Interprofessional Education for Pre-Service School-Based Professionals: Faculty and Student Collaboration

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Authors

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Introduction

Interdisciplinary teaming is an integral part of special education in the United States. With the reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004, special education services must be planned and implemented by a team of qualified professionals. For example, members of the Individual Education Program (IEP) team must include not less than one general education teacher, one special education teacher, a representative from the school, and the parent(s)/guardian(s) (IDEA, 2004). Together, these individuals must collaboratively develop a plan of service for a student. Collaboration is a large part of the job for professionals (e.g., nurses, school psychologists, school counselors, speech-language pathologists (SLPs), social workers, occupational therapists, and physical therapists) working in the schools; however, many professionals learn about collaboration in their specific disciplines without actually having the opportunity to collaborate across disciplines while receiving their training.

Interprofessional education (IPE) and collaborative practice are defined as "occasions when two or more professions learn with, from and about each other to improve collaboration and the quality of care" (World Health Organization, 2010, p. 13). The Interprofessional Education Collaborative (IPEC, 2011, 2016) established four core competency domains for interprofessional collaborative practice: (1) values/ethics (i.e., working with other professionals in maintaining a climate of mutual respect and shared values); (2) roles/responsibilities (i.e., using the knowledge of one's own role and the roles of other professionals to appropriately assess and address the health care needs of patients); (3) interprofessional communication (i.e., communicating with families, communities, and other professionals in a responsive and responsible manner that supports a team approach); and (4) teams and teamwork (i.e., using the principles of team dynamics and relationship-building values to work effectively in different team roles).

These competencies guide professional practice and curricular development of learning approaches and assessment strategies across health professions at the preprofessional level. They encourage dialogue both within and between healthcare disciplines in developing opportunities to integrate essential IPE content into training programs, consistent with each profession's accreditation requirements.

For the purpose of understanding the potential usefulness of IPE and collaborative practice, imagine an 11-year-old female fourth grader, Adria, who has a history of uncontrolled childhood diabetes, as well as diagnoses of attention deficit/hyperactivity disorder (ADHD), expressive language impairment, and a learning disability. Adria has behavioral and academic difficulties at school as well as at home, where she lives with her maternal grandparents who have primary custody of her. Adria's medical needs are not being met consistently and she is receiving failing grades and missing class instruction due to frequent removals for disruptive behavior. A child study team has been assembled to discuss how best to meet Adria's needs. Each individual team member brings professional expertise and experiences to the meeting, which forms their perspective and provides a variety of ideas for interventions to address Adria's needs. Ideally, these professionals would engage in a collaborative process by coordinating ideas and best practices, thereby creating the most comprehensive and holistic plan for Adria. An interprofessional plan would include her grandparents as integral members of the team and would

likely address academic and behavioral supports for Adria, as well as family supports to assist her grandparents in meeting her medical needs.

Unfortunately for Adria, and many young people in schools and community settings, effective collaboration does not happen as often as it should, nor does it happen simply by calling together a meeting of different professionals. Without an interprofessional plan that values her family as an integral part of the team, Adria's grandparents might not have the support they need to meet her medical, educational, and behavioral needs.

Several researchers have advocated for IPE among educational professionals because schools are staffed with a wide variety of professionals (Dobbs-Oates & Wachter Morris, 2016; Margison & Shore, 2009). In addition to administrators, schools typically have general and special education teachers, nurses, school psychologists, school counselors, SLPs, social workers, occupational therapists, physical therapists, and other professionals who provide services to students (Dobbs-Oates & Wachter Morris, 2016; Margison & Shore, 2009). At the university level, however, most pre-service education training takes place in separate programs that have little contact with one another (Shoffner & Wachter Morris, 2010).

Studies have shown that effective collaborative techniques must be developed, taught, and practiced in order to build competency and produce effective outcomes (Anderson, 2013; Dobbs-Oates & Watcher Morris, 2016; Hong & Shaffer, 2015; Salm, 2014). Based on the research, which indicated that shared decision-making yields better results for students and teachers, professional organizations have acknowledged interprofessional collaboration as an essential component in professional training at higher education institutions (Arredondo, Shealy, Neale, & Winfrey, 2004). For example, the American Speech-Language-Hearing Association requires graduate SLP programs to prepare preprofessional students to interact and coordinate care effectively with other disciplines and community resources (Council on Academic Accreditation, 2017). Similarly, several professional organizations have included interprofessional collaboration in their ethical codes for professional practice, such as the fields of nursing (American Nurses Association, 2001), social work (National Association of Social Workers, 1999), and special education (Council for Exceptional Education, 2012).

To appropriately prepare students for their future careers, university programs may need to move beyond traditional classroom experiences by incorporating collaborative learning opportunities across programs and colleges. Recognizing that collaborating across programs and colleges may present significant challenges for many universities, several accrediting bodies have approved the use of alternative methods such as standardized patients, classroom simulators, virtual patients, and digitized mannequins (Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2013; Commission on Collegiate Nursing Education, 2018.

