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A Pilot Study on Implementing an Interprofessional Education Model for Developing Rehabilitative Science Student Core Competencies

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Cover Page Footnote

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Abstract

Introduction: Inclusion of interprofessional education (IPE) in academia is required by education accreditation agencies for occupational therapy (OT) and physical therapy (PT) in the United States. Limited information is available on models of IPE to guide faculty. The purpose of this pilot study was to determine the feasibility of implementing a recently designed IPE model with OT and PT graduate students. This IPE model aligned Interprofessional Education Collaborative core competency domains with novel learning activities, such as an escape room, simulated medical chart, and two simulations.

Methods: Data were retrieved from 52 auto-enrolled students ($n=14$ OT) and ($n=38$ PT) in a 15-week course held in 2019. Students completed the Interprofessional Education Collaborative Self-Assessment Tool on the first day (pre) and last day (post) of the course. Inclusion criteria required all archived assignments to be completed thoroughly. Data were analyzed using a non-parametric statistical test with a significant threshold set at $p < 0.05$.

Results: Results indicated total post-scores were significantly higher compared to pre-scores, $z = -5.08$, $p < .001$. Further, sub-group analysis using the Wilcoxon Signed Ranks Test showed significantly higher post-scores compared to pre-scores for interaction component ($z=-5.27$, $p < .001$) and values component ($z=-2.50$, $p=.012$). Comparison between OT and PT students using the Mann-Whitney U test did not show any significant difference in total scores ($U=231.5$; $p=.853$), interaction component ($U=221.0$; $p=.678$), and value component ($U=238.5$; $p=.972$).

Discussion: This IPE model is feasible for a larger study and, after participating, students will move forward in the curriculum with better IPE foundational knowledge.

Key Words: core competencies, higher education, interprofessional education, occupational therapy, physical therapy

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Introduction

Interprofessional education (IPE) was instituted to enhance patient care experiences, improve patient safety, and lower healthcare costs by narrowing the gap between health education and clinical practice (WHO, 2010). According to the WHO (2010), IPE occurs when two or more professions learn with, from, and about one another for effective collaboration and improvement of health outcomes (Steinheider et al., 2021). In 2016, the Interprofessional Education Collaborative (IPEC) report described the four core competency domains of communication, teamwork, roles/responsibility, and values/ethics required for successful collaborative teams. Per the IPEC report, “the most important outcome...is providing an enabling framework for clinical care providers, public health practitioners, and professionals from other fields to collaborate more effectively and creatively across disciplines to optimize health care and advance population health” (p. 4). In 2020, the accreditation councils for occupational therapy (OT) and physical therapy (PT) included IPE standards in education (Accreditation Council for Occupational Therapy Education, 2022; Commission on Accreditation in Physical Therapy Education, 2019).

Implementing and delivering IPE can be complex and multifaceted as it is influenced and threatened by institutional, academic, and environmental factors, especially when each area is not addressed (Grymonpre, 2016). Continuous discussion and debate occur on how to improve teaching delivery of healthcare students. Many pedagogies to facilitate IPE are available in the literature, such as using case studies (Scrooby et al., 2019; Yancey et al., 2018), lectures (Goreczny et al., 2016; Oxelmark et al.,

2017), team-based learning (Loftin & West, 2017), simulations (Appelbaum et al., 2020; Carson & Harder, 2016; Gellis et al., 2019; Morrell et al., 2019; Poirier et al., 2019), online simulation training (Kim et al., 2017), and high-fidelity simulation (Coppola et al., 2019). These various teaching deliveries found increased confidence and feelings of competence in most participants. Frequency and placement of IPE in the curriculum is also debated with agreement that a single IPE simulation is not enough to build confidence for collaboration in students, even at the end of didactic work (Gunaldo et al., 2021; Lairamore et al., 2018; Price et al. 2021). In a systematic review of 37 articles, Azzam et al. (2022) discovered that most IPE student encounters were one-off experiences, limited to two professions, and had logistical difficulties preventing sustainability for IPE delivery. IPE scholars researched and found the need for curricular development to capture student learning within multiple opportunities across the continuum of learning, rather than one isolated event (Arth et al., 2018; Hean et al., 2018; Lockeman et al., 2016; Paige et al., 2017; Wellmon et al., 2017). Learners’ self-assessments of confidence have been found to be more effective when utilizing multiple IPE events over time, varied IPE learning activities like simulation escape rooms, and scaffolded IPE experiences incorporating Bloom’s taxonomy of hierarchical levels of learning (Arth et al., 2018; Hean et al., 2018; Lockeman et al., 2016; Sabus & Macauley, 2016; Stockert & Ohtake, 2017; Wellmon et al., 2017).

