Interprofessional Education for School-Based Settings

Brittney M. Mack
Brigham Young University

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Interprofessional Education for School-Based Settings

Brittney M. Mack

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Science

Connie L. Summers, Chair
Kathryn L. Cabbage
Tyson G. Harmon

Department of Communication Disorders
Brigham Young University

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ABSTRACT

Interprofessional Education for School-Based Settings

Brittney M. Mack
Department of Communication Disorders, BYU
Master of Science

Teamwork is essential to provide quality services to individuals with disabilities (Morrison & Gleddie, 2019). Deficits across a variety of domains make interprofessional practice even more crucial (Dobbs-Oates & Wachter Morris, 2016). Interprofessional education (IPE) provides preprofessionals the opportunity to gain experience collaborating with various disciplines, better preparing them for interprofessional practice (Anderson et al., 2011; Ruebling et al., 2014). Most IPE research has been completed with preprofessionals engaged in medical cases. The existing evidence for IPE in school-based settings is limited, which creates a gap for speech-language pathologists (SLPs) who are pursuing work in school-based settings. The first purpose of this study was to examine the perceptions and attitudes of participants following an IPE experience of a medical case with both quantitative and qualitative data. The second purpose of this study was to determine if a case could be adapted to a school-based setting. Seventy-one participants completed a survey following an IPE experience with eight later participating in a focus group. Preprofessionals self-reported interprofessional learning from the experience and recognized the importance of team interactions. The IPE experience was successfully adapted to a school-based case and in an initial program evaluation, perception of teamwork and interactions were also important. In both settings, preprofessionals rated themselves as having less bias towards others than others have towards their own disciplines. This study provides essential information regarding IPE for school-based settings that will ultimately benefit children with disabilities by encouraging interprofessional practice.

Keywords: interprofessional education, interprofessional practice, interdisciplinary education, interdisciplinary practice, school-based settings
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Finally, I would like to express my sincere thanks to my husband, Jordan Mack, for his treasured encouragement and understanding as I dedicated much of my time and energy to this thesis. My gratitude extends to my parents – they taught me the value of education and hard work. This thesis would not have been possible without the support I received from my loving family and friends.
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DESCRIPTION OF THESIS STRUCTURE AND CONTENT

A hybrid format was used for this thesis, *Interprofessional Education in School-Based Settings*. This format integrates traditional thesis requirements with journal publication formats. The annotated bibliography is included in Appendix A. Appendix B contains the institution review board documents. Appendix C contains the study’s instruments. Appendix D includes the case study used in the IPE experience. The focus group questions are found in Appendix F. This thesis format contains a reference list, with all citations used in this thesis.
Introduction

Teamwork is essential to provide quality services to children with disabilities (Morrison & Gleddie, 2019). Children with disabilities may have developmental deficits across a variety of domains, making interprofessional practice crucial (Dobbs-Oates & Wachter Morris, 2016). Preparation for collaborative work occurs by providing preprofessionals opportunities to learn about and practice working in interprofessional settings during their education. Such opportunities are referred to as interprofessional education (IPE) which is defined by the World Health Organization as the practice of training preprofessionals “to learn about, from and with [different disciplines] to enable effective collaboration and improved health outcomes” to those for whom they will provide services (2010, p. 7). IPE is designed for preprofessionals, but it can continue as professional development through in-service trainings. IPE provides preprofessionals the opportunity to gain experience collaborating with various disciplines, better preparing them for interprofessional practice (Anderson et al., 2011; Ruebling et al., 2014). The purpose of this study was to investigate interprofessional learning from IPE experiences in medical settings and determine if they could be adapted to school-based settings.

Implementation of Interprofessional Education

Interprofessional education is designed to improve the trust and effectiveness within the service delivery team, which improves person-centered care (Interprofessional Education Collaborative Expert Panel, 2011). Awareness of and respect for the expertise of team members occurs as professionals learn about the roles of other disciplines and learn how to work cohesively (American Speech-Language Hearing Association, n.d.). In 2009, the Interprofessional Education Collaborative (IPEC) was formed by six national education associations as an advocate for the proper distribution of IPE (Interprofessional Education
These organizations represented higher education for a variety of medical professions with the common goal of guiding the development of curricula to promote and encourage interprofessional learning experiences to prepare preprofessionals for interprofessional practice in medical settings (Interprofessional Education Collaborative, 2016). To provide high-quality training, IPEC created four core competency domains that must be included in IPE. These include values and ethics, roles and responsibilities for collaborative practice, interprofessional communication and teamwork and team-based care (Interprofessional Education Collaborative, 2016). When these domains of IPE are incorporated, IPE has the greatest chance for success because professionals will learn to work together with similar values and goals. This panel has continued to disseminate IPE ideals, which encourages person-centered care that is optimal, safe, and accessible through collaborative practice (Interprofessional Education Collaborative Expert Panel, 2011). This foundation for unified interprofessional practice is possible because IPEC encourages equality in the accessibility and standard of IPE for preprofessionals.

The American Speech-Language Hearing Association’s (ASHA) mission statement encourages excellence in professional practice. ASHA provides resources, guidelines, and training to fulfill this goal. ASHA recognizes the crucial role of IPE in preparing speech-language pathologists (SLPs) for collaborative work on the job. In 2021, ASHA produced an interprofessional practice survey documenting that 88.9% of SLPs identify their primary reason for participating in interprofessional practice as “improved patient/client outcomes.” ASHA has created a list of strategic objectives, one of which includes the goal of advancing IPE and interprofessional practice to fulfill their mission statement. SLPs are encouraged to participate in
IPE and foster opportunities for interprofessional practice in their work settings. The guidelines from IPEC and ASHA inform professional practice across settings.

**Interprofessional Education Across Settings**

For decades, IPE has been provided for preprofessionals aspiring to work in medical settings (Thistlethwaite, 2016). There are countless studies that have recorded how IPE has positively impacted medical preprofessionals’ perception of interprofessional practice (Darlow et al., 2015). The studies have found that medical preprofessionals who participate in IPE are better prepared for and more motivated to participate in interprofessional practice in their professional careers (Anderson et al., 2011; Ruebling et al., 2014). Once in the medical setting, professionals who received IPE demonstrated increased awareness of and appreciation for their team members (Pechak et al., 2018a). Although IPE was originally created for the medical setting, it has the potential to transform the way preprofessionals in school-based settings are trained (Dobbs-Oates & Wachter Morris, 2016). It is expected that benefits of incorporating IPE in school-based setting preprofessional training would likely be comparable with those reported from the medical setting.

Limited research providing justification for the implementation of IPE for school-based settings could lead to fewer interprofessional learning opportunities for school-based preprofessionals and professionals, including education leaders, special education teachers, SLPs, general education teachers, school psychologists and other school-based disciplines. Dobbs-Oates and Wachter Morris (2016) found that school-based professionals often receive their training separately, which minimizes exposure to the expertise that other disciplines bring to a school setting. Yet, school-based professionals are required to work collaboratively during individualized education plan meetings and cases (Dobbs-Oates & Wachter Morris, 2016).
Without IPE, school-based preprofessionals may not feel prepared to engage in interprofessional practice.

Forty-three percent of SLPs that are certified by ASHA work in school settings (American Speech-Language Hearing Association, 2021). Of these school-based SLPs, forty-nine percent reported they felt “not at all prepared” to engage in interprofessional practice (American Speech-Language Hearing Association, 2021). This demonstrates the shocking lack of IPE offered to school-based SLPs, which inhibits their preparation to work collaboratively. A survey of rural school districts found this to be consistent for other school-based professionals. In this survey, “skills in collaboration” and “how to work more effectively with [professionals from other disciplines]” were highly requested topics for additional training. School-based professionals recognize they are beginning their careers with a lack of experience with interprofessional practice, which could have been addressed with IPE for school-based preprofessionals (Dobbs-Oates & Wachter Morris, 2016).

One of the few studies about interprofessional practice in school-based settings reported positive results. Daughrity et al. (2020) involved collaboration between SLPs and adapted physical education teachers to better serve children with disabilities. Adapted physical education teachers work closely with children with disabilities to provide inclusion and adaptations, yet opportunities to offer input on the children’s individualized education plans are limited in some districts, which creates a “‘disconnect’ in the individualized education plan process” (Kowalski et al., 2006, p. 35). Daughrity et al. (2020) provided insight about the benefits of including interprofessional practice when carrying out an individualized education plan. After the adapted physical education teachers received training and live coaching from the SLPs, significant improvement of peer engagement between the disabled and able-bodied children were
demonstrated. Additionally, observers rated the adapted physical education teachers as more competent in implementation of modified participation techniques. This collaborative experience was presented via a preservice training to prepare adapted physical education teachers to work with children with disabilities. While this preservice proved beneficial, the training may have had an even greater impact had it taken place during their education, long before they were hired. IPE has the potential to benefit school-based settings by increasing cohesion during the creation and implementation of individualized education plans, which would allow the professionals to better meet the needs of individual children.

Although IPE for school-based settings is less discussed in research, Borg and Drange (2019) articulate why it would likely be beneficial now more than ever before. First, increasingly complex medical and social challenges exist in the school population, requiring care from multiple specialties with varied skills and perspectives (Dobbs-Oates & Wachter Morris, 2016; Nester, 2016). Additionally, children spend much of their days and weeks at school, which makes it an ideal place to promote well-rounded development addressed through interprofessional practice (Borg & Drange, 2019). Interprofessional practice would thus be the most effective and cost-efficient way to address children’s needs because professionals can address most, if not all, of the students’ needs simultaneously (American Speech-Language-Hearing Association, 2021). Students who have individualized education plan, may have disabilities that affect their learning across a variety of domains, which requires near-constant interprofessional collaboration (Dobbs-Oates & Wachter Morris, 2016). It is likely that additional studies would further document the relationship between interprofessional collaboration and improved well-being of children in school-based settings.
Overcoming Barriers to Interprofessional Education

Several potential barriers to IPE have been documented. Masten et al. (2013) discussed various stages of IPE implementation, obstacles that may be encountered, and suggestions for overcoming potential roadblocks. During initial stages of implementation, awareness of the benefits of interprofessional practice emerge, but often awareness is not powerful enough to incorporate change. After learning about IPE, administrators and faculty may verbally endorse its implementation, but they may struggle to incorporate IPE into their academic framework. Mindsets reflecting an enthusiasm for IPE, but a lack of drive to undergo substantial reorganization of curricula may surmount during this stage. Some suggestions for overcoming this challenge include offering faculty incentives for incorporating IPE such as awarding credit toward tenure, providing opportunities for promotion, and arranging faculty release time for curricula revision and coordination with other professors (Masten et al., 2013). The authors also identified that the most critical barrier to IPE implementation is building administrative support before IPE implementation can be attempted. So, if universities properly compensate and support the faculty involved in implementing IPE, then universities have a greater likelihood of achieving a cultural transformation that includes interprofessional learning.

Given how medical settings have made significant progress implementing IPE, school-based settings could learn from how this setting overcame some of the logistic obstacles. Some medical preprofessionals receive IPE through their university’s IPE institute (University of Utah College of Health, 2020). Because there is a university organization with the objective of providing IPE experiences, the culture of their universities has shifted to naturally embed IPE within the courses of various disciplines. However, this transformation certainly took time, significant buy-in, and financial resources. Medical universities had to first achieve support from
top level administration. Medical universities were finally motivated to provide support when threatened by not meeting accreditation standards (Masten et al., 2013). With accreditation at risk, the top-level administration agreed to dedicate the necessary resources to developing IPE institutions.

Another barrier to the implementation of IPE is coordination of experiences. Despite university programs having the same academic calendar, they have significantly diverse course schedules. Organizational support has been key to implementation of IPE with medical cases (Reeves et al., 2007). This support can be created by recruiting faculty members who are particularly committed to IPE to assist their colleagues during the incorporation of IPE. As discussed earlier, these faculty members could be compensated with additional incentives for their dedication. A major role of these faculty members would be to help resolve scheduling conflicts that were inhibiting IPE implementation (Reeves et al., 2007). One way they could fulfill this is by collecting available dates and then proposing an IPE event date to mitigate the frustration of scheduling conflicts. Aligning the schedules of multiple professors from multiple disciplines across the university will never be a simple task but assigning dedicated individuals to provide organizational support can aid in overcoming this barrier to IPE.

Successful implementation of IPE into school-based preprofessional programs will require the application of IPEC competencies discussed above. Although IPEC competencies of ethics, responsibilities for collaborative practice, interprofessional communication and team-based care were originally developed for medical settings, they can be adopted for school-based settings. Ludwig and Kerins (2019) discussed an IPE framework that revealed differences between medical and school-based settings. These differences require adjustments to IPEC competencies to properly incorporate IPE in school-based settings. For example, in the ethics
and values area, Ludwig and Kerins (2019) noted that both settings aim to provide person/child-focused care, but school-based professionals must include medical professionals in the diagnostic development of individualized education plans to fulfill this requirement. In the roles and responsibilities area, both settings must communicate their roles and pursue opportunities for professional and interprofessional development throughout their career. School-based professionals are also responsible for ensuring parental participation when addressing the needs of the children on their caseload. Interprofessional communication is a core competency addressed by both settings when information is administered effectively and in an understandable manner, which school-based professionals fulfill by providing the parent with adequate documentation of their child’s education and special services. Teamwork is incorporated in medical and school-based settings by planning, delivering, and evaluating the care given to patients and children. Since schools have a variety of teams, school-based professionals must also ensure understanding of team function prior to meetings to mitigate confusion of their purpose. Incorporating these adjustments to the IPEC competencies will allow the proper administration of IPE to preprofessionals and current professionals in school-based settings.

**Evaluating the Effectiveness of Interprofessional Education**

Previous IPE studies have evaluated the effectiveness of IPE experiences using a variety of methods such as self-ratings (Pechak et al., 2018a; Pechak et al., 2018b), focus groups (Anderson et al., 2011), interviews (Anderson et al., 2011; Howell et al., 2012) and questionnaires that include open-ended questions (Anderson et al., 2011) A combination of both quantitative and qualitative methods strengthens the evidence. Using this kind of wider strategy of evaluation measures has been recommended when evaluating IPE (MacKay, 2004). There have been several instruments used to measure preprofessionals’ perceptions, but there has not
been a consensus about which is best. Both quantitative and qualitative techniques will be used to evaluate the potential benefits of IPE in this study.