Review of Literature

Before describing the specific goals, process, and outcomes of the intervention and study, it may be helpful to understand a bit more about the importance of IPE in terms of pre-service education. Researchers have suggested that pre-service education professionals would benefit from

interprofessional education. Although limited, research suggests pre-service education professionals have minimal knowledge of the roles of other professionals and effective collaborative practices (Dobbs-Oates & Wachter Morris, 2016; Suleman et al., 2014; Wilson, McNeill & Gillon, 2015). Wilson et al. (2015) examined the perceptions of student teachers and student speech-language therapists (SLT) regarding professional collaboration and service delivery. Results of their online survey revealed both groups of participants indicated teachers should be the primary professional involved in the assessment and teaching of reading and spelling and SLTs should work in classrooms to provide learning opportunities for students with language learning difficulties; however, the groups differed on the nature of the role of the SLT in the classroom. Results for team teaching as an appropriate SLT role were mixed. Fewer SLT students (54%) indicated team teaching as an appropriate SLT role compared to student teachers (71%). Both groups agreed that indirect service models, such as providing support to family members, were appropriate SLT roles. These findings indicated that student teachers and student SLTs have minimal knowledge of collaborative practices and a limited shared understanding across disciplines. Wilson et al. (2015) suggested that interprofessional initiatives that increase opportunities for pre-service teachers and SLTs to develop shared knowledge of effective practices are preferred.

Research does suggest, however, that pre-service education professionals would benefit from interprofessional education that affords pre-service students the opportunity to increase their understanding of the roles of other professionals and effective collaborative practices (Dobbs-Oates & Wachter Morris, 2016; Sulemman et al., 2014). For example, Dobbs-Oates and Wachter Morris (2016) described a semester-long IPE experience whereby students in school counseling and early childhood education partnered to provide academic and functional supports for children in a preschool classroom. Students wrote reflections of their experiences. Reflections revealed an increased respect for other educational professionals, an increased understanding of the roles and responsibilities of the other professionals, and an increased understanding of the communication process.

Similarly, Suleman et al. (2014) examined pre-service SLPs (*n* = 55) and student teachers' (*n* = 52) knowledge of service delivery models before and after a 90-minute interactive IPE seminar. Following the seminar, small mixed-discipline groups designed an intervention plan for a hypothetical classroom. Students completed a reflective survey before and after the seminar. The reflective survey provided a classroom description and asked students to describe configurations for service delivery. Before the seminar experience, 39% of pre-service SLP students and 13% of student teachers described consultative models (the least collaborative model). Further, only 16% of pre-service SLP students and 2% of student teachers described transdisciplinary models (the most collaborative model). These results suggested that, prior to the IPE seminar, student teachers did not see their role as being collaborative with the work of an SLP. Following the experience, 32% of pre-service SLP students and 33% of student teachers described transdisciplinary models of collaboration in response to the reflective survey. These results indicated that, following the IPE seminar, both groups demonstrated increased understanding of collaborative service delivery models.

Finally, Tourse, Kline, Mooney and Davoren (2005) provided another example of interprofessional collaboration between pre-service social work and education students. In the

model, teams of graduate students in social work and special education interned together in either an elementary school or a middle school. Students had joint supervision and provided interprofessional services to children. Following the two-year project, the authors concluded that there were tangible benefits for both groups of pre-service students. For example, pre-service students recognized the "advantage of blending treatment paradigms into interventions that can be more powerful" (p. 472).

Taken together, the results of these studies (Dobbs-Oates & Wachter Morris, 2016; Suleman et al., 2014; Tourse et al., 2005; Wilson et al., 2015) indicate that pre-service education professionals may have limited understanding of other professionals' roles and effective collaborative practices (Suleman et al., 2014; Wilson et al., 2015). Results also indicate, however, that learning opportunities that incorporate facilitated discussions (e.g., Wilson et al., 2015) and reflection of learning (Dobbs-Oates & Wachter Morris, 2016) can increase pre-service education professionals' knowledge.

Although these examples provide helpful information and aspects of a "roadmap" for future studies, the research base examining effective ways to teach IPE principles is limited. First, the studies reviewed only included pre-service students from two different disciplines. As previously discussed, schools are staffed with a wide variety of professionals. Therefore, research including pre-service students from a variety of disciplines is needed.

Second, reflection is an important component; however, only one study reported students' reflections of their learning (Dobbs-Oates & Wachter Morris, 2016). Further research is needed that explores students' reflections of their learning, which can then be used in developing learning opportunities that maximize student learning.

Finally, the interventions varied extensively vis-à-vis the amount of intervention time the participants received. For example, the Dobbs-Oates and Wachter Morris (2016) and Tourse et al. (2005) studies included semester-long IPE experiences, whereas the Suleman et al. (2014) study included a 90-minute interactive IPE seminar. As previously discussed, collaborating across programs and colleges may present significant challenges for many universities. Therefore, effective IPE experiences that can be easily integrated into current university curricula are needed.

