

Interprofessional Training in an Education Context

by

David Fainstein

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ABSTRACT

Interprofessional education occurs when two or more groups of professionals learn with, from, and about one another. The vast majority of the research on interprofessional education has occurred in medicine. In a medical context, the objectives of interprofessional education are to improve professional collaboration and the quality of care. Medicine is not the only discipline where interprofessional education is important. In education, professionals need to collaborate, consult, and communicate with other professionals on a daily basis with a goal of improving the quality of education for students. In order to build on the small amount of interprofessional education research in an education context, past research has been reviewed and applied to a new context. The current thesis develops a theoretically driven workshop for preservice teachers and school psychologists with the objective of developing an interprofessional understanding and proposes a method for pilot testing of this workshop.

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Chapter 1: Literature Review

Defining Interprofessional Education

The Centre for the Advancement of Interprofessional Education (CAIPE) has provided a commonly cited (e.g., Canadian Interprofessional Health Collaborative, 2012; Freeth, Hammick, Reeves, Koppel, & Barr, 2008; Hammick, Freeth, Koppel, Reeves, & Barr, 2007) definition of interprofessional education: “interprofessional education is those occasions when members (or students) of two or more professions learn with, from and about one another to improve collaboration and the quality of care” (Hammick et al., 2007, p. 736). This definition highlights two important points. First, interprofessional learning occurs when members of different professions *interact* with one another and develop *understanding* of each other’s professions. Second, the goals of interprofessional education (IPE) are to improve professional collaboration and quality of care.

The literature about “interprofessional education” does not all use this term (Campbell et al., 2001; Hanbury, Wallace, & Clark, 2009; Helitzer et al., 2011). Terms such as teamwork building (Weaver et al., 2010) communication training (Brown, Boles, Mullooly, & Levinson, 1999; Helitzer et al., 2011), and team training intervention (Strasser et al., 2008) are commonly used. These terms are not always clearly defined but are typically used to refer to the concept of a team of people learning about and/or improving communication. This inconsistent terminology and lack of clear, explicit definitions of the terms used does make it difficult to draw definite conclusions about IPE from the literature. Recently, researchers have formed organizations (e.g., Centre for the Advancement of Interprofessional Education, Canadian Interprofessional Health

Collaborative) in an effort to provide guidance and encourage the dissemination of clear and concise information about IPE.

Theoretical Foundations of IPE

As noted by Abu-Rish et al. (2012), a program of interprofessional education should be predicated on a theory. Although there are different perspectives, any theoretically sound collaborative framework should include a description of two essential elements: client needs and service professional needs (D'Amour, Ferrada-Videla, San Martin Rodriguez, & Beaulieu, 2005). Notably, these two elements are tied to the two goals of IPE in the CAIPE definition provided above. The first CAIPE goal, improving the quality of client care, is related to serving client needs. The second CAIPE goal, improving collaboration among professionals, is related to serving professional needs. An IPE framework must be designed to consider the needs of both clients and professionals to ensure that both groups gain something from this type of professional development. While no single theoretical basis has been determined to be the gold standard for IPE programs, there are several which appear prominently in the literature. Barr, Koppel, Reeves, Hammick, and Freeth (2005) identified organizational theory, contact hypothesis, and social categorization theory as commonly used theoretical perspectives in their review of the IPE literature.

Organizational Theory. Many studies (e.g., D'Amour et al., 2005; Gaboury, Bujold, Boon, & Moher, 2009; Sicotte, D'Amour, & Moreault, 2002; West, Borrill, & Unsworth, 1998) support using organizational theory (sometimes referred to as organizational management theory) as the basis for IPE. Organizational theory (McGrath, 1964) uses an input-process-output, or I-P-O, model of analysis. This model breaks down

the collaborative process into three categories. First, input, defines group structure and composition as well as required tasks and environmental factors. Next, processes are considered to be any pattern of interaction among two or more professionals. Finally, outputs are the tasks or performance of any group member, team development (e.g., alterations in roles or responsibilities), and effects on group members (e.g., changes in attitudes, beliefs, and knowledge within the work context).