**Quantitative Methods of Evaluation**

Quantitative data have been used to evaluate the effectiveness of IPE including using self-ratings to evaluate perceptions of communication and teamwork, interprofessional learning, interprofessional interaction, and interprofessional biases. Several instruments have been developed including the Interprofessional Collaborator Assessment Rubric (Curran et al., 2011), Performance Assessment of Communication and Teamwork Tool Set (Chiu, 2014), Interprofessional Professionalism Assessment Instrument (Frost et al., 2018), Readiness for Interprofessional Learning Scale Questionnaire (Parsell & Bligh, 1999), The Entry Level Interprofessional Questionnaire (ELIQ; Pollard, 2015), and The Interprofessional Attitudes Scale (IPAS; Norris et al., 2015).

The ELIQ (Pollard et al., 2004; Meekins, 2016) and the IPAS (Gillette et al., 2019; Kim et al., 2019) have identified increased perceptions of teamwork following IPE experiences in several studies involving preprofessionals. The ELIQ and the IPAS provide valid measures of changes in the perceptions of IPE and interprofessional practice, communication and teamwork, roles and responsibilities, interprofessional biases, diversity and ethics, and people and community-centeredness of preprofessionals (Gillette et al., 2019; Pollard, 2015; Norris et al., 2015). Additionally, the IPAS follows IPEC competency areas that are also appropriate for the school-based setting (Norris et al., 2015; Ludwig & Kerins, 2019). In this study, the ELIQ and IPAS were used to evaluate an IPE experience. Responses from qualitative data will be combined with these quantitative measures for further insights.
Qualitative Methods of Evaluation

Qualitative data have been used in IPE to provide expansion of or clarification for the responses given by preprofessionals about their IPE experiences. MacKay (2004) has recommended a combination of quantitative and qualitative data for more complete data collection. In a recent IPE study by Pechak et al. (2018b), the quantitative analysis from the Readiness for Interprofessional Learning Scale Questionnaire showed significant differences in the ratings following an IPE experience. However, the qualitative analysis revealed themes otherwise undocumented by the quantitative data/questionnaire responses. For the current study, a focus group following the IPE experience was conducted asking open-ended questions utilizing the comprehensive strategy recommended by MacKay (2004).

The Potential Influence of Self-Efficacy

For this study, the potential influence self-efficacy has on the quantitative and qualitative data will also be assessed, specifically looking at individual experiences. Confidence in one’s own expertise and skill set is helpful during interprofessional practice. This applies to IPE situations where preprofessionals are required to voice their perspectives and represent their future profession. In a study by Howell et al. (2012) some preprofessionals expressed difficulty participating in the IPE experience due to lack of confidence in their professional identity. One stated, “Most [preprofessionals] are immersed in trying to figure out their professional identities and cannot move beyond that to feeling secure enough to work with those from other disciplines who may challenge them and force them to verbalize their professional opinions” (Howell et al., 2012, p. 52). Preprofessionals likely require some degree of self-efficacy to fully engage in and learn from an IPE experience.
Mann et al. (2012) developed The Self-Efficacy for Interprofessional Experiential Learning (SEIEL) scale to measure self-efficacy perceptions of preprofessionals receiving IPE. This 16-item scale has been esteemed as a valid and reliable scale that has been used in previous IPE studies (Jung et al., 2020; Williams et al., 2017). It was developed using a conceptual analysis of relevant tasks and the existing literature. Wording in specific items were adapted following the recommended adjusts for school-based settings (Ludwig & Kerins, 2019). Mann et al. (2012) reasoned that because a person’s self-efficacy encourages confidence and resilience even amidst uncertainty, this would be an essential value to measure in IPE. The levels of perceived self-efficacy of participants and how that affects their personal and group IPE experiences have not yet been assessed (Mann et al., 2012). It is possible that examining qualitative data along with ratings of self-efficacy may reveal the benefits gained from IPE experiences.

**Purpose of the Current Study**

The purpose of this study was to examine interprofessional learning from IPE experiences in medical settings and determine if they can be adapted to school-based settings with similar benefits. The need for methods of examining the efficacy of IPE in school-based settings is critical. This study aimed to answer the following questions:

1. Do preprofessionals learn about interprofessional practice and self-efficacy following an IPE experience?

2. Do IPE experiences adapted for school-based settings result in similar benefits as those designed for medical settings?

It was hypothesized that consistent with previous findings, preprofessionals would benefit from interprofessional learning and that IPE experiences in medical settings could be
adapted to school-based settings. It was also hypothesized that a measure of self-efficacy (i.e., SEIEL) would provide additional insights and confirm that self-efficacy is included in the IPE experience of preprofessionals. This study will provide essential information regarding IPE for school-based settings that will ultimately benefit children with disabilities by encouraging professional practice according to IPEC standards.

**Methods**

**Participants**

Preprofessionals from Occupational Therapy (OT), Physical Therapy (PT), and SLP graduate programs were part of a larger study of IPE in rehabilitation sciences (Summers et al., 2021). Preprofessionals attended an IPE experience as part of a course and were invited to participate in the study. As such, participants came from a convenience sample. All participants attended the same university in the southwest. A total of 71 participants had an average age of 24.3 years. Fifty participants (70.42%) identified as female, 17 (23.94%) as male, and four participants (5.63%) preferred not to respond. Forty-eight participants (67.61%) identified as Hispanic, 22 participants (30.99%) as non-Hispanic, and one participant (1.41%) did not respond. Participant demographic information by program is summarized in Table 1.

**Table 1**

<table>
<thead>
<tr>
<th>Program</th>
<th>N</th>
<th>Gender (% Female)</th>
<th>Mean Age</th>
<th>Ethnicity (% Hispanic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OT</td>
<td>17</td>
<td>86.6%</td>
<td>23.9</td>
<td>62.5%</td>
</tr>
<tr>
<td>PT</td>
<td>32</td>
<td>58.8%</td>
<td>24.2</td>
<td>55.8%</td>
</tr>
<tr>
<td>SLP</td>
<td>20</td>
<td>85.0%</td>
<td>24.8</td>
<td>85.0%</td>
</tr>
</tbody>
</table>

*Note.* N = sample size; OT = Occupational Therapy; PT = Physical Therapy; SLP = Speech-Language Pathology
Measure

Participants completed a survey after participating in an IPE experience that included five demographic questions and 27 items from the IPAS. The IPAS was designed to assess attitudes that relate to the 2011 Core Competencies for IPEC and has been validated (Gillette et al., 2019; Kim et al., 2019; Norris et al., 2015). The IPAS is one of the first scales to focus specifically on the Core Competencies. The IPAS consists of 27 items in five subscales including Teamwork. Participants rated statements on a five-point scale with one being ‘strongly disagree’ and five being ‘strongly agree’. For the purposes of this study, the subscales of Team, Roles, and Responsibilities and Interprofessional Biases were analyzed.

Procedures

Interprofessional Education Experience

Participants attended an IPE experience during their graduate program which was approximately 2.5 hours in duration. Upon arrival at the IPE experience, participants were instructed to sit with pre-assigned interprofessional groups consisting of multiple disciplines including OT, PT, and SLP preprofessionals. At the start of the event, faculty members presented a brief overview before the preprofessionals were provided with a case-study about a transgender patient who had a diagnosis of a cerebrovascular accident. The case-study was divided into four sections and distributed one section at a time. Questions were embedded in the case-study for the preprofessionals to discuss within their small groups at the table after each section after which the next section was distributed to the preprofessionals. This process was repeated four times during the IPE experience. Faculty members circulated around the room throughout the event to facilitate discussion and encourage participation from preprofessionals. After all sections of the case-study had been completed and discussed, faculty members guided a large-group debrief.
session. See Pechak et al. (2018a) for a full description of the planning and design of the IPE experience. At the conclusion of the experience, the preprofessionals completed the survey.

Focus Group

A few preprofessionals from each discipline were invited to participate in a focus group two weeks after the IPE experience. Of the preprofessionals that volunteered to participate in the focus groups, two OT, three SLP, and three PT preprofessionals were selected to participate. The focus group followed a semi-structured interview format. The focus group was audio-recorded for later transcription and analysis.

Data Analysis

Descriptive statistics were used to examine patterns in mean ratings. To test the effects of program (OT, SLP, PT), non-parametric Kruskal-Wallis tests were conducted on IPAS scores. If statistically significant differences were found, pairwise comparisons were performed using Dunn’s (1964) Bonferroni correction for multiple comparisons. For the qualitative analysis, a content analysis was performed on the responses transcribed from the focus group (Hseih & Shannon, 2005) using NVivo software (QSR International Pty Ltd, 2018). After reviewing the transcript, two researchers created codes for analysis, independently examined the responses while identifying common themes, and then met to discuss the themes until they agreed. This process was repeated twice and then reviewed with a third researcher before the major themes were finalized.

Procedures for Adaptation of Measures for School-Based Settings

The measure used in the medical setting was adapted for use with school-based IPE cases. The evaluation tool resulted in 46 self-rated items, and one open-ended question. The self-rated items came from the following instruments: ELIQ, IPAS, and SEIEL. When the three
measures were combined, some questions became redundant. The duplicates were removed, which resulted in a total of 46 self-rated items. Table 2 includes examples of questions from the survey. A full description of each instrument used in the survey follows. Wording for each item was modified to reflect a school-based setting.

**Entry Level Interprofessional Questionnaire.** The ELIQ is a 27-item tool that uses a Likart scale to assess preprofessionals’ attitudes towards interprofessional education and collaboration (Pollard, 2015). The tool has three sections: Communication and Teamwork, Interprofessional Learning, and Interprofessional Interaction. This is a valid instrument that has been used in many IPE studies with the ability to identify significant results (Pollard et al., 2004; Meekins, 2016). The program evaluation included all 27 questions from the ELIQ. See Table 2 for examples of items. Items on the Communication and Teamwork section are scored on a four-point scale (one being strongly disagree and four being strongly agree). The other two sections, Interprofessional Learning and Interprofessional Interaction, use a five-point scale (The five-point scale is rated as one being strongly disagree and five being strongly agree).

**Interprofessional Attitudes Scale.** Because of the overlap of many items on the ELIQ and the IPAS, for the purposes of this study, only three questions from the subscale Interprofessional Biases were used (see Table 2; Gillette et al., 2019; Kim et al., 2019). The five-point scale is rated as one being ‘strongly disagree’ and five being ‘strongly agree’.

**Self-Efficacy for Interprofessional Experiential Learning Scale.** The SEIEL scale is used to determine self-reported perceptions of self-efficacy that have been validated (Jung et al., 2020; Mann et al., 2012; & Williams et al., 2017). The 16-item scale was developed for use with medical setting preprofessionals, so wording was adjusted to address preprofessionals in school-based settings (see Table 2 for examples of items). The ten-point scale is rated as one (low
confidence) to ten (high confidence). An open-ended question was added at the end of the survey to acquire data for qualitative analysis.

Table 2

Adapted Evaluation Survey for School-Based Interprofessional Education

<table>
<thead>
<tr>
<th>Tool</th>
<th>Number of Items</th>
<th>Example Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELIQ*</td>
<td>27</td>
<td>Collaborative learning would be a positive learning experience for all school-based setting preprofessionals. Different school-based setting professionals have stereotyped views of each other. The line of communication between all members of the school-based setting professions is open.</td>
</tr>
<tr>
<td>IPAS*</td>
<td>3</td>
<td>Professionals/preprofessionals from other disciplines have prejudices or make assumptions about me because of the discipline I am studying. I have prejudices or make assumptions about professionals/preprofessionals from other disciplines. Prejudices and assumptions about school-based professionals from other disciplines get in the way of delivery of services in educational settings</td>
</tr>
<tr>
<td>SEIEL**</td>
<td>16</td>
<td>Working with other preprofessionals from different professions to form a team. Understanding and discussing the objectives of interprofessional learning. Helping school-based settings understand an interprofessional team’s role.</td>
</tr>
<tr>
<td>Open-Ended</td>
<td>1</td>
<td>Anything else you would like to add?</td>
</tr>
</tbody>
</table>

Note. *Rated on a scale of 1 to 4 or 5; **Rated on a scale of 1 to 10; ELIQ = The Entry Level Interprofessional Questionnaire; IPAS = The Interprofessional Attitudes Scale; SEIEL = Self-Efficacy for Interprofessional Experiential Learning

Program Evaluation. After the adaptation of a school-based measure, a program evaluation was completed following a school-based IPE experience involving preprofessionals from a variety of school-based disciplines including special education, speech-language pathology, and school psychology. The IPE experience was structured around a case of a child
experiencing difficulties in academics and was conducted via zoom for approximately one hour to maximize participant attendance. Participants were assigned to work in groups of preprofessionals from various programs to formulate the best solution for the case. This IPE experience was attended by 34 preprofessionals including six Special Education preprofessionals, 13 SLP preprofessionals, 14 School Psychology preprofessionals, and one student observer. At the conclusion, students were provided a QR code to evaluate the experience. Twenty students completed this survey.

Results

The first purpose of the study was to examine the attitudes and perceptions of participants following an IPE experience using quantitative and qualitative methods. First, descriptive statistics were used to examine the mean and standard deviations of the self-ratings (see Table 3). Participants demonstrated attitudes and perceptions about teamwork within medical settings on the IPAS Teamwork, Roles, and Responsibilities subscale with a very high level of agreement that teamwork is beneficial to service delivery (mean = 4.75). The IPAS Interprofessional Biases subscale provided information about the medical preprofessionals’ self-ratings of prejudice and assumptions within interprofessional practice. The first question for the Interprofessional Biases subscale (IB 1) resulted in a mean of 4.05; the participants rated themselves as agreeing that other disciplines have prejudices or make assumptions about the preprofessionals’ own disciplines. Results from the second question for the Interprofessional Biases subscale (IB 2) revealed a mean of 3.31, which indicated that participants rated themselves relatively neutral in holding prejudices or making assumptions about others’ disciplines. The third question for the Interprofessional Biases subscale (IB 3) resulted in a mean of 4.40, which meant that the participants rated themselves as having a high level of agreement that prejudices and
assumptions within interprofessional practice get in the way of service delivery in medical settings.