Current Study

The purpose of the present study was to examine the effects of a one-day interprofessional learning experience designed to promote increased understanding of the various roles of school professionals and provide an opportunity for students to participate in interprofessional collaboration within a simulated school-based context. As mentioned previously, researchers have indicated that effective collaborative techniques must be developed, taught, and practiced in order to build competency (Anderson, 2013; Dobbs-Oates & Watcher Morris, 2016; Hong & Shaffer, 2015; Salm, 2014).

Faculty members from the fields of nursing, school psychology, school counseling, occupational therapy, exceptional education, communication sciences and disorders, and social work, who work with graduate and undergraduate students, collaborated over a three-year period to address the

need for IPE. While students and faculty reported student efficacy in their own field of study and practice, students and faculty alike noted lack of comfort and competency in real-time collaboration in schools. In order to address this emerging problem across disciplines, eight faculty members (two from school psychology, one from each of the other disciplines) met to design an educational experience to assist students and their future clientele. Each year following the one-day seminar, the faculty met to debrief and to revise the day for the following year. One revision included adding a formal assessment of the experience, as discussed in this article.

The goals of the day were a) students would gain understanding of the professional roles, responsibilities, ethical standards, and specialties in school nursing, school psychology, school counseling, special education, social work, occupational therapy, and SLP; b) students would be knowledgeable in the concepts of collaboration with other school professionals; c) students would be knowledgeable in applying a problem-solving model to address individual student needs in school settings; and d) students would be able to articulate how the total collaborative experience enhanced their ethical reasoning personally, professionally, and as a citizen. The day was viewed as a two-fold mission: first, to expose and train students in understanding a process for building interprofessional collaboration with other school professionals, and second, to send students into the workforce with interprofessional skills to positively influence and impact systems where they would be employed.

The following two research questions were addressed:
1. After participating in the day, do school-based pre-service students from the fields of nursing, school psychology, school counseling, occupational therapy, exceptional education, SLP, and social work demonstrate a quantitative change in attitudes regarding interprofessional collaboration?
2. Do school-based pre-service students' reflections of their experience indicate increased knowledge of the IPEC (2016) interprofessional competencies?

Method

Overview. A mixed-method design combined use of a survey (quantitative) with phenomenologic inquiry (qualitative) to examine the effects of the day in helping students integrate interprofessional core competencies of communication and team-based care. A pre-post survey, *The Attitudes Toward Health Care Teams Scale* (*ATHCT*; Heinemann, Schmitt, Farrell, & Brallier; 1999), was used to examine quantitative changes in students' attitudes about interprofessional collaboration. Students' written responses to four open-ended questions were qualitatively analyzed to examine students' experiences of the day, contextualize the survey results, and inform future educational experiences. Figure 1 provides an overview of the timeline, program components, and the materials used.
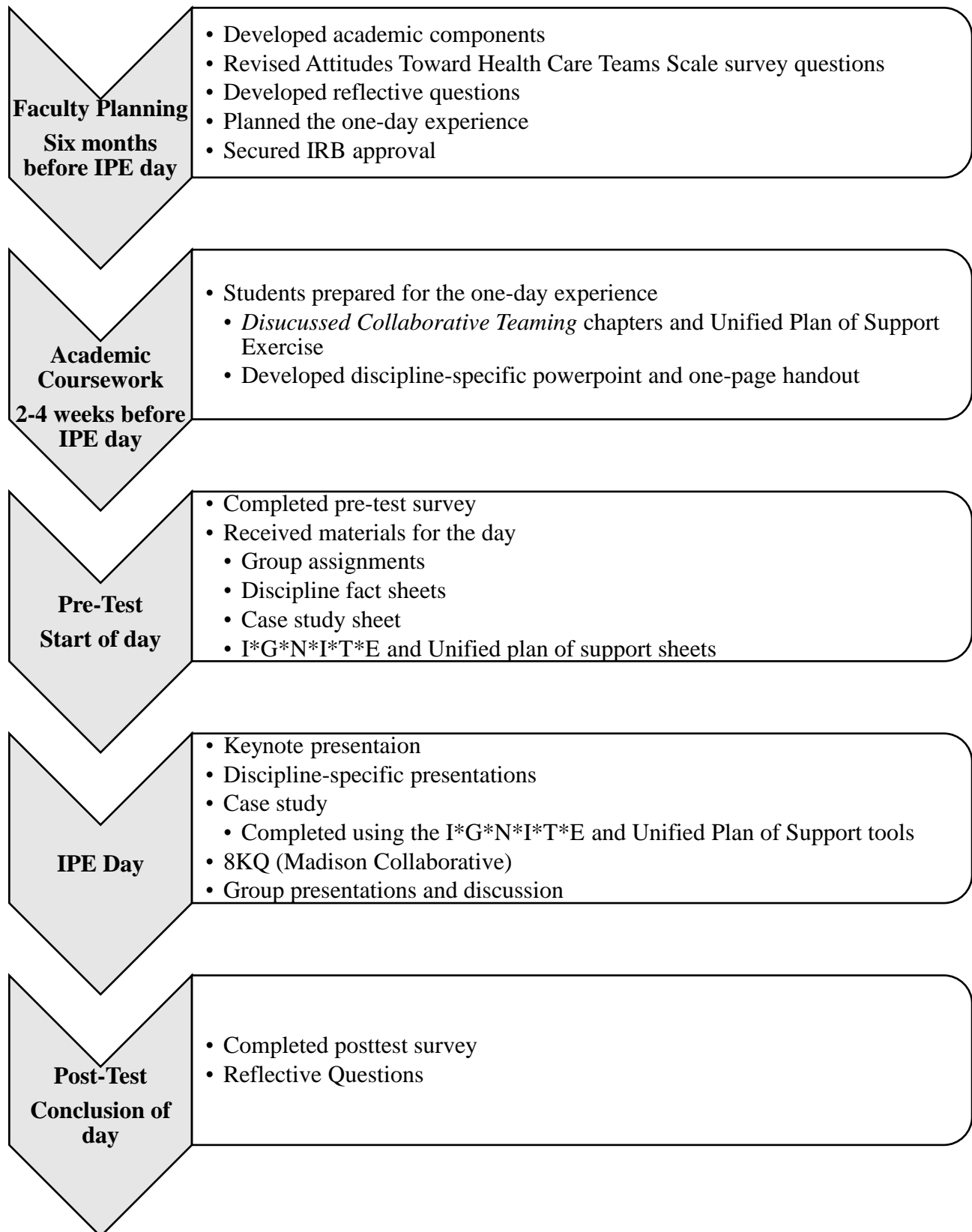
Faculty Planning