Limited evidence is found describing IPE educational models for rehabilitative science academia. The ASPIRE model by Uy et al. (2016) had positive results from a pilot study conducted in three different hospital settings where clinical practitioners evaluated clinical spaces and performance areas to enhance

patient safety and reduce lengths of stay. Brashers et al. (2020) also found success with the ASPIRE model used for faculty training and instructing how to incorporate the IPEC core competency domains into IPE. Bridges et al. (2011) described three successful medical models for incorporating IPE into academia for nursing and medical students. These models are for clinical practice or health science education and not tailored to rehabilitative science education. In addition, these models do not link learning activities to individual IPEC core competency domains (IPEC, 2016). A single event for OT and physician assistant (PA) students that incorporated team-based learning, jigsaw technique, and role-playing showed a 78.6% response rate and positive results in IPEC core competency domains; however, it was an isolated event and not embedded into the curriculum (Nemec et al., 2021). In the academic training of OT and PT students, there are opportunities to utilize IPE for training and preparation for collaborative practice-ready practitioners (Johnson, 2017; Sabus & Macauley, 2016). A gap exists in rehabilitative science education regarding the influence of IPE-based activities, the impact on educational effectiveness, and the usefulness of the assessment tools used to measure student perceptions and performances (Sabus & Macauley, 2016).

The purpose of this pilot study was to examine the effects of a recently designed IPE model of sequenced learning activities developed for inclusion in rehabilitative science education. The IPE Model 1–Introduction was piloted with OT and PT first-term students to determine the feasibility of conducting a larger study. Ultimately, the goal was to incorporate this scaffolded IPE sequence as standard pedagogy into the OT and PT curricula and have a model available for rehabilitative science faculty. The aim of the IPE Model 1-Introduction, utilizing novel

learning activities aligned to each IPEC core competency domain, was to provide an IPE foundation for OT and PT students to build upon and prepare for their future collaborative practice. We hypothesized the OT and PT students would score themselves with a higher level of agreement on post-survey when compared to pre-survey scores after engaging in the four IPE activities throughout the course.

Methods

Development of the IPE Model 1-Introduction

From a narrative review, a conceptual framework was designed to guide and promote IPE in OT and PT higher education (Belleza & Johnson, 2023). The first steps determined the institutional and programmatic learning outcomes and accrediting body requirements for the professions following the backward by design method (McTighe, 2014). Next, the IPEC core competency domains with selected assessment tools were assessed. Then course learning outcomes were matched with the outcome measures and aligned with the IPEC core competency domains. The final step assessed the effectiveness of each learning activity to ensure the institutional IPE learning outcomes were effectively being met (Belleza & Johnson, 2023).

Guided by this conceptual framework, an IPE educational model was constructed by rehabilitative science faculty from OT and PT for an introductory level patient-client care management course utilizing the WHO definition of IPE and institutional, programmatic, and course learning objectives to help fill this gap (Belleza & Johnson, 2023; WHO, 2016).

The interprofessional faculty team engaged in numerous collaborative meetings regarding options for learning activities, how each could align to a specific IPEC core competency domain to meet learning

objectives, time requirements, and the overall goals with predicted student behaviors for each activity. Collective decisions are shown in Table 1.

Table 1

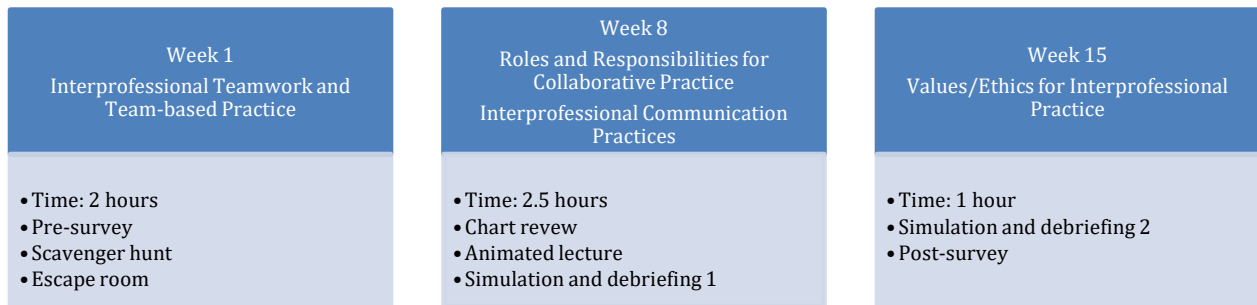
IPEC Core Competency Domains with IPE Activities, Length of Time, Goal of IPE Experience, and Expected Behavior

IPEC Core Competency Domains (2016)	IPE Course Activity	Time for each IPE encounter	Goal of IPE Experience	Expected Learner Behavior (2016) After IPE activity, learner will be able to:
Interprofessional Teamwork and Team-based Practice	Scavenger hunt and escape room	2 hours	Learners to value relationships, team dynamics, and how to work in a team.	Engage and manage themselves respectfully in differences regarding principles, roles, and treatment with patients.
Roles and Responsibilities for Collaborative Practice	Simulated chart review and animated lecture	1.5 hours	Learners to begin to share an appreciation of the individual team members roles and abilities on a rehabilitation team.	Explain the roles and responsibilities of themselves and other team members.
Interprofessional Communication Practices	IPE simulation 1	1 hour	Learners to learn how to communicate with each other respectfully and professionally that supports a team approach.	Actively and respectfully listen, share, and discuss ideas and opinions of other team members.
Values/ethics for Interprofessional Practice	IPE simulation 2	1 hour	Learners to work together with mutual respect and shared values.	Embrace cultural diversity with respect and dignity.

