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## Embedding Interprofessional Activities with Physical Therapy and Athletic Training Students in Shared Professional Course

Katie Sniffen  
*Saint Louis University*

Anthony P. Breitbach  
*Saint Louis University*

Erick Briggs  
*Saint Louis University*

Leslie Hinyard  
*Saint Louis University*

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## Introduction and Background

Health professions education programs are charged with preparing students for their “social contract” responsibility as both healers and professionals (Cruess & Cruess, 2008). Students’ professional socialization during their program of study is impacted by the progressive development of expectations regarding one’s professional roles and responsibilities throughout their clinical and educational experiences (Klossner, 2008). Institutions have turned to interprofessional education (IPE) as a means of preparing students for their role as health professionals. The World Health Organization (WHO) has defined IPE as learning that “occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes” (World Health Organization, 2010, p. 13). IPE experiences allow students to gain knowledge about their professional roles and the roles of others in the context of team-based health care (Lairamore et al., 2018; Nelson S, 2014; Shoemaker, Platko, Cleghorn, & Booth, 2014; Trommelen, Hebert, & Nelson, 2014). There has been an effort to embed authentic interprofessional learning experiences in formal professional program curriculum (Khalili, Hall, & DeLuca, 2014; Lockeman et al., 2017).

In 2010, an Expert Panel from the Interprofessional Education Collaborative (IPEC) developed “Core Competencies for Interprofessional Collaborative Practice” “inspired by a vision of interprofessional collaborative practice as key to the safe, high quality, accessible, patient-centered care desired by all” (Interprofessional Education Collaborative, 2011). The competencies provide a structure for faculty, programs, institutions and accreditation groups as they design learning experiences in the development of collaboration-ready health professionals. The IPEC competencies were updated in 2016 organizing the competencies within a singular domain entitled “Interprofessional Collaboration”. This domain was subdivided into 4 topics: (1) Values/Ethics for Interprofessional Practice, (2) Roles and Responsibilities, (3) Interprofessional Communication, and (4) Teams and Teamwork (Interprofessional Education Collaborative, 2016). These topical competency areas each contain 8-11 sub-competencies that are “developmentally appropriate for the learner; able to be integrated across the learning continuum; sensitive to the systems context and applicable across practice settings; applicable across professions; stated in language common and meaningful across the professions; and outcome driven” (Interprofessional Education Collaborative, 2016, p. 10). Accreditation bodies in the health professions look to use this structure when embedding IPE into their standards (Zorek & Raehl, 2013).

Relative to athletic training education, Standard 8 of the 2020 “Standards for Accreditation of Professional Athletic Training Programs” requires that “planned interprofessional education is incorporated within the professional program,” and further emphasizes that students must have multiple exposures to IPE to meet this criterion (Commission on Accreditation of Athletic Training Education, 2018). Additionally, the Commission on Accreditation for Physical Therapy Education “Standards and Required Elements for Accreditation of Physical Therapist Education Programs” Standards 6 and 7 reference the presence of interprofessional education and collaborative practice (Commission on Accreditation for Physical Therapy Education (CAPTE), 2017).

Programs have flexibility in how they incorporate IPE into their curricula, creating an opportunity for educators to develop unique approaches to meeting these standards that best fulfill the needs of their program. Inclusion of IPE in existing professional courses further warrants the exploration of student reflections on the experience of engaging in IPE activity to ensure learning objectives are being met.

### **Case-Based Learning Activities**

Group learning activities are incorporated in many interprofessional education curricula and may lend towards increased role clarity in student learners. One university describes an activity in which students are placed in interprofessional groups to solve medication reconciliation cases with a stated objective of improving knowledge of one's own professional role and responsibilities regarding medication practices (Nelson S, 2014). The use of simulated case-based learning activities was used by having interprofessional student groups address the needs of a virtual patient (Shoemaker et al., 2014). Qualitative analysis of the students' reflections indicated a majority of students reported improved knowledge of the roles and scope of practice of other professions after the exercise and increased comfort interacting with other professionals (Shoemaker et al., 2014). In addition, a majority of students participating in the interprofessional group interview of a standardized patient indicated learning something useful about their health care colleagues (Barnett, Hollister, & Hall, 2011).

