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Face-to-Face and Online Interprofessional Immersive Experiences: A Qualitative Study

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ABSTRACT: At the study site for this research, Interprofessional Education taught in distance learning courses can be challenging for faculty, impacting student engagement, motivation, and success. A qualitative case study was conducted with students to explore participant perceptions of their engagement following their participation in a virtual synchronous immersive experience. The study took place during four consecutive semesters beginning in the Spring 2019 term. Participants at the study site are learning in a healthcare strategic planning course class that focuses on interprofessional collaboration as a basis of health strategy. Data was collected using open-ended questionnaires to determine students' online versus face-to-face immersive learning experiences. Findings suggest that due to their engagement experiences, participation in a virtual Immersive Learning Simulation experience may be a viable substitute for the traditional face-to-face learning experiences. After the Immersive Learning experience, participating students and the healthcare experts were asked to respond to a questionnaire to assess their perceptions of the strengths, weaknesses, and opportunities offered by the online immersive event. This research study offers new information about students' and healthcare experts' perceptions of an online immersive IPE experience while identifying possible strengths, weaknesses, and opportunities.

KEYWORDS: Interprofessional education, online learning, synchronous learning, distance learning, immersive experiences.

I. INTRODUCTION

Interprofessional collaboration and education (IPE) have been identified as integral components of improved patient care and outcomes by increasing safety and efficiency[1]. Teamwork has also been shown to provide benefits to health care providers, including reducing extra work and increasing job satisfaction[2]. However, barriers to interprofessional collaboration (IPC) include negative perceptions and a lack of understanding of the scope, strengths, and capabilities of other health professionals[3]. There has been a call for IPE to establish a foundation for equitable teamwork among health professionals through improved identities and attitudes[4]. Further, IPE holds collaborative learning as a foundational principle to improve collaborative practice[3]. Healthcare graduate education has addressed the call for IPE by expanding course offerings to include simulations and online modules with collaborative care opportunities[5].

In 2010, the World Health Organization (WHO) released *Framework for Action on Interprofessional Education & Collaborative Practice*, which provide a roadmap for collaborative practice and interprofessional education[6]. WHO defined IPE as education that "occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improved health outcomes" (p. 7). In addition, the report offered support for the use of IPC in patient care to improve safety, outcomes, and patient satisfaction[6]. As a result, health professional educators from public health, dentistry, pharmacy, nursing and medicine formed the Interprofessional Education Collaborative Panel (IPEC) and developed *Core Competencies for Interprofessional Collaborative Practice* (2016). The four specific competencies are: Values/Ethics for Interprofessional Practice, Roles and Responsibilities for Collaborative Practice, Interprofessional Communication, and Interprofessional Teamwork and Team-based Practice[7]. These competencies provide specific behaviors necessary for proper delivery of integrated collaborative healthcare and guide the development of IPE[7].

II. RESEARCH PURPOSE

As health care educators work to provide interprofessional education courses and opportunities for collaboration in the classroom, real time, face-to-face interaction can prove challenging in the virtual setting. Students reading about the role of team members has not had the same impact as live peer interaction as students develop communication, team building and conflict resolution skills. The emergence of the COVID-19 pandemic and associated social distancing measures have led to an increased focus on the efficacy of online learning, communication, and the need to create effective online tools for education[8]. As the pandemic

continues, healthcare providers and educational institutions are considering the possibilities, limitations, effectiveness, and perceptions of online interprofessional collaboration and education[9].

The purpose of this qualitative case study was to explore students' perceptions of an online immersive simulated interprofessional learning experience, as part of an interprofessional education (IPE) online course ("Strategic Planning in Healthcare"), offered by a health sciences university that provides instruction in multiple states. The goal was to better understand the strengths, weaknesses, and opportunities presented by online immersive learning simulations (ILS) experiences in IPE. Understanding participants' perceptions of strengths, weaknesses, and opportunities of online and face to face ILS, may or may not support the allocation of resources for future courses to continue both options.

II. Literature Review

Immersive Interprofessional Education Experiences

Traditional lecture-based education has been criticized for being inefficient and ineffective[10], which facilitated a move towards learner-centric experiential learning. As a result, immersive, interactive learning experiences such as team-based learning, problem-based learning, and simulation have become increasingly prominent within healthcare education[11]. Immersive in-person clinical experiences for health care teams can be beneficial by exposing students to the principles of IPC and IPE in practice[12]. Over two-thirds of participants reported that the experiences had improved their ability to work in an interprofessional team. Specifically, immersive clinical experiences offer opportunities for contextual learning as it relates to professional responsibilities and roles, impacting future practice[12]. Improved attitudes are apparent towards IPC after an immersive learning experience[3,15].

