Andrews University, a comprehensive private university that offers a variety of undergraduate, graduate, and doctoral programs. It is the flagship university in the Seventh-day Adventist education system, the second largest Christian school system in the world. The JWL collection is about 890,000 physical volumes, 490,000 eBooks, 191,080 electronic journals, and over 240 databases. The Library is also very proud of its institutional repository, the Digital Commons, which has recorded over one million downloads worldwide. There are 14 professional librarians, 17 staff, and 65 student assistants who work as a team to provide information services to patrons. In an attempt to make the Library a participatory space and meet the changing needs of students for collaborative work, the Dean of Libraries sets up the Innovation Lab for faculty teaching. It is an average-sized room strategically located next to the library's 3D printing kiosks and large poster printing services to provide a point-of-need support to the Lab. The Lab is equipped with a large computer screen, movable and adjustable seating furniture, and a staff attendant. During the fall semester of 2018, the Dean of Libraries and the main instructor of INEN 221-001 reached an agreement to hold the class in the Innovation Lab.

INEN 221-001 Introduction to Innovation & Entrepreneurship: Foundations of Play

The class is composed of 16 students whose majors are in different disciplines that include computer science, business management, information systems, architecture, Spanish, and accounting. The instructors are also from diverse academic disciplines that include computer science, educational leadership, architecture, horticulture and landscape design, marketing, and engineering. INEN 221-001 is an introductory course designed to help students acquire creativity, innovation, problem-solving, and entrepreneurship skills. Design thinking is the core of this course. Students work together in groups to think, play, try new ideas, and create project proposals that are of interest to them. There is no formal textbook, but reading materials are provided during the course. The students engage in learning adventures very similar to challenge-based learning. The cross-disciplinary composition of the class and the trans-disciplinary composition of the instructors provide a rich exposure to diverse learning activities, pedagogies, peer presentations, and peer-led discussions. At the completion of the course, the students should be able to:

- Understand implementation and design thinking principles;
- Uncover forces that drive economic and social vitality;
- Implement and develop an innovative and viable solution-based model; and
- Identify and recognize the differences between ideas and opportunities.

The library space as the venue for this class provides an open learning environment where learning resources are readily available and accessible at the point of need. Because of the multidisciplinary composition of the students in the course, the instructors believe that a neutral space that is not associated with any discipline would be more acceptable.

Literature Review

Teaching Excellence in the 21st Century

Faculty members at universities are expected to provide the best learning experience for students in ways that support globally competitive learning outcomes that promote a creative economy in a knowledge society (Scott & Scott, 2011). De Courcy (2015) argues that academic institutions are increasingly pressured to demonstrate proficiency and adopt pedagogies that promote creativity and knowledge-building to demonstrate holistic learning. Biggs (2003) stresses that for

students to demonstrate and/or acquire creativity skills, teaching and learning must diversify and take place in other locations outside the traditional classroom. Oblinger (2006) underscores this argument and argues that learning spaces should be decentralized from traditional classroom venues to places that support group projects and knowledge construction. In support of the previous argument, Zhu, Wang, Cai, and Engels (2013) re-iterate that 21st century students cannot benefit from traditional approaches to teaching and that faculty must make a shift if they are to achieve the desired learning outcomes set for their courses. Gibson (2010) asserts that “the time when academics in higher education could simply replicate the teaching methods that they experienced as students is quickly drawing to an end” (p. 609). Rather, research clearly urge teachers to adopt innovative pedagogies that will support modern-day learning and prepare graduates to transit successfully into the workplace (Zhu et al., 2013). This renewed focus on innovation in teaching and experiential learning is attributed to an increased emphasis on measurable outcomes among universities and institutions (Fitzmaurice, 2010). Innovation is the core of learning in the 21st century (Kalantzis & Cope, 2010). Zhu et al. (2013) reinforce the concept of innovative teaching and explore four core competencies of innovative teaching as learning competency, social competency, educational competency, and technical competency. At the center of these competencies, Cohen and Robinson (2018) encourage teachers to adopt team-based and student-centered innovative approaches to teaching in order to enhance teaching excellence.

Library Space in the Context of Teaching and Learning.

Academic libraries have been dramatically re-inventing their physical spaces as learning-centered libraries that support research, teaching and learning, and student engagement. According to Webb, Schaller, and Hunley (2008), “If we want to engage students in library spaces, it is imperative we discard traditional views of library space and furniture” (p. 420). In the age of information and knowledge when information resources are readily available from other sources via the web, students do not have to come to the library to access information resources. What propels students to the library today is space. So libraries need to rethink and evolve library spaces to provide flexible spaces that support a wide range of learning activities (Andrews, Wright, & Raskin, 2016). Library as a space has become a rich resource that supports engaged learning and which has become attractive to the teaching and service units of the university as they explore new pedagogies that will enrich students’ learning and support outcomes that are not attainable in the traditional classroom (Mysliwiec, Dunbar, & Shibley, 2005).