Not all researchers agree that an I-P-O model of analysis is the most effective theoretical framework. Ilgen, Hollenbeck, Johnson, and Jundt (2005) described the I-P-O framework as inadequate for understanding team collaboration, specifically noting that the linear progression from inputs to processes to outputs was unlikely to be representative of actual group interactions. Others have noted that mediating factors, that are not typically considered to be *processes* in organizational theory, may exist between inputs and outputs. For example, how efficiently an individual performs a task would not be defined as a team *process*, but it could have an impact on the team-based *outcome* (Ilgen et al., 2005; Marks, Mathieu, & Zaccaro, 2001).

Contact Hypothesis. Barnes, Carpenter, and Dickinson (2000) suggested that contact hypothesis is a simple and well-established theoretical framework that could be used when developing IPE programs. Contact hypothesis (Allport, 1979) asserts that merely having contact between one group and another is insufficient to change attitudes for both parties. Instead, to facilitate a mutually positive interaction, a number of additional conditions need to be met. While the specific conditions with regard to IPE are not universally agreed upon, several have been proposed. These include equality of group member status, positive expectations of IPE pre-hoc, systemic support, organizational

support, group cooperation, and mutually agreed-upon goals (Barnes et al., 2000; Carpenter, 1995; Furness, Armitage, & Pitt, 2012; Hewstone, Carpenter, Routh, & Franklyn-Stokes, 1994).

Social Categorization Theory. SCT proposes that self-identity is developed from one's social category or group (Levine & Hogg, 2010; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). As well, individuals who categorize themselves into a collective group may engage in stereotyping, conformity, and egocentrism. Importantly, in IPE a group composed of members from the same profession can define themselves as an ingroup and distinct from an outgroup whose members are from another profession (Hean, Clark, Adams, Humphris, & Lathlean, 2006) and this can have positive or negative outcomes. Self-categorization and ingroup formation may be the cause of attitudes and behaviours directed towards outgroups in IPE (Hean & Dickinson, 2005). An example of ingroup favouritism and outgroup discrimination would be a group of physicians who viewed their own ingroup as more important for providing healthcare to patients than other health professionals. Ingroup formation can also have positive implications for IPE. Hind et al. (2003) examined current medicine, nursing, pharmacy, physiotherapy, and dietetics student attitudes towards their own and other preservice professionals and found that the more strongly students identified with their own profession, the more likely they were to report that they were ready for IPE.

Summary. It is clear that any IPE program should be based on a definite theoretical framework and that the most common theories associated with IPE are organizational theory, contact hypothesis, and social categorization theory; however it is not clear which theoretical framework best informs IPE. Researchers (Ilgen et al., 2005;

Marks et al., 2001) have noted that organizational theory does not account for the complexity of group interactions and neither contact hypothesis nor social categorization theory seems adequate on their own. Hean and Dickson (2005) proposed using both contact hypothesis and SCT as a theoretical framework in developing IPE. This approach has the benefit of drawing from both theoretical perspectives, which broadens the scope of objectives for IPE in program development.

IPE Programs in Medicine

Many IPE programs have been conducted in medical settings and with medical professionals (Abu-Rish et al., 2012; Reeves, Perrier, Goldman, Freeth, & Zwarenstein, 2013). Brown et al. (1999) conducted a randomized, controlled trial (RCT) of an interprofessional program designed to improve clinician communication skills. The primary goal of this study was improving patient care rather than building interprofessional collaboration. As such, it was an example of interprofessional learning where learners obtained information simultaneously. That is, the intervention group (n = 32) of doctors, nurses, physician assistants, and optometrists were not required to practice in interprofessional groups. Instead, the intervention group participated in the interprofessional program and then continued their routine as healthcare providers. The experimental measure was a pre-post survey assessing patients' ratings of clinicians' communication skills. There were three components to the IPE intervention from this study. First, clinicians attended a four-hour workshop focusing on building effective relationships with patients. Then, over the next month participants were required to audio record and listen to two patient visits that were at least an hour in duration. Throughout this month, an instructor from the training program called each clinician and reiterated