Existing literature supports the use of case-based exercises interprofessionally to improve role clarity. Colgrove and VanHoose (2017) found that physical therapy doctorate (DPT) and physical therapy assistant (PTA) students in interprofessional case-based learning activities had improved role clarity and overall performance on the task as compared to learners using the same cases in a uniprofessional fashion. Trommelon, Hebert and Nelson (2014) used interprofessional case-based learning and found improved role clarity, communication, and willingness to refer patients with vestibular disorders to the other professions. In a large longitudinal study on interprofessional and group learning, Lairamore and colleagues (2018) found that interprofessional case-based activities increased the knowledge of professional identities. However, they found that smaller teams with more clinically realistic groupings of professions provided a greater benefit to the learners. Ivey, Bowman and Lockeman (2018) also reported that occupational therapy (OT) and physical therapy (PT) students enrolled in a case-based class benefited with improved self-efficacy and positive learning outcomes. At our university, OT, PT and athletic training (AT) students follow comparable trajectories through an early assurance model with similar pre-professional coursework. We expect similarly enhanced interprofessional collaborative practice in a first-semester professional course that combines the allied health professions of AT and PT students and includes case-based learning activities.

### **Course Design**

The course in Therapeutic Modalities is part of the required curriculum for graduate level Athletic Training and Physical Therapist Education Programs. For both groups of students, the course is taken during the first Fall term of their professional program, after completing an initial two courses in the previous Summer term. Most students had matriculated into their professional programs from the university's undergraduate program in Exercise Science, and many

participated in either the Concentration or Minor in IPE. The course consists of two 50-minute lecture sessions per week and all students participate in one of four, two-hour lab sections per week.

### **Instructors**

The course is taught by an interprofessional teaching team consisting of an athletic trainer as the course director, physical therapist as the lab coordinator, and two athletic trainers as lab instructors. Students observed the interprofessional interaction between instructors primarily during weekly two-hour lab sessions. The teaching team shared roles and responsibilities of teaching course content, demonstrating modality set-up and application, and evaluating student performance. Mutual trust and respect were demonstrated among the teaching team as each instructor expressed value in their colleague's experience, opinions, and capabilities.

### **Lab**

Each student participated in a weekly two-hour lab session. Two of the four lab sections were uniprofessional, while one section had two AT students enrolled with 27 PT students and another had four PT students enrolled with 20 AT students. Although these experiences were primarily uniprofessional in composition, all lab activities involved working together in groups of two-to-five. Student groups completed lab packets that facilitated clinical understanding and application of the therapeutic modalities. Students engaged in shared learning as they provided feedback to each other and collaborated in the shared goal of completing the assignments. The interprofessional teaching team provided instruction, demonstration, and was available for questions during all lab times.

### **Case-Based Learning Activity**

Case-based learning activities, in which students work together in teams, were implemented during lecture sessions at four time points throughout the semester. Students were separated into teams of three-to-four members per team. An imbalance in number of enrolled AT students (22) and PT students (90) created an opportunity to develop two different types of team conditions. Eighteen teams had interprofessional (IP) composition, of which 14 teams had one AT and two PT students and four teams had two AT and two PT students. The remaining 18 teams had uniprofessional (UP) composition of three PT students each. The activities took place in a lecture hall where teams were assigned locations to sit together to ensure adequate space for all. Students were free to roam during this time; however, they were instructed to work within their assigned teams. Teams could ask questions of the course director as needed.

The case-based learning activities consisted of simulated patient cases that included patient history, presentation, and goals. Students were asked to document appropriate therapeutic interventions including main outcomes, assessment methods, physiological effects, contraindications, precautions, and parameters. Teams of students were given one of six cases that reflected course content covered up to that point in the term. Teams spent approximately 30 minutes completing the assignment followed by ten minutes of facilitated discussion by the course director. A total of four case-based learning activities were completed over the course of

the semester, occurring an average of four weeks apart. An example of one of the case studies is as follows:

A 34-year-old female presents with a diagnosis of chronic elbow tendinosis and complains of right lateral elbow pain and stiffness that she attributes to tennis activities. Exam reveals pain with palpation at the common wrist extensor tendon at the lateral elbow, pain and weakness with resisted wrist extension, and decreased active and passive range of motion (A/PROM) wrist flexion. Primary Medical History (PMHx): currently four months pregnant with gestational hypertension (HTN).