Mosley, Alderman, and Carmichael (2015) assert that evolving university pedagogy focuses on engaging students in group learning and in group activities. The authors argue that meeting the needs of students involves a well-articulated

complex process of planning and re-designing library spaces to meet students' expectations and learning outcomes. Bennett (2008) articulates this point earlier and argues that it is mandatory for libraries to engage in collaborative efforts to design and repurpose library spaces to respond to the mission of the institutions that they serve. Supporting the idea of collaboration, Houston (2015) suggests that such a process should be inclusive and incorporate input from students, faculty, and other departments of the university. According to him, an inclusive strategy elicits novel ideas for space needs from students and teaching faculty. Farmer (2016) takes this further and asserts that in the higher education (HE) realm, learning space design should consider the desired learning outcomes, the learning style variances for differentiated spaces, and group arrangements for optimum realization of the learning objectives. In support of space design, Oblinger (2006) reiterates that library spaces should demonstrate flexibility that could easily meet changing educational tasks for group and individual customization. The library should include smart spaces with technology for access to information resources and promote active learning (Bennett, 2011). Luo and Lei (2012) assert that more than the classroom, the library as a space has been identified as one of the most desired venues to support learning and research activities, especially if it is purposefully structured and with appropriate technology to support self-directed and open-ended learning. The authors further argue that such designs help students to develop knowledge and skills that enhance productivity in the world of works. Nitecki (2011) argues that library space not only fosters self-directed learning, but also promotes learning communities. Forrest and Hinchliffe (2005) summarize this review by concluding that library learning spaces should demonstrate flexibility to accommodate faculty teaching preferences and students' learning styles.

Library-Teaching Faculty Collaboration

Higher educational institutions are working jointly with other educational participants to promote active learning, as well as knowledge-building for increased productivity (Kezar, 2005). In a learning environment that seeks to impact creativity and innovative skills in students, learning experiences must be varied, and learning from multiple instructors with varying pedagogies results in multiple gains for both teachers and students (Kaygan & Aydinoglu, 2018). It's therefore not a surprising trend that HE pedagogies are favoring cross-disciplinary teamwork that emphasizes "co-planning, co-implementing, and co-evaluating students' progress throughout the instructional process," (Montiel-Overall, 2005, p. 5). Maguad (2018) attests that collaboration among the university components helps to achieve the mission of the organization. And when the institutional resources--including library resources and services--are well coordinated and integrated, students' experiences are enriched. The result is maximum benefit. Many faculty members are

convinced that the successful realization of the desired learning outcomes requires flexible modes of pedagogical delivery that emphasizes out-of-classroom activities (Pham & Tanner, 2015). Collaboration therefore becomes a necessity for the improvement of student learning.

Purpose

This study reviews students and faculty experiences of the Innovation Lab as a teaching and learning space. The researcher's primary concerns in this study are to:

- Gain insights into what students learn from their use of the Innovation Lab during the instructional period of the course INEN 221-001;
- Explore how students learn and how they interact with one another, with technology, and with spaces;
- Analyze the impact of the library and academic faculty collaboration in contributing to students' success; and
- Identify library services and facilities that require improvement for the library as a learning space.

Therefore, the research question that guides this study is, "What is the impact of the Innovation Lab as a teaching and learning space on student learning and faculty teaching?" In order to find answers to this question, the author conducted a survey of students and faculty participating in the course between December 2018 and January 2019 to request feedback about their experiences.

Methodology

The study is a mixed methodology based on two questionnaires. The first is the students' survey questionnaire that consists of 12 questions (see Appendix I). The questionnaires explore the students' perceptions of the use of the Innovation Lab as a space for learning. The second is a set of 10 questions (Appendix II) that explore the professors' perceptions of the impact of the Innovation Lab on their teaching and the realization of the learning outcomes of the course. Additionally, the second questionnaire also seeks ideas from the professors on how to improve and repurpose library spaces for enhanced learning. The findings are reported in two sections: students' responses and professors' responses. The findings are documented under broad subject categories, and not necessarily in the order of the questions in the survey questionnaire.

The Students' Survey

The first two questions are demographic: Question 1 asks for the students' academic disciplines and majors, while Question 2 asks for their year in college. The next two questions are Likert scale questions: Question 3 asks respondents to rank their responses on a five-point rating scale to show if they experience increased learning and acquire greater learning from the varied delivery methods of their professors. Question 4 measures the extent to which the location of the class in the library helps to increase the students' creativity skills. Ranking factors are "strongly agree," "agree," "neutral," "disagree," and "strongly disagree." Simple descriptive statistics and percentile are used to analyze the data from these two questions. Question 5 is an open-ended question that seeks to know how the use of space in the Innovation Lab affects the students' learning experience. Question 6 is a dichotomous question (yes-no) that seeks to know if it makes a difference to the students' learning experience if the class is held in the regular conventional classroom. Question 7 is an outcome-based, open-ended question that seeks to know what the students are able to do at the end of the class that they could not do before the class experience. Question 8 asks the students to explain the impact of the Innovation Lab on their perception of library space. Question 9 asks to know the resources and types of spaces that students would require in the library. Question 10 seeks to know if a partnership between the library and the faculty could promote students' learning and enhance their development of creativity skills. Question 11 asks students to list the technological tools that the library needs to acquire in order to support students' learning. The last question asks for additional comments and suggestions from the students.

