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## Designing Interprofessional Education Curriculum to Maximize Collaborative Competency

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# Designing Interprofessional Education Curriculum to Maximize Collaborative Competency

## Abstract

Interprofessional collaboration improves health outcomes through enhanced efficiency and communication among team members. Professional educational standards call for interprofessional education (IPE) to develop the collaborative competencies necessary for transition from didactic learning to clinical practice. Variability exists regarding methods of IPE implementation, so efficacy of curricula needs to be described in a manner which allows for replication and utilization of these methods with occupational therapy students. A pre/post design with convenience sampling of students from occupational therapy, physical therapy, and physician assistant programs was completed to determine the effectiveness of an IPE module and to discover if differences in IPE competency were observed among students from each discipline. Interprofessional competencies were assessed pre/post module participation with the Jefferson Teamwork Observation Guide, a faculty developed survey, and the Interprofessional Collaborative Competency Scale. The nine-week hybrid format module used TeamSTEPS® concepts as central constructs for module design. Critical reasoning was addressed through peer-led instruction of foundational interprofessional concepts. Experiential learning was emphasized through case examples and video simulated care conference which assisted in linking students' prior experiences with new concepts. Data were gathered for analysis from the university's online learning platform. Following module completion, students reported an increased understanding of effective teams. Interprofessional competency outcomes indicated improved collaborative competencies among all student groups, with mild variation between professional disciplines as assessed at posttest. Moving beyond focusing on obstacles of collaborative learning, and instead focusing on innovative methods for implementation of interprofessional education, helped to prepare students to incorporate interprofessional skills in clinical practice as assessed through the faculty developed survey.

## Keywords

Interprofessional education, collaboration, teamwork, occupational therapy education

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## Designing Interprofessional Education Curriculum to Maximize Collaborative Competency

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### ABSTRACT

Interprofessional collaboration improves health outcomes through enhanced efficiency and communication among team members. Professional educational standards call for interprofessional education (IPE) to develop the collaborative competencies necessary for transition from didactic learning to clinical practice. Variability exists regarding methods of IPE implementation, so efficacy of curricula needs to be described in a manner which allows for replication and utilization of these methods with occupational therapy students. A pre/post design with convenience sampling of students from occupational therapy, physical therapy, and physician assistant programs was completed to determine the effectiveness of an IPE module and to discover if differences in IPE competency were observed among students from each discipline. Interprofessional competencies were assessed pre/post module participation with the Jefferson Teamwork Observation Guide, a faculty developed survey, and the Interprofessional Collaborative Competency Scale. The nine-week hybrid format module used TeamSTEPPS® concepts as central constructs for module design. Critical reasoning was addressed through peer-led instruction of foundational interprofessional concepts. Experiential learning was emphasized through case examples and video simulated care conference which assisted in linking students' prior experiences with new concepts. Data were gathered for analysis from the university's online learning platform. Following module completion, students reported an increased understanding of effective teams. Interprofessional competency outcomes indicated improved collaborative competencies among all student groups, with mild variation between professional disciplines as assessed at posttest. Moving beyond focusing on obstacles of collaborative learning, and instead focusing on innovative methods for implementation of interprofessional education, helped to prepare students to incorporate interprofessional skills in clinical practice as assessed through the faculty developed survey.

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## **INTRODUCTION**

Team-based collaborative healthcare is emerging as the standard of care for service delivery (Interprofessional Education Collaborative Expert Panel [IECEP], 2011). Both patients and health systems recognize the benefits of teamwork, which includes improved health outcomes and higher standards of care (Neocleous, 2014; Prast, Herlache-Pretzer, Frederick, & Gafni-Lachter, 2016; Reeves, Goldman, Burton, & Sawatzky-Girling, 2010). Collaboration among members of the healthcare team decreases complications, reduces medical errors, and has been shown to decrease length of hospital stay (Baker & Durham, 2013; World Health Organization [WHO], 2010). Occupational therapists frequently provide services as one health professional among many, working collaboratively to address client factors. As such, equipping occupational therapy (OT) students with the skills necessary to work with and lead collaborative teams is of the utmost importance.