Note. Interprofessional Education Collaborative (2016). Core competencies for interprofessional collaborative practice: 2016 update [PDF]. <https://www.ipecollaborative.org/resources.html>

Figure 1

Timeline for IPE Model-1 Introduction



Note. Modified with permission from The Learning Continuum from the IPEC (IPEC, 2011).

From these interprofessional collaborative sessions, exchanges among the faculty from different perspectives created a contextually rich environment to meet the needs of students from different programs (Johnson, 2017; Sabus & Macauley, 2016). The IPE Model 1-Introduction purposefully arranged learning activities in a successive and scaffolded approach spread out over the term as depicted in the timeline in Figure 1. In total, approximately 5.5 hours out of the 45 course hours (12%) would be dedicated to IPE using this model. Prior to any IPE activities, the students were asked to complete the IPEC competency survey and again after the last simulation.

Interprofessional Teamwork and Team-based Practice (TT) was chosen first and implemented during week 1 of the 15-week term. The TT domain was selected as a prerequisite for the students to gain measurable improvements in the succeeding activities which focused on Roles and Responsibilities for Collaborative Practice domain (RR), Interprofessional Communication Practices (IC), and Values/ethics for Interprofessional Practice (VE). The IPEC competencies report

suggested TT and RR should come early in IPE as students should understand professional roles and responsibilities prior to being effective in collaboration with others in a client-centered way (IPEC, 2011). Over a 2-hour class, the OT and PT students were educated on IPE, IPEC core competency domains, and education accreditation requirements followed by a scavenger hunt of commonly used items in rehabilitation, such as front-wheeled walkers and bedside commodes. Then, with word jumbled clues, students were to unscramble the clue to break out of the simulated escape room using team efforts.

Midway through the course, RR was selected, and the students were divided into IPE teams to review a simulated medical chart and participate in an animated lecture. The simulated medical chart was constructed for the upcoming simulation with a standardized patient (SP) who was recovering from knee surgery. The chart included all medical and rehabilitation documentation needed for the students to prepare for their simulated therapy session. While reviewing the medical chart, the students were instructed to identify and

define at least 10 acronyms and medical terminology that was unfamiliar to them.

The animated lecture required the IPE student teams to perform a dependent transfer together and take a manual blood pressure reading on a mannequin. This simulated transfer required the pair of OT and PT students to collaborate with each other professionally while performing a safe transfer of the mannequin from lying supine in the hospital bed to sitting at the edge of the bed for taking blood pressure.

Later that same week, the student cohorts came together again for their first IPE simulation and debriefing with a focus on professional verbal and non-verbal communication. An SP portrayed a patient in the intensive care unit following a knee surgery that was represented in the medical chart they read at the beginning of the week. This simulation had standardized family members in the room and an ally acting as a nurse. Lucas et al. (2020) encouraged the use of allies in simulation, so the scenario was more authentic and to save simulations from derailing from the learning objectives. The 20-minute simulation was immediately followed by a 40-minute debriefing using the simulation objectives as a guide following best practice guidelines (Rossler et al., 2021).

During the last week of the term, a second 20-minute IPE simulation followed by a 40-minute debriefing ran with a focus on values and ethics. An SP portrayed a female patient who refused to work with male therapists. The debriefing led to stimulating discussions regarding ethics and values of working with diverse patients with cultural differences. Figure 2 depicts each core competency domain and an image of student participation. After the debriefing, the students were again asked to fill out the IPEC competency survey for the posttest. Specific details and

expanding content of the IPE Model 1-Introduction can be found in Appendix A.

Research Design

Utilizing a pre- and post-survey design, this quantitative pilot study collected and examined student archived assignments to measure the impact of the IPE Model 1-Introduction using deliberate IPE learning activities as the intervention. The archived assignments included the pre- and post-surveys from a health science course where the OT and PT students together learned initial psychomotor skills, such as taking vitals and transferring hospitalized patients out of bed.