Six months before IPE day

- Developed academic components
- Revised Attitudes Toward Health Care Teams Scale survey questions
- Developed reflective questions
- Planned the one-day experience
- Secured IRB approval

Academic Coursework

2-4 weeks before IPE day

- Students prepared for the one-day experience
  - *Disucussed Collaborative Teaming* chapters and Unified Plan of Support Exercise
  - Developed discipline-specific powerpoint and one-page handout

Pre-Test Start of day

- Completed pre-test survey
- Received materials for the day
  - Group assignments
  - Discipline fact sheets
  - Case study sheet
  - I*G*N*I*T*E and Unified plan of support sheets

IPE Day

- Keynote presentaion
- Discipline-specific presentations
- Case study
  - Completed using the I*G*N*I*T*E and Unified Plan of Support tools
- 8KQ (Madison Collaborative)
- Group presentations and discussion

Post-Test Conclusion of day

- Completed posttest survey
- Reflective Questions

Figure 1. Timeline and Materials. This figure illustrates the timeline and materials used in implementing the IPE day.

Participants and Setting. Participants ($N = 102$) included first-semester SLP graduate students ($N = 29$), first-semester special education graduate students ($N = 7$), second-year school counseling graduate students ($N = 7$), second-year occupational therapy graduate students ($N = 21$), second-year school psychology graduate students ($N = 7$), first-semester senior undergraduate nursing students ($N = 16$), and second-semester senior undergraduate social work students ($N = 15$). All students attended a large, Mid-Atlantic state university. All students were enrolled in a course with a faculty member directly involved in the development of the learning experience and participation in the day was included as a syllabus requirement. IRB approval to survey the students and collect reflections of learning was obtained prior to the day. Participation in the survey and reflection of learning were voluntary.

Designing the Day. Faculty members from the fields of nursing, school psychology, school counseling, occupational therapy, exceptional education, communication sciences and disorders, and social work, who work with graduate and undergraduate students, worked together to design the day. The day comprised four components: 1) concepts of collaboration and teaming, 2) roles and responsibilities of the various disciplines, 3) application of student learning to case study and team problem solving, and 4) ethical reasoning. Additionally, faculty developed the instruments to assess students' learning, which are described in the following sections.

Concepts of Collaboration and Teaming. Faculty chose three chapters from *Collaborative Teaming* (King-Sears, Janney, & Snell, 2015), which were used in all of the discipline-specific academic courses. These chapters were chosen because they provided the students with an overview of collaborative teaming as well as an understanding of teamwork skills and problem-solving strategies.

Roles and Responsibilities of the Various Disciplines. In those same academic courses, faculty guided student participants in creating discipline-specific fact sheets and a PowerPoint presentation. The purpose of the fact sheets and presentations was to describe the roles and responsibilities of said discipline relative to schools and included background information about the profession, required training for practitioners, associated professional organizations, outlines of responsibilities and typical daily activities for the professional in the school, and challenges and rewards of said profession.