In the updated accreditation standards for OT education, an emphasis on interprofessional collaborative practice and education is noted across several educational standards (Accreditation Council for Occupational Therapy Education [ACOTE], 2018). In addition, interprofessional education (IPE) is increasingly emphasized across numerous health sciences educational curricula (Schreiber & Gorecnzy, 2013). Students with training in IPE demonstrate improved efficiency and problem-solving skills along with increased ability to engage in shared decision making (Baker & Durham, 2013). Despite these positive outcomes, variation exists regarding methods of IPE implementation. Because of this, a need exists for efficacy of curricula to be described and tested in a detailed manner allowing for replication and utilization of IPE for both OT and health science students (Ireland, Gibb, & West, 2008).

## **BACKGROUND**

Successful IPE implementation involves synchronized efforts and extensive planning in order to foster optimal learning opportunities (Boet, Bould, Layat Burn, & Reeves, 2014). Institutional barriers including lack of time, methods of delivery, limited space and financial resources, as well as the buy-in of students and faculty may hinder implementation of IPE experiences (Neocleous, 2014; Neville, Petro, Mitchell, & Brady, 2013). Methods of improving IPE implementation may include development of a community of practice, in which faculty work together to share knowledge to maximize outcomes for students and patients (Neocleous, 2014). Yet, faculty may remain unclear of exact methods to carryout interprofessional experiences as variation exists regarding frequency and methods of IPE implementation. Experiences range from one-day events, face-to-face experiences, online module completion, to video simulation experiences (Margalit et al., 2009). Incongruence regarding when IPE takes place, which professions to include, and requirements for participation exist (Abu-Rish et al., 2012; Ateah et al., 2011; Baker & Durham, 2013). As such, challenges occur regarding implementation, measurement of outcomes, and replication of successful experiences which necessitate additional study (Baker & Durham, 2013).

Interprofessional education involves focused experiences that allow students to learn “about, from, and with each other to enable effective collaboration and improve health outcomes” (WHO, 2010, p. 7). The IECEP (2011) offered a theoretical foundation for preparing students to deliberately work together through collaborative client-centered care in dynamic health care systems. This theoretical foundation includes social and educational theories that promote interprofessional learning including social identity, professionalism, and a reflective and experiential learning process (Sargeant, 2009). The IECEP (2011) and the Canadian Interprofessional Health Collaborative (CIHP, 2010) identified the desired principles and domains for interprofessional competencies that serve as the basis for IPE curriculum development. These competencies include client-centered care that is relevant to the population served and is linked to learning activities that fit the learner (CIHP, 2010; IECEP, 2011). These competencies are integrated across the learning continuum, from academia to clinical practice, and utilize a common language to promote collaborative communication among all members of the healthcare team in order to promote optimal outcomes.

As the basis for IPE is translation to practice, IPE experiences should be relevant and applicable to the interprofessional collaboration seen in healthcare environments. The World Health Organization describes collaborative practice as provision of comprehensive services, with the patient, family, and community included in the healthcare team (WHO, 2010). Despite knowledge of who makes up a team, students highlight inconsistencies between IPE in the classroom and collaboration in clinical practice (Cahill, O'Donnell, Warren, Taylor, & Gowan, 2013; Shoemaker, Platko, Cleghorn, & Booth, 2014). The relationship between IPE encounters in the classroom and the collaboration seen in healthcare settings must be addressed to ensure that the education provided will translate to clinical environments encountered in practice (Cahill et al., 2013; Shoemaker et al., 2014). Innovative pedagogy matching the fast-paced and multidimensional healthcare environment must be incorporated to advance IPE and to increase faculty and student engagement in such content (Gillan, Lovrics, Halpern, Wiljer, & Harnett, 2011; Kent, Drysdale, Martin, & Keating, 2014; Lapkin, Levett-Jones, & Gilligan, 2013; Reeves et al., 2010; Rice et al., 2010). These approaches must be exciting, active, and provoke clinical reasoning skills similar to those required in clinical settings (Hallin, Kiessling, Waldner, & Henriksson, 2009). Creating course materials reflective of this sought-after pedagogy allows faculty to structure content in a manner that not only meets their students' current skillset but can also prepare students for clinical experiences (Anderson, Smith, & Hammick, 2016; Eccott et al., 2012; Reeves et al., 2010).