Participants

Purposive sampling was used for study participants. The 2019 spring cohorts had OT and PT students ($N = 112$). All incoming students (OT $n = 48$; PT $n = 64$) from January 2019 to April 2019 were auto-enrolled in this

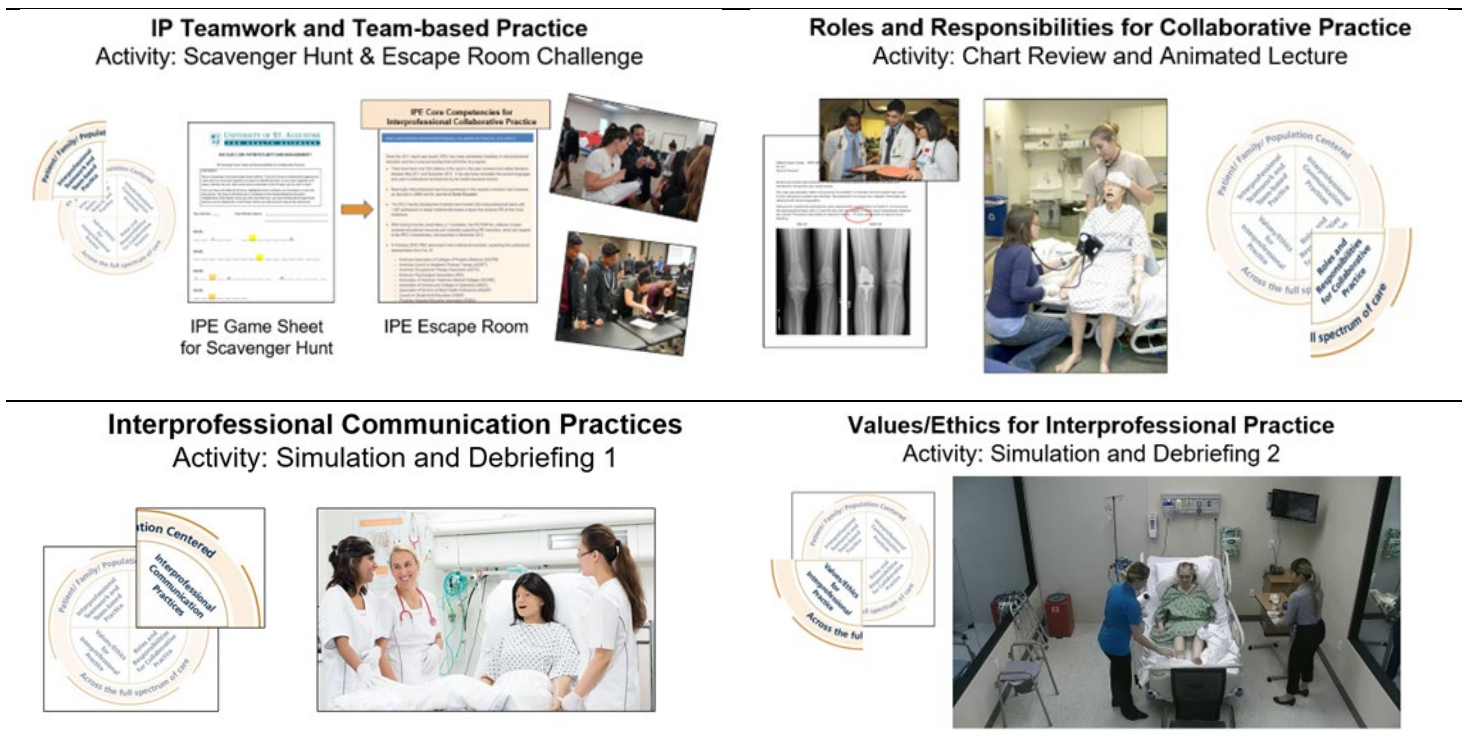
first-term 15-week course where this IPE educational model and assignments were piloted. All students were educated on IPE, the upcoming IPE activities, and the option to fill out pre- and post-surveys as voluntary assignments.

Data Collection

Prior to the first IPE activity during week 1, participants filled out the pre-survey and after the last IPE activity during week 15, the post-survey. The outcome measure selected was the IPEC Competency Self-Assessment Tool Version 3 (IPEC-CSAT3, 2015) which is detailed in Appendix B.

Figure 2

IPEC Four Competency Domains with IPE Activities for IPE Model 1 - Introduction



The IPEC-CSAT3 sub-scores are divided into *Interactions* comprised of the TT and IC IPEC core competency domains and *Values* that are linked to the VE IPEC core competency. The IPEC Competency Self-Assessment Tool (IPEC-CSAT) Version 3 has initial validity and reliability for interprofessional collaborative practice (Hasnain et al., 2017). In a study by Lockeman et al. (2016), a 16-item survey was developed which was shorter than the original 42-item survey. Factor 1, or Interaction Domain, consisted of criteria from TT and IC. Factor 2, the Values Domain, consisted of criteria from VE. A Chi-square statistic was significant for a potential indicator for poor model fit ($X^2 = 294$, $df = 103$, $p < 0.001$). However, the normed Chi-square (X^2/df) value of 2.85 fell within the acceptable range for model fit. Cronbach's alpha found high internal

consistency for each factor (0.92 for Factor 1, and 0.96 for Factor 2). Indicators for model fit were adequate but not all factors were optimal (RMSEA = 0.064, CF = 0.943, TLI = 0.934). Lockeman et al. (2016), through a multi-institution and three-study approach, established the validity, reliability, and usability of the 16-item IPEC-CSAT. The condensed 16-item tool retained the psychometric strengths of the longer original 42-item tool and utilizes a 5-item Likert scale for students to indicate their level of agreement or disagreement to a series of statements as seen in Appendix B.