### **Critical Reflections**

At the end of the four case-based learning activities, students completed a written critical reflection assignment in which they were asked to respond to the following prompts:

1. Describe your overall readiness to apply therapeutic modalities in patient care.
2. Describe your experience with the team case report activity, considering the following:
  - a. Describe the overall quality of your group's work.
  - b. Discuss any of your individual characteristics (i.e. active listening, clear communication, honesty) that contributed to the quality of your team's work.
  - c. Discuss any of your other group member's individual characteristics that contributed to the quality of your team's work.
  - d. Discuss any challenges/barriers you encountered in the process of completing the team case report.
3. Describe your perceptions about the interprofessional nature of this course and its impact on your future role in patient care. Did it build off previous interprofessional coursework?

Including the opportunity for critical reflection after an interprofessional experience enables students to make meaningful connections between the team work processes employed during the activity and application to future practice (Buring et al., 2009; Mann, Gordon, & MacLeod, 2007). Critical reflections also enable educators to document the accomplishment of learning outcomes.

### **Methods**

A deductive qualitative approach was used to classify critical reflection content into a taxonomy of representative educational competencies. Two course instructors identified eight IPEC sub-competencies as relevant to the critical reflection assignment with two sub-competencies from each of the four core competencies (Table 1). The resulting framework of domains was used to deductively categorize the text of students' critical reflections. The two course instructors reviewed the de-identified text and independently classified excerpts into one of the eight IPEC sub-competencies. For any discrepancies in classification, the instructors discussed and agreed upon final classification, resulting in the taxonomy of critical reflection excerpts corresponding to relevant IPEC sub-competencies. Frequencies of each sub-competency across IP and UP teams were calculated.

**Table 1.** Frequency of comments representative of IPEC sub-competency

<b>IPEC Sub-competency</b>		<b>IP n(%)</b>	<b>UP n(%)</b>
<b>Values/Ethics for Interprofessional Practice</b>			
VE4	Respect the unique cultures, values, roles/responsibilities, and expertise of other health professions and the impact these factors can have on health outcomes.	36(12.5)	28(9.0)
VE6	Develop a trusting relationship with patients, families, and other team members.	15(5.2)	11(3.5)
<b>Roles/Responsibilities</b>			
RR9	Use unique and complimentary abilities of all members of the team to optimize health and patient care.	46(16.0)	39(12.5)
RR10	Describe how professionals in health and other fields can collaborate and integrate clinical care and public health interventions to optimize population health.	23(8.0)	41(13.2)
<b>Interprofessional Communication</b>			
CC4	Listen actively and encourage ideas and opinions of other team members.	34(11.8)	36(11.6)
CC7	Recognize how one's uniqueness contributes to effective communication, conflict resolution and positive interprofessional working relationships.	26(9.0)	34(10.9)
<b>Teams and Teamwork</b>			
TT3	Engage health and other professionals in shared patient-centered and population-focused problem solving.	51(17.7)	62(19.9)
TT8	Reflect on individual and team performance for individual, as well as team, performance improvement.	57(19.8)	60(19.3)
<b>Total comments (599):</b>		<b>288(100)</b>	<b>311(100)</b>

## Outcomes

Table 1 lists the eight relevant IPEC sub-competencies and the associated frequency of comments made within the critical reflections. Table 2 reports sample quotations for each sub-competency from students in interprofessional and uniprofessional groups.