### **Assessing Interprofessional Competency**

Interprofessional competency outcome measures are necessary when assessing learning outcomes and determining the effectiveness of an IPE curriculum. National programming describing communication competencies has been developed. TeamSTEPPS® modules, an example of this programming, were developed by the Agency for Healthcare Research and Quality (AHRQ) and the Department of Defense (DoD) and have been shown to improve team performance and enhance patient safety in military-based healthcare (King et al., 2008). TeamSTEPPS® focuses on the

development of a team that embodies leadership, adaptability, team-based goals and mutual trust. TeamSTEPPS® modules have been incorporated into IPE as a means of improving collaborative competencies, knowledge, skills and attitudes (Baker & Durham, 2013; Brock et al., 2017; King et al., 2008), along with attitudes towards clinical practice experiences (Jernigan et al., 2016). Nursing, medical, pharmacy, and physician assistant students constitute the majority of students in these studies.

Baker and Durham (2013) found significant differences following an IPE course regarding students' communication, collaboration, understanding of roles and responsibilities, ability to provide a patient/family-centered approach, conflict management and resolution, and team functioning. Improved attitudes and motivation as well as students placing greater value on working with teams following IPE has been described using IPE assessment and TeamSTEPPS® training (Brock et al., 2017). These outcomes are further enhanced when combined with clinical experiences (Jernigan et al., 2016).

Positive changes in students' attitudes for teamwork have also resulted from IPE (Archibald, Trumpower, & MacDonald, 2014; Jernigan et al., 2016; Schmitz et al., 2017). Valid tools have been developed and tested to measure these outcomes, such as the Interprofessional Collaborative Competency Scale (ICCAS), a self-assessment instrument for interprofessional collaborative practice. The ICCAS measures the learner's current and prior level of competency in interprofessional collaboration following participation in an IPE experience (Archibald et al., 2014). The components of the ICCAS are based on the interprofessional care competencies reflected in the CIHP (2010), namely effective communication, collaborative relationships, understanding of roles and responsibilities, a patient/family centered approach, and conflict resolution through collaboration and team functioning to improve quality of care. Before training, students often view their own role and role of others as separate and distinct. Following IPE an improved understanding of the interactions involved in team functioning were more frequently reported.

Literature regarding IPE indicates a need for additional research to demonstrate the effectiveness of IPE curricula, especially as it translates to clinical practice. Enhanced efficacy of IPE assessment tools is necessary to identify the tools that are most advantageous for identifying the collaboration and communication skills that will enhance the students' abilities to be effective members of an interprofessional healthcare team (MacDonald et al., 2010). Linking IPE efforts to clinical practice through innovative and relevant IPE curricula is essential for the safety of patients and the ability of the healthcare team to effectively collaborate and achieve optimal outcomes (Lidskog, Lofmark, & Ahlstrom, 2007; Sheldon et al., 2012). The sparsity of interprofessional research published within the OT literature highlights the need for studies carried out and published within the profession's readership. The purpose of this study was to determine the effectiveness of an IPE module provided to students from three health science disciplines and to discover if differences in IPE competency were observed among students from each discipline.

## METHODS

### Research Design

This study utilized a pre/post design with convenience sampling. Students enrolled in an IPE module embedded within a discipline specific course from the OT, physician assistant (PA), and physical therapy (PT) programs from 2017-2018 were eligible for inclusion. Approval was obtained from the university's Institutional Review Board (IRB) prior to collecting data for analysis.

### Participants

Students enrolled in the selected IPE module in the OT, PA, and PT programs for each program were eligible to participate.

### Instruments

Interprofessional competencies were assessed at the outset and completion of the module. Assessment tools included the Jefferson Teamwork Observation Guide (JTOG; Lyons, Giordano, Speakman, Smith, & Horowitz, 2016), a faculty developed module survey, and the ICCAS (Archibald et al., 2014).

**Jefferson Teamwork Observation Guide.** Students utilized the JTOG to assess teamwork behaviors depicted through a video of a simulated team conference. The JTOG is comprised of 14 characteristics of well-functioning teams based upon interprofessional competencies of leadership, roles and responsibilities, communication, values and ethics, and teamwork. The JTOG has been shown to be a reliable and valid tool for assessing the behaviors of members of the healthcare team in a clinical setting (Lyons et al., 2016). Students rated the degree to which the professionals in the simulated team conference exhibited characteristics of a well-functioning team based upon the knowledge, skills and attitudes attained through participation in the course activities. Faculty-led debriefing of the effective and ineffective characteristics of the teams depicted in the recordings strengthened students' understanding of the interprofessional communication and collaboration necessary for future experiential learning opportunities and clinical experiences.