Immersive Learning Simulations

Simulation was defined as "a technique—not a technology—to replace or amplify real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner" (p. i2)[16]. ILS provide interactive, realistic, and engaging experiences facilitating knowledge transfer and learning[17]. ILS allow learners to build upon existing knowledge while acquiring new competencies driven by their experiences within the immersive environment. ILS provides a relevant environment for students to integrate practice and theory, giving meaning to the learning and tasks being performed[18]. Gaba further expanded on the benefits of ILS as providing experience, practice, collaboration, repetition, reflection, standardization, and opportunity for experimentation and assessment[16]. Jeffries suggested that simulation is an appropriate method for the development of IPE skills, such as interprofessional communication[19]. ILS provides a safe environment for students to practice and further develop newly learned skills prior to implementation in the healthcare environment.

Immersive IPE Simulation in an Online Environment

ILS implementation presents challenges to educators and educational institutions, as outcomes are hard to assess, development and implementation are time consuming, and simulation programs can be expensive[18]. When exploring simulation options, Taekman and Shelley presented rationales for choosing virtual ILS over face-to-face ILS[11]. Virtual ILS creates the ability to duplicate and distribute the learning environment at low cost, allowing for scalability and convenience. Virtual ILS allows for repetition, reflection, standardization, and an opportunity for immediate assessment and directed feedback. Online ILS may challenge millennial learners, as these students value collaboration and active learning, while compensating for weaknesses related to immature critical thinking and inductive problem-solving skills[11]. The use of online immersive experiences can contribute to improved learning outcomes, including a higher rate of retention of key concepts when compared to online instruction alone[17].

III. SETTING

The research study took place at a university that supports undergraduate and graduate health care programs and has a mission to encourage interprofessional education and collaboration. The virtual ILS experience is part of a 15-week online IPE course in strategic planning in healthcare. Students are divided into interprofessional working teams that must collaborate to produce deliverables for a chosen healthcare organization. The ILS session is a three-day synchronous online immersion where students meet in their interprofessional work groups and attend lectures on strategic planning and metrics. The experience simulates interprofessional collaboration among health care leaders as the students evaluate the community and organization to develop a strategic plan that addresses health needs identified while maintaining financial viability. Each team presents the strategic plan in the form of a strategic map and balanced score card to a "board of directors". The board is made up of health care leaders from organizations across the country. The experts question the students about the development of the strategic plan and provide feedback and recommendations. Students also watch the presentations of other teams and hear the feedback and questions from the team of experts.

IV. Methodology

A. *Participants*

The graduate students enrolled in the course had completed their undergraduate education in traditional brick and mortar programs and while many practiced as registered nurses (RN), physical therapists (PT) or occupational therapists (OT), a portion

of the students were not direct care providers. These students were completing master's degrees in healthcare leadership (MHS) or healthcare administration (MHA). The student population was primarily female (76%). The student group was diverse with the following interprofessional breakdown: RN 34% (*n*=13); OT 13% (*n*=5); MHA 23.6% (*n*= 9); MHS 18% (*n*=7); PT 10% (*n*=4) (Table 1).

Table 1. Student Demographics

Term	Number of students participating in ILS	Gender	Program	Number of Research Evaluations Completed
Spring 2019	10	9F 1M	3 RN 1 OT 4 MHA 2 MHS	10
Summer 2019	10	7F 3M	5 RN 3 OT 1 MHA 1 MHS	7
Fall 2019	8	6F 2M	3 RN 1 OT 1 MHA 1 MHS 2 PT	2
Spring 2020	10	7F 3M	2 RN 3 MHA 3 MHS 2 PT	3

B. *Data Collection*

To address the research study, an end of experience questionnaire was created to evaluate the students' perceptions of teaching and course design and how it relates to their engagement. Seven students from the spring 2019 terms answered open-ended questions and questions using a Likert scale. A pattern of responses to open-ended questions led exploration of this course delivery method further and the development of two additional questions being added to the questionnaire.

A qualitative case research design was used to collect data from students at the end of the immersion experience, over four semesters between Spring 2019 and Spring 2020. Students answered four ordered and two open-ended questions. These are standardized questions allowing for comparison to National Promotor Scores and benchmarking with other educational institutions. Of the students enrolled in the course, 52.78% (*n*=38) participated in the virtual ILS. Of these, 58% of the students (*n*=22) completed the optional questionnaire. The questions looked at engagement from the face-to-face experience, the online experience, and its impact on engagement in interprofessional collaboration.

VI. DATA ANALYSIS AND RESULTS

A. *Analysis*

Following data collection, the data were prepared and then analyzed to determine the common themes in participants' responses. A thematic analysis using a combination of a priori and emergent coding was used to help determine themes and patterns of participants' experiences using virtual immersions, face-to-face immersions, and interprofessional collaboration. The multiple methods data collection was then triangulated. The constructs of virtual immersions, face-to-face immersions, and interprofessional collaboration was used to guide the responses for level one coding. In addition, the following sub codes were used within the main a priori codes for this study: face-to-face—direct instruction and ILS in a face-to-face setting; online immersive setting—using an online immersion and ILS in an online format; and interprofessional collaboration—utilizing interprofessional collaboration to support ILS experiences. Following first-level coding of all data, second-level codes were identified by using pattern coding across open-ended questionnaires. This allowed the linking concepts that appear throughout questionnaires to be identified. Themes emerged based on participant perceptions of the face-to-face and virtual immersion experiences.