**Table 3**

*Descriptive Statistics of Self-Ratings*

<table>
<thead>
<tr>
<th>Subscale Ratings</th>
<th>Medical Setting</th>
<th>School-based Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>ELIQ Subscales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication and Teamwork Scale*</td>
<td>3.51</td>
<td>0.36</td>
</tr>
<tr>
<td>Interprofessional Learning Scale</td>
<td>4.31</td>
<td>0.38</td>
</tr>
<tr>
<td>Interprofessional Interaction Scale</td>
<td>3.57</td>
<td>0.46</td>
</tr>
<tr>
<td>IPAS: Teamwork, Roles, and Responsibilities</td>
<td>4.75</td>
<td>0.35</td>
</tr>
<tr>
<td>IPAS: Interprofessional Biases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IB 1: Other school-based professionals/students from other disciplines have prejudices or make assumptions about me because of the discipline I am studying</td>
<td>4.05</td>
<td>0.82</td>
</tr>
<tr>
<td>IB 2: I have prejudices or make assumptions about the other school-based professionals/students from other disciplines</td>
<td>3.31</td>
<td>1.11</td>
</tr>
<tr>
<td>IB 3: Prejudices and assumptions about school-based professionals from other disciplines get in the way of delivery of services in school-based settings</td>
<td>4.40</td>
<td>0.95</td>
</tr>
<tr>
<td>SEIEL Subscales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interprofessional Interaction</td>
<td>7.8</td>
<td>1.08</td>
</tr>
<tr>
<td>Interprofessional Team Evaluation and Feedback</td>
<td>7.21</td>
<td>1.50</td>
</tr>
</tbody>
</table>

*Note.* *For comparison purposes, the 4-point scale was converted to a 5-point scale; SD = standard deviation; ELIQ = Entry Level Interprofessional Questionnaire; IPAS = Interprofessional Attitudes Scale; IB = Interprofessional Biases subscale; SEIEL = Self-Efficacy for Interprofessional Experiential Learning
Kruskal-Wallis tests were run using SPSS software. The results revealed no significant differences by discipline on Teamwork, Roles, and Responsibilities, IB 2, and IB 3. There were significant differences for IB 1, $\chi^2(2) = 6.853, p = .033$. Post hoc pairwise comparisons revealed that the OT students had a higher rating of agreement than the PT students on IB 1 ($p = .031$; mean rank 40.18 and 27.85 respectively).

**Focus Group Qualitative Analysis**

The qualitative analysis of the focus group discussion revealed major themes summarized in Table 4. Three main themes emerged from the analysis, the first two being particularly salient to the focus of the IPE experience. First, participants frequently discussed learning regarding *Roles and Responsibilities* of team members. Participant comments reflected recognition of the importance of each member of the team and how each member contributed to patient care. The second major theme was *Team Interactions*, which reflected learning about working with others during the IPE experiences. Characteristic comments in this theme addressed how to engage members in the interaction, descriptions of the team interactions during the IPE experience, and acknowledging the importance and necessity of learning from each other. Perceptions about *Previous Experience* was a third major theme. The participants reflected on previous experiences and how that affected the IPE experience in the study.
Table 4

Major Themes From the Focus Group

<table>
<thead>
<tr>
<th>Themes</th>
<th>Examples of Comments</th>
</tr>
</thead>
</table>
| Roles and Responsibilities    | *I learned how quickly the entire team is involved in a patient's care.*  
*I learned that everyone was sort of tunnel-visioned on their goals and what they wanted to achieve, and although that did not limit our productivity and efficiency of carrying out the simulated health care for the patient, I can see how... that tunnel vision would have limited that care or the excellence of our simulated care.*  
*I left feeling like there are other health professionals out there who know a lot. That's a comfort to me on a healthcare team, there are people with their knowledge and their strengths, and we complement each other.* |
| Team Interactions             | *I did appreciate that at our table people were open to the opinions and thoughts of others and encouraged input from other people from other professions*  
*Our collaboration was really good.*  
*The people at my table ... were really quiet people. And as soon as you asked they would answer. But they definitely felt like they needed somebody to pull at them.*  
*I also took the role [of] the facilitator in the group, just to make it more organized.*  
*Right off the bat, I was completely honest. And I was like, you know what, I also don't know what these medications mean. Hey, do you know what they mean? We are students. We don't know everything. We don't have to know everything right now. That's why we're doing this.* |
| Previous Experience           | *I had a lot of experience with OT not really PT, so really meeting you all before we went into the actual simulation and talking to each other and then afterwards I got really close.*  
*Yeah, I guess. I feel like all of us had some nervousness, some confidence of whether it was forced confidence or genuine confidence.* |
Program Evaluation of School-Based Interprofessional Education Adaptation

The second purpose of the study was to adapt the IPE experience for school-based settings. The ELIQ offered insights into the attitudes and perceptions of students concerning communication and teamwork, interprofessional learning, and interprofessional interaction. The communication and teamwork subscale mean was 3.51, which meant that the participants rated themselves as having a limited level of agreement with statements about communication and teamwork. The interprofessional learning scale mean was 4.31, which indicated the participants rated themselves as having high ratings of agreement with statements about interprofessional learning. The interprofessional interaction scale mean was 3.57 as participants rated themselves as having a lower level of agreement with statements about interprofessional interaction.

Consistent with the findings from the medical-based IPE experience, there were no significant differences between the three programs (Special Education, SLP, and School Psychology).

The IPAS Interprofessional Biases subscale provided information about the students’ self-ratings of prejudice and assumptions within interprofessional practice. The first question resulted in a mean of 3.15, which meant the participants rated themselves as having relatively neutral feelings of agreement that other disciplines have prejudices or make assumptions about the students’ own disciplines. The second question resulted in a mean of 2.55 as participants rated themselves as somewhat disagreeing that they have prejudices or make assumptions about others’ disciplines. The third question resulted in a mean of 3.6, which meant the participants rated themselves as having more agreement that prejudices and assumptions within interprofessional practice get in the way of service delivery in school-based settings.

The SEIEL is a scale that reveals the preprofessionals’ self-perception of their self-efficacy within interprofessional interactions and when participating in team evaluations. The
interprofessional interaction subscale resulted in a mean of 7.8, which meant the preprofessionals rated themselves as experiencing high rates of confidence in interprofessional interactions. The interprofessional team evaluation and feedback subscale resulted in a mean of 7.21, meaning preprofessionals rated themselves as experiencing slightly lower, but still high rates of confidence in evaluation and feedback situations within interprofessional practice. The open-ended question at the end of the survey was completed by five out of the 20 participants. Their responses were extremely brief and nonspecific. Because of these two factors, there was not enough information to run a qualitative data analysis.

Discussion

The purposes of this study were to evaluate the interprofessional learning and self-efficacy of preprofessionals following IPE experiences and to adapt an IPE experience previously focused on a medical case to a school-based case. Participants demonstrated interprofessional learning and self-efficacy following a medical IPE experience. Patterns from a program evaluation of a school-based IPE experience were consistent with the findings from the medical IPE experience following the adaptation.

Patterns of Interprofessional Learning

Descriptive statistics revealed patterns of interprofessional learning consistent across settings. The preprofessionals involved in both the medical IPE case and the school-based case consistently had a high rating of agreement about the importance of IPE and neutral-to-high rating of agreement about the importance of interprofessional interaction. The major theme of Team Interactions illustrated how preprofessionals recognized the importance of interactions in teams. This finding was also consistent in the evaluation of the adapted school-based IPE experience. Because the preprofessionals in this study were pursuing their graduate degrees, it is
understandable that they felt most strongly about the importance of incorporating IPE into their programs of study.

The IPAS Interprofessional Biases subscale revealed that the medical setting and school-based setting preprofessionals followed a similar pattern when self-rating these items. Participants had relatively neutral feelings of agreement that other disciplines have prejudices or make assumptions about their own discipline while they somewhat disagreed that they have prejudices or make assumptions about others’ disciplines. All participants agreed that prejudices and assumptions within interprofessional practice get in the way of service delivery which is consistent with previous literature; attitudes of a profession can affect attitudes towards others (MacKay, 2004). These findings revealed that although school-based preprofessionals provided lower ratings across all the measures, the means followed similar patterns, demonstrating that school-based preprofessionals respond similarly to IPE experiences focused on medical cases.

Medical and school-based settings require interprofessional practice during service-delivery. The preprofessionals identified with a high level of agreement that teamwork was beneficial to service delivery in medical settings consistent with previous findings (Pechak et al., 2018a). School-based preprofessionals overall had lower survey ratings than the medical setting preprofessionals. This difference could have been due to IPE being less established in the curriculum for school-based preprofessionals as it has been for medical setting preprofessionals. Medical preprofessionals tend to learn about the cross-over between their disciplines and others, while school-based preprofessionals primarily receive their training separately (Dobbs-Oates & Wachter Morris, 2016) potentially minimizing exposure to the expertise that other professionals bring to a school setting. Indeed, school-based professionals often request additional training for how to work with other disciplines (Dobbs-Oates & Wachter Morris, 2016). Since the school-
based preprofessionals likely did not have the same opportunities to receive IPE as medical preprofessionals, they might not have the same level of understanding about the benefits of interprofessional practice, thus resulting in lower survey ratings.

**Self-Efficacy**

Self-efficacy is not only a belief, but a catalyst for action and thus could be another factor in the lower school-based preprofessional survey scores. Possessing self-efficacy is helpful when representing one’s profession because a degree of assertiveness is required to speak up for the good of the client or patient (Howell et al., 2012). The qualitative data from the medical IPE case may be higher because preprofessionals who plan to work in medical settings often receive assertiveness training (Omura et al., 2016). Assertiveness training has been found to be essential for effective working relationships in medical settings (Omura et al., 2016). Because assertiveness training is not typically included in the education of school-based setting preprofessionals, they may have lower assertiveness and thus be more reserved in their attitudes and perceptions of IPE, which would result in lower ratings on IPE instruments.

Self-efficacy is a consistent theme of IPE experiences across settings. The qualitative data from the medical IPE case revealed that some preprofessionals felt confident in their ability to effectively collaborate with other professionals, while others lacked in such confidence. Several medical preprofessionals commented on this varying confidence and how they perceived it to affect their IPE experience. The results from the SEIEL indicated that self-efficacy is an active element of IPE experiences across settings (Mann et al., 2012) and should be further explored in IPE research.
Limitations

Some limitations of the study might affect the interpretation of findings. Scheduling conflicts led to fewer preprofessionals attending the IPE experience. Brzuz and Gustafson (2019) recommend that starting small and then using feedback to guide future IPE experiences is a good way to begin implementing IPE, which was followed here. An aim of the current study was to determine if IPE experiences could be adapted to school-based settings with similar benefits to those experienced by medical settings. Although this was successfully accomplished, exact comparisons across the two settings are limited. Scheduling difficulties are often cited as a common barrier to IPE implementation (Reeves et al., 2007) and this was true for the current study.

Clinical Implications

A clinical implication of this study was the identification of a similarity between school-based setting IPE experiences and the real world. The preprofessionals involved in the school-based IPE experience were at various stages of their graduate programs – some were in the middle or end of their programs, while others were in their first year. Because of this, there was a variety of working experience among the preprofessionals – some had the opportunity to begin working at externships, while others had not. Like the real world, working professionals vary in years of and types of experience. This, however, is why interprofessional practice is so essential and valuable. Each working professional adds a unique skill set and knowledge base necessary to the functioning of a team.

As discussed previously, the implementation of IPE can be met with many challenges including organizational and scheduling difficulties (Reeves et al., 2007). For example, the SLP preprofessionals in the school-based IPE experience had a previous commitment that ended 5
minutes before the IPE experience was scheduled. This amount of time would not have allowed
the SLPs to join the IPE experience on-time if they needed to travel to an in-person event, so
holding the experience via Zoom allowed these preprofessionals to participate. Virtual delivery
of the IPE experience was beneficial in overcoming scheduling conflicts. Future IPE
implementation efforts can be eased by the option of virtual delivery. The current study
confirmed that the IPEC competencies could be adapted to IPE experiences in school-based
settings and yield similar results to medical IPE experiences. The program evaluations of the
school-based IPE experience results in positive perceptions of interprofessional learning and
practice which should be further explored in future studies.

Future Directions

Future studies should examine changes that occur before and after an IPE experience and
it is recommended that the pre survey be administered in-person to ensure completion before the
IPE experience begins. Even if the IPE experience is delivered virtually, the pre survey can be
administered by visiting the participating programs in their classes prior to the IPE experience.
Even though the current study had a link to the pre survey and time for the participants to fill out
the pre survey at the beginning of the IPE experience, some participants joined the Zoom link
late and did not receive the instructions or those who joined might have been distracted by their
personal environments and neglected to complete the survey. Future studies could examine
changes experienced by preprofessionals as a result of participation in IPE experiences to
adequately document changes in perceptions and attitudes.

Direct Measure of Benefits for Children in School-Based Settings

As discussed previously, children with disabilities may have developmental deficits
across a variety of domains, making interprofessional practice crucial (Dobbs-Oates & Wachter
Morris, 2016). Additional studies would likely confirm and specify how interprofessional collaboration improves the well-being of children in school-based settings. Although difficult, future IPE studies focused on school-based studies could directly measure potential benefits to children which would be helpful in further documenting the success of IPE experiences.

**Longitudinal Effects**

A longitudinal look at the effects of IPE experiences could provide further insights into the benefits of IPE. Follow-up interviews or the same post survey used immediately after an IPE experience could be sent out a few months after the IPE experience, preferably once the preprofessionals have begun working in professional settings. This would further document the long-term effect of IPE and if effects, such as documented by the current study, are lasting. For example, Karasinski and Schmedding-Bartley (2018) surveyed SLP preprofessionals in their first or second semesters of graduate school. The first-semester graduate students rated themselves positively on their interprofessional practice skills. Interestingly, the second-semester students who had the opportunity to begin work at internship sites, rated themselves much lower on their interprofessional practice skills. Surveying preprofessionals on their interprofessional practice skills after they have had the opportunity to work as a professional could reveal that preprofessionals recognize potential areas for growth during their work experiences.

**Conclusions**

This research aimed to identify the interprofessional learning and self-efficacy of preprofessionals following IPE experiences and to adapt IPE experiences widely used for medical cases to a school-based case. By analyzing the quantitative and qualitative data from a previous medical IPE case experience and the current study’s school-based IPE case experience, the original hypotheses were confirmed:
1. Preprofessionals demonstrated interprofessional learning and self-efficacy following an IPE experience. Self-efficacy is an important aspect of IPE across settings and the SEIEL is a helpful tool in tracking it.

2. IPEC competencies can be adapted for school-based setting IPE experiences and yield similar results as medical IPE experiences.

Virtual delivery of the IPE experience was beneficial in overcoming scheduling conflicts and can ease future IPE implementation efforts. If future studies use a virtual delivery and use a pretest-posttest design, it is recommended that the presurvey be administered prior to the IPE experience to ensure completion. This research clearly illustrates that interprofessional learning and self-efficacy is demonstrated across settings and that IPE experiences can be adapted for school-based settings, but also raises further questions about the direct benefits of children receiving interprofessional care in school-based settings and the longevity of the findings. A closer look at these factors could provide further insights into the benefits of IPE.