**Module survey.** A survey, created by investigators, was used to determine utilization of module constructs during the assignments and experiential opportunities. This survey consisted of 18 questions regarding prior knowledge of IPE, satisfaction with module structure, likelihood of utilizing IPE principles in future practice, and other professionals with whom students would like to work more closely with in future coursework. Students were asked to identify their program of study. Two questions were yes/no responses regarding prior knowledge of Team STEPPS®. Students then ranked items on a 5-point Likert-type scale regarding value of the course, collaboration, and assignments. Students were asked if they anticipated using the skills from this course in clinical practice and were provided opportunity for free response to indicate how and when they felt these would be utilized.

**Interprofessional Collaborative Competency Attainment Scale.** The ICCAS is a self-assessment tool which measures the learner's perceived change in attitudes and behaviors related to interprofessional collaborative competencies before and after participation in IPE (MacDonald et al., 2010). The ICCAS is comprised of 20 pre and post-test items rated on a seven-point Likert scale (strongly disagree= 1, strongly agree= 7). This tool has been shown to be both reliable and valid as a self-assessment with scores predictive of meaningful outcomes related to the learner's attitudes and behaviors towards attainment of interprofessional competence across multiple disciplines (Archibald et al., 2014; Schmitz et al., 2017).

### **Procedure**

Occupational therapy, PA, and PT faculty worked collaboratively to develop an interprofessional module from the initial stages of creating a module that would align with each discipline's educational goals to the implementation of the module when faculty from each discipline served as guides for the interprofessional student groups. The nine-week interprofessional module was embedded as a revision to existing courses, which involved students from OT, PA, and PT programs. The IPE module was delivered in a hybrid format which included both face-to-face and online learning platforms. TeamSTEPPS® concepts, including effective and active communication, were central constructs of the overall module design.

As described in Table 1, the module was structured by weekly themes which were initiated with faculty-led discussion regarding IPE and teamwork. During the first week, students completed pretest assessments and participated in faculty-led discussion following a video on the role of communication in reducing medical errors. In weeks 2-4 students asynchronously progressed through the TeamSTEPPS® modules using online materials. This knowledge was then utilized during face-to-face interprofessional student group meetings in which students peer-taught pre-determined concepts learned through the TeamSTEPPS® modules. Students utilized communication and reflection tools posted within the module's online learning platform to organize the group meetings. Once students were equipped with knowledge regarding collaborative communication and aspects of an effective team, they participated in faculty-led sessions in which effective and ineffective team examples were viewed and discussed. During these sessions, students were asked to draw upon their professional knowledge based on their own discipline's role in the scenario as well as discuss the overall structure and function of the team examples. The culmination of the course involved students working collaboratively within larger teams of peers during a simulated case study event described below.

Development of clinical reasoning and critical thinking were central to the module structure. As described above, students were tasked with peer-led teaching of foundational IPE constructs regarding effective communication and teamwork. In small groups of four to five students from each of the three disciplines, students selected the focus of their peer instruction. Over the first week, students prepared materials to engage their peers regarding assigned topics. Working asynchronously students collaborated on delivery of their section. During the following weeks, face-to-face



meetings were scheduled in which group members taught their sections. These activities were designed to provide the foundational knowledge that students would apply during experiential learning activities.

**Interprofessional case simulation.** Experiential opportunities were incorporated through a pre-established, university wide, IPE simulation carried out as the culmination of this module. Students enrolled in the OT, PA, and PT programs, along with other health sciences students (nursing, medicine, pharmacy, social work, and addiction counseling) were divided into groups of around 15 intermixed students from each program. Occupational therapy, PT, and PA students utilized foundational knowledge gained through completion of the IPE module to engage with other health sciences students while addressing the needs of standardized patients who role-played pre-determined cases.

**Client centered care.** The notion that IPE must align with clinical practice was also a central construct throughout the module. The experiential learning cycle was utilized to link prior clinical experiences, along with those that took place during this IPE module, to knowledge of IPE. Further, investigators designed and created a video simulated care conference which was incorporated into the course in a manner that allowed for students to engage in a dialogue and mutual sharing of ideas related to effective team collaboration.