**Table 2.** Comments representative of IPEC sub-competency by team condition

		<b>Comment</b>
<b>VE4</b>	IP	“The biggest thing interprofessionally was learning to work with someone new, to respect them, and to assume that they have something valuable to add to the group. This will undoubtedly be useful to me as a future professional.”
	UP	“Learning how these modalities could be used in the practice of physical therapy or athletic training was interesting and helped me learn more about the similarities and differences between our professions. My case study group

		consisted of only PTs, and I think it could have been helpful to have an AT. Not only due to their clinical experience, but also due to their different perspectives.”
<b>VE6</b>	IP	“Our communication improved as we grew more comfortable with each other. Also we didn’t hesitate to ask questions if we were not in total agreement.”
	UP	“While the peers I worked with were always PT’s, so the same profession I will be entering, we still got to practice working in group settings which is so important because there may be cases that require multiple opinions and it helps to practice building relationship and good communication skills.”
<b>RR9</b>	IP	“[Jane] not only was extremely organized in putting our case studies together and submitting them, but she was also always prepared for class. This helped us manage our time well as a team and honestly helped me with different techniques in remembering the material. [John] brought with him a different view, as he was the only AT student in our group, as well as being able to clearly communicate. He not only helped broaden my views on the course material, but also as a future health care professional.”
	UP	“[Jack] was very good about making sure we were thinking everything all the way through, while [Jill] worked well on clarifying any misunderstood information and working through the course work to help develop answers.”
<b>RR10</b>	IP	“Each member may have their own ideal way of reaching a patient’s goals, but every member’s plan for patient healing can’t be done at once. So a consensus must be made among the health care team at some point about the best comprehensive approach to a patient’s well-being.”
	UP	“In our professional careers, there are going to be moments when we have to reach out to other professions in order to provide the best care to our patients. Whether that be contacting the medical physician about your concerns, exchanging information with the athletic trainer that provided care to your athlete patient, or working together with an occupational therapist in a rehab hospital.”
<b>CC4</b>	IP	“Everyone displayed active listening skills and would let the other members know if they disagreed or had an idea that was different than the first one stated.”
	UP	“We actively listened to each other and were honest when we thought an alternative opinion might work better.”
<b>CC7</b>	IP	“Some of my individual characteristics that I believe helped with my team’s success is my clear communication and my ability to think about the problem as a whole while also looking at the details within the case. My communication was very important due to the amount of information that we were trying to sift through.”
	UP	“During our interactions, I felt that I brought a good deal of leadership and moderation to our group. For example, my group was divided between two modalities to use in the case, so I stepped in to help the group come to a unified decision.”

<b>TT3</b>	IP	“There were a few times where we would disagree on which modality to use or whether or not certain parameters were correct. However, we were able to talk through these difficult conversations and figure out the best answer as a group.”
	UP	“We all contributed ideas and reasoned through why we would choose one modality over another. We collectively looked at all the components and determined if the modality was appropriate or inappropriate based on contraindications and precautions, as well as the symptoms the patient was experiencing.”
<b>TT8</b>	IP	“My team was very capable, and we worked very well together. We produced high quality work very efficiently. Our work style was very cohesive, and we made cooperative decisions very well.”
	UP	“Overall, I think my group was very productive and produced high quality work.”

### Values/Ethics for Interprofessional Practice

Student reflections expressed a gained appreciation for other health professions’ contributions to team outcomes, both in the context of the class assignment and in future health care practice (VE4). This awareness seems to have come about through the development of new relationships with peers during the progress of the case-based learning activities over the course of the semester (VE6).

### Roles and Responsibilities

Students were able to articulate how their individual team members’ strengths contributed to the success and quality of their group work (RR9). Furthermore, students commented on how professionals from multiple fields can and should work together to provide optimal patient-centered care (RR10). An example of the integration of these ideas was nicely articulated by the following physical therapy student:

Since I was able to work with both physical therapy and athletic training students in my group, I felt that this class was more interprofessional than my other physical therapy classes and reflected the interprofessional education courses I took in undergraduate. I was better able to gain an idea of the work that athletic trainers do and how therapeutic modalities are applied in athletic training, in addition to how they are used in physical therapy. In my future practice, if I work alongside athletic trainers, I will have a better understanding of their role in patient centered care and the role that therapeutic modalities play in their treatment of the cases that they see as athletic trainers. I also feel that this class, through its collaboration in case studies, will better prepare me for interacting with other healthcare professionals in my future practice.

Students described their comprehension of the connections between understanding health professionals’ roles and the ability to effectively collaborate with others.