Application of Student Learning to Scenarios and Team Problem Solving. Faculty developed the case study described at the beginning of this article. The case study included a child with complex academic, behavioral, and medical needs, and was intentionally developed so that all disciplines could potentially have a role in the education plan for the child. Faculty felt student learning would be maximized if all disciplines could have an opportunity to support the child and/or family. Recognizing that students would need learning supports as they worked through the case study, faculty chose two tools. These tools were chosen because faculty wanted to demonstrate the connection between academic coursework and practice.

The first tool, the *I*G*N*I*T*E Problem Solving Method* (Beck, 1997), guided participants through the steps of **I**dentifying the problem, **G**enerating possible solutions, **N**oting the pros and cons of possible solutions, **I**dentifying a solution, **T**argeting an action plan, and **E**valuating the plan and making any needed changes. This tool is part of the King-Sears et al. (2015) chapters the

student participants read and discussed in their academic classes and was chosen to help students conceptualize the case and organize their discussions of the case.

The second tool, *The Unified Plan of Support Exercise*, was developed by the faculty and served as a framework for treatment planning. This tool was already in use by two of the programs and faculty felt it was important to use tools included in other parts of the curriculum. It guided participants to define/describe the concern(s), determine the major area(s) of concern, prioritize the concerns, develop a treatment plan, and describe specific actions or strategies that would be used to address the goals.

Ethical Reasoning. Faculty decided to have students discuss the *Madison Collaborative: Ethical Reasoning in Action*, which is an ethical reasoning model espoused by the University. The *Madison Collaborative* focuses on eight key questions (8KQ) of fairness, outcomes, responsibilities, character, liberty, empathy, authority, and rights. Discussion and reflection of the 8KQ were included because ethics is one of the four IPEC (2016) competencies and the university already had a way to discuss ethical reasoning.

Student Participation in the Day. *Preparing for the Day*. Prior to the day, student participants read and discussed the three King-Sears, et al. (2015) chapters in their discipline-specific academic courses. Additionally, participants created discipline-specific fact sheets and a PowerPoint presentation.

Morning Activities. At the start of the day, all participants completed the pre-survey and received a packet of materials they would use for the day, which included the morning and afternoon group assignments, all discipline-specific fact sheets, the case study description, and the I*G*N*I*T*E and unified plan of support prompt sheets. Prior to the day, faculty assigned students to the morning and afternoon groups. Groups were designed to include at least one representative from each discipline, with no more than three representatives in any one group. Additionally, faculty intentionally designed the morning groups to include different participants than the afternoon groups to offer students the opportunity to interact with more participants from the various disciplines.

Following a keynote presentation, participants moved to assigned breakout rooms in which they shared a 15-minute PowerPoint presentation explaining their discipline. During the discipline-specific presentations, participants were encouraged to ask questions in order to fully understand the various roles of the professionals. One faculty member was assigned to each breakout room to assist with the flow of the presentations.

Afternoon activities. After lunch, participants collaborated in interprofessional groups on the assigned case study. Students met for 1.5 hours to review the case study, apply the collaborative and treatment planning process, and develop a treatment plan for Adria. Faculty monitored the sessions, but refrained from actively participating in discussions to allow students to engage in the process independently.

Once the groups had finished their plan, they were asked to reflect upon the 8KQ. Students discussed which prompts and questions they felt resonated the most with them when developing

the treatment plan for their case study. Finally, the day concluded with group presentations. One member from each group gave a brief (approximately 10-minute) presentation which described their plan, as well as the process by which the group developed the plan and the group's reflection of the 8KQ. Once all presentations were concluded, students completed the post-survey.

Instrumentation. *Survey*. The *ATHCT* was developed by Heinemann and colleagues (1999) and is free to use. Hyer, Fairchild, Abraham, Mezey and Fulmer (2000) used this survey in examining health professional students learning about team care. Their 21-item scale assessed three domains important to effective collaboration; including Value of Team, a measure reflecting attitudes towards teams; Team Efficiency, a measure of team efficiency; and Shared Leadership, a measure of shared leadership and equality among team members. Hyer et al. (2000) reported an internal consistency of $\alpha = .87$.

The participants in the current study participated in educationally-based teams; thus, some of the items on the *ATHCT* were not appropriate for our purposes. For example, item four read, "Physicians have the right to alter patient care plans developed by the team" and was reworded as follows, "Individual disciplines have the right to alter student care plans developed by the team." Each of the 21 items was re-worded to make the items relevant to school-based settings (see Appendix).

Participants rated these 21 items using a 6-point Likert scale (6 = strongly disagree, 1 = strongly agree) before the start of the day and at the conclusion of the day. The current study provided an internal consistency of $\alpha = .83$. Devellis (1991) interpreted alpha values $\geq .80$ as very good. After the pre-and post-test surveys were collected, the results were entered into an SPSS file. Survey data were analyzed using a one-way multivariate analysis of variance (MANOVA).

Reflective Prompts. Faculty developed four prompts to explore students' experiences of the day. Students were asked to provide written responses to the following open-ended prompts:
- How has this experience impacted your understanding of working with other school professionals?
- What role did you assume as a team member? What influenced you taking this role?
- How has this experience impacted your professional identity?
- What has this experience meant for you?