Table 1

<i>Interprofessional Education Module Outline</i>	
Week	Topic
Week 1	<ul style="list-style-type: none"> <li>• Introduction to the module and pretest</li> <li>• Team STEPS Essentials</li> <li>• Implications of Medical Errors</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>• Introduction to teams</li> </ul>
Week 3-4	<ul style="list-style-type: none"> <li>• Self-Directed Learning Experiences               <ul style="list-style-type: none"> <li>○ Team Structure</li> <li>○ Communication</li> <li>○ Leading teams</li> <li>○ Situational monitoring</li> <li>○ Mutual support</li> </ul> </li> </ul>
Week 5-6	<ul style="list-style-type: none"> <li>• Collaborative Peer-led Instruction</li> </ul>
Week 7-8	<ul style="list-style-type: none"> <li>• Experiential video simulation</li> <li>• Dialogue and faculty debrief using JTOG</li> </ul>
Week 9	<ul style="list-style-type: none"> <li>• IPE case simulation</li> <li>• Module wrap-up and post test</li> </ul>

## Data Analysis

Data were analyzed using data collected through the university's online learning platform. Data were gathered from the ICCAS, JTOG, and the investigator developed survey based on the TeamSTEPPS® modules. Results of these assessments delivered as part of the IPE module were included for analysis. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 25.0 for Windows (IBM, 2017). Initial analysis included descriptive statistics to determine the distribution of data. Data did not meet principles of normality and were thus analyzed using non-parametric statistics and results should be interpreted and generalized as such. This included Wilcoxon Sign Rank Test comparing ICCAS pre/post results and a Kruskal-Wallis Test to analyze changes between each professional group for responses on the ICCAS and JTOG. Statistical significance was set at  $\alpha \leq .05$ .

## RESULTS

In total, 76 students from OT (n= 25), PA (n= 25), and PT (n= 26) programs participated in the IPE module. Results were analyzed for those that completed pre/post assessment for each outcome measure. All 76 students completed the JTOG. The pre/post module survey was completed by 71 students. Finally, the ICAAS was completed voluntarily by 37 participants.

The JTOG was utilized following viewing a video of an interprofessional simulated care conference experience and faculty debrief. Results of the JTOG were analyzed by combining questions related to each of the five IPE competencies. Average scores per discipline are outlined in Table 2 and indicate overall consistent findings across disciplines. To determine differences among groups a Kruskal-Wallis Test was used, however, no statistically significant findings were noted.

Table 2

<i>Jefferson Teamwork Observation Guide (JTOG) Results by Discipline</i>			
	OT	PA	PT
Values and Ethics	1.5	1.4	1.66
Roles and Responsibilities	1.08	1.06	1.10
Communication	1.12	1.15	1.10
Teamwork	1.14	1.12	1.23
Leadership	1.06	1.13	1.11

*Note.* Values from Strongly Agree (1) to Strongly Disagree (4). N=76

The ICCAS was introduced as an additional, but voluntary outcome tool to determine change in interprofessional collaborative competency from the outset to the completion of the IPE module. Scores were ranked as follows: Strongly disagree (1); moderately disagree (2); slightly disagree (3); neutral (4); slightly agree (5); moderately agree (6); strongly agree (7). Items ranked as not applicable were removed from analysis. Descriptive statistics indicated skewness in the data. For this reason, a non-parametric Wilcoxon Sign Rank test was used to analyze pre/post ICCAS results. Results are reported in Table 3, which indicated several significant findings related to change in interprofessional collaborative competency among the scale items.

The 18-item module survey consisted of questions regarding overall satisfaction, prior knowledge of Team STEPPS®, and likelihood to utilize modules in future practice used to further determine the model's efficacy. Many students (74.65%) indicated they found Team STEPPS® modules to be a valuable component of the IPE module. Results from the module survey revealed most students (91.55%) agreed or strongly agreed they increased their knowledge of other professions through collaboration with students from different disciplines during the module. As a result, 92.86% reported enhanced perceptions of the role of other professionals. Students reported broadly (92.96%) that they would utilize Team STEPPS® modules in future clinical practice.