Faculty Survey

Two methods were used to gather information from the professors: The first was via a general meeting held at the end of the semester to discuss issues of the Innovation Lab and gain insight into the professors' experiences of the library space. The second method was a questionnaire that consists of 10 open-ended questions (Appendix II) designed to gather information on how the use of the Innovation Lab impacts professors' teaching experience. Question 1 asks about the objectives of the course. Question 2 seeks to identify the departments that constitute the teaching team. Question 3 seeks to know why the Library is chosen as the venue for the course, and Question 4 asks about the professors' teaching methodologies. Question 5 asks if the library venue meets their goals, and Question 6 seeks to know the challenges they face from using the Library for hands-on learning. Question 7 asks the professors to describe how the library should be equipped to foster innovation and team learning. Question 8 asks how the library and the academic departments can collaborate to increase student learning and experience. Question 9 asks how

the use of library space/environment helps students in self-discovery. The last question asks for comments on how to transform library space for greater impact on teaching and learning.

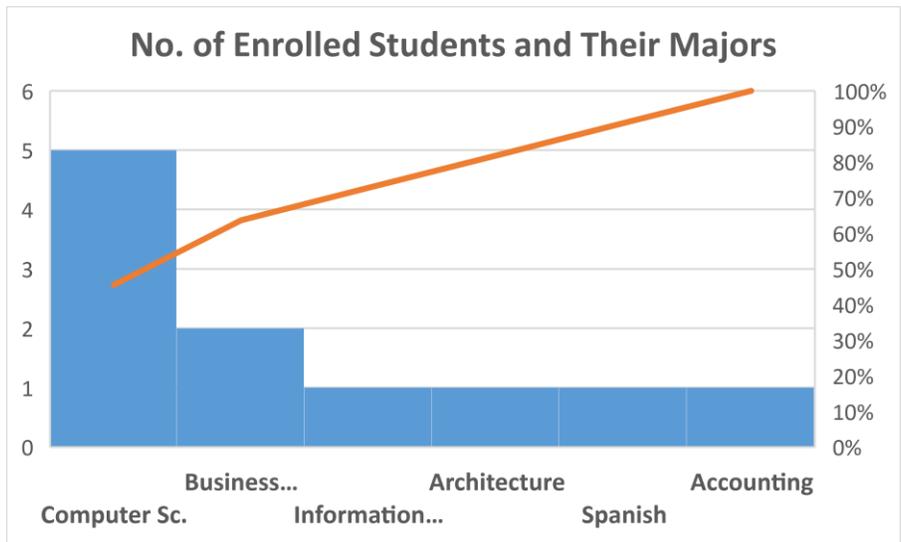
The survey was conducted on paper and manually distributed to all the 16 students in the course at the end of the semester, with instructions to drop their responses on a table next to the Innovation Lab. The students were told that completing the questionnaire is voluntary. The questionnaire for the professors was distributed via email. The responses are analyzed and tabulated manually because the survey population is small. The quantitative data is charted, and the qualitative data coded. The survey response rate was 69%. In all, the combination of both quantitative and qualitative approaches to this study provides a more complete and comprehensive understanding of the issues than either quantitative or qualitative approaches alone would have accomplished (Gawlik, 2016).

Findings: Student Survey

Demography

Questions 1 & 2 are demographic questions. Below is the demography of students who enrolled for the course. Five students were in computer science, two in business management, and one each in information systems, architecture, Spanish, and accounting.

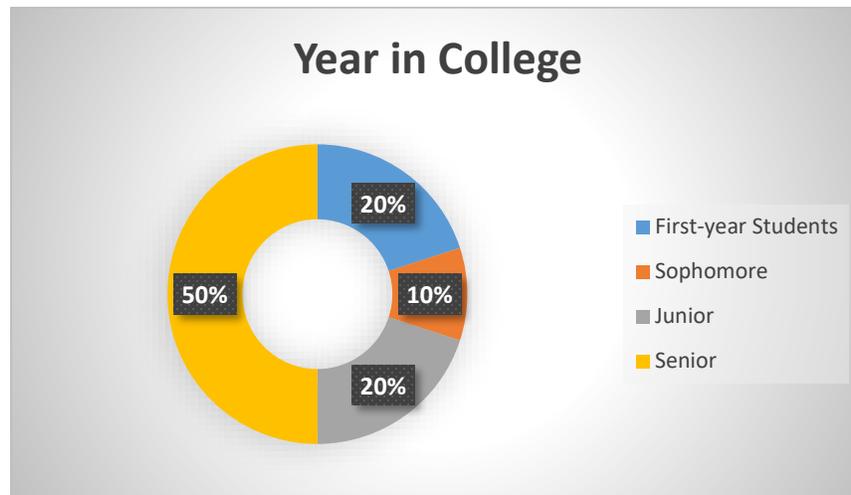
Table 1: Student Enrollment for Course: INEN 221-001



Year of Study in College

The study population consisted of eight seniors, three juniors, two sophomores, and three first-year students.

Table 2: Year of Study in College



Respondents' Perception of Increased Learning and Creativity Skills

Questions 3 and 4 are Likert scale questions. Responses to Question 3 show that respondents' perceived increased learning and increased creativity skills from learning at a location other than the traditional one-classroom environment. Four (33%) respondents strongly agreed with increased learning outside the classroom, three (27%) agreed; three (27%) were neutral, and one (9%) disagreed. Four (33%) respondents said they were happy to be out of the traditional class setup. One of them described the traditional class as a "preconditioned mentality of lecture and note-taking." Three (27%) respondents admitted that the location helps them to pay more attention. Five (45%) respondents affirmed that the "traditional classroom" is a place they would like to trade for other venues. Emphasizing the uniqueness and the effectiveness of the pedagogies, one respondent admitted that he has never experienced "that type of class before" and that the teaching styles expanded his viewpoints.