IPE has positively impacted medical preprofessionals and their preparation to participate in interprofessional practice for decades (Darlow et al., 2015; Thistlethwaite, 2016). IPE for school-based preprofessionals has been limited, so justification for IPE implementation for school-based settings has been lacking. By documenting that IPE experiences can be adapted for school-based settings and yield similar results to medical settings, it is hopeful that more opportunities for school-based setting IPE will occur. Because school-based settings are tasked with supplying well-rounded, quality services to children with disabilities, preparation for collaborative work is crucial to the well-being of children in schools who may have developmental deficits across a variety of domains. This study provided essential information
regarding IPE for school-based settings that will ultimately benefit children with disabilities by encouraging professional practice according to IPEC standards.
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https://doi.org/10.3109/0142159X.2010.498491

https://doi.org/10.1177/1365480219864812

https://doi.org/10.46743/1540-580X/2019.1841

https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/25364/Chiu_washington_0250E_12790.pdf?sequence=1


APPENDIX A

Annotated Bibliography


*Objective:* The objective was to define IPE and connect its importance to SLPs and audiologists.

*Summary:* Collaboration is an essential skill for SLPs and audiologists. There are many benefits to IPE including awareness of and respect for the expertise of team members.

*Relevance to the current study:* The current study used this information to explain the importance of IPE for SLPs, which is a profession in school-based settings that works with students with disabilities.


*Objective:* The purpose was to monitor progress toward advancing interprofessional practice.

*Summary:* ASHA collected a random sample of 8,796 ASHA-certified SLPs and audiologists in the United States or U.S. Territories. It documents experiences and opinions professionals have about interprofessional practice in medical and school-based settings.
Relevance to the current study: The literature review of the current study references these survey results to identify that interprofessional practice is a cost-effective way to address the needs of students with disabilities.


Objective: Medical preprofessionals are required to obtain medical education and learn how to communicate effectively with their team to deliver proper care. People with disabilities are particularly vulnerable to poor communication within their medical team. This study aimed to reflect on the importance of effective communication in interprofessional practice.

Methods: Various medical programs were randomly selected to participate in a student workshop. Focus groups, questionnaires with open comments, and interviews were used to collect data on the student’s experiences.

Results: This study found that medical preprofessionals who participate in IPE experiences demonstrate learning in domains of knowledge relating to interprofessional practice and that they are better prepared for and more motivated to participate in interprofessional practice in their professional careers.

Relevance to the current study: The current study aimed to identify if the positive outcomes of IPE for medical settings are similar for school-based settings.

**Objective:** Understand current collaboration in school-based settings and conclude which kind of collaboration yields the strongest results.

**Methods:** This article used a mixed-methods design.

**Results:** Collaboration between two professions resulted in small-to-moderate positive effects. Collaboration between multiple professions throughout the school yielded the greatest likelihood of long-term benefits.

**Relevance to the current study:** This study’s literature review identified why collaboration in school-based settings would likely be beneficial now more than ever before. The current study’s literature review used this information to highlight the need for IPE for school-based professionals.


https://doi.org/10.46743/1540-580X/2019.1841

**Objective:** The purpose of this study was to further discuss how IPE is beneficial to professions that practice in medical settings such as occupational therapy and physical therapy.

**Methods:** Students from occupational therapy and physical therapy programs completed the Readiness for Interprofessional Learning Scale before participating in an experiential educational activity.

**Results:** “Interprofessional educational collaboration can be facilitated through carefully designed IPE activities that utilize IPEC Core Competencies as a guide. Student feedback following participation in an experiential IPE activity indicated valuable
learning, attainment of project learning objectives, and recommendations for continuation at an even more complex level. Faculty interested in developing IPE activities should creatively think around barriers, start small, and use student feedback to guide future projects.” One of the barriers mentioned was scheduling difficulties.

Relevance to the current study: The current study had to overcome similar barriers and had to start small in the hopes of increasing future IPE experiences for preprofessionals.


https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/25364/Chiu_washington_0250E_12790.pdf?sequence=1

Objective: This paper aimed to describe the development of the PACT tools and summarize the evidence of their validity.

Methods: A literature search identified existing IPE tools. These tools were reviewed by an expert panel, who then created the PACT. The PACT tools were then used to assess the interprofessional practice skills of approximately 500 students from medical setting programs.

Results: The PACT tools were found to be consistent and reliable. They can be validly used for preprofessional students seeking to work in medical settings.

Relevance to the current study: This is an example of one of the many quantitative methods of evaluation for IPE.

**Objective:** This paper aimed to describe the development of the ICAR and summarize the evidence of its validity.

**Methods:** A two-stage mixed method approach was used to create interprofessional collaborator competencies and an assessment rubric.

**Results:** Results identified that this IPE rubric will offer a valid means to assess the development of skills important to interprofessional practice in medical settings.

**Relevance to the current study:** This is an example of one of the many quantitative methods of evaluation for IPE.


**Objective:** This paper aimed to evaluate if an IPE experience would change the attitudes and self-perceptions of medical setting preprofessionals.

**Methods:** A prospective controlled IPE experience was measured using the Attitudes Toward Health Care Teams Scale, the Readiness for Interprofessional Learning Scale, the Team Skills Scale, and the Long-term Condition Management Scale.
**Results:** After an eleven-hour IPE experience, the students reported improved attitudes about interprofessional teams and interprofessional learning. Additionally, their self-reported effectiveness as a team member and self-perceived confidence in being able to manage long-term medical conditions increased.

**Relevance to the current study:** This is paper documented how IPE has positively impacted medical preprofessionals’ regarding interprofessional practice and discussed the countless other studies that have recorded similar findings.


**Objective:** SLPs and adapted physical education teachers have the opportunity to collaborate, so they can better serve students with disabilities, specifically with communication and movement needs. This study aimed to discover if training from SLPs to adapted physical education teachers would improve peer engagement and inclusion for students with disabilities in physical education experiences.

**Methods:** A collaboration experience led by SLPs was presented via a preservice training to twenty-three adapted physical education teachers. Following the training, the teachers also received 2-4 days live coaching. These teachers were rated using a fidelity checklist. A cumulative link mixed model was used to evaluate the effectiveness of physical education preservice teachers within tasks after receiving speech-language pathology training and live coaching.
Results: After the adapted physical education teachers received training and live coaching from the SLPs, significant improvement of peer engagement between the disabled and able-bodied children were demonstrated. Additionally, observers rated the adapted physical education teachers as more competent in implementation of modified participation techniques.

Relevance to the current study: The current study referenced this study as evidence that although there is a lack of research about school-based interprofessional education and practice, positive results have been documented by the few that exist.


Objective: This article outlines the importance of collaboration among school-based professionals especially for the well-being of students with disabilities.

Summary: Children with disabilities may have developmental deficits across a variety of domains, making interprofessional practice crucial. School-based professionals recognize they are beginning their careers with a lack of experience with interprofessional practice, which could have been addressed by IPE for school-based preprofessionals. Although IPE was originally created for the medical setting, it has the potential to transform the way preprofessionals in school-based settings are trained.

Relevance to the current study: The current study took this article one step further by testing whether IPE results in positive outcomes for preprofessionals in school-based settings, so that push for implementation has greater support.
Objective: This study aimed to discover a way to find simultaneous confidence intervals for several means.

Methods: The methods section summaries the complex statistical equations that make multiple comparisons among means possible.

Results: The results were successful in providing information to guide future analysis.

Relevance to the current study: The current study used Dunn’s Bonferroni correction for multiple comparisons.


Objective: This paper aimed to describe the development of the IPA and summarize the evidence of its validity.

Methods: A cross-sectional design was used.

Results: The results supported the reliability and validity of the IPA.

Relevance to the current study: This is an example of one of the many quantitative methods of evaluation for IPE.

**Objective:** This study’s objective was to identify medical setting preprofessionals’ attitudes toward and perceptions of interprofessional practice.

**Methods:** A cross-sectional questionnaire was administered to medical setting preprofessionals in their first semester at a university using the IPAS. Analysis of the data was completed using Kruskal–Wallis tests.

**Results:** The IPAS identified two significant differences among students (teamwork and patient-centeredness). This shows that the IPAS is a valid instrument for measuring changes before and after an IPE experience.

**Relevance to the current study:** The current study used the IPAS to identify school-based setting preprofessionals’ attitudes toward and perceptions of interprofessional practice.


**Objective:** Occupational therapy and psychology students were provided an interprofessional practice experience that facilitated learning how to teach children with autism spectrum disorder.
Methods: Interviews and direct observations of students interprofessional interactions were conducted.

Results: Participants described their interprofessional experience in largely positive terms.

Relevance to the current study: Some students expressed difficulty participating in the IPE experience due to lack of confidence in their professional identity. The current study is interested in the potential influence of self-efficacy. The comments of these students support the idea that students likely require some degree of self-efficacy to fully engage in and learn from an IPE experience.


*Qualitative Health Research, 15*(9), 1277–1288.

https://doi.org/10.1177/1049732305276687

Objective: This research article reported on the different kinds of content analysis and described analytic procedures specific to each approach.

Summary: Content analysis is used to interpret meaning from the content of qualitative data.

Relevance to the current study: The current study used a content analysis on the responses transcribed from the medical IEP case focus group.


https://www.ipecollaborative.org/ipec-core-competencies Objective: This article outlines the core competencies for interprofessional collaborative practice as well as background information about the formation of IPEC.
Summary: IPEC was formed by six national education associations as an advocate for the proper distribution of IPE. These organizations represented higher education for a variety of medical professions with the common goal of guiding the development of curricula to promote and encourage interprofessional learning experiences to prepare preprofessionals for interprofessional practice in medical settings. To provide high-quality training, IPEC created four core competency domains that must be included in IPE. These domains are values and ethics, roles and responsibilities for collaborative practice, interprofessional communication, and teamwork and team-based care. When these domains of IPE are incorporated, IPE has the greatest chance for success because professionals will learn to work together with similar values and goals.

Relevance to the current study: The current study is interested in the benefits of IPE for school-based preprofessionals. If found to be beneficial, IPEC domains can be adapted for school-based settings.


Objective: This article offered additional insight about the purposes of IPEC.

Summary: The article reported that interprofessional education is designed to improve the trust and effectiveness within the service delivery team, which improves person-centered care. The IPEC panel has continued to disseminate IPE ideals, which encourages person-centered care that is optimal, safe, and accessible through collaborative practice.
Relevance to the current study: The current study aimed to evaluate if using IPEC competencies to adapt IPE experiences for school-based settings would yield similar benefits as found for medical IPE experiences.


**Objective:** The purpose of this study was to develop an IPE program for medical-setting preprofessionals.

**Methods:** 116 medical setting preprofessionals were randomly assigned to an intervention or control group. A pre survey post survey control group design was used.

**Results:** The student demonstrated improvements in their perception towards IPE and in their self-efficacy for interprofessional learning, and in their perception towards of interprofessional competency following the IPE experience. The SEIEL identified significant differences of self-efficacy between and within the various programs in the study. This shows that the SEIEL is a valid instrument for measuring self-efficacy between and within subjects.

Relevance to the current study: The current study used the SEIEL to identify school-based setting preprofessionals’ self-perception of self-efficacy when engaged in interprofessional practice.

Objective: This study aimed to guide the future designing of interprofessional experiences for SLP preprofessionals and current professionals.

Methods: An interprofessional survey was given to fifty-eight SLP students at the beginning of the first or second semester of graduate school.

Results: The second-semester students who had the opportunity to begin work at internship sites, rated themselves much lower on their interprofessional practice skills than the first-semester students.

Relevance to the current study: Surveying preprofessionals on their interprofessional practice skills after they have had the opportunity to work as a professional could reveal that preprofessionals recognize potential areas for growth during their work experiences. This would be an interesting future direction for other studies.


https://doi.org/10.1016/j.bjpt.2018.09.003

Objective: This study’s objective was to evaluate the effectiveness of an IPE experience for professionals working in medical settings.

Methods: A prospective, pre-post cohort design was used. Graduate students from occupational therapy, physical therapy, and physician assistant programs participated as well as 17 older adult volunteers. The primary outcome measure was the IPAS and the secondary outcome measure was the study-specific questionnaire.
**Results:** The IPAS identified that areas of teamwork, roles, and responsibilities significantly improved. This shows that the IPAS is a valid instrument for measuring changes before and after an IPE experience.

**Relevance to the current study:** The current study used the IPAS to identify school-based setting preprofessionals’ attitudes toward and perceptions of interprofessional practice.


**Objective:** This article aimed to highlight the value of collaboration between physical educators and other school-based professionals on the IEP committee in hopes of inspiring change.

**Summary:** This article discussed the importance of including physical educators in IEP process. If collaboration opportunities are limited, then a disconnect will likely be noticed in the individualized education plan process, which would negatively affect the students with disabilities.

**Relevance to the current study:** The current study aimed to evaluate the benefits of IPE for school-based settings.


[https://doi.org/10.1044/2018_PERS-SIG2-2018-0009](https://doi.org/10.1044/2018_PERS-SIG2-2018-0009)
Objective: This article describes the similarities and differences between medical and school-based settings when the IPE framework is applied.

Summary: Some examples of the similarities and differences between medical and school-based settings were revealed by analyzing various aspects of the IPEC competencies. For example, in the ethics and values area, both settings aim to provide person/child-focused care, but school-based professionals must include medical professionals in the diagnostic development of individualized education plans to fulfill this requirement. In the roles and responsibilities area, both settings must communicate their roles and pursue opportunities for professional and interprofessional development throughout their career. School-based professionals are also responsible for ensuring parental participation when addressing the needs of the children in their caseload. Interprofessional communication is a core competency addressed by both settings when information is administered effectively and in an understandable manner, which school-based professionals fulfill by providing the parent with adequate documentation of their child’s education and special services. Teamwork is incorporated in medical and school-based settings by planning, delivering, and evaluating the care given to patients and children. Since schools have a variety of teams, school-based professionals must also assure understanding of team function prior to meetings to mitigate confusion of their purpose. Incorporating these adjustments to the IPEC competencies will allow the proper administration of IPE to preprofessionals and current professionals in school-based settings.
Relevance to the current study: The current study is interested in if IPE is beneficial for school-based preprofessionals, so it is important to know that the IPEC competencies are applicable to this setting.


Objective: This systematic review aimed to identify the strengths and weaknesses of IPE measures.

Summary: A weakness in the body of research was a lack of good quality study designs for evaluating the outcome of IPE. This article suggested ways to improve IPE evaluation strategies including to use a combination of quantitative and qualitative data for a more complete data collection.

Relevance to the current study: The current study followed this recommendation to provide a wider strategy of evaluation to increase insights and strengthen evidence.


Objective: This study aimed to create and test the validity of a self-efficacy measure for IPE experiences.

Methods: Using conceptual analysis of relevant tasks and the existing literature, a 16-item scale was developed. Six IPE experts then assessed the content validity.
Results: The six judges rated the internal consistency of the scale (Cronbach's $\alpha = 96$) and subscales 1 ($\alpha = .94$) and 2 ($\alpha = .93$) as high. Two factors were identified: interprofessional interaction and interprofessional team evaluation and feedback. The study concluded that the SEIEL as a valid instrument that can be useful when evaluating IPE interventions.