All completed assignments were de-identified by removing any names or identifiers by the researchers prior to any data analysis. Inclusion criteria required archived surveys to be completely and accurately filled out. Surveys that were not completed thoroughly or correctly were deemed

ineligible and not used. Archived data at the university were protected according to Family Educational Rights and Privacy Act (FERPA) regulations in locked cabinets in locked, badge protected buildings. All data were protected and reviewed on passcode and protected laptops. After the necessary data were retrieved, all content was re-stowed to its original protected location to satisfy FERPA requirements.

Data Analysis

The data were analyzed using IBM SPSS Statistics (Version 29). The statistical significance level was set at $p \leq .05$. The normality of the pre-scores and post-scores was assessed using the Shapiro-Wilk test, revealing a lack of normal distribution for both variables ($p < .001$). Therefore, non-parametric statistical tests were employed for analysis. The Wilcoxon Signed Ranks Test was used to examine the significance of differences between the pre- and post-scores for total scores and their sub-scores (interaction and values components). To compare the changes in pre- to post-scores between OT and PT students, the Mann-Whitney U test was used.

Ethical Considerations

Ethical approval was obtained from the university research ethics committee Project Number: 0131-020. After ethical approval, data were collected from archived voluntary surveys from the OT and PT Spring cohorts in 2019. Complying with the ethical guidelines, all data were de-identified and protected on secured, password protected laptops.

Results

Fifty-eight students completed the pre- and post-surveys. Fifty-two participants (46.4% of the class) (male $n = 23$; female $n = 28$; transgender $n = 1$) met inclusion criteria as six surveys were incomplete. The only demographic data from the group, beyond gender, included OT students ($n = 14$), which were comprised of 11 Master of OT and 3 Doctorate of OT students, and PT students ($n = 36$) as all data were de-identified prior to data analysis, researchers were unable to determine other demographics.

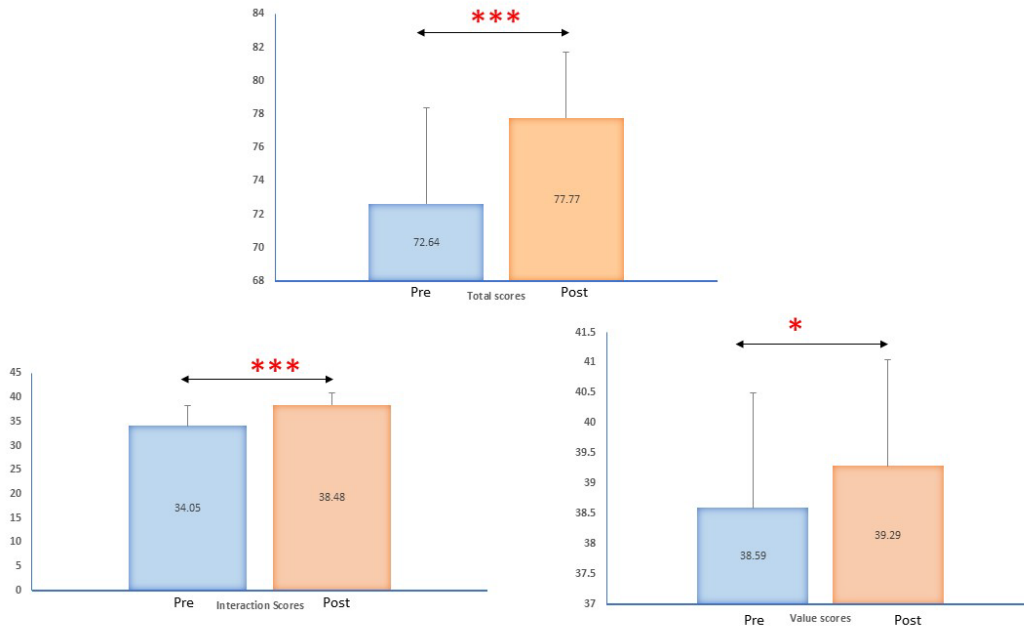
The comparison of the mean values pre-post-participation total scores and sub-scores was given in Figure 3. Results of that analysis indicated that the total post-scores after participating was significantly higher compared to the pre-scores, $z = -5.08$, $p < .001$. Further, sub-group analysis showed there were significantly higher post-scores compared to pre-scores on the Interaction domain ($z = -5.27$, $p < .001$) as well as the Values domain ($z = -2.50$, $p = .012$). Comparison between the OT and PT students did not show any significant difference in total scores ($U = 231.5$; $p = .853$), interaction component ($U = 221.0$; $p = .678$), and value component ($U = 238.5$; $p = .972$).