Two of the authors completed two rounds of coding. First, the two authors independently read all responses and developed a coding scheme as themes emerged through line-by-line review of the responses (Guba & Lincoln, 1981). Following their independent coding, the two authors then met to discuss the themes, reach consensus, and discuss generalizability.

Results

The overall response rate to the revised *ATHCT* survey was approximately 98%. A total response rate consisted of $N = 102$ Pretest (School Psychology = 7, Social Work = 15, Occupational Therapy = 21, Nursing = 16, School Counseling = 7, SLP = 29, Special Education = 7), and $N = 95$ Posttest (School Psychology = 7, Social Work = 15, Occupational Therapy = 20, Nursing = 14, School Counseling = 7, SLP = 26, Special Education = 6). Participants rated each of the 21-items using a

6-point Likert scale (6= strongly disagree, 1= strongly agree). For each of the subtests, the mean score was higher at the pre-test than at the post-test, indicating that more students selected responses of "agree" or "strongly agree" at the post-test. When answered in the positive, the items of the subscale, Value of Team, reflect positive outcomes as a result of a team approach. In the second subscale, Team Efficiency, items were worded so that agreement meant that team meetings did not waste time and were productive in planning for student-focused outcomes. Finally, the items on the third subscale, Shared Leadership, were worded so that agreement indicated the respondent values mutual accountability and shared leadership. Table 1 includes the means, standard deviations, and *F*-test results. The overall response rate to the open-ended reflective questions was 93% (*N* = 95).

Table 1

Means, Standard Deviations, and F Values for Pre-post comparisons of ATHCT subscales

Subtest	Pretest (*M*, SD)	Posttest (*M*, SD)	*F* value
Value of Team	*M* = 25.147, SD = 5.06	*M* = 22.70, SD = 5.38	11.239[a]
Team Efficiency	*M* = 14.108, SD = 2.39	*M* = 12.36, SD = 2.98	21.322[a]
Shared Leadership	*M* = 11.226, SD = 2.74	*M* = 10.039, SD = 2.72	9.616[a]

[a]*F* is significant at the .01 level

Research Question 1. Research question 1 asked whether participating in the day resulted in changes in student attitudes regarding interprofessional collaboration by examining students' pre- and post-test responses to the revised *ATHCT* survey. There were a total of 26 missing pairs for the Value of Team subscale, 11 missing pairs for the Team Efficiency subscale, and seven missing pairs for the Shared Leadership subscale. Specifically, there were 13 missing data points from eight questions at the pre-test: Q5 (*n* = 5), Q7 (*n* = 1), Q8 (*n* = 1), Q10 (*n* = 1), Q12 (*n* = 1), Q13 (*n* = 1), Q15 (*n* = 1), and Q19 (*n* = 2). At the post-test, there were 31 missing data points from 17 questions: Q1 (*n* = 1), Q4 (*n* = 2), Q5 (*n* = 6), Q6 (*n* = 1), Q7 (*n* = 1), Q8 (*n* = 2), Q9 (*n* = 1), Q10 (*n* = 2), Q11 (*n* = 2), Q12 (*n* = 2), Q13 (*n* = 1), Q16 (*n* = 1), Q17 (*n* = 1), Q18 (*n* = 1), Q19 (*n* = 2), Q20 (*n* = 2), Q21 (*n* = 3). The missing values were replaced using multiple imputation (van Buuren, 2012). Results of a one-way MANOVA revealed a significant main effect for participation in the seminar, $F (3, 200) = 7.814$, $p < .000$, Wilks' $\lambda = .895$, $\eta_p^2 = .105$. Given the significance of the overall test, the univariate main effects were examined. Significant univariate main effects for participation in the seminar were obtained for each of the three subscales: Value of Team, $F (1, 202) = 11.239$, $p = .001$, $\eta_p^2 = .053$, Team Efficiency $F (1, 202) = 21.322$, $p < .0005$, $\eta_p^2 = .095$ and Shared Leadership, $F (1, 202) = 9.616$, $p = .002$, $\eta_p^2 = .045$.

Research Question 2. Research question 2 examined whether students' reflections of their experience indicated increased knowledge of the IPEC (2016) interprofessional competencies. Three major themes and two minor themes emerged, which indicated increased understanding of three of the IPEC competencies, including roles/responsibilities, interprofessional communication, and teams and teamwork. First, 95% (*n* = 89) indicated an increased understanding of the role of the team and the individual roles of the various disciplines. For example, one student wrote,

> It has reiterated to me how crucial and important it is to have a team to develop the most appropriate plan of care and treatment. I understand now that each team member has a

critical role in the team process and better understand what the specific roles in each discipline consist of.