skills learned in the first workshop. Finally, clinicians attended a second four-hour workshop focusing on negotiating disagreements with patients. Both workshops included didactic, interactive (e.g., encouraging discussion), and role-playing components. The results of this study did not support the hypothesis that IPE has positive effects on patient care. In fact, patient satisfaction increased for the control group and while there was no increase in patient satisfaction for the intervention group. The authors of the study concluded that in order for IPE programs to be effective, they should cover a broader range of skills, have a longer duration, and include ongoing feedback. Several limitations of this study included: lack of interprofessional collaboration, the use of a measurement instrument with undetermined validity, government regulations dictating the amount of time clinicians were permitted to spend with patients, the control condition did not receive any educational program to compare with the IPE program, and the fact that clinicians were encouraged to target improving communication skills with high-needs patients rather than with all patients.

Janson et al. (2009) developed an IPE intervention targeted at improving the care and outcomes of adult patients with type-2 diabetes. The healthcare professionals involved in this intervention were students in medicine, nursing, and pharmacy. In contrast to the previous study, there was a greater focus on active interprofessional collaboration. These professionals worked in teams of four or five medical residents, two nursing students, and two pharmacy students. A total of 120 students participated in 8-12 week rotations as healthcare providers throughout the course of the study. The intervention group of patients (n = 221) received diabetes care from the interprofessional team and the control group of patients (n = 163) received care solely from medical

residents. Each interprofessional team engaged in a one-half day per week chronic illness curriculum developed by the research authors. Specifically, this consisted of a one-hour didactic seminar followed by a half-hour clinical discussion focused on patient management and 2.5 hours of patient visits. Throughout the intervention, interprofessional teams received feedback about their patients' clinical status and quality of care. The results showed that the intervention group patients had an improved process of care and less use of emergency care as compared to controls. Further, the healthcare students in the intervention group gave themselves higher scores in the areas of preparation, accomplishment, and providing acute care for type-2 diabetes patients compared to self-ratings of the control group of healthcare professionals. Despite the positive findings of the study, there were several limitations to the methodology. One significant limitation was the fact that neither patients nor healthcare providers were randomly assigned to intervention or control conditions. This limitation may have had an impact on the results because more committed patients and/or healthcare providers may have self-selected into the intervention condition. Secondly, the composition of the IPE teams changed frequently which made it difficult to develop and maintain team cohesiveness (e.g., medicine residents were on an 8-week rotation and pharmacy students were on a 12-week rotation). Thirdly, the intervention group had more time to receive clinical training and more available resources than the medical residents in the control condition. Finally, the study did not use a measure of interprofessional learning specific to understanding the expertise and roles of members of other professions (e.g., did students identify an overlap in the functions of pharmacy and nursing; were medicine residents able to identify misconceptions about the role of a pharmacist).

In another example of a RCT designed to evaluate patient outcomes after an IPE program, 31 veterans affairs medical centres across the United States measured stroke patient outcomes including motor ability, community discharge location, and length of stay from admission to discharge (Strasser et al., 2008). Healthcare professionals in both control (n = 237) and intervention (n = 227) conditions were placed in teams consisting of one or more members from each of six professional disciplines: medicine, nursing, occupational therapy, speech-language pathology, physical therapy, and social work. The intervention teams received an intensive six-month IPE program delivered in three phases. The first phase was a two and a half day workshop focusing on team problem solving and using program evaluation data effectively. Approximately one month later, the second phase consisted of discussing team process problems and then creating action plans to address the presented problems. The third phase was spread over the last three months of the intervention where the IPE instructors provided teams with ongoing feedback and support. The control condition participants received information on effective team functioning but no additional training during the six-month IPE program for the intervention condition. Results of this study demonstrated that patients who received care from the professionals in the IPE program made greater gains in functional motor movement but had an equal length of hospital stay to the controls. One notable limitation of this study was that the professionals in the control condition were at a disadvantage because the intervention group received additional time for professional development.