Table 3

*ICCAS Results*

Item	Pre Mean (SD)	Post Mean (SD)	Z	p
1. Promote effective communication among members of an interprofessional (IP) team	3.9 (1.7)	5.9 (.82)	-4.69	.000*
2. Actively listen to IP team members' ideas and concerns	6.3 (.77)	6.6 (.55)	-1.98	0.48
3. Express my ideas and concerns without being judgmental	5.8 (.93)	6.2 (.79)	-1.66	0.96
4. Provide constructive feedback to IP team members	5.0 (1.4)	6.0 (.75)	-3.08	.002*
5. Express my ideas and concerns in a clear, concise manner	5.0 (1.3)	6.1 (.78)	-3.59	.000*
6. Seek out IP team members to address issues	5.1 (1.1)	6.1 (1.0)	-3.34	.001*
7. Work effectively with IP team members to enhance care	5.6 (.76)	6.4 (.90)	-3.42	.001*
8. Learn with, from and about IP team members to enhance care	5.7 (.78)	6.6 (.65)	-4.08	.000*
9. Identify and describe my abilities and contributions to the IP team	5.2 (1.3)	6.4 (.69)	-4.08	.000*
10. Be accountable for my contributions to the IP team	6.0 (1.0)	6.4 (.64)	-1.87	0.61
11. Understand the abilities and contributions of IP team members	5.5 (.77)	6.3 (.78)	-3.75	.000*
12. Recognize how others' skills and knowledge complement and overlap with my own	5.7 (.89)	6.3 (.97)	-2.79	.005*
13. Use an IP team approach with the patient to assess the health situation	5.3 (1.1)	6.5 (.83)	-4.2	.000*
14. Use an IP team approach with the patient to provide whole person care	5.4 (1.1)	6.5 (.73)	-3.98	.000
15. Include the patient/family in decision-making	5.8 (.98)	6.6 (.55)	-3.95	.000*
16. Actively listen to the perspectives of IP team members	6.2 (.67)	6.6 (.49)	-3.12	.002*

17. Take into account the ideas of IP team members	6.1 (.71)	6.6 (.50)	-3.11	.002*
18. Address team conflict in a respectful manner	5.5 (1.0)	6.3 (.84)	-3.69	.000*
19. Develop an effective care plan with IP team members	5.2 (1.1)	6.3 (.85)	-4.69	.000*
20. Negotiate responsibilities within overlapping scopes of practice	4.9 (1.1)	6.2 (.89)	-4.64	.000*

Note. \* indicates significance with  $p \leq .05$ . N=37

Results of the ICCAS were also analyzed to compare findings by discipline using the Kruskal-Wallis Test. Significant findings were noted between groups on three items at pretest. For the item 'address conflict in a respectful manner' results indicated  $\chi^2(2) = 7.45$ ,  $p = 0.24$  with a mean rank value for OT students (15.13), PT students (24.93), and PA students (15.68). For the item 'develop an effective care plan with IP team members' results were again significant  $\chi^2(2) = 13.82$ ,  $p = 0.001$ . Mean scores were 10.79 (OT), 25.93 (PT), and 19.41 (PA). Finally, 'negotiate responsibilities within overlapping scopes of practice' was also significant between groups indicated  $\chi^2(2) = 7.76$ ,  $p = 0.21$ . Mean scores were 12.79 (OT), 24.0 (PT), and 19.41 (PA). Following the IPE module, several significant findings were noted. The same items as indicated on pre-test were again significant, along with 6 additional items (see Table 4). These findings indicated that OT students were more neutral versus PA and PT students in their perceptions of the ICCAS items.

Table 4

<i>ICCAS Significant Post Results by Group</i>					
Item	$\chi^2$	P	Mean Rank		
			OT	PT	PA
8	7.78	.023	13.08	21.39	22.41
9	6.59	.037	13.38	20.29	23.50
11	9.07	.011	11.96	22.14	22.68
12	10.92	.004	11.50	23.46	21.50
13	14.64	.001	10.46	22.86	23.41
14	7.71	.021	12.92	22.36	21.36
18	10.35	.006	11.50	23.29	21.73
19	8.41	.015	12.25	22.29	22.18
20	7.86	.020	12.58	22.96	21.0

Note. Item numbers correspond with items in Table 3.

## DISCUSSION

The purpose of this study was to determine the effectiveness of an IPE module provided to students from three health science disciplines and to discover if differences in IPE competency were observed among students from each discipline. Despite extensive literature discussing the need for IPE, few studies have determined how learners from different disciplines benefit from such instruction. In addition to findings related to interprofessional competencies, results of this study align with previous research indicating that collaboration among faculty is necessary for the successful development

and implementation of IPE (Neocleous, 2014). Investigators in this study worked together extensively to envision the IPE module, develop materials, and to ensure student schedules aligned for collaborative sessions, as was described as necessary for success of such experiences (Neocleous, 2014). Creating an IPE module which fell within the parameters of three different professional programs involved dedication. Findings align with previous studies with slight variability in method and delivery of IPE (Abu-Rish et al., 2012; Ateah et al., 2011; Baker & Durham, 2013; Margalit et al., 2009). For this reason, a combination of face-to-face, online, and experiential opportunities were utilized to create the most holistic experience possible.