Another student also wrote about an increased understanding of the individual role and the roles of other professionals, "It helps me understand where other professionals are coming from. I know better how to approach a situation that needs an interprofessional team, and where my role lies." Yet another student wrote, "This was probably the most impactful interprofessional experience (meeting) I've had. I learned what other professionals can do and what they should do and how they see/value my profession." These responses, while only a few of many examples, exemplify students' perceptions that the day helped them to not only understand the role of their specific profession, but also the roles of the other professionals.

A second major theme that emerged was experiencing teamwork in action. Nearly three-quarters of participants (73%; $n = 74$) expressed an increased value for teamwork because they experienced teamwork in action. One student wrote (in describing the impact of the day), "I am more of a team member and less of a single player." Similarly, another student also described feeling a greater capacity for teamwork, "It has shown me that I am capable of being a team member, and though I am independent – help is nice." Another student wrote,

> I learned so much about how many professionals go into caring and providing care for students in the school environment. I never really took the time to think about it. I truly believe the best outcome for a child with a disorder, disease, illness, concern, etc., would not be possible without all interdisciplinary teams taking action.

One student succinctly wrote, "The main thought is – 'I don't have to do it alone.'" These responses, again, only a few of many examples, demonstrated how the day helped students in fully understanding and embracing the concept of teamwork.

Finally, 59% ($n = 56$) of the participants wrote about the importance of communication skills. For example, one participant wrote, "I contributed at times, but also listened intently." Similarly, another student commented, "I provided my knowledge/opinion concerning my profession, but also acted as a listener to learn from other professionals who may have had differing opinions." Some students also reflected on the communication challenges they faced. For example, one student wrote, "Discipline specific language was somewhat of a challenge that we became more aware of throughout the experience and addressed." These responses indicated that students were reflecting not only on their individual communication behaviors, but also on the importance of effective group communication.

Although not reported by a majority of participants, two other themes emerged including feeling an increased confidence in their skills (17%; $n = 16$) and feeling better prepared for the future (14%; $n = 13$). For example, one student wrote, "I have gained confidence in my ability to be part of a health professional team." Finally, 10% of students ($n = 10$) used the words "eye-opening" or "opened my eyes" in their reflections of the day. One student wrote, "This has been a really eye opening experience for me. I had no idea that these different professions worked so closely together and have such a huge impact on client outcomes." Another student wrote, "It has been eye opening to gain perspectives from other professionals. It will help me to be a more well-rounded

professional." Additionally, 98% of the participants said they would recommend that all students who will work in school-based settings experience this seminar.

Discussion

The goals of this study were (1) to examine whether pre-service students demonstrated a change in attitudes regarding interprofessional collaboration and (2) to examine whether students' reflections of their experience indicated increased knowledge of the IPEC (2016) interprofessional competencies. Relative to the first goal, analysis of the pre- and post-test survey results indicated students demonstrated more positive attitudes regarding interprofessional collaboration. On all three subscales of the survey, more students selected responses of strongly agree or agree at the post-test, as compared to responses of strongly disagree or disagree. Similarly, results of the thematic analysis revealed an overarching theme of an increased value for teamwork because they experienced teamwork in action.

Relative to the second goal, students' responses to the reflective prompts indicated an increased understanding of three of the IPEC (2011, 2016) competencies, including roles/responsibilities, teams and teamwork, and interprofessional communication. Nearly all of the students' reflections (95%) indicated an increased understanding, respect, and value for both their own professional role and the roles of the other professionals. As discussed previously, pre-service education professionals may have limited understanding of the roles of other professionals (Wilson et al., 2015); however, successful interprofessional collaborative practice requires knowledge of those roles (IPEC, 2011; 2016). The 2011 IPEC report identified both knowledge of both one's own professional role and responsibilities as well as the roles and responsibilities of other professionals as a core competency for interprofessional collaborative practice. That report goes on to state, "[t]eam members' individual expertise can limit productive teamwork across the professions. Collaborative practice depends on maintaining expertise through continued learning and through refining and improving the roles and responsibilities of those working together" (IPEC, 2011, p. 20). Because schools are staffed with a variety of professionals and federal law requires these professionals to work interprofessionally when providing services for students with disabilities, developing an understanding of the roles and responsibilities of all team members at the pre-service level could better prepare these students to more effectively serve on interprofessional teams.

Teams and teamwork, another of the four IPEC (2011, 2016) interprofessional competencies, includes valuing working with others and is essential for effective team functioning. The IPEC (2011) report succinctly states, "interprofessional means learning to be a good team player" (p. 24). A majority of students (73%) indicated increased understanding of being a good team player. As students move forward in their professional careers, developing strong teamwork skills will be essential to professional practice because federal law requires a team-based approach in planning and implementing special education services.

Finally, interprofessional communication is regarded as a core aspect of interprofessional collaborative practice (IPEC 2011, 2016). Students' responses indicated that they were reflecting on the importance of effective individual communication behaviors. One barrier to successful interprofessional communication, however, is the use of professional jargon (IPEC 2011). Some

students' responses indicated that use of professional jargon interfered with the group's communication. Although the responses also indicated that the group successfully addressed the barrier, it is possible that other groups may not have been as successful. Future research could include a more nuanced analysis regarding use of professional jargon.