Responses to Question 4 show the degree to which the class periods in the library increased students' creativity skills. Four (33%) respondents agreed, five (45%) were neutral, and 2 (18%) disagreed. Four (33%) respondents gave credit to the openness of the learning space and described it as facilitating learning. One responded, "Instead of the standard classroom setup, we have a more open classroom encouraging ideas." Another said, "Open space made open thought easier." The responses to questions 3 and 4 are tabulated below in rank order scale of highest to lowest.

Table 3: Benefits of Teaching Outside the Classroom Environment

	Strongly Agree	Agree	Neu-tral	Disa-gree	Strongly Dis-agree
Q.3. Learning outside traditional classroom increases learning and the development of creativity skills as opposed to the one-teacher-one-class method.	4	3	3	1	0
Q.4. Learning in the library space increases students' creativity skills	0	5	4	2	0

Question 7, an outcome-based question, reports students' perception of the skills they acquired at the end of the class. Seven (63%) respondents commented that they learned more creativity skills and many new tools to help start new ideas. Four (33%) respondents admitted that they are now better problem-solvers. Two respondents acknowledged that the class boosted their confidence, while other respondents remarked that they can now think "outside the box."

Question 9 reports respondents' general remarks about the course: One respondent appreciated that it was fun and "kept him interested." Another liked the course because there were no tests and quizzes. Two (18%) respondents were impressed with the openness and the ability "to use my ideas." Four (33%) respondents were pleased with the emphasis on creativity. One (9%) was impressed with the class setup, while another appreciated the varied learning activities.

Respondents' Perception of the Impact of Library Space

Question 5, a dichotomous question, asks to know if it would be better if the course were held in the classroom rather than in the library. Four (33%) respondents answered “yes,” while seven (63%) answered “no.” Question 6 asks respondents to explain. The majority of respondents who agreed that the class was better held in the library stressed that the course is not suitable for a regular classroom setting because of the need for “space, work tables, group areas” that are not usually available in the regular classroom setting. One student commented that the library location is right because it takes students away from the “traditional classroom setting.” Another argued that no other place could have been more suitable than the library.

With regard to those who preferred a classroom location for the course, two respondents perceived that the library environment is not suitable for a workshop-like course, with its characteristic noisy and loud activities, because the library is traditionally quiet. Another respondent reiterated his preference for a classroom setting and argued thus: “I think it would have been better. I always felt like we had to be quiet in the library even doing activities.” Stressing the quietness of the library, one other respondent argued that the location of the lab in a quiet zone is not consistent with the nature of the class and that the constant caution of the library staff attendant that they should be quieter prevented them from engaging in greater exploratory activities. Another asserted that the location of the class in the library had minimal effect, “Little to none,” while another reiterated that it is the content and style of delivery that matters and not the location.

Question 8 reports respondents' additional observations about their library experience during the period of the course. “I learned the library has a good number of 3D printers,” said one respondent. Another discovered the library's poster printing services. Yet another wondered why the 3D and poster printing technology are not integrated to enrich the course. The respondent suggested that the professors consider “better use of technology; for instance, the library has 3D printers and poster printers, but we did not use any of them.”

Library Resources, Technology, and Space

Question 10 reports suggestions about resources and spaces that could promote group learning. Respondents asked for more quiet study and group project areas with appropriate technological tools. Other suggestions included the following:

- Updated resources;
- More and better technology;

- Better computers loaded with all software needed by departments on campus;
- Better printing;
- A small bar;
- 3D printers;
- IT staff to provide technical support to instructors;
- Projectors;
- Whiteboards;
- TV screens;
- Tablets;
- Bigger rooms; and
- Collaborative/active learning spaces.

Library/Academic Departmental Partnership

Question 11 reports what respondents thought about a partnership between the library and the university's academic units to support learning and research. One respondent (9%) claimed there is no need for a partnership and believed that the library serves well as a quiet place. Five (45%) respondents supported the idea of a strong partnership between the library and academic departments to repurpose the library space to enrich students' learning. One was indifferent, while another claimed not to understand the concept.

Question 12 asks for other suggestions on how library space could be repurposed for enhanced learning and research.

Findings: Survey and Discussions with Professors

Below is the analysis of the professors' responses to the questionnaire and the data gathered from their meetings with the researcher. Three professors (50%) responded to the questionnaire, and three (50%) attended the meeting where their experiences with the class and venue were discussed. The responses are coded and grouped into paragraph headings below.

Basic Information about Course INEN 221

Questions 1 to 3 summarize basic information about the course. INEN 221 is an introductory course designed to help students acquire creativity, innovation, prob-

lem-solving, and entrepreneurship skills. The main objective is to introduce students to innovation and entrepreneurship using principles of design thinking. It uses a cross-departmental teaching staff of six faculty from different departments: Computer Science, Educational Leadership, Architecture, Horticulture and Landscape Design, Marketing, and Engineering. The pedagogy is creative and action-driven, and it includes seminars, workshops, breakout groups, interactive activities, field trips, discussions, videos, and lectures.