Historically students note variation between classroom IPE instruction and real-life collaboration (Cahill et al., 2013; Shoemaker et al., 2014). For this reason, a video case simulation created for this course, utilizing community members as the 'client' and multiple health professions was found to be an effective method for incorporating real-life experiences and may assist students as they transition to practice. Debrief and discussion using the JTOG revealed overall fairly similar results across disciplines, but highlighted team member roles in a realistic way. Students reported increased understanding of what makes an effective team, as indicated by 91.55% of students indicating they agreed or strongly agreed with this item.

Measurement of IPE outcomes is necessary to determine effectiveness of curricula. Despite various developed tools, utilization of these especially within the OT literature, is varied. A focus in developing this IPE module was on utilization of effective tools to aide students in understanding the implications of IPE and to effectively demonstrate the efficacy of instructional approaches. Findings align with prior research indicating improvements in collaborative competencies in IPE (Baker & Durham, 2013; King et al., 2008; Schmitz et al., 2017). Interestingly, OT students consistently ranked ICCAS items lower, indicating less agreement regarding collaboration. Significant differences between disciplines indicated OT students most closely aligned with responses from PA students at pretest. At posttest, however, OT students mean ranks for the ICCAS remained lower than both PA and PT students. For the item indicating overlapping scope of practice, OT students rated this lower than other students, which perhaps aligns with the broad, holistic role of OT which may be perplexing to the student or novice therapist. Despite these differences, significant findings were noted from pre to posttest on many ICCAS items, indicating the IPE module was an effective method for IPE instruction.

### **Limitations**

Results of this study are limited to students in three professional programs at one Midwestern University. As such, broad generalizability is lacking, necessitating future research to support findings. Because the ICCAS was completed on a voluntary basis, the data gathered from this assessment could be skewed compared to the overall perceptions of change in attitudes and behaviors related to interprofessional collaborative competencies before and after participation in IPE module for all students in the study. While real-life application was emphasized in simulated and video aspects of the course, actual application to clinical settings was not determined beyond survey

responses. Research exploring the carryover of knowledge and skills gained through completion of the IPE module following transition into clinical practice is warranted.

### **IMPLICATIONS FOR OCCUPATIONAL THERAPY EDUCATION**

Findings from this study highlight that, in some instances, OT students ranked items differently than did their peers from other programs. This indicates a need to conduct additional research, ideally involving qualitative methodology to determine how OT students conceptualize materials differently than do their peers from other disciplines. Interprofessional education and collaborative practice have been highlighted in professional literature extensively as vital to the future of healthcare. Despite this, much of the literature is from nursing and other health sciences programs, indicating a need for more depth of literature in this regard within the OT literature. With additional emphasis on IPE in the ACOTE standards, now is the time to explore innovative methods for such curriculum. As evidence highlights the need for an understanding of collaboration and teamwork OT educators should work to find innovative methods to infuse these practices into didactic education and field experiences. Increased fidelity of such experiences can be gained through use of real patients and critical self-directed peer led learning as described in this article. Expanding the scope of these educational experiences to include other professional disciplines and infusing into varied courses throughout a curriculum may also be advantageous for OT education.

### **CONCLUSION**

Research needs to move beyond exploring the obstacles encountered with the development and implementation of IPE curricula. Rather, research must determine the best methods to effectively implement IPE curricula that prepare students who are able to seamlessly transition from the academic setting to clinical practice. This study provides promising findings for implementation of IPE in OT education. These findings, along with future research exploring the carryover of knowledge, skills and attitudes gained through IPE experiences into clinical practice, will help to ensure OT students are equipped with the skills necessary to work with and lead collaborative healthcare teams. To be viewed as leaders in IPE, OT educators must continue to study and report findings regarding efficacy of IPE experience. In doing so a best practice approach will be created which can serve to promote IPE across programs and to ensure the profession of OT is a leading innovator in evolving interprofessional education. As changes in practice and healthcare influence therapy delivery, incorporating realistic simulated experience of interprofessional collaboration in action, as utilized in this study through video simulation, is a vital and necessary step to realistic didactic education which prepares students for practice.

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