Discussion

The aim of this pilot study was to determine the feasibility of implementing the IPE Model 1-Introduction using deliberate learning activities aligned with the IPEC core competency domains into OT and PT curriculum. Pre-assessment using the IPEC-CSAT3 was used to establish baseline measures in an introductory patient/client care management course prior to any IPE activity (Dow et al., 2014).

Figure 3

Results of Total Scores, Interaction Scores, and Value Scores



Note. Comparison of pre- and post-scores of IPEC Competency Self-Assessment Tool (a) total scores, (b) interaction component scores, (c) value component scores. * $p < .05$ *** $p < .001$

After completing the 4-part IPE series, post-assessment of the outcome measure was used for student reflection on experiences and perspectives. Current evidence indicated mixed results for significance in outcome studies using pre-post assessments. The Student Perceptions of Interprofessional Clinical Education Revised (SPICE-R2), is an individualized self-rating tool comprised of TT, RR, and patient outcomes. Brennan et al. (2021) and Nichols et al. (2019), both utilized the SPICE-R2 and measured pre-post test score changes after a single IPE simulation. Brennan et al. (2021) found after a simulation, students had a statistically significant increase in the TT sub-score and patient outcomes sub-scores, but they did not have a statistically significant increase in their total scores or RR sub-scores. Whereas

Nichols et al. (2019), students had a statistically significant increase in the RR and patient outcomes sub-scores after a single IPE simulation, but they did not have a statistically significant change in the TT sub-scores. The result of this study differs from Brennan et al. (2021) and Nichols et al. (2019) in that there was a statistically significant increase in the total score and both sub scores for Interactions (TT and IC) and Values (VE).

The difference could be attributed to the larger number of IPE activities that students participated in for this pilot study. IPE scholars recommended that IPE should be more than a single or one-off event to promote the desired effect of increased interprofessional collaboration (Arth et al.,

2018; Gunaldo et al., 2021; Hean et al., 2018; Lockeman et al., 2016; Paige et al., 2017; Wellmon et al., 2017). Single IPE simulations versus four IPE activities of this study may have allowed students to have more opportunities to engage in all the IPEC core competency domains and have more confidence in self-rating their own competency. The result of this study is also supported by similar studies that utilized multiple IPE learning activities which resulted in statistically significant increases in not only the total scores, but also the subscores of the IPE tool (Matulewicz et al., 2020; Nwaesei et al., 2019). Additionally, this study found that there was no statistically significant difference when comparing the results of OT and PT indicating that regardless of the discipline, both student groups benefited from the learning activities of the trialed IPE Model 1-Introduction of this study.

Students who participated in the four IPE activities identified themselves as having more competence and sense of salience with IPE interactions. The results indicated that the IPE Model 1-Introduction was effective by an increase in students' self-assessments. This increase supported the claim that IPE elicits better quality behaviors amongst team players promoting improved patient safety and patient outcomes (IPEC, 2011). In addition, there was a notable improvement in students' attitudes toward IP learning and collaboration based on their responses.

The overall goal of IPE curriculum is to improve competencies of knowledge, skills, and attitudes plus influence behaviors of future clinicians in the preparation of a collaborative practice-ready workforce (Hamson-Utley et al., 2021; WHO, 2010). Valuable insights may be gained from a student's perspective through self-assessment as we found appropriate for first-

term students in this study. In this introductory first-term course, OT and PT students may shape their knowledge, skills, and attitudes and develop an awareness of these factors, especially how they may impact clinical decision-making and patient care. The results of this study indicated that students are more equipped with greater self-perceived skills and competencies in interprofessional collaborative activities. As students progress in IPE curricula, improved interprofessional competencies could translate into the development of interprofessional clinical skills in preparation for being part of a collaborative practice-ready workforce.

When health education programs endeavor to implement IPE curricula and learning activities for their students, consideration of sequencing, structure, pedagogy, and best-practice of learning activities is paramount. Deciding which learning activities to implement and addressing potential obstacles, such as budgets, training of educators, time of commitment, and workload, should be weighed into the decision-making for education and clinical settings. Therefore, rigorous studies exploring the various IPE methods available can help navigate which avenues to pursue to tailor a program to meet the programmatic, accreditation, and institutional needs inherent in respective programs and settings. Due to the positive outcomes of this pilot study, the researchers plan to move forward and conduct a larger study over several terms with the goal of implementing the IPE Model 1-Introduction as standard teaching delivery in this course.

Limitations

This pilot study had several limitations that are worthy of discussion. First, the study was limited by the design, as it utilized archived

completed survey data from one course, so it was not possible to assess the effects of IPE collaboration across other courses, the curriculum, or in clinical internships. The selected survey was the IPEC-CSAT2 to measure the effect of all the IPE experiences within this model, not just the simulation portion. The SPICE-R2 is recommended for assessing simulations. Perhaps including both assessment measures would produce more information for future IPE model designs.

In addition, the study data were limited to survey assignments from less than half of the OT and PT graduate students so the information cannot be generalized to the remaining students or other disciplines' healthcare students. Lastly, the archived survey results were a self-assessment tool rather than an objective evaluation of student IPE competence. According to Yeo et al. (2010), there is evidence that feelings of self-confidence are not necessarily equal to self-competence.