Relevance to the current study: The potential influence of self-efficacy in an IPE experience was one of the research questions the current study aimed to answer.


Objective: This study discusses various stages of IPE implementation, obstacles that may be encountered, and suggestions for overcoming potential roadblocks.

Summary: IPE implementation requires many steps and can confront various roadblocks. Some of the steps of implementation include obtaining support from administration, gaining financial support, identifying and training faculty as leaders for the project, and evaluating the outcomes of IPE. The authors discuss potential solutions to obstacles that might occur during this process.

Relevance to the current study: The current study is interested in the benefits of IPE for school-based settings. This information was used to highlight some of the obstacles that might be delaying the implementation of IPE for school-based setting preprofessionals. The suggestions for how these roadblocks could potentially be resolved were also discussed.

**Objective:** This study aimed to examine if the incorporation of IPE will improve curriculum.

**Methods:** The ELIQ was used to gather quantitative data regarding perceptions about teamwork and communication, interprofessional learning and team interactions.

**Results:** Self-reported scores increased significantly demonstrating positive changes in learning, teamwork and communication after the IPE experience. This demonstrates that the ELIQ can identify significant changes after IPE learning and experiences.

**Relevance to the current study:** The ELIQ will be used in the current study to document changes in attitudes and perceptions after an IPE experience.


**Objective:** This article reflected on the needs of disabled students in school-based settings. It outlines how physical education teachers can collaborate with their assistants and other school-based professionals to offer appropriate and meaningful activities that disabled students can participate in.
Summary: This article listed seven steps to aid in collaborative work. They focused on making time to communicate and build a professional relationship, then discussing students and creating a plan, then reflecting on the collaborative experience to better support one another in the future.

Relevance to the current study: The current study aimed to identify if IPE aids in collaborative success for school-based professionals for the benefit of students with disabilities.


Objective: This article discusses issues and topics related to IPE.

Summary: The article concludes that no single discipline can address the complexity of healthcare by themselves and that there is a need to promote and develop collaboration in medical settings in order to better care for the community.

Relevance to the current study: The current study is interested in the potential benefits of IPE for school-based settings. The current study used this information to explain that the increasingly complex medical and social challenges existing in community requires care from multiple specialties with varied skills and perspectives especially in school-based settings where children often receive care through IEPs.

Objective: This study aimed to develop and validate a tool that could assess the interprofessional attitudes of medical setting preprofessionals

Methods: Two of the authors developed and led an interprofessional team of students who created and administered a survey to four schools at the University of Utah Health Sciences Center. The responses to the survey were randomly split into two independent subsets. The analysis was used to demonstrate construct validity and reliability.

Results A 27-item scale with five subscales was created. The content of the five subscales were shown to be valid, reliable and in line with the IPEC competencies. The study concluded that the IPAS reflects current thinking about interprofessional competencies better than previous assessment instruments.

Relevance to the current study: The IPAS will be used in the current study to document changes in perceptions of bias after an IPE experience.


Objective: This review aimed to find the best available quantitative evidence related to assertiveness communication training programs for medical settings and then synthesize it.

Summary: It is essential for professionals in medical settings to have good communication skills and have the confidence to speak up assertively for the well-being
of their patients. Assertiveness training is effective in improving communication skills and is often offered to medical professionals.

*Relevance to the current study:* Having self-efficacy leads to a greater willingness to represent one’s profession and in order to properly do this, a degree of assertiveness is required. This article was used as evidence that assertiveness training is a part of training for some medical preprofessionals and working professionals, which likely increases their self-efficacy.

[https://doi.org/10.1046/j.1365-2923.1999.00298.x](https://doi.org/10.1046/j.1365-2923.1999.00298.x)

*Objective:* This study aimed to create a rating scale that could assess how ready a medical setting preprofessional is for shared learning activities.

*Methods:* A questionnaire study was performed involving 120 undergraduate students from 8 medical setting professions.

*Results:* An internal consistency of 0.9 was found using a principal components analysis.

*Relevance to the current study:* The Readiness for Interprofessional Learning Scale Questionnaire was mentioned as an example of one of the many instruments that uses self-ratings to evaluate perceptions of communication and teamwork, interprofessional learning, interprofessional interaction, and interprofessional biases.

vulnerable populations. *Journal of Allied Health, 47*(3), 75-81.


**Objective:** This study aimed to describe an IPE model that included a case study focused on a vulnerable population and then evaluate the findings.

**Methods:** A pre-test post-test design was used. The survey consisted of questions from the Readiness for Interprofessional Learning Scale Questionnaire and the IPAS, which was administered before and after the IPE activity.

**Results:** All participating professions showed improved knowledge and attitudes related to interprofessional practice and increased sensitivity to working with vulnerable populations.

**Relevance to the current study:** This article recorded various benefits experienced by the preprofessional who participated in the medical IEP case experience. The current study aims to determine if school-based IEP case experiences can yield similar benefits.


**Objective:** This study’s main objective was to create a rating scale that could identify how ready a medical preprofessional was to participate in a shared learning activity.

**Methods:** A questionnaire was used to assess 120 undergraduate students from 8 medical disciplines.

**Results:** The Readiness for Interprofessional Learning Scale Questionnaire was unable to detect a significant difference between the pre and post survey scores.
However, the qualitative analysis revealed themes otherwise undocumented by the quantitative data/questionnaire responses.

Relevance to the current study: For the current study, focus groups were used to gain insights into participants’ changes in perceptions and attitudes about interprofessional practice after a medical IPE case experience.


Objective: The objective of this study is to evaluate the attitudes about collaborative learning and working before and after qualification to enter programs of a primarily medical-setting university.

Methods: 852 students from 10 medical-setting programs completed the ELIQ. Comparative analysis of the data was performed.

Results: Results indicated that students rated their communication and teamwork skills as improved after IPE.

Relevance to the current study: The ELIQ is a valid instrument that has been used in many IPE studies with the ability to identify significant results.


Objective: This website aids in informing researchers about various tools for assessing IPE, including the ELIQ.
Summary: The ELIQ is a 27-item tool that uses a Likart scale to assess preprofessionals' attitudes towards interprofessional education and collaboration (Pollard, 2015). The tool has 3 sections: Communication and Teamwork, Interprofessional Learning, and Interprofessional Interaction.

Relevance to the current study: The ELIQ was used in combination with the IPAS and SEIEL to assess the perceptions and attitudes about interprofessional practice in the current study.


Objective: This website aimed to identify insights and common themes through qualitative data analysis.

Summary: The website is used to “uncover richer insights and produce clearly articulated, defensible findings.”

Relevance to the current study: For the qualitative portion of the current study, the open-ended questions were analyzed using a content analysis through Nvivo. Common themes across the responses were identified. The quantitative and qualitative analyses answered the research questions about perceptions of interprofessional practice and self-efficacy.

Objective: The objective was to explore some of the key barriers to the implementation of IPE.

Summary: Some of the barriers include the promotion of IPE, facilitation and training, administrative support, and organizational factors.

Relevance to the current study: The current study used this article to discuss the many barriers to the implementation of IPE.


Objective: The aim of this study was to identify the attitudes and perceptions of preprofessionals about collaborative learning.

Methods: A questionnaire that included questions from the University of West England Interprofessional Questionnaire and the Readiness for Interprofessional Learning Scale was used. 305 preprofessionals completed the questionnaire before and after an IPE experience.

Results: The studies have found that medical preprofessionals who participate in IPE are better prepared for and more motivated to participate in interprofessional practice in their professional careers.

Relevance to the current study: This study provided insight into the benefits of IPE that were found for medical preprofessionals. The current study aimed to identify if similar benefits could be experienced by school-based preprofessionals.

**Objective:** The objective of this study was to look at the long-term effectiveness of IPE experiences.

**Methods:** A pre-survey and two post-surveys consisting of the IPAS and open-ended questions was administered to 71 students from occupational therapy, physical therapy and SLP graduate programs.

**Results:** Significant differences across time were found, which suggested that the knowledge and perceptions of participants increased because of the IPE experiences they participated in.

**Relevance to the current study:** This study used a medical IPE case experience, so it was used as a comparison to the current school-based setting study.


**Objective:** To point out that IPE research began more than 50 years ago and highlight its importance.

**Summary:** This article describes IPE and the evidence behind it. It highlights the importance of IPE for medical settings.

**Relevance to the current study:** IPE has positively impacted medical preprofessionals and their preparation to participate in interprofessional practice for decades, but there is limited research about IPE for school-based settings.

**Objective:** This website was created to provide information about the University of Utah’s IPE Program.

**Summary:** The medical preprofessionals at the University of Utah receive IPE through their university’s IPE Institute. Because there is a university organization with the objective of providing IPE experiences, the culture of this universities has shifted to naturally embed IPE within the courses of various programs.

**Relevance to the current study:** The current study used this information to offer an example of a university that created a cultural and logistical transformation to prioritize IPE.


**Objective:** This study’s objective was to examine the self-efficacy beliefs of medical preprofessionals for skills required in interprofessional practice.

**Methods:** The SEIEL scale was used to determine self-perceived self-efficacy of the preprofessionals.

**Results:** “Student t-tests were used to compare scores between males and females, with one-way ANOVAs used to explore SEIEL scores across disciplines and year level.” Significant differences were found between the genders. This demonstrates that the SEILE can identify significant changes after IPE learning/experiences.
Relevance to the current study: The current study used the SEIEL to identify school-based setting preprofessionals’ self-perceptions of their self-efficacy when they engaged in interprofessional collaboration.


http://apps.who.int/iris/bitstream/handle/10665/70185/WHO_HRH_HPN_10.3_eng.pdf;jsessionid=C5BB63584F8D3D7B4D9F6E384B5187?sequence=1

Objective: This article created a framework for IPE to be implemented in a way that will result in optimal health care services.

Summary: This article defines key terms related to IPE and then explains ways to properly implement IPE using their framework for action.

Relevance to the current study: The World Health Organization’s definition of IPE was used to introduce the topic.
APPENDIX B

Institutional Review Board Documents

Institutional Review Board

Office of the Vice President for Research and Sponsored Projects
The University of Texas at El Paso IRB

FWA No: 00001224
El Paso, Texas 79968-0587
P: 915-747-7693 E: irb.orsp@utep.edu

Date: July 22, 2019

To: Connie Summers, PhD

From: University of Texas at El Paso IRB

Study Title: [1460572-1] A Longitudinal Study of Interprofessional Education in Rehabilitation Sciences Graduate Students

IRB Reference #: College of Health Sciences

Submission Type: New Project

Action: EXEMPT

Review Type: Exempt Review
Approval Date: July 22, 2019
Expiration Date: July 21, 2021

The application for the above referenced study has been reviewed. This study qualifies as exempt from review under the following federal guidelines: [45 CFR 46.104(d)(2)].

If Institutional data (secondary or other) will be used for this research project please verify with the applicable department that such data may be used. Additional institutional clearances and approvals may be required. Accordingly, the project should not begin until all required approvals have been obtained.

Exempt protocols do not need be renewed. Please note that it is the Principal Investigator's responsibility to resubmit the proposal for review if there are any modifications made to the originally submitted proposal. This review is required in order to determine if "Exemption" status remains.

This exemption does not relieve the investigators of any responsibilities relating to the research subjects. Research should be conducted in accordance with the ethical principles as outlined in the Belmont Report.

You should retain a copy of this letter and any associated approved study documents for your records. We will put a copy of this correspondence on file in our office.

If you have any questions, please contact the IRB Office at irb.orsp@utep.edu or Christina Ramirez at (915) 747-7693 or by email at cramirez22@utep.edu. Please include your study title and reference number in all correspondence with this office.

Sincerely,

[Signature]

Dr. Lorraine Torres, Ed.D, MT(ASCP)
IRB Chair
University of Texas at El Paso (UTEP) Institutional Review Board

Informed Consent Form for Research Involving Human Subjects

Protocol Title: A Longitudinal Study of Interprofessional Education in Rehabilitation Sciences Graduate Students

Principal Investigators: Drs. Connie Summers & Patricia Lara

UTEP: Speech Language Pathology

1. Introduction

You are being asked to take part voluntarily in the research project described below. Please take your time making a decision and feel free to discuss it with your friends and family. Before agreeing to take part in this research study, it is important that you read the consent form that describes the study. Please ask the study researcher or the study staff to explain any words or information that you do not clearly understand.

2. Why is this study being done?

You have been asked to take part in a research study about the effectiveness of Interprofessional Education Experiences for Rehabilitation Sciences graduate students. Approximately 82 participants will be invited to enroll in this study at UTEP. You are being asked to participate in the study because you are a first year student in the Doctor of Physical Therapy Program (DPT), the Master of Occupational Therapy Program (MOT) and the Speech Language Pathology Program (SLP).

3. What is involved in the study?

If you agree to take part in this study, the research team will examine and analyze the measures you complete as part of the IPE experiences in your curriculum including a pre-survey during your first semester and 2 post-surveys following the IPE experiences. These surveys are collected for the purpose of curricular evaluation. However, it is your choice whether or not you allow us to analyze and publicly disseminate the data we collected during the study. Your grade will not be affected in any way if you choose not to participate in the study. Also, you may be contacted later to participate in two focus groups to discuss the effectiveness of the IPE experiences. The focus groups would involve approximately two additional hours of your time during which you would participate in a discussion of your perceptions of the experiences. Discussions from the focus groups will be audio recorded for later transcription and analysis.
4. What are the risks and discomforts of the study?

The only potential risk of the study is a loss confidentiality in your responses. The faculty researchers will be administering the IPE experiences and may know about situations or details that you include in your responses if you discussed them with faculty.

5. What will happen if I am injured in this study?

The University of Texas at El Paso and its affiliates do not offer to pay for or cover the cost of medical treatment for research related illness or injury. No funds have been set aside to pay or reimburse you in the event of such injury or illness. You will not give up any of your legal rights by signing this consent form. You should report any such injury to Dr. Patricia Lara (915-747-7271) and to the UTEP Institutional Review Board (IRB) at (915-747-8841) or irb.orsp@utep.edu.

6. Are there benefits to taking part in this study?

There are no direct benefits for the participants who only complete surveys. However, this research may serve to improve the quality of the future IPE events that will benefit future graduate students.

7. What other options are there?

You have the option not to take part in this study. There will be no penalties involved if you choose not to take part in this study.

8. Who is paying for this study?

This project is supported by a grant from the College of Health Sciences Grants for Strategic Transformation: Interprofessional Education Fund.

9. What are my costs?

There are no costs for participating in this study.

10. Will I be paid to participate in this study?

Participants in the focus groups will receive a $40 gift card after participation in the second focus group.
11. What if I want to withdraw, or am asked to withdraw from this study?