## **Interprofessional Communication**

Students often commented on both their own and their team members' ability to actively listen. Many suggested that this skill, combined with an open forum for sharing ideas, contributed to the success of the team (CC4). Additionally, students articulated a variety of personal skills that they felt had a positive impact on the quality of work their team was able to produce (CC7).

## **Teams and Teamwork**

Throughout the reflections, students described the processes by which their teams were able to engage in solving the patient case. Often this would include how the team would work through disagreements or challenges (TT3). And of course, by design of the assignment, significant reflection on both individual and team performance was apparent (TT8).

## **Course Experience Overall**

The instructors were struck by many of the student's eloquent integration of foundational IPE concepts and a collaborative, patient-centered approach to health care. We felt that these reflected positive learning outcomes that originated in the undergraduate IPE curriculum and are now translating in the graduate level programs. These examples came from students in both IP and UP teams:

Patient-centered care relies on interprofessional collaboration. All members of a health care team must work together to achieve the best outcome for the patient. We must be able to communicate openly and respectfully with one another to share ideas and knowledge. This course gave us a good idea of how to collaborate with others and come to a decision. In previous IPE courses, we have learned information that definitely translated into this class. The importance of patient-centered care and interprofessional collaboration has carried through each IPE course and this course on therapeutic modalities. (Interprofessional Team)

Not only has modalities provided a wealth of new knowledge, but it has required and encouraged a form of teamwork that not all classes strongly emphasize. This teamwork can be experienced through team case report activities in the lecture hall, or during lab on Tuesdays or Thursdays. This form of teamwork has been a skill that classes have been attempting to put into practice throughout the curriculum, but this first year of grad school has proven that group work like group studying and sharing our strengths and weaknesses is extremely beneficial for continuous growth at SLU in this our respective programs. (Uniprofessional Team)

Students from both groups were able to reflect on their experience using appropriate IPE terminology. Through descriptions that demonstrate relevant IPEC sub-competencies, educators can utilize this documentation as evidence of inclusion of IPE in the curriculum and successfully meet accreditation standards.

## Discussion

Health professions programs are challenged when incorporating IPE into already crowded curricula where resources and time may be limited (Breitbach et al., 2013; Zorek & Raehl, 2013). Finding unique and novel ways to embed IPE into these programs is important to educators. Creating IPE pedagogy in an existing shared professional course may be a viable option. This course incorporated varying levels of interprofessionalism and team work that may be effective in addressing relevant IPEC Competencies. The combination of an interprofessional teaching team, case-based learning activities, and group work in lab appeared to contribute to a positive interprofessional experience regardless of team composition in the case-based learning activities. Student reflections after these activities document perceived benefits to this approach that align with the IPEC Core Competency domains, including specific sub-competencies. This alignment could enable educators to demonstrate how IPE experiences are meeting accreditation standards. By using a variety of interprofessional and team work strategies in an existing shared professional course, AT and PT programs can include IPE in line with IPEC competencies and accreditation standards.

One limitation to this study is that student's demonstration of IPEC competencies may not be solely attributed to the case-based learning experiences as there was no control group and many other professional interactions exist in other academic, clinical, lab, and social experiences. However, this continued use of team work and critical reflection across the continuum of foundational and graduate educational experiences is important to collaborative skill development (IOM, 2015). Additionally, the students participating in this course were early stage learners; e.g. they may not have formed clear and distinct professional identities at this juncture in their education. It is possible that the stage of learner is important for the type of pedagogical experiences that provide the highest impact for interprofessional learning. Finally, this report represents one time point on that continuum and future research should consider the longitudinal assessment of IPEC competencies across multiple timepoints.

## Conclusion

This article reflects preliminary insight into the impact of interprofessional education in a shared professional program course for athletic training and physical therapy students. However, we feel that we present a novel and useful approach for programs who wish to embed interprofessional learning activities to meet updated accreditation standards. Adaptation of an existing shared course can be an excellent option for programs as they manage limited faculty and financial resources, along with a crowded existing curriculum. Future research could include more robust investigations of the impact of this approach, along with a broader look at the effect of interprofessional education on the patients and population these health professionals serve as they enter the healthcare workforce.

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