Areas for Future Research

This IPE scaffolding occurred within one course over one term. The researchers recommend more longitudinal studies, such as across several terms and additional studies to support the use of IPE throughout rehabilitative science curriculum. Further study is needed to include learning activities with students of other healthcare professionals, such as speech and language pathology, recreational therapy, nursing, and respiratory therapy. In addition, it will be important to further examine the relationship between self-assessed confidence in and demonstrated competence during internship or fieldwork settings.

The IPE Model 1-Introduction utilized a variety of learning activities whose

summation may have created the effect of change noted in students' self-assessments of their competency. The effect of individual learning activities could not be separated or controlled based on the methods of this study. Future studies exploring the efficacy of each learning activity could be further investigated.

A review of current IPE indicates that most studies utilize tools where effectiveness is measured using student self-assessment. The overall goal of any IPE curriculum is to improve knowledge, skills, and attitudes, in addition to influencing behaviors of future clinicians in the preparation of a collaborative practice-ready workforce (Hamson-Utley et al., 2021; WHO, 2010). However, there are limited numbers of studies that measure the effect that IPE has on clinical skills and behaviors not assessed by student self-rating, but rather via faculty or preceptor ratings. Future research should utilize appropriate outcome measures that are used by faculty, clinicians, or preceptors, to measure the effectiveness that IPE activities have on observable skills in academic and clinical settings.

Conclusion

This pilot study demonstrated positive effects from implementing the IPE Model 1-Introduction using specifically planned IPE encounters linked to IPEC core competency domains. Students' self-assessments within the designated introductory health science course demonstrated improved student self-perceived competencies in IPE collaboration. By participating in the IPE activities, students are armed with greater self-perceived skills and competencies needed for collaboration. This research helps fill the gap in OT and PT IPE education and lays the foundation of meeting the need for preparing practice-ready collaborative healthcare practitioners. In

addition, the results of this pilot test demonstrate feasibility for a larger study prior to integrating into the OT and PT curriculums.

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Appendix A

Expanded IPE Model 1 - Introduction

Activity 1, Week 1: Interprofessional Teamwork and Team-based Practice

On the first day of their respective academic journey, OT and PT students, as a large group, were introduced to the IPEC report, IPE core competency domains, and the interprofessional (IP) faculty team consisting of OT, PT, PA, and the medical doctor (MD). After this introduction, students completed the IPEC Competency Self-Assessment Tool Version 3 (2015).

The first activity had students participate in an IPE scavenger hunt and escape room experience for IP Teamwork and Team-based Practice on the IPCP (IPEC, 2011). Students were assigned to IP groups of 4-5 students and given a fill-in-the-blank activity sheet to collaboratively use as a scavenger hunt at ten stations along the perimeter of the room. Each station had a medical device, rehabilitation therapy tool, or durable medical equipment that the group had to guess what it was named. Once all the items were correctly written on the activity sheet, students started the IPE escape room experience. Each of the scavenger hunt items had one highlighted letter. Students needed to unscramble the highlighted letters to come up with a secret passcode. The passcode was an embedded phrase or word within the 2016 IPEC report. An example of an embedded passcode was the educational accrediting bodies of representative IPE members such as the AOTA for OT students or ACAPT for PT students. At the end of the activity, a group discussion included recognizing one's skills, knowledge, and abilities limitations and how each member team as part of understanding the importance of working on

a team in collaborative practice (Hasnain et al., 2017).

Activity 2, Week 8: Roles and Responsibilities for Collaborative Practice

The second learning activity was an IPE simulated medical chart review and animated lecture for Roles and Responsibilities for Collaborative Practice on the IPCP (IPEC, 2011). A simulated patient chart for an elective total knee replacement was created with a complete medical record, including admission, surgical notes, treatment notes, medications, vital signs, and other pertinent sections that would be found in a typical hospital chart. During the chart review, students encountered written items that were also present in the scavenger hunt, such as a Jackson-Pratt drain, linking the two activities. In IP groups, students discussed what they found in the medical chart, wrote down terms, acronyms, or concepts they were not familiar with, and they were charged with the task of defining those unfamiliar terms. Next, they collaborated on how they could work together as a team to perform an IP co-treatment with this simulated patient. The chart review concluded with students sharing what they discovered and faculty discussing strategies and tips on working in teams and understanding their own professional roles and responsibilities.

After the chart review activity, an IP team of one OT and PT student was selected to demonstrate an animated lecture. A simulated mannequin was set up similarly to the medical chart case study. The animated lecture required the OT and PT students to safely move the patient, with all the medical lines attached, from supine to sitting at the edge of the bed and perform vital signs assessment. At the end of class, the group discussed the significance of patient-centered problem-solving and constructively

managing situations for IP teamwork and team-based practice (Hasnain et al., 2017).