Library Space and the Goals of the Class

Questions 4, 5, and 6 focus on reasons for using library space for instruction, whether the library space meets the needs for the course, and the challenges of using library space. Similar questions were asked at the meeting, and several respondents argued that they prefer the library space because it is neutral. The students are cross-disciplinary, and library space provides neutrality, comfort, and belongingness. Some argued that they need an open space to promote open thinking. Others asserted that they need a place where they can readily gain access to physical information resources for hands-on learning. Others seek a space where tools and technology complement their teaching, and they think the library is the ideal place for tools and technology integration. All respondents agreed that the Innovation Lab “somewhat” met their goals, but with some reservations: Some said that the space is smaller than expected and is too crowded. Another said that the space is not acoustically isolated from the study areas of the library, hence, “We were asked to be quieter several times, which hindered the students’ activities.” Another asserted that the tools and equipment needed to teach creativity techniques are lacking.

Desired Library Space

Question 7 asks faculty to describe what they would like to see in the library space to foster innovation and team learning. Respondents requested a dedicated space that supports loud activities--a place where they can play music and engage in active learning and exploration. They asked for spaces with “ganging” chairs and tables on wheels for easy reconfiguration and/or storage and a multi-media area that can capture video-audio activities and then project them back, with the space allowing self-observation and critical analysis of course activities. They asked for multiple screens, and as one suggested, “Extensive white board surfaces on the walls that allow makerspace activities.” They advised that a space that accommodates tools and other learning “would improve the experience for students.”

Library/Academic Department Partnership for Enhanced Learning

Question 8 asks for comments on the importance of forging library and academic department partnerships to improve students learning experiences. The majority of respondents agreed that the teaching faculty and library staff need to run joint workshops to teach students how to use creativity tools for learning. One stated that partnership with library staff is crucial for the success of experiential learning because the classroom environment is not designed to foster such. Lastly, one person suggested that library staff should spend some time observing a class period or two to increase their insights regarding how they might further prepare the library for unusual and nontraditional teaching and learning.

Benefits of Using Library Space

Question 9 reports faculty responses on how the use of library space helps to promote self-discovery. Most respondents reported that the library as a space for teaching and learning promotes self-discovery. They claimed that library space offers them the flexibility that their pedagogy requires, and it supports active learning. Others claimed that the library environment promotes independence and self-paced learning. With regard to the importance of library space as a resource for discovery, one respondent asserted that “the library is a community for group and individual discovery and not just a place for books and journals.” The library should no longer be perceived as a quiet place for “hush’ tones, but as a space for engagement and discovery.

Question 10 asks for further comments about space improvement. The professors voiced a desire for a customized lab that is fully equipped with furniture and technology that support creative learning. They echoed the students’ list of needed furniture and technology. Others asked for active neutral spaces to support group learning. Most of their responses correlate with findings from the students’ survey.

Discussion

Experiences from INEN 221

Most student respondents agreed that learning from different professors in this course increased their creativity skills, helped them to develop their talents, and built their self-confidence. The different pedagogies enhanced their problem-solving skills. The students valued the library as a place for engagement, and the professors used it as a platform for facilitating personalized and customized learning. The deviation from the traditional classroom teaching and testing system is new, fascinating, and accepting to the students; as one student attested, “It was a new

type of class that I haven't experienced before. Definitely expanded my viewpoints." The pedagogy of design thinking was fun for many. Others expressed appreciation for the "open format," the "hands-on" experience, and the emphasis on innovation. One respondent claimed, "This class has helped me improve my creativity." The recognition and emphasis on "fun," and "creativity" and the assertion by one respondent that "the underlying concepts taught were powerful," testify to the students' valuing of the course. Their comments are indicators that the desired learning outcomes for this course were met. Though the pedagogy motivates thinking and exploration, the students argued that the delivery of course content could be more effective if the professors integrated technology into the course.

Teaching in the Library Space

About 80% of student respondents agreed that the desired learning outcomes were achieved because the class was held outside the familiar traditional classroom environment. About 70% of respondents attributed the success of the class to the use of library space. They claimed that the "open" setting of the Innovation Lab, laid out and set up in a collaborative manner, motivates students to "pay attention more." The students' assessment of the Innovation Lab can be summarized in the words of a respondent: "The setup of the class with tables arranged in circles and the open space made open thought easier."

In support of the effectiveness of learning spaces in the 21st century, Savin-Baden (2008) asserts that learning spaces must be places of engagement, discovery, and knowledge-building. The author contends that learning spaces should foster free and open thoughts that are clear and refreshing to the mind. Most of the student respondents attested to Savin-Baden's ideas. They preferred to learn outside the classroom, in an "open space" that "made open thoughts easier." The students appreciated the use of design and art principles to learn creative skills and expressed resentment for the traditional classroom learning model with its characteristic "pre-conditioned mentality of lecture and note taking." Their inclination to creativity can be summarized in the statement of one respondent: "I think more outside the box." The students' experience in this course supports Saavedra and Opfer's (2012) assertion that the 21st century students require higher order thinking skills and "deeper learning outcomes" if they are to succeed in a global economy where skills development, creativity, and knowledge creation are critical for survival.