Taking part in this study is voluntary. You have the right to choose not to take part in this study. If you do not take part in the study, there will be no penalty. If you choose to take part, you have the right to stop at any time. However, we encourage you to talk to a member of the research group so that they know why you are leaving the study. If there are any new findings during the study that may affect whether you want to continue to take part, you will be told about them.

12. Who do I call if I have questions or problems?

You may ask any questions you have now. If you have questions later, you may contact Dr. Patricia Lara (915-747-7271; plara2@utep.edu). If you have questions or concerns about your participation as a research subject, please contact the UTEP Institutional Review Board (IRB) at (915-747-8841) or irb.orsp@utep.edu.

13. What about confidentiality?

Every effort will be made to keep your information confidential. During the analysis, your name will not be associated with your responses. The researchers will remove all identifying information before any analysis is initiated. Given that the researchers are familiar with the participants in these courses, they may be able to identify who you are by some of the details in your responses. However, your personal information will never be associated with your responses. If you participate in the follow-up focus group, your responses will not be associated with your name.

All records will be maintained in electronic format and stored on password protected computers. Hard copies will be stored in a locked office. Once transcription has been completed of the focus group discussion without any names, the audio recordings will be destroyed.

14. Mandatory reporting

If information is revealed about child abuse or neglect, or potentially dangerous future behavior to others, the law requires that this information be reported to the proper authorities.

15. Authorization Statement

I have read each page of this paper about the study (or it was read to me). I know that being in this study is voluntary and I choose to be in this study. I know I can stop being in this study without penalty. I will get a copy of this consent form now and can get information on results of the study later if I wish.
Participant Name:  
Participant Signature:  

Consent form explained/witnessed by:  
Signature:  
Printed name:  

Date:  
Time:  
Date:  
Time:
APPENDIX C

Instruments

Entry Level Interprofessional Questionnaire (ELIQ)

*University of the West of England, Bristol*

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<tr>
<th>Profession:</th>
<th>Gender:</th>
<th>Female □</th>
<th>Male □</th>
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<tr>
<td>ID #:</td>
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Previous clinical experience (total number of weeks):

Please answer the following questions according to these categories (Note: Section A contains only 4 categories)

<table>
<thead>
<tr>
<th>SA = Strongly Agree</th>
<th>A = Agree</th>
<th>N = Neutral</th>
<th>D = Disagree</th>
<th>SD = Strongly Disagree</th>
</tr>
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### A. Communication and Teamwork Scale

1. I feel comfortable justifying recommendations/advice face-to-face with more senior people* | SA □ A □ D □ SD □ |
2. I feel comfortable explaining an issue to people who are unfamiliar with the topic* | SA □ A □ D □ SD □ |
3. I have difficulty in adapting my communication style (oral and written) to particular situations and audiences* | SA □ A □ D □ SD □ |
4. I prefer to stay quiet when other people in a group express opinions that I don't agree with | SA □ A □ D □ SD □ |
5. I feel comfortable working in a group* | SA □ A □ D □ SD □ |
6. I feel uncomfortable putting forward my personal opinions in a group | SA □ A □ D □ SD □ |
7. I feel uncomfortable taking the lead in a group | SA □ A □ D □ SD □ |
8. I am able to become quickly involved in new teams and groups* | SA □ A □ D □ SD □ |
9. I am comfortable expressing my own opinions in a group, even when I know that other people don’t agree with them | SA □ A □ D □ SD □ |
### B. Interprofessional Learning Scale

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<tbody>
<tr>
<td>1.</td>
<td>My skills in communicating with patients/clients would be improved through learning with students from other health and social care professions</td>
<td>SA □ A □ N □ D □ SD □</td>
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<tr>
<td>2.</td>
<td>My skills in communicating with other health and social care professionals would be improved through learning with students from other health and social care professions</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>3.</td>
<td>I would prefer to learn only with peers from my own profession</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>4.</td>
<td>Learning with students from other health and social care professions is likely to facilitate subsequent working professional relationships</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>5.</td>
<td>Learning with students from other health and social care professions would be more beneficial to improving my teamwork skills than learning only with my peers</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>6.</td>
<td>Collaborative learning would be a positive learning experience for all health and social care students</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>7.</td>
<td>Learning with students from other health and social care professions is likely to help to overcome stereotypes that are held about the different professions</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>8.</td>
<td>I would enjoy the opportunity to learn with students from other health and social care professions</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>9.</td>
<td>Learning with students from other health and social care professions is likely to improve the service for patient/client</td>
<td>SA □ A □ N □ D □ SD □</td>
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### C. Interprofessional Interaction Scale

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<tbody>
<tr>
<td>1.</td>
<td>Different health and social care professionals have stereotyped views of each other</td>
<td>SA □ A □ N □ D □ SD □</td>
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<tr>
<td>2.</td>
<td>The line of communication between all members of the health and social care professions is open</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>3.</td>
<td>There is a status hierarchy in health and social care that affects relationships between professionals</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>4.</td>
<td>Different health and social care professionals are biased in their views of each other</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>5.</td>
<td>All members of health and social care professions have equal respect for each discipline</td>
<td>SA □ A □ N □ D □ SD □</td>
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<td>6.</td>
<td>It is easy to communicate openly with people from other health and social care disciplines</td>
<td>SA □ A □ N □ D □ SD □</td>
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<tr>
<td>7.</td>
<td>Not all relationships between health and social care professionals are equal</td>
<td>SA □ A □ N □ D □ SD □</td>
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<tr>
<td>8.</td>
<td>Health and social care Professionals do not always communicate openly with one another</td>
<td>SA □ A □ N □ D □ SD □</td>
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<tr>
<td>9.</td>
<td>Different health and social care professionals are not always cooperative with one another</td>
<td>SA □ A □ N □ D □ SD □</td>
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Adapted by: D. Dryman, UBC College of Health Disciplines
Interprofessional Attitudes Scale (IPAS)

Authors: Jeffrey Norris, Joan Carpenter, Jacqueline Eaton, Jia-Wen Guo, Madeline Lassche, Marge Pett, Donald Blumenthal

Description:
IPAS is a scale designed to assess attitudes that relate to the 2011 Core Competencies for Interprofessional Collaborative Practice. IPAS is one of the first scales to focus specifically on the Core Competencies. IPAS consists of 27 items in 5 sub-scales, which we have called "Teamwork, Roles, and Responsibilities", "Patient-Centeredness", "Interprofessional Biases", "Diversity & Ethics", and "Community-Centeredness". IPAS was created from factor analysis of survey data collected from over 700 student respondents at the University of Utah Health Sciences Center in 2012.

Contact:
Jeffrey Norris, MD
jeffreynorris@gmail.com
801-671-8500

Citation:

Scale with Sub-Scales:
All items assessed using a 5-level Likert scale (from "strongly disagree" to "strongly agree")

1. **Teamwork, Roles, and Responsibilities**
   1.1. Shared learning before graduation will help me become a better team worker.
   1.2. Shared learning will help me think positively about other professionals.
   1.3. Learning with other students will help me become a more effective member of a health care team.
   1.4. Shared learning with other health sciences students will increase my ability to understand clinical problems.
   1.5. Patients would ultimately benefit if health sciences students worked together to solve patient problems.
   1.6. Shared learning with other health sciences students will help me communicate better with patients and other professionals.
   1.7. I would welcome the opportunity to work on small-group projects with other health sciences students.
   1.8. It is not necessary for health sciences students to learn together.
   1.9. Shared learning will help me understand my own limitations.

2. **Patient-Centeredness**
   2.1. Establishing trust with my patients is important to me.
   2.2. It is important for me to communicate compassion to my patients.
   2.3. Thinking about the patient as a person is important in getting treatment right.
   2.4. In my profession, one needs skills in interacting and co-operating with patients.
   2.5. It is important for me to understand the patient’s side of the problem.

3. **Interprofessional Biases**
3.1. Health professionals/students from other disciplines have prejudices or make assumptions about me because of the discipline I am studying.
3.2. I have prejudices or make assumptions about health professionals/students from other disciplines.
3.3. Prejudices and assumptions about health professionals from other disciplines get in the way of delivery of health care.

4. Diversity & Ethics
It is important for health professionals to:
4.1. Respect the unique cultures, values, roles/responsibilities, and expertise of other health professions.
4.2. Understand what it takes to effectively communicate across cultures.
4.3. Respect the dignity and privacy of patients while maintaining confidentiality in the delivery of team-based care.
4.4. Provide excellent treatment to patients regardless of their background (e.g. race, ethnicity, gender, sexual orientation, religion, class, national origin, immigration status, or ability).

5. Community-Centeredness
It is important for health professionals to:
5.1. Work with public health administrators and policy makers to improve delivery of health care.
5.2. Work on projects to promote community and public health.
5.3. Work with legislators to develop laws, regulations, and policies that improve health care.
5.4. Work with non-clinicians to deliver more effective health care.
5.5. Focus on populations and communities, in addition to individual patients, to deliver effective health care.
5.6. Be advocates for the health of patients and communities.
Development of a scale to measure health professions students' self-efficacy beliefs in interprofessional learning

Karen Mann, Judith McIntyre-Durdie, Lynn Breaux, Joanne Clovis, Ruth Martin-Misener, Tanya Matheson, Hope Beanlands & Mara Sarra


Table 3 of 3

Table III  Self-efficacy scale: Principal component analysis with varimax rotated solution

<table>
<thead>
<tr>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor 1: Interprofessional interaction</strong></td>
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<td></td>
</tr>
<tr>
<td>1. Working with other students from different professions to form a team.</td>
<td>.873</td>
<td>.240</td>
</tr>
<tr>
<td>2. Working with other students from different professions to resolve problems in the team.</td>
<td>.796</td>
<td>.334</td>
</tr>
<tr>
<td>3. Working with other students from different professions to develop a realistic appropriate patient care plan.</td>
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<td>.462</td>
</tr>
<tr>
<td>4. Working with other students from different professions to understand our respective roles in an interprofessional team.</td>
<td>.687</td>
<td>.383</td>
</tr>
<tr>
<td>5. Working with other students from different professions to understand the benefits to patients of team care.</td>
<td>.661</td>
<td>.490</td>
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<tr>
<td>6. Interacting with students from other professions and disciplines than my own.</td>
<td>.881</td>
<td>.295</td>
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<tr>
<td>7. Learning together cooperatively with students from other professions.</td>
<td>.724</td>
<td>.423</td>
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<tr>
<td>8. Communicating effectively with other members of an interprofessional team.</td>
<td>.692</td>
<td>.497</td>
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<tr>
<td><strong>Factor 2: Interprofessional team evaluation and feedback</strong></td>
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<tr>
<td>9. Understanding and discussing the objectives of interprofessional learning.</td>
<td>.482</td>
<td>.382</td>
</tr>
<tr>
<td>10. Providing feedback to an interprofessional team on our function and work as a team.</td>
<td>.494</td>
<td>.663</td>
</tr>
<tr>
<td>11. Providing feedback to individual team members of an interprofessional team on their function and work on the team.</td>
<td>.333</td>
<td>.703</td>
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<tr>
<td>12. Helping clinical sites understand an interprofessional team’s role in a clinical setting.</td>
<td>.762</td>
<td>.782</td>
</tr>
<tr>
<td>13. Helping the patient understand the objectives of the interprofessional learning.</td>
<td>.370</td>
<td>.810</td>
</tr>
<tr>
<td>14. Evaluating the quality of work as an interprofessional team.</td>
<td>.395</td>
<td>.796</td>
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<tr>
<td>15. Evaluating the degree to which an interprofessional team has achieved its goals.</td>
<td>.424</td>
<td>.751</td>
</tr>
<tr>
<td>16. Interacting with teachers and preceptors from other professions and disciplines than my own.</td>
<td>.332</td>
<td>.690</td>
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<tr>
<td>Variance accounted for by rotated components:</td>
<td>34.7%</td>
<td>34.4%</td>
</tr>
</tbody>
</table>
APPENDIX D

Case Study

Agenda

Main Room - https://byu.zoom.us/j/92516518601

6:00  Introductions - 5 minutes - (will make the break out rooms)

6:05  Review information and agenda - 5 minutes

Breakout Rooms

6:10  Introductions

Introduce yourself to your group and share one of the following
  Show one item in your space that tells something about you
  Share one thing you are excited to do during the summer this year

6:15  Each discipline will have ~3 minutes to provide a summary of the information they have about

Kevin. The following prompts may be useful:
  What are the issues/problems in the case?
  What do you consider his strengths? His weakest areas?
  What patterns do you see in any available test data?

6:30  Group discussion (send out discussion questions to break-out rooms)

Considering all of the information in the case and the assessment reports, what do you
think is going on with Kevin?
  What are resources/personnel that could be helpful?
  What other information do you need about Kevin?
  What are the next steps needed for Kevin?

6:45  Send out google link for Dx -
https://docs.google.com/document/d/1QvGnbB5jAU0RKilPGfug3AyEp4e3OkDmAuNctu3TBx_BM/edit?
usp=sharing

6:50  Send out reflection prompts

What did you learn about your profession today?
What did you learn about other professions today?
What did you learn about working in teams?

Main Room

6:55  Debrief & Evaluation

Reflection Questions

What did you learn about your profession today?
What did you learn about other professions today?
What did you learn about working in teams?

Evaluation-

Info for Students

Please review the information from your discipline on the page numbers listed below. Be prepared to
provide a 3 minute summary of Kevin’s case from your discipline’s perspective. The other sections are
provided for your reference only but you are not expected to review them prior to the experience.

Special Education  pgs 4-6
Speech Language Pathology  pgs 8-9
School Psychology  pgs 10-14
Case Study: Kevin

Kevin, a first-grade boy has been referred to the multidisciplinary team at his school (pre-referral team/intervention team/TAT, child-study, etc.) due to persistent academic and behavioral concerns. This meeting will discuss the concerns about Kevin, his history, and recommended actions. The meeting is attended by the following individuals.

Sharon: Classroom teacher
Fran: Speech Education Teacher
Robin: Principal
Megan: Speech-Language Pathologist
Alan: School Psychologist

Teacher: Sharon

Sharon Williams, a veteran teacher, is perplexed by the unusual pattern of behaviors displayed by Kevin. Sharon was Kevin’s teacher last year in Kindergarten and is his current first grade teacher. According to his parents and others who knew the family, Kevin had developed good language, cognitive, and social skills as a preschooler. Now he seldom interacts with the other students and often acts as if he doesn't understand what is going on in class. The following is a summary of her observations in kindergarten and in first grade.

In kindergarten, she noticed that he had not learned the routines of the classroom after several weeks of class as his classmates had. He was a cute, normal looking little boy who was very verbal and visually alert. He appeared to be intelligent and well prepared for kindergarten, but he never seemed to know what was going on in class.