B. *Results*

The ILS was created to facilitate a real time interprofessional collaborative simulated experience across a geographically diverse population, and many advantages were found with this method of instruction. During the period of study, COVID-19 and social distancing created a need for a virtual learning option. Based on student feedback, ILS is a viable choice for interactive learning experiences**.**

There are important aspects of ILS experiences in terms of reflection and debriefing after the simulation[17]. This observation is consistent with the results of this study. Open-ended questionnaires suggested the importance of enriching feedback, and the use of simulation were key to student's engagement. Additionally, the online platform allowed for application in simulation; therefore, new learning could be tested in a safe environment. Typically, the ILS option uses more resources than a traditional asynchronous course. Therefore, student responses on the strengths and weaknesses of the experience were sought to justify the allocation of resources to support the continuation of the ILS offering.

In their white paper, Microsoft identifies three realms of learning that occur in virtual experiences[20]. This immersive experience challenged the learner in all three realms. First, the psychological immersive component was met when the students worked to master complicated tasks in a real-world environment[20]. While difficult to achieve in the traditional classroom, this ILS offered a setting for interprofessional collaboration and application of strategic planning skills[20]. Next, the sensory immersion occurred as the students interacted with national healthcare executive and presented their strategic plan for the chosen organization[20]. Each group of students became the leadership team of a healthcare organization and were able to respond to posed questions from the leaders. The students did not simply develop an assignment but presented and defended their decisions. Last, the narrative and symbolic realm was reached as learning amongst, with, and from each member of the interprofessional team was achieved[20]. The students worked together to solve problems, hold each other accountable, communicate and acquire skills that they will use as future healthcare executives. They developed a profound emotional tie to the product they created and the clear vision for the organization that they represented.

Open dialogue is a part of processing new materials and experiences, which is an important and necessary part of any ILS experience. Similarly, the ability to make self-corrections during the experience was an important aspect of successful simulated experiences[21]. Simulation is associated with student collaboration, rather than competition in the learning setting, and simulation motivates students to learn through a unique format created to meet the needs of diverse learning styles[21].

Students found that the venue and format allowed for meaningful and important interprofessional collaboration. IPE was an important factor in developing a robust strategic plan and allowed students to examine the delivery of healthcare through many different perspectives. Students believed that the format met their learning goals leading to recommendations for future students.

The results of this study suggest that virtual ILS experiences may be a viable substitute for face-to-face ILS. Virtual ILS overcomes traditional ILS barriers, including those introduced by the COVID-19 pandemic and associated social distancing measures. There is an ability to collaborate with a diverse group of experts that are not limited to one geographical location. The virtual ILS is cost effective, as the university faculty and students are not burdened with the cost of travel (hotel, airfare, meals). The results of this research study demonstrate that 83.3% of students find it to be as beneficial as the face-to-face immersion. Additionally, 95% of students reported that their learning goals were met either "a great deal" or "a lot". Virtual ILS stimulates learning through the creation of meaningful, real life experiences, which is supported by students' satisfaction.

VII. CONCLUSIONS

This study offers new information about students' perceptions of an online immersive IPE experience while identifying possible strengths, weaknesses, and opportunities. The students' responses suggest that the virtual ILS may be a viable option to face-to-face immersive learning experiences and well worth resource utilization. It also appears that ILS appeals to adult learners. Educational experiences must have meaning and learners must be able to immediately apply new concepts for valuable learning to exist. Achievement of meaningful learning leads to a hunger to learn more and offsets the sacrifices made by the adult learner. This virtual experience met those adult learning needs and provided a cost-effective and convenient way to interact and learn. Additionally, the virtual immersive, collaborative offering provided a venue for the students to successfully meet the course learning outcomes established by faculty.

Future research could include additional data to add to the enrichment of the existing data. The research focused on face-to-face and online immersions; adding a blended model could another layer to the data and determine if such a model provides engagement in comparison to only face-to-face and online immersion experiences. Future research could build on the findings by expanding the population to understand if the same gaps exist. Future research could also evaluate implementation before and after attending an immersive experience.

The purpose of this qualitative case study was to explore whether face-to-face, or immersive experiences were best practices to increase the understanding of their immersion experiences. Stakeholders can choose to use the findings to provide training for higher education faculty to improve the implementation of best practices in an immersive experience, whether it is face-to-face or online. The results of this study can be used to train higher education faculty in implementing best practices in their immersive

experiences for interprofessional collaboration. Feedback from participants will help educators improve the training and provide input for future research and interprofessional educational experiences.

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