The openness of the class provided a new context for the students to process information, evaluate their options, and build knowledge at a higher level. As one respondent claimed, "instead of the standard classroom setup, we have a more open classroom encouraging ideas." Another asserted, "Open space made open thought easier." And yet another appreciated the opportunity to be "freely able to stretch

and think.” The free and open learning context improved the students’ self-confidence and increased their ability to reason independently and propose solutions that are novel and unique to solving problems. As one respondent observed, “I like the ability to use my ideas.” One could easily conclude from the responses that the use of the library space for teaching and learning supports a much more favored learning model that promotes independent thoughts and self-discovery compared to the old method of mass education that is essentially a one-size-fits-all model that promotes conformity and uniform thinking.

Innovation Lab Location

The location of the Innovation Lab in a zone that restricts the students from engaging in loud activities that are pertinent to the success of the course accounts for the perception that the library space is not ideal for the class. This is, no doubt, why the professors stress that for the class to truly succeed in the library, they will need a dedicated space customized for their class. The same argument goes for the location of the snack bar. Some respondents recommend a “small bar for food and a small area to study with food.” Ironically the library’s snack bar and eating area is just adjacent to the Innovation Lab, unnoticeable and sparingly used, partly because it is located in a quiet zone--an unlikely place for a snack room. In addition, the two signs on the door leading to the space are conflicting: One sign, just by the door, says it is a microfiche collection room, and another sign says it is a study space. Yet inside the room is a vending machine, a microwave, and a few tables and chairs supposedly meant for dining. It takes a curious patron to discover the functions of that room. The snacking room should have been located in a neutral space for general and public use. Signs in a library space must correspond with the activities of the space; otherwise, the space is lost to patrons.

Some respondents are glad to “discover” that the library provides 3D and poster printing services. Again, this could be attributed to the location of these crowd-attracting entrepreneurial services in a quiet zone. And within the culture of library quietness, it does not register in human thinking that 3D and large printing enterprises that are essentially active human activities would be located in a quiet zone. This discovery by the INEN 221 class is an indicator that the James White Library needs to redefine and re-envision its spaces to reflect the use to which the spaces are designed and provide appropriate signage at the main entrance of the library that explains the different zones and activities that take place in them. Poor planning and inappropriate signage of library spaces can obscure and conceal the best of services designed for enhanced student learning and comfort. Library space planning is an evolving paradigm as long as human activities and interactions are continually determined by various ways of learning. The academic library space will need to continue to be restructured and rezoned to meet patrons’ information

and knowledge development needs. The zoning and the layout should physically speak to the patrons, and they should be able to readily distinguish an active learning zone from a quiet one. Such distinctions would motivate patrons, particularly undergraduate students, who very much cherish group learning, participatory space, and creative learning in a fun environment. Mixing up active and quiet learning activities in one zone, as it is the case of the Innovation Lab, inhibits the actualization of the goals for which the spaces are designed.

Spaces must be demarcated as social spaces for active learning, as in active classrooms and active labs; makerspaces for exploration and hands-on learning; collaborative study spaces for knowledge exchange; spaces for food and drink; quiet spaces for contemplation; and neutral spaces for general and public use. Active learning zones are not quiet spaces but spaces for collaboration and knowledge sharing. The library needs to spell out the rules that guide the use of each space and communicate the information to patrons. The preconceived notion of the library as a quiet place will dissipate, and patrons will begin to perceive the library as an active learning center where spaces are designed to support group cognitive activities and promote discovery.

An innovation lab requires all necessary technological tools that support innovative activities. In this case, the Innovation Lab is sparingly equipped, hence the need for tools and equipment as suggested by the respondents. Brooks (2011) contends that technology-enhanced environment has a significant effect on student learning, and spaces dedicated to innovative activities within the library must be well designed and equipped to meet students' exploration and interactive activities and general human behavior. Because knowledge generation is very critical to learning, library spaces must include laboratory areas, tools, and resources that stimulate the senses and support multisensory knowledge construction. In designing innovation labs, therefore, the library should always consider the strong link between learning, research, and technology.

The experiences expressed by the participants in this study should motivate the library to begin to review its space service delivery, consider transformative measures of space repurposing and redesigning to meet patrons' learning needs, and also provide a good lasting impression to patrons in their use of library space. Könings, Brand-Gruwel, and van Merriënboer (2005) reiterate that students and faculty perceptions of the learning environment determine largely what kind of learning activities should be employed, and this, in turn, should inform the library about faculty and student needs.

Conclusion

The results of this exploratory study suggest that the use of the Innovation Lab as the teaching and learning space for INEN 221 benefits the students in several ways: As a space, the Lab facilitates open learning, and as a neutral environment, the Lab motivates students to think dependently and engage in collaborative learning and promotes student-centered learning. The openness of the library space encourages free thinking, self-discovery, and self-paced learning. Students cherish the free learning environment and are happy to escape from the ‘caged’ classroom context. The faculty achieve their teaching and learning outcomes, and students discover hidden services that are beneficial to them.

The study reveals that the library as a teaching and learning space has a great potential to facilitate open learning and holds a great promise for transdisciplinary learning. If library spaces are well equipped with emerging technology, the library could expand its role as a vital place on campus for connection, collaboration, and knowledge construction. This study underscores the need for the library to engage in greater partnership with the teaching faculty to use the library as a participatory space. The more library spaces are used, the greater the repurposing for relevance and needs. Today, the library is not just a study space but a learning hub that inspires patrons to develop new ideas and knowledge. The author of this study reiterates Dr. Silas Oliveira’s (2016) call for a need to re-envision the James White Library spaces for purposeful human engagement to promote collaboration and knowledge exchange.