Summary. The structure of interprofessional programs in a medical context varies considerably across studies. The programs vary with respect to duration, sites of

implementation (e.g., hospitals, outpatient centres), number of professionals involved, and types of professions included (Reeves et al., 2013). Additionally, the goals of interprofessional learning vary across studies. As an example, there may be differences in the extent to which programs explicitly aim to improve or increase interprofessional collaboration (Thistlethwaite, 2012). Abu-Rish et al. (2012) found that the IPE literature is weakened by poorly detailed outcomes, populations, and study settings. Interestingly, the studies discussed above (Brown et al., 1999; Janson et al., 2009; Strasser et al., 2008) have a common limitation: each IPE intervention group was compared against a control group who received no educational component. This limitation is significant because without a comparison educational component, the intervention condition may have benefitted from time provided for additional training rather than from interprofessional training specifically. The results from these studies would have been more compelling if they had shown that their IPE intervention was successful as compared to a control group with a different educational intervention.

Overall, past research has shown that IPE programs have had varying degrees of success. In a systematic review, Reeves et al. (2013) reported that IPE programs in medical education have been shown to result in improvement in a number of areas. These included increased patient satisfaction, reduction in clinical errors, improved professional competency development, improved patient care, better interprofessional collaboration, and improved culture in emergency room care. However, of the fifteen studies reviewed by Reeves et al. (2013), over half had either mixed or no impact on the health outcomes of patients. Several authors have noted the need for further research in this area (Abu-Rish et al., 2012; Lapkin, Levett-Jones, & Gilligan, 2013; Reeves et al., 2013).

Measuring IPE Outcomes

There are numerous instruments used by researchers to measure the outcomes of IPE. In fact, the Canadian Interprofessional Health Collaborative (CIHC; 2012) lists 128 instruments used to assess outcomes of IPE along with a brief description and information about their psychometric properties. The high volume of instruments to measure IPE outcomes may be partly attributed to the variety of outcomes explored by different researchers. To measure the outcomes of interest, IPE researchers have continued to create new instruments for their studies. Often, these instruments assess similar, if not identical, constructs as other researcher-developed instruments. This trend could be one reason for the conclusion of Abu-Rish et al. (2012) that the outcomes explored in IPE literature are assessed and reported in an inconsistent manner.

The Readiness of (Healthcare Students) for Interprofessional Learning (RIPLS; Parsell & Bligh, 1999) and the Interdisciplinary Education Perception Scale (IEPS; Luecht, Madsen, Taugher, & Petterson, 1990) are two instruments commonly used to measure IPE outcomes (e.g., Blue, Mitcham, Smith, Raymond, & Greenberg, 2010; Goelen, De Clercq, Huyghens, & Kerckhofs, 2006; Margalit et al., 2009; Pollard, Miers, & Gilchrist, 2005). Despite the fact that they are commonly used, there are psychometric weaknesses with both instruments. For example, Thannhauser, Russell-Mayhew, and Scott (2010) reported that the IEPS and RIPLS rely on self-report data, which may not be best suited to measure interactional factors of IPE.

Oates and Davidson (2015) reviewed the psychometric properties of nine instruments, including the RIPLS and IEPS, commonly used to measure IPE outcomes. The authors found that there were limitations for all of the instruments reviewed. In

particular, ceiling effects and a narrow scale width were noted to limit the ability to detect meaningful change in dependent variables (e.g., behaviour change, change in attitude toward other professionals). Further, many of the instruments reviewed reported low internal consistency for subscales and did not include any information about the scoring protocol or interpretation of the score data obtained from participants. Therefore, Oates and Davidson did not recommend the use of any of these instruments to measure outcomes from an IPE program with preservice healthcare professionals.

One relatively new instrument, the Interprofessional Collaborative Competency Attainment survey (ICCAS; Archibald, Trumpower, & MacDonald, 2014), seems to have addressed some of the concerns noted by Oates and Davidson. The ICCAS was developed to assess two factors: one's roles and skills in interprofessional collaboration and one's understanding of their role on an interprofessional team. This measure was validated on 584 participants in undergraduate, graduate, and professional development IPE programs. The ICCAS uses a pre-post retrospective 20-item survey, which was designed to account for ceiling effects noted as a limitation in previous IPE outcome measures (Oates & Davidson, 2015). However, one limitation associated with a pre-post retrospective format is that participants may have recall bias (e.g., answers to questions might also be influenced by conscious or unconscious desire to show or not show change in their question answers). Positively, the internal consistency value (i.e., Cronbach's alpha) of the subscales of the ICCAS was found to be even higher (ranging between 0.94 and 0.98) than the range (i.e., 0.70 – 0.90) recommended by Oates and Davidson (2015).