Kevin often lagged behind the other children, watching to see what they did before he acted. He often looked confused or gave odd or inappropriate responses to questions. One day when his nose began to bleed, he made no attempt to let her know and by the time the other children alerted her, his face, shirt, and desk were covered with blood.

Sometimes when Sharon called his name or gave him oral instructions, Kevin didn't respond at all, as if he didn't hear her. On the rare occasions when he did try to tell her something, he had a difficult time getting the words out. His speech was hesitant and choppy as if he had to continually search for the words he wanted to say.

Kevin’s mother had his hearing evaluated. Although many of his responses were inconsistent, the audiologist determined that Kevin's hearing was within normal limits. She accounted for the inconsistencies by suggesting that Kevin had difficulties understanding and concentrating on the task of raising his hand when he heard the sound. "Well, maybe he is just having adjustment problems," his mother had suggested when she informed Sharon about the results of the hearing evaluation.

Then, there was the coat incident. That was probably the moment when Sharon knew something more serious was amiss. She had entered the room after lunch to discover many of the children's jackets on the floor. After directing the children to the reading circle for their afternoon story, she gathered up the jackets and brought them with her to the circle. "Whose jacket is this?" she called as she held the jackets up one by one. As the children claimed their jackets, they were directed to go to the back of the room and hang them up. When she held up the last jacket, no one raised his or her hand to claim it. She repeated the question "Whose jacket is this?" several times. Finally, several children called out, "It's Kevin's jacket," as
they pointed to Kevin sitting with them on the floor. "Kevin, is this your jacket? Please go hang it up," Sharon instructed as she handed Kevin his jacket. Kevin, looking confused, took the jacket meekly, rolled it up, and with both hands, pushed it into the floor as if he were trying to hide it. He did not appear to understand Sharon's request even after watching the other children claim their jackets and hang them up. "What a peculiar response," thought Sharon as she began to read the story she had selected for that day. "If it's not his hearing, then maybe he has a processing disorder."

After speaking with Fran, the learning specialist, Kevin was evaluated by the speech-language pathologist and the school psychologist in February. He did not qualify for services. After those evaluations, Sharon noticed that Kevin's behavior was becoming more bizarre. He was aloof with the other children, displayed ritualistic patterns of behavior, became agitated and upset when routines were disrupted, and appeared to be in a world of his own.

At the parents’ request, the hearing evaluation was repeated in March and a mild, conductive hearing loss was detected in both ears. Because of the concerns noted by Kevin's teacher and parents, the audiologist recommended that Kevin use a phonic ear. This device, consisting of a microphone worn by the teacher and an earpiece worn by the student, was often used to amplify the teacher’s voice for children with mild hearing problems. At the same time, Kevin's doctor put him on a trial dose of Ritalin to improve his focus and concentration. Everyone was hopeful that these interventions would solve many of Kevin's problems.

Unfortunately, Kevin resisted wearing the earpieces and did not respond any better even when he did wear them. After two months on the medication, Sharon did not see any improvement in his ability to attend or concentrate. By this time, June was approaching and school would soon be out for the summer.

Mr. Robinson, the principal at Oak Bend, had for some time been encouraging Sharon to move to first grade next year. After much deliberation, Sharon decided to give it a try. Everyone involved with Kevin agreed it would be best for him to move up to first grade with her in order to maintain consistency, even though he had not mastered the kindergarten curriculum. Sharon was hopeful that over the summer the doctors could regulate Kevin's medication and by August he would return in better shape to learn.

When Kevin returned for first grade, his behavior, if anything, was worse. Because of the increasing demands of the first grade curriculum, he was less able to function and showed more aggression and "autistic-like behaviors." His doctors increased his medication but Kevin began to show signs of an adverse reaction known as a "speech push" (excessive talking) so the Ritalin was discontinued. They tried another medication called Depakote, but Kevin was so sleepy that he could barely keep his eyes open.

Kevin was now able to count only to 15 and still could not recite the alphabet in order. When shown a list of words in alphabetical order and asked to find the "b" word, or the "g" word, he would search the entire list, apparently not realizing that they had any particular order, even when it was pointed out to him. He was eligible for a reading improvement program, and was receiving a half-hour of individual instruction every day. According to the reading specialist, Kevin was making some appropriate gains but needed continual reminders to use visual cues while reading. She reported having a difficult time keeping Kevin on task.

Kevin's mom came in one day to help out in the classroom and Kevin, as if on cue, demonstrated some of his typically rigid behaviors. He refused to participate when the classroom routine was altered for a special activity. Sharon could tell that Mrs. Smith was shocked and disturbed by Kevin's inappropriate and immature behavior. The Smiths were also expressing concern because Kevin's four-year-old sister was now surpassing him academically.
Sharon considered what she should say on Kevin's behalf at the current meeting. "I have taught kindergarten for 13 years and I have never known another child like Kevin," she rehearsed. Well, that wasn't entirely true. She had known others with similar behaviors, but they were diagnosed as being autistic and had shown indications of the disorder from an early age. Kevin, to the best of everyone's knowledge, had developed normally up until the age of five. "I hope the psychologist and the other specialists can shed some light on this case or give us some direction because I am simply out of ideas," she thought as she prepared to greet her class.

**Special Education Teacher - Fran**

Fran feels that it is important to arrive at some consensus about Kevin at the meeting because the process has already taken so long. She has spoken with Sharon, Kevin’s teacher, and suggested to her that she should share her observations with the team.

Last year, Sharon first visited Fran Myers, the learning specialist, who coordinated all the services for the children with special needs at Oak Bend about her concerns. "Fran, I have a little boy in my class who is really beginning to worry me. He already recognizes all of his letters and numbers but he can't count past 12 or say the alphabet in order. He still hasn't learned the class routine and he usually doesn't have a clue what's going on. His mom had his hearing checked but nothing unusual showed up. He also has a peculiar speech pattern, kind of monotone with hesitations, like he can't think of the words he wants to say. I think he might have a problem with comprehension or processing. What should I do?"

"Well, we should probably start by referring him to Megan Marks, our speech pathologist," Fran replied as she bent down to open the bottom drawer of her file cabinet. "Get his parents to sign this notification and permission form and we'll bring him up at the child study meeting next week. In the meantime, I'll come observe him so that we can both give Megan input. Megan can screen his speech and language and test further if she feels it's necessary."

"Okay, but we need to act fast because Kevin is already showing signs of frustration," Sharon continued as she shared some of her other concerns. "He's starting to withdraw from the rest of the class and yesterday he pushed another child down on the playground. Several children have complained to me that he has hurt them recently."

“That is concerning,” Fran commented.

“Yes. Frankly I’m puzzled. I’ve taught other kids with similar behaviors, but they were diagnosed as being autistic and had shown indications of the disorder from an early age. Kevin developed good language, cognitive, and social skills as a preschooler. It wasn’t until kindergarten his development started to raise concern.” Sharon remarked.

"What do his parents say about all this? Have you talked to them?" Fran asked as she made notes on a sheet of paper.

Sharon replied, "They came in on conference day and we discussed it but I didn't want to alarm them unnecessarily. They've noticed some of this behavior at home too, but they think he is just perfectionistic and shy. He really does have a lot of readiness skills; he has a good vocabulary and he already reads a little. He's a whiz on the computer so it's hard to explain to the Smiths why I'm so concerned. I'm sure they don't realize how poorly he is doing or how inappropriate his behavior is at times."
"Well, we'll do the best we can," Fran reassured her. "Voice your concerns to Mrs. Smith again when you ask her to sign the permission form and I'll talk to Megan about the urgency of testing Kevin soon."

Permission was obtained and Kevin was evaluated by the speech-language pathologist and the school psychologist in February. He did not qualify for services. After those evaluations, Sharon noticed that Kevin's behavior was becoming more bizarre. He was aloof with the other children, displayed ritualistic patterns of behavior, became agitated and upset when routines were disrupted, and appeared to be in a world of his own.

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See academic testing below:
Woodcock Johnson Tests of Achievement

COMPUSCORE FOR THE WJ-R 3.0

Norms based on age

Kevin Smith

CA: 6 years 2 months

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Raw Score</th>
<th>Age Equiv.</th>
<th>Grade Equiv.</th>
<th>RPI</th>
<th>SS (+/- ISEM)</th>
<th>Percentile (+/- ISEM)</th>
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<tbody>
<tr>
<td>1. Memory/ Names</td>
<td>18-B</td>
<td>3-5</td>
<td>K-0</td>
<td>61/90</td>
<td>68 (63-73)</td>
<td>2 (1-4)</td>
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<tr>
<td>2. Memory/Sen</td>
<td>27</td>
<td>3-2</td>
<td>K-0</td>
<td>9/90</td>
<td>61 (56-66)</td>
<td>0.5 (0.2-1)</td>
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<tr>
<td>3. Visual Matching</td>
<td>8</td>
<td>4-6</td>
<td>K-0</td>
<td>50/90</td>
<td>76 (69-83)</td>
<td>5 (2-13)</td>
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<td>6. Picture Vocabulary</td>
<td>24</td>
<td>5-7</td>
<td>K-5</td>
<td>84/90</td>
<td>94 (87-101)</td>
<td>34 (19-53)</td>
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<td>9. Memory/Words</td>
<td>4</td>
<td>4-0</td>
<td>K-0</td>
<td>2/90</td>
<td>48 (42-54)</td>
<td>0.1 (0.1-0.1)</td>
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<td>13. Oral Vocab.</td>
<td>8</td>
<td>5-11</td>
<td>K-5</td>
<td>85/90</td>
<td>97 (92-102)</td>
<td>41 (30-55)</td>
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<td>Short-Term Memory</td>
<td>___</td>
<td>4-0</td>
<td>K-0</td>
<td>4/90</td>
<td>47 (42-52)</td>
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<td>Comprehension</td>
<td>---</td>
<td>5-10</td>
<td>K-5</td>
<td>84/90</td>
<td>94 (89-99)</td>
<td>34 (23-47)</td>
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<td>17. Numbers Reversed</td>
<td>0</td>
<td>4-0</td>
<td>K-0</td>
<td>1/90</td>
<td>64 (59-69)</td>
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<td>20. Listening Comprehension</td>
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<td>21. Verbal Analogies</td>
<td>3</td>
<td>5-5</td>
<td>K-2</td>
<td>82/90</td>
<td>93 (87-99)</td>
<td>32 (19-47)</td>
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<td>Oral Language</td>
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<td>4-10</td>
<td>K-0</td>
<td>66/90</td>
<td>81 (78-84)</td>
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<td>22. Letter-Word Recognition</td>
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<td>6-7</td>
<td>1.1</td>
<td>68/90</td>
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<td>23. Passage Comprehension</td>
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<td>K-0</td>
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<td>6-0</td>
<td>K-8</td>
<td>39/90</td>
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<td>14 (9-21)</td>
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<td>25. Applied Problems</td>
<td>19</td>
<td>6-2</td>
<td>1-1</td>
<td>71/90</td>
<td>86 (81-91)</td>
<td>18 (10-27)</td>
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<td>26. Dictation</td>
<td>12</td>
<td>6-2</td>
<td>1-0</td>
<td>58/90</td>
<td>85 (81-89)</td>
<td>15 (10-23)</td>
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<td>27. Writing Samples</td>
<td>2-T</td>
<td>6-1</td>
<td>1-0</td>
<td>8/90</td>
<td>85 (82-88)</td>
<td>10 (4-21)</td>
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<td>28. Science</td>
<td>16</td>
<td>5-3</td>
<td>K-1</td>
<td>53/90</td>
<td>81 (74-88)</td>
<td>10 (4-21)</td>
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<td>29. Social Studies</td>
<td>11</td>
<td>4-5</td>
<td>K-0</td>
<td>25/90</td>
<td>69 (62-76)</td>
<td>2 (0.5-5)</td>
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<td>10</td>
<td>3-8</td>
<td>K-0</td>
<td>21/90</td>
<td>66 (60-72)</td>
<td>1 (0.4-3)</td>
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</tbody>
</table>
Principal- Mr. Robinson

Last year, Sharon had mentioned Kevin to Mr. Robinson, the principal at Oak Bend, who knew Kevin's family well. He assured Sharon that Kevin was a perfectly normal, perhaps even precocious, child. Sharon agreed that, in many ways he was, but he always lagged behind the other children, watching to see what they did before he acted. He often looked confused or gave odd or inappropriate responses to questions. One day when his nose began to bleed, he made no attempt to let her know and by the time the other children alerted her, his face, shirt, and desk were covered with blood.

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Megan- Speech-Language Pathologist

Megan, the speech-language pathologist, evaluated Kevin in Kindergarten. The evaluation revealed average language functioning both receptively and expressively (report attached). She remarked that Kevin demonstrated a delayed response time when answering questions and that his expressive vocabulary scores were significantly better than his receptive vocabulary scores. Even though this pattern was atypical for a kindergarten child, Kevin did not meet criteria for enrollment in speech and language therapy.
Speech and Language Assessment Report

Kevin Smith CA: 6 years, 0 months

Assessment Procedures and Results: The Peabody Picture Vocabulary Test—Revised (PPVT-R) was administered to assess Kevin’s receptive vocabulary in single words. On this test, he received a raw score of 47 which corresponded to a standard score of 79 and an age equivalent of 4-3. This score is slightly below the average range for his age.

The Expressive One Word Picture Vocabulary Test (EOWPVT) was given to evaluate Kevin’s single word, expressive vocabulary level. His score on this test was 58 which was equivalent to a standard score of 114 and a language age of 7-4. This standard score was on the high average end of the range of his age.

These results were interesting because a person’s receptive vocabulary is usually higher than his/her expressive vocabulary level. It is not known why the significant difference in the above scores exists. It could be due to fatigue, a lack of understanding about the task, nerves, preoccupation, or other unknown factors.

The Language Processing Test (LPT) was presented to determine Kevin’s auditory processing abilities. His results on this test are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Raw Scores</th>
<th>Age Equiv.</th>
<th>Percentile</th>
<th>Standard Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associations</td>
<td>6</td>
<td>--</td>
<td>39</td>
<td>49</td>
</tr>
<tr>
<td>Categorizations</td>
<td>5</td>
<td>6-7</td>
<td>49</td>
<td>51</td>
</tr>
<tr>
<td>Similarities</td>
<td>2</td>
<td>5-7</td>
<td>38</td>
<td>44</td>
</tr>
<tr>
<td>Differences</td>
<td>4</td>
<td>7-2</td>
<td>61</td>
<td>53</td>
</tr>
<tr>
<td>Attributes</td>
<td>21</td>
<td>6-6</td>
<td>53</td>
<td>50</td>
</tr>
<tr>
<td>Total Test</td>
<td>38</td>
<td>6-3</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

The average standard score on this test is 50, with an average range between 40 and 60. Thus, Kevin’s abilities appear to be within the average range for his age. These results indicate that Kevin’s problems in the classroom do not seem to be due to a significant processing difficulty.