Activity 3, Week 8: Interprofessional Communication Practices - Simulation 1

The third IPE activity was a simulation and debriefing experience for IP Communication on the IPCP (IPEC, 2011). Continual threading of the IPE activities occurred by using items from the scavenger hunt from Activity 1 and the simulated medical chart review from Activity 2. However, instead of a mannequin, the students engaged in simulation with a standardized patient and a standardized family member (paid actors). One OT and one PT student were selected to be in the simulation as active participants in the hot seat (Bong et al., 2017; O'Regan et al., 2016; Reime et al. 2017. Students not selected were assigned as simulation observers to watch the simulation from the observation deck via one-way mirrors. In this simulation, students were tasked to perform infection control, obtain informed consent from the standardized patient, assist the patient in bed mobility, transfers, and assess the patient's vital signs. Throughout the simulation, the standardized patient and the family member were scripted to ask questions about the various roles and responsibilities of the OT and PT and the planned treatment interventions. During the simulation, the standardized patient was asked to exhibit non-verbal signs of discomfort and pain in her left knee. When the students removed bedding covers for the bed mobility, they found the surgical bandage to have increased strike through bleeding which caused the patient to be alarmed and worried. The nurse's call button was pushed, and a simulated nurse entered the room to change the bandage. Immediately after the simulation, all students participated in a debriefing focused on IP techniques of communication with each other (OT/PT team), nurse, patient, and family members

such as active listening and use of respectful language. In addition, the guided discussion included IP teamwork, recognizing non-verbal and verbal communication, and communicating the roles and responsibilities of the OT and PT (Hasnain et al., 2017; Kim et al., 2017).

Activity 4, Week 15: Values/Ethics for Interprofessional Practice - Simulation 2

The fourth and final IPE activity was a second simulation with a standardized patient during the last week of the course. In this simulation, the objectives were centered around values and ethics for interprofessional practice (IPEC, 2011). One male OT and one male PT student were selected to be the active participants in the simulation. Students not selected were assigned as simulation observers to watch the simulation from the observation deck via one-way mirrors. Upon entering the room, the standardized patient visibly showed non-verbal signs of being anxious with facial expressions and slowly pulling her bed sheets up to her chin to cover herself. As the students were introducing themselves and beginning the informed consent process, the patient notified the students that she was culturally uncomfortable working with male therapists. After multiple failed attempts, the students eventually stepped out of the room and notified a simulated rehabilitation manager who reassigned the case.

Two female student-therapists, one OT and one PT, then entered the room and proceeded to work with the now agreeable patient. The unsteady patient, connected to multiple lines and tubes, required physical assistance to stand and walk safely. The OT/PT student team needed to safely manage the lines, assist the patient with donning socks using adaptive equipment, transfer out of bed, and walk over to the bedside commode. After the

simulation, all participants and students joined in a debriefing session that guided discussions on managing ethical dilemmas and respecting patient cultures and values (Hasnain et al., 2017). Johnson (2017) emphasized the use of guided debriefing strategies to facilitate the transfer of

knowledge from simulated practice to future clinical practice. After this second simulation, students completed the IPEC Competency Self-Assessment Tool Version 3 (2015) as their last assignment of the course.

Appendix B

IPEC Competency Self-Assessment Tool

VERSION 3 (July 2015)

INSTRUCTIONS: Based on your education or experience in the health care environment, select/circle the number that corresponds with your level of agreement or disagreement on each item.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. I am able to choose communication tools and techniques that facilitate effective team interactions.	1	2	3	4	5
2. I am able to place the interests of patients at the center of interprofessional health care delivery.	1	2	3	4	5
3. I am able to engage other health professionals in shared problem-solving appropriate to the specific care situation.	1	2	3	4	5
4. I am able to respect the privacy of patients while maintaining confidentiality in the delivery of team-based care.	1	2	3	4	5
5. I am able to inform care decisions by integrating the knowledge and experience of other professions appropriate to the clinical situation.	1	2	3	4	5
6. I am able to embrace the diversity that characterizes the health care team.	1	2	3	4	5
7. I am able to apply leadership practices that support effective collaborative practice.	1	2	3	4	5
8. I am able to respect the cultures and values of other health professions.	1	2	3	4	5
9. I am able to engage other health professionals to constructively manage disagreements about patient care.	1	2	3	4	5
10. I am able to develop a trusting relationship with other team members.	1	2	3	4	5
11. I am able to use strategies that improve the effectiveness of interprofessional teamwork and team-based care.	1	2	3	4	5
12. I am able to demonstrate high standards of ethical conduct in my contributions to team-based care.	1	2	3	4	5
13. I am able to use available evidence to inform effective teamwork and team-based practices.	1	2	3	4	5
14. I am able to act with honesty and integrity in relationships with other team members.	1	2	3	4	5
15. I am able to understand the responsibilities and expertise of other health professions.	1	2	3	4	5
16. I am able to maintain competence in my own profession appropriate to my level of training.	1	2	3	4	5

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