Instructional Design

Instructional design has been described as planning instruction to support learning by taking the principles of human learning into account (Gagné & Briggs, 1979). Human learning may take place in many different environments. More recently, online learning has been used as a supplement or in replacement of traditional in-person learning. Due to the fact that easily usable computer-mediated technology has been developed relatively recently, the literature on instructional design using online content is sparse in comparison to that using a traditional in-person classroom environment (Cook et al., 2010).

Past research has investigated instructional design in numerous settings. In a medical context, some of this research has used in-person (e.g., problem-based learning, simulation-based learning), online (e.g., electronic-learning), and combining both types of instruction (e.g., blended learning).

Problem-Based Learning. Problem-based learning (PBL), sometimes referred to as case-based learning, originated in McMaster University's medical faculty in the late 1960s (Allen, Donham, & Bernhardt, 2011). Since that time, it has been widely used as an instructional method in medical schools in many countries. In the medical field, PBL uses patient cases as a context for student learning about the skills and knowledge necessary to solve practical problems (Albanese & Mitchell, 1993). To date, there have been mixed findings with respect to the efficacy of PBL in medical education (Hartling, Spooner, Tjosvold, & Oswald, 2010; Polyzois, Claffey, & Mattheos, 2010). There has been no definitive outcome from the literature examining PBL compared to conventional lecture instruction. One recent systematic review concluded that there was no difference between PBL and conventional lecture instruction (Polyzois et al., 2010). However,

another systematic review (Hartling et al., 2010) reported that past studies of PBL instruction have demonstrated that medical students improve their diagnostic accuracy and knowledge acquisition. The authors of both systematic reviews (Hartling et al., 2010; Polyzois et al., 2010) noted that the inconsistent findings from past research might be due to the heterogeneity across study methodology.

PBL Curriculum Examples. Schauber, Hecht, Nouns, Kuhlmeier, and Dettmer (2015) recruited a large pool of participants (N = 1646) and followed them from the end of their second year through to the start of their fifth year of medical school at Universitätsmedizin Berlin: Charité. The vast majority (n = 1471) completed a traditional medical curriculum. Students who completed the PBL curriculum (n = 175) had chosen to participate in a lottery for positions in this medical education program. The traditional medical curriculum group attended lectures and seminars and had to complete a licensing exam before entering the practical component of their training. In contrast, the PBL group worked in small groups facilitated by a tutor for their coursework, and did not have to complete a licensing exam. Both groups completed a self-report measure at the beginning, three times throughout their coursework, and once at the end of their coursework on attitudes and knowledge about their course of study (i.e., study effort, self-efficacy, perception of learning environment, collaborative learning experiences) as well as several clinical knowledge tests. The PBL group rated their learning environment more highly and reported higher levels of engagement in collaborative learning than the traditional curriculum group. On the other hand, over five semesters of study the traditional curriculum group made greater gains in clinical knowledge test scores as compared to PBL students. Importantly, self-report of study effort was consistently

related to gains in academic achievement across two and a half years and when this factor was considered, the authors concluded that PBL did not have substantial benefit over the traditional curriculum.

Tiwari, Lai, So, and Yuen (2006) examined the difference between PBL and traditional lecture-based training on nursing students' critical thinking. First-year nursing students were randomly assigned to either a PBL stream (n = 40) or lecture stream (n = 39). Both streams completed a first-year nursing therapeutics course (three to six hours per week for both groups). Participants in the lecture stream had traditional lectures in an auditorium. Participants in the PBL stream worked in groups of ten with one tutor throughout the year in small tutorial rooms. Each PBL session consisted of forming hypotheses, reviewing learning objectives, responding to presented problems, and synthesizing a method to solve the case. Participants' ability to use critical thinking was measured over four time points throughout the year using the California Critical Thinking Disposition Inventory. After one year, first-year nursing students who experienced the PBL curriculum reported greater critical thinking disposition as compared to students who took a traditional lecture-based stream. The authors of this study suggested that critical thinking disposition relates to participants' self-regulated learning. Self-regulated learning refers to learning processes guided by meta-cognition, strategy development, and motivation (Winne & Perry, 2000). It was suggested that as participants were better able to self-regulate their learning, the acquisition of important knowledge and skills increased. Thus, the authors concluded that PBL was an effective curriculum that was preferable to a traditional lecture stream for nursing students.