This study has some limitations: The sample size is very small, so the views of the respondents do not represent the views of the majority of the students who use the library. There is a need for future research that will collect data from a much larger representative sample of patrons to really get perceptions from a wider population. Such a study could involve user perception of library space. This study focuses mainly on the perceptions of participants in the course INEN 221. While it is a small study, with a small sample size, the findings reveal the state of library spaces in James White Library and the need to begin examining space repurposing critically.

REFERENCES

- Andrews, C, Wright, S. E., & Raskin, H. (2016). Library learning spaces: Investigating libraries and investing in student feedback. *Journal of Library Administration*, 56, 647-672. <https://doi.org/10.1080/01930826.2015.1105556>
- Barr, R & Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. *Change*, 27(6), 12-26. <https://doi.org/10.1080/00091383.1995.10544672>

- Bennett, S. (2008). The information or learning commons: Which will we have? *Journal of Academic Librarianship*, 34, 183-185. <https://doi.org/10.1016/j.acalib.2008.03.001>
- Bennett, S. (2011). Learning behaviors and learning spaces. *portal: Libraries and the Academy*, 11, 765-789. <https://doi.org/10.1353/pla.2011.003>
- Biggs, J.B. (2003). *Teaching for quality learning at university: What the student does*. Buckingham: Open University Press.
- Brooks, D. C. (2011). Space matters: The impact of formal learning environments on student learning. *British Journal of Educational Technology*, 42, 719-726. <https://doi.org/10.1111/j.1467-8535.2010.01098.x>
- Butler, D. L., Lauscher, H. N., Jarvis-Selinger, S., & Beckingham, B. (2004). Collaboration and self-regulation in teachers' professional development. *Teaching and Teacher Education*, 20, 435-455. <https://doi.org/10.1016/j.tate.2004.04.003>
- Cohen, J. & Robinson, C. (2018). Enhancing teaching excellence through team-based learning. *Innovations in Education and Teaching International*, 55, 133-142. <https://doi.org/10.1080/14703297.2017.1389290>
- De Courcy, E. (2015). Defining and measuring teaching excellence in higher education in the 21st century. *College Quarterly*, 18(1). Retrieved from <http://collegequarterly.ca/>
- Farmer, L. S. J. (2016). Library space: Its role in research. *The Reference Librarian*, 57, 87-99. <https://doi.org/10.1080/02763877.2016.1120620>
- Fisher, K. (2001). *Building better outcomes: The impact of school design on student learning outcomes and behaviour*. Canberra, Australia: Department of Employment, Education, Training and Youth Affairs.
- Fitzmaurice, M. (2010). Considering teaching in higher education as a practice. *Teaching in Higher Education*, 15, 45-55. <https://doi.org/10.1080/13562510903487941>
- Forrest, C. & Bostick, S.L. (2013). Welcoming, flexible, and state-of-the-art: approaches to continuous facilities improvement. *IFLA Journal*, 39(2), 140-150. <https://doi.org/10.1177/0340035213486408>
- Forrest, C. & Hinchliffe, L. J. (2005). Beyond classroom construction and design: Formulating a vision for learning spaces in libraries. *Reference & User Services Quarterly*, 44(4), 296-300.
- Gawlik, R. (2016). Methodological aspects of qualitative-quantitative analysis of decision-making processes. *Management and Production Engineering Review*, 7(2), 3-11. <https://doi.org/10.1515/mper-2016-0011>
- Gibson, R. (2010). The 'art' of creative teaching: Implications for higher education. *Teaching in Higher Education*, 15, 607-613. <https://doi.org/10.1080/13562517.2010.493349>

- Houston, A. M. (2015). Revisiting library as place: Balancing space planning priorities by focusing on core purpose. *Reference & User Services Quarterly*, 55(2), 84-86. <https://doi.org/10.5860/rusq.55n2.84>
- Kalantzis, M. & Cope, B. (2010). The Teacher as designer: Pedagogy in the new media age. *E-Learning and Digital Media*, 7, 200-222. <https://doi.org/10.2304/elea.2010.7.3.200>
- Kaygan, P. & Aydinoglu, A. U. (2018). The role of space in interdisciplinary collaboration in design education. *International Journal of Technology and Design Education*, 28, 803-817. <https://doi.org/10.1007/s10798-017-9407-2>
- Kezar, A. (2005). Redesigning for collaboration within higher education institutions: An exploration into the developmental process. *Research in Higher Education*, 46, 831-860. <https://doi.org/10.1007/s11162-004-6227-5>
- Könings, K.D., Brand-Gruwel, S., & van Merriënboer, J. J. G. (2005). Towards more powerful learning environments through combining the perspectives of designers, teachers, and students. *British Journal of Educational Psychology*, 75, 645-660. <https://doi.org/10.1348/000709905X43616>
- Luo, H., & Lei, J. (2012). Emerging technologies for interactive learning in the ICT age. In J. Jia (Ed.), *Educational stages and interactive learning: From kindergarten to workplace training* (pp. 73–91). Hershey, PA: Information Science Reference.
- Maguad, B. A. (2018). Managing the system of higher education: Competition or collaboration? *Education*, 138, 229-238.
- Mysliwicz, T., Dunbar, M. E., & Shibley, I. A. (2005). Learning outside the classroom: Practical suggestions for reorganizing courses to promote higher-order thinking. *Journal of College Science Teaching*, 34(4), 36-39.
- Montiel-Overall, P. (2005). Toward a theory of collaboration for teachers and librarians. *School Library Media Research*, 8, 1-36.
- Mosley, P., Alderman, J., & Carmichael, L. R. (2015). Making it fit: Reshaping library services and spaces for today's students. *Journal of Access Services*, 12(3-4), 91-103. <https://doi.org/10.1080/15367967.2015.1061943>
- Nitecki, D. A. (2011). Space assessment as a venue for defining the academic library. *The Library Quarterly*, 81, 27-59. <https://doi.org/10.1086/657446>
- Oblinger, D. G. (2006). Space as a change agent. In D. G. Oblinger (Ed.), *Learning spaces* (pp. 1-3). Washington, D.C.: EDUCAUSE.
- Oliveira, S. M. (2016). Space preference at James White Library: What students really want. *The Journal of Academic Librarianship*, 42, 355-367. <https://doi.org/10.1016/j.acalib.2016.05.009>
- Pham, H. T. & Tanner, K. (2015). Collaboration between academics and library staff: A structurationist perspective. *Australian Academic & Research Libraries*, 46, 2-18. <https://doi.org/10.1080/00048623.2014.989661>