The Bankson Language Test—2 (BLT – 2) was also administrated to assess abilities in various areas of language. This test involves two areas of language: semantic knowledge and morphological/syntactical knowledge. His results are listed below:
The morphological/syntactical subtest score was slightly below average; however, it is believed that these grammatical abilities will develop with maturation and exposure to reading.

Observations: Kevin displayed a delayed processing time, when answering some of the questions on the above test; however, this was inconsistent. In addition, he often said, I’m thinking, I’m thinking" before he gave the answer. However, the test results above do not indicate that a specific language processing problem is responsible for his difficulties in the classroom.

It should be noted that Kevin had significant difficulty making the change from the classroom to go with me to be evaluated. The first time he went to my room, there were no problems exhibited; however, the following three times, he resisted and cried, even though he knew that we would play with the toys in my room. Once we were on our way to the room, these behaviors disappeared.

Recommendations: Due to the above results, no language intervention is recommended at this time, as test results and other observations do not warrant it.

Alan - School Psychologist

Alan Moore, the school psychologist evaluated Kevin in kindergarten. Kevin achieved average to above average scores on a number of intelligence measures, both verbal and nonverbal. However, the evaluation revealed considerable difficulties with processing, retaining, and retrieving information. In addition, Kevin was noted to perseverate on certain tasks and to have many characteristics of Attention Deficit/Hyperactivity Disorder. It was recommended that Mr. and Mrs. Smith consult Kevin's physician about managing his problems with attention and concentration. It was also recommended, in light of Kevin's processing and memory deficits, that he be retested by the speech therapist in a year to see if he would then qualify for language therapy.

Psychological Evaluation of Kevin Smith

Date of Evaluation: 2/13 and 2/23

Chronological Age: 6 years, 2 months

Identified Concerns

Kevin was referred at the request of his kindergarten teacher at Oak Bend Elementary School. His teacher indicated that Kevin had a very slow start in September. There was some question as to whether he was
hearing or understanding. His actual fine motor execution in letters and numbers was excellent and he evidenced an adequate vocabulary. Behaviorally, he was observed as taking in considerable visual cues as a support to know what he should be doing. There were no acting out behaviors evidenced. His parents noted concern for any specific learning disabilities, linguistic difficulties, and/or speech difficulties.

**History**

On *The Anser System—Parent Questionnaire* his mother noted a pregnancy characterized by bleeding at the beginning of her second trimester. Kevin was born by C section after a labor lasting longer than twelve hours. He was born at a birth weight of nine pounds, seven ounces and was slightly jaundiced. Early health problems included ear infections between thirteen and twenty four months. Kevin had surgery for a hydrocele at sixteen months. At age one year, he burned the skin off both hands. At age four, he ran into a cement wall and needed stitches on his forehead. At age five, he had chicken pox and additionally received nine stitches on his leg after falling against a store shelf. Functional problems included sleep difficulties (trouble falling and staying asleep) between thirteen and eighteen months. Overactivity began at age two and continued to age five. Temper tantrums began at age two and continue to present. Shyness with strangers, irritability, and unwillingness to go along with change in daily routine have been present since age four. His mother additionally noted Kevin tendency to make loud noises when playing Nintendo and eating.

Temperament study form a preschool perspective notes a slow to adapt youngster, intense and very persistent. His mother noted that his rhythmically (appetite, sleep/wake cycle, mood regulation) has been less predictable as time has gone on.

Kevin’s mother noted that he fusses, speaks unclearly, and tends to stutter or stammer. Additionally, on the selective attention components of *The Anser System*, she noted he is quite visually aware, is restless, gets bored easily, seems to want things right away, is hard to satisfy, is rather fidgety, and seems to not realize he is disturbing others.

Academically, his mother noted that Kevin has a hard time expressing himself verbally and often starts sentences over and over or says, "I'm thinking". He has difficulty memorizing (alphabet, phone numbers, address, songs). He is a quick learner with visual games (Nintendo) and has fine gross and motor skills.

Kevin is the oldest in a sibship of two children. He has a younger sibling, Anna, age 3. His parents are both 40 and in excellent health.

**Tests and Clinical Procedures Utilized**

Review of prior assessment

Clinical Interview

*The Anser System—Parent Questionnaire*

Temperment Questionnaire

Anxiety Checklist

*Wechsler Preschool and Primary Scale of Intelligence—Revised*
Kaufman Assessment Battery for Children

Peabody Picture Vocabulary Test—Revised—Form L

Child Behavior Checklist

Conners Parent Questionnaire

Behavior Rating Scale—parent form

Woodcock—Johnson Psycho-Educational Battery—Revised

Observations

Kevin was evaluated on two separate occasions, February 13 and February 23, at the chronological age of six years, two months. This evaluation was subsequent to initial assessment conducted by the Speech and Language Specialist. Throughout the course of the evaluation, Kevin used words such as "bench," "thermometer," "thermos," "fingernail," and "siren" in appropriate context. It is noteworthy that prior assessment in the area of language on the Language Processing Test found him to be within normal limits on Associations, Categorization, Similarities, Differences, and Attributes.

Test Results

A. Intellectual Test Results

On the Wechsler Preschool and Primary Scale of Intelligence—Revised

Verbal Scale IQ 94 34+ percentile average range
Performance Scale IQ 105 63+ percentile average range
Full Scale IQ 99 48+ percentile average range

Specific scaled scores and percentiles are as follows:

<table>
<thead>
<tr>
<th>Verbal Scores</th>
<th>Scaled Scores</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Comprehension</td>
<td>17</td>
<td>99</td>
</tr>
<tr>
<td>Arithmetic</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Similarities</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Sentences</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>-----------</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**Performance Scales**

<table>
<thead>
<tr>
<th>Object Assembly</th>
<th>11</th>
<th>63</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geometric Design</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Block Design</td>
<td>13</td>
<td>84</td>
</tr>
<tr>
<td>Mazes</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Picture Completion</td>
<td>12</td>
<td>75</td>
</tr>
</tbody>
</table>

Additional assessment on select subtests of the Kaufman Assessment Battery for Children resulted in the following age scores: Hand Movements, 6-2, Gestalt Closure, 6-9, Number Recall, 3-6.

**B. Language Test Results**

On the Oral Language Cluster of the Woodcock Johnson Psychoeducational Battery—Revised, Kevin attained a standard score of 81 at the 11th percentile, KO grade score, age score of 4-10. Assessment of Form L of the Peabody Picture "Vocabulary Test—Revised resulted in a standard score of 101 at the 53rd percentile.

**C. Memory Test Results**

Short term memory assessment on the Short Term Memory Cluster of the Woodcock Johnson—Revised resulted in a standard score of 47 at below the first percentile, KO grade score, age score of 4-0.

**D. Emotional/Behavioral Test Results**

Throughout the course of the evaluation, presented in a very positive fashion. He has difficulty formulating verbal expressive responses beyond a single word level. On occasion he would verbalize, "I’m thinking". He also evidenced mild distractibility in verbalizing that he heard associated sounds from outside the evaluative setting.

Results of clinical scales are summarized as follows. From a temperament perspective (Item 1.0), his parents described Kevin as an active youngster, slow to adapt, somewhat hesitant to move into new situations, and very persistent. Results of the Child Behavior Checklist (Item 2.0) found the Attention Problems scale nearly two standard deviations above the mean, approximately the 97th percentile. On the Conners Parent Questionnaire (Item 3.0), Kevin evidenced a Hyperactivity Index score of 2.0 and a Learning Problems scale approximately 2.5 standard deviations above the mean. On the Behavior Rating Scale (Item 4.0), the parents endorsed seven of nine impulsivity and five of nine inattention items.

**E. Achievement Test Results**

**Woodcock Johnson Tests of Achievement**
COMPUSCORE FOR THE WJ-R 3.0

Norms based on age

Kevin Smith

CA: 6 years 2 months

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Raw Score</th>
<th>Age Equiv.</th>
<th>Grade Equiv.</th>
<th>RPI</th>
<th>SS (+/- 1SEM)</th>
<th>Percentile (+/- 1SEM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Memory/ Names</td>
<td>18-B</td>
<td>3-5</td>
<td>K-0</td>
<td>61/90</td>
<td>68 (63-73)</td>
<td>2 (1-4)</td>
</tr>
<tr>
<td>2. Memory/Sen</td>
<td>27</td>
<td>3-2</td>
<td>K-0</td>
<td>9/90</td>
<td>61 (56-66)</td>
<td>0.5 (0.2-1)</td>
</tr>
<tr>
<td>3. Visual Matching</td>
<td>8</td>
<td>4-6</td>
<td>K-0</td>
<td>50/90</td>
<td>76 (69-83)</td>
<td>5 (2-13)</td>
</tr>
<tr>
<td>6. Picture Vocabulary</td>
<td>24</td>
<td>5-7</td>
<td>K-5</td>
<td>84/90</td>
<td>94 (87-101)</td>
<td>34 (19-53)</td>
</tr>
<tr>
<td>9. Memory/ Words</td>
<td>4</td>
<td>4-0</td>
<td>K-0</td>
<td>2/90</td>
<td>48 (42-54)</td>
<td>0.1 (0.1-0.1)</td>
</tr>
<tr>
<td>13. Oral Vocab.</td>
<td>8</td>
<td>5-11</td>
<td>K-5</td>
<td>85/90</td>
<td>97 (92-102)</td>
<td>41 (30-55)</td>
</tr>
<tr>
<td>Short-Term Memory</td>
<td>___</td>
<td>4-0</td>
<td>K-0[1]</td>
<td>4/90</td>
<td>47 (42-52)</td>
<td>0.1 (0.1-0.1)</td>
</tr>
<tr>
<td>Comprehension</td>
<td>---</td>
<td>5-10</td>
<td>K-5</td>
<td>84/90</td>
<td>94 (89-99)</td>
<td>34 (23-47)</td>
</tr>
<tr>
<td>17. Numbers Reversed</td>
<td>0</td>
<td>4-0[36]</td>
<td>K-0</td>
<td>1/90</td>
<td>64 (59-69)</td>
<td>1 (0.3-2)</td>
</tr>
<tr>
<td>20. Listening Comprehension</td>
<td>12</td>
<td>4-6</td>
<td>K-0</td>
<td>66/90</td>
<td>85 (79-91)</td>
<td>16 (8-27)</td>
</tr>
<tr>
<td>21. Verbal Analogies</td>
<td>3</td>
<td>5-5</td>
<td>K-2</td>
<td>82/90</td>
<td>93 (87-99)</td>
<td>32 (19-47)</td>
</tr>
<tr>
<td>Oral Language</td>
<td>---</td>
<td>4-10</td>
<td>K-0</td>
<td>66/90</td>
<td>81 (78-84)</td>
<td>11 (7-14)</td>
</tr>
<tr>
<td>22. Letter-Word Recognition</td>
<td>17</td>
<td>6-7</td>
<td>1.1</td>
<td>68/90</td>
<td>91 (88-94)</td>
<td>28 (21-34)</td>
</tr>
<tr>
<td>23. Passage Comprehension</td>
<td>0</td>
<td>5-6</td>
<td>K-0</td>
<td>1/90</td>
<td>66 (62-70)</td>
<td>1 (0.5-2)</td>
</tr>
<tr>
<td>24. Calculations</td>
<td>3</td>
<td>6-0</td>
<td>K-8</td>
<td>39/90</td>
<td>84 (80-88)</td>
<td>14 (9-21)</td>
</tr>
<tr>
<td>25. Applied Problems</td>
<td>19</td>
<td>6-2</td>
<td>1-1</td>
<td>71/90</td>
<td>86 (81-91)</td>
<td>18 (10-27)</td>
</tr>
<tr>
<td>26. Dictation</td>
<td>12</td>
<td>6-2</td>
<td>1-0</td>
<td>58/90</td>
<td>85 (81-89)</td>
<td>15 (10-23)</td>
</tr>
<tr>
<td>27. Writing Samples</td>
<td>2-T</td>
<td>6-1</td>
<td>1-0</td>
<td>8/90</td>
<td>85 (82-88)</td>
<td>10 (4-21)</td>
</tr>
<tr>
<td>28. Science</td>
<td>16</td>
<td>5-3</td>
<td>K-1</td>
<td>53/90</td>
<td>81 (74-88)</td>
<td>10 (4-21)</td>
</tr>
<tr>
<td>29. Social Studies</td>
<td>11</td>
<td>4-5</td>
<td>K-0</td>
<td>25/90</td>
<td>69 (62-76)</td>
<td>2 (0.5-5)</td>
</tr>
<tr>
<td>30. Humanities</td>
<td>10</td>
<td>3-8</td>
<td>K-0</td>
<td>21/90</td>
<td>66 (60-72)</td>
<td>1 (0.4-3)</td>
</tr>
<tr>
<td>Broad Reading</td>
<td>---</td>
<td>5-10</td>
<td>K-7</td>
<td>12/90</td>
<td>74 (72-76)</td>
<td>4 (3-5)</td>
</tr>
</tbody>
</table>
Follow-up Information about Kevin

Shortly after the meeting, Kevin was diagnosed with Landau-Kleffner Syndrome, a rare seizure disorder causing severe language disturbances, which typically occurs after a period of normal language development (see link below). After Christmas, everyone was encouraged when Kevin went into a period of remission and began to make progress academically and socially. Then, unfortunately, the seizures reappeared over the summer and he again lost ground, becoming almost entirely nonverbal. Now, as Kevin's family and teachers struggle to support him during the periods when the seizures are active, they also search for answers to the baffling disorder as well as treatment options for Kevin's future. A new form of brain surgery has recently been considered. If Kevin is determined to be a good candidate for this surgery he will be one of a very few to have received it.

In this surgical technique, the doctor slices the brain with a tool that looks like a dental pick. Those vertical cuts, 5 millimeters apart, interrupt the horizontal flow of abnormal brain activity. Doctors report that the surgery has helped, to some degree, most of the children who have undergone it.

For more information on Landau Kleffner Syndrome

How does this diagnosis fit or not fit with your previous discussion as a group?
APPENDIX E

Focus Group Questions

1. What did you learn about your role on the team?

2. What did you learn about the roles of others on your team?

3. What did you learn about interprofessional practice?

4. What discipline played a leadership role on your team? Why?

5. Describe the quality of your teamwork? Was there collaboration and/or communication?

6. Are there any other benefits you received from the IPE experience?

7. Is there anything else we could do to improve the interprofessional aspect of this experience for future students?