Castro-Sánchez et al. (2012) used PBL as a central part of their undergraduate curriculum for physical therapy students. The objective of this study was to examine whether students preferred PBL or conventional lecture instruction and to explore the study strategies they developed as a result of both forms of instruction. The PBL curriculum followed a sequence of steps that included group-based problem solving, assigned tasks from a tutor, individual work, individualized feedback, integrating individual contributions into a coherent solution, and extending knowledge to other applicable scenarios. In the first year of the study, students (n = 182) entering the program received conventional lecture instruction. In the second year of the study, students (n = 176) entering the program received a PBL curriculum. Both groups of students completed pre-post surveys about their study skills, learning strategies, and the quality of their learning experience. Students who received the PBL curriculum reported greater interest in the coursework, saw improvements in their ability to create relationships between ideas, and had better study organization skills as compared to students who received conventional lectures. Students who received PBL instruction also reported a decrease in lack of purpose, less memorizing without connecting to another concept, and a reduced fear of failure. The authors acknowledged that there was no follow-up data collected about students' ability to translate knowledge gained from PBL in training to a real life setting. However, they concluded that PBL was an effective instructional method that facilitated positive learning strategies for physical therapy students.

Combining IPE and PBL. Dahlgren (2009) proposed that implementing PBL in an IPE environment would be beneficial for two primary reasons. First, both IPE and

PBL are founded on group-based learning where participants share the ownership for their learning. This is important because real-world learning is often a social process, and so it would be helpful to practice this type of interaction in a training program. Second, when students reflect on their PBL experience they often identify the skills they have acquired which help to improve patients' quality of care. For example, if a student reflected that PBL helped them acquire effective interprofessional communication skills, this would have a positive impact on patient care. That is, both IPE and PBL contribute to building competency for multiple professionals, which will ultimately serve the client.

Eccott et al. (2012) conducted a study where IPE and PBL (which they referred to as IP-PBL) were combined for preservice students in a variety of medical training programs. Twenty-four students from nursing, pharmacy, medicine, physical therapy, and occupational therapy were placed on five teams. Each team had a representative from each profession with the exception of one group who did not have a physical therapy student. After the IP-PBL experience, participants were interviewed in focus groups regarding the learning experience. Overall, students' understanding of interprofessional practice (e.g., understanding their role on a multidisciplinary team, describing others' roles) increased and there was an improvement in attitudes towards collaborating with other professions. The authors concluded that the success of this IP-PBL program might be partly attributed to an in-person synchronous learning experience where professionals could interact face-to-face (Curran, Sharpe, Forristall, & Flynn, 2008; Eccott et al., 2012). The authors also noted that it would be beneficial to conduct further research using the combination of IPE and PBL because there is a gap in the literature for this specific type of education.

Future Directions in PBL. There has been emerging research on IP-PBL in the context of medical training; however, only one study examining the efficacy of IP-PBL in an education context was located. Wellmon, Gilin, Knauss, and Inman Linn (2012) examined students' attitude change towards other professions after an IPE program. This study included students in: clinical psychology (n = 35), education (n = 17), physical therapy (n = 36), and social work (n = 35). Although the outcome of this study showed that student attitudes changed positively after IPE, there were several limitations. First, the study used measurement tools that were validated using professionals and preservice professionals in the healthcare field (i.e., clinical psychologists, teachers, and social workers were not included in the validation of their measurement tools). Second, the authors described a case-based learning experience, which has many features of PBL but does not include group facilitators. Third, although education students were included in the study, the problem presented in the case was primarily medical in nature. In schools, there are a variety of professionals who work with educators and students directly (e.g., speech-language pathologists, school psychologists, occupational therapists) and others (e.g., physicians, police) with whom