Limitations and Recommendations for Future Research. This study is limited in several ways. First, a limitation of this study included possible selection bias because only some of the disciplines who work in school settings were involved in the study. Bias may have occurred because the participants involved in this study were previously taught the importance of collaboration. Future research including all disciplines that work in school settings is needed.

A second limitation of this study is the lack of a control group. Although the participants completed the survey immediately before and after completing the one-day experience, the lack of a control group allows for the possibility that the results could be due to other factors, and not the one-day experience. Future research should include a control group to more clearly delineate the impact of the one-day experience.

A third limitation is adaption of the ATHCT survey, which was designed for use with practicing health care professionals. In this study, the survey was adapted to use with pre-service education professionals. Therefore, it is possible that factor analysis would yield a different factor structure for these participants. This study included fewer than 100 participants; therefore, factor analysis for this data did not seem appropriate (Pearson & Mundform, 2010). Future research could include more participants to allow for factor analysis and the development of a measure specific to education professionals.

Finally, it is possible that responses to the survey and reflective prompts of the experience could have varied systematically as a function of the student's discipline. Some of the disciplines had relatively few participants (i.e., School Psychology, School Counseling, Special Education had seven participants each) in comparison to others (i.e., Social Work, Occupational Therapy, Nursing, and SLP had at least 15 participants each); therefore, it was not possible to statistically examine differences based on discipline due to the relatively small, and unequal, sample sizes. Future research could include equal sample sizes large enough to allow for statistical comparison across groups. Additionally, students' responses to the reflective prompts were anonymous to encourage students to respond as honestly and openly as possible. Students could indicate their discipline on the reflective responses to allow for group comparisons while maintaining confidentiality.

Practical Application. The results of this study demonstrated that a combination of traditional classroom learning and learning through a simulated real-time work setting could effectively increase pre-service students' understanding of three of the IPEC interprofessional competencies (i.e., roles/responsibilities, teams and teamwork, and communication). Faculty new to IPE may find the model used in this study, traditional classroom learning combined with a one-day experience, could be easily adopted into their courses. Because the interprofessional component in which students participate is limited to one day, a one-day experience could be a more reasonable goal, as compared to a semester-long experience. Further, the use of case studies, which

faculty could tailor to meet the needs of their specific students, may be easier to incorporate into classroom learning and could afford faculty the opportunity to target specific learning objectives.

In debriefing sessions, faculty recognized several important considerations that others may want to consider in designing their own experiences. First, when assigning the student groups, it was important that all groups had at least one member from every discipline, but no more than two members. When groups had disciplines represented by several students, students with few representatives reported feeling overwhelmed and isolated.

Second, informal conversations indicated the morning presentations of the roles and responsibilities of each discipline could become tiresome. Therefore, the student presentations should contain some kind of an interactive component such as use of a video or demonstration to help keep everyone engaged in the presentations. Relatedly, we realized that some presentations allotted too much time to discussing known information (e.g., defining "IEP", eligibility, "IDEA"). These terms are now discussed in the discipline-specific coursework.

Finally, it is important not only to teach and model collaboration in the classroom, but to also offer clinical and practicum opportunities for students to experience meaningful and comprehensive learning relative to interprofessional collaboration. As students move forward into their work as full-time professionals in school-based settings, we hope this learning day, where students demonstrated positive attitude changes toward interprofessional collaboration, will also increase their ability to advocate for collaborative processes in future work settings. Perhaps this experience will provide a model for students to emulate similar collaborative efforts in their future work settings.

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Appendix
Survey Questions
1. Working in interprofessional teams unnecessarily complicates things most of the time.
2. The interprofessional team approach improves the quality of care to students with special needs.
3. Interprofessional meetings foster communication among team members from different disciplines.
4. Individual disciplines have the right to alter student service/treatment plans developed by the team.
5. Students with special needs who receive interprofessional services/treatments are more likely than other students with special needs to be treated as whole persons.
6. A primary purpose of the interprofessional team is to assist parents in achieving treatment goals for the student with special needs.
7. Working interprofessionally keeps most professionals enthusiastic and interested in their jobs.
8. Developing a student service/treatment plan with other team members avoids unnecessary duplication in delivering services.
9. When developing interprofessional student services/treatments, translation of jargon from other disciplines can be challenging.
10. Professionals working on interdisciplinary teams are more responsive than others to the emotional needs of the parents of students with special needs.
11. Developing an interdisciplinary student service/treatment plan is excessively time consuming.
12. The give and take among interdisciplinary team members helps them make better student.

13. Students who receive interprofessional team services have better outcomes than those who do not receive interprofessional team services.
14. I consider myself a team player.
15. Interprofessional approach makes the delivery of services/treatment more efficient.
16. The interprofessional approach permits professionals to meet the needs of the family as well as the student.
17. Having to report observations to the interdisciplinary team helps team members better understand the work of other disciplines.