- Saavedra, A.R. & Opfer, V. D. (2012). Learning 21st-century skills requires 21st-century teaching. *Phi Delta Kappan*, 94(2), 8-13. <https://doi.org/10.1177/003172171209400203>
- Savin-Baden, M. (2008). *Learning spaces: creating opportunities for knowledge creation academic life*. Berkshire, England: Open University Press.
- Scott, D. E., & Scott, S. (2011). *Effective university teaching and learning*. Retrieved from University of Calgary website: <https://www.ucalgary.ca/provost/files/provost/scottscott-effectiveuniversityteachingandlearning.pdf>
- Sinclair, .B. (2007). Commons 2.0: Library spaces designed for collaborative learning. *EDUCAUSE Quarterly*, 30(4), 4-6.
- Umbach, P. & Wawrzynski, M. R. (2005). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher Education*, 46, 153-184. <https://doi.org/10.1007/s11162-004-1598-1>
- Webb, K.M., Schaller, M. A., & Hunley, S.A. (2008). Measuring library space use and preferences: Charting a path toward increased engagement. *portal: Libraries and the Academy*, 8, 407-422. <https://doi.org/10.1353/pla.0.0014>
- Zhu, C., Wang, D., Cai, Y., & Engels, N. (2013). What core competencies are related to teachers' innovative teaching? *Asia-Pacific Journal of Teacher Education*, 41, 9-27. <https://doi.org/10.1080/1359866X.2012.753984>

Appendix I

Survey questionnaire for students enrolled in INEN 221-001 Intro to Innovation & Entrepreneurship: Foundations of Play.

This survey sets out to gather relevant data that would inform the library how the use of the Innovation Lab as the teaching and learning space for INEN 221 – 001 has contributed to learning. We want to know about your experience and what we can do to improve our spaces to foster effective learning and research. Please complete the questionnaire below:

1. What is your major?

2. What year are you in university?
 - Freshman Sophomore Junior Senior

3. This is a team-taught class. Learning from different teachers across different disciplines has increased my learning, perspectives, and creativity skills better than it would have been in the traditional one-teacher-one-class system

- Strongly agree Agree Neutral Disagree Strongly disagree
4. The classes held in the library have helped to increase my creativity skills
 Strongly agree Agree Neutral Disagree Strongly disagree
5. Would it have made a difference to your learning experience if this class had held in the classroom rather than in the library? Yes No.
6. Please explain your answer to Question 5
7. What are you able to do now that you were not able to do before this class?
8. How has the use of the Innovation Lab affected your perception of library space?
9. What do you like most about this class?
10. What other resources and spaces do you need to improve group learning in the library?
11. The location of this class in the library was as a result of the partnership that exists between library management and the academic department. What kind of partnerships would you like to see the Library engage in to support your learning and research?
12. Do you have any suggestions or comments on how library space should be designed or repurposed for your learning and research?

Appendix II

Survey of faculty members who taught the course INEN 221-001 Intro to Innovation & Entrepreneurship: Foundations of Play.

This survey sets out to gather relevant data that would inform the library how the use of the Innovation Lab as a teaching and learning space has contributed to learning. We want to know about your experience and what we can do to improve our spaces to foster effective learning and research. Please complete the questionnaire below:

1. What are the objectives of the course: INEN 221 – Intro to Innovation & Entrepreneurship-Foundations of Play?

2. Which Departments make up the teaching team?
3. Why did you select the library as your venue?
4. What's your teaching methodology?
5. Did the library space meet your goals?
6. What challenges did you experience using library space for hands-on learning?
7. What facilities would you like to see in the library space to foster innovation and team learning?
8. What kind of library/academic faculty partnerships would you envisage for improving the learning experience of students?
9. The element of self-discovery is very critical to this class. How has your use of library space contributed to helping your students discover themselves?
10. Any other comments about repurposing library space to enhance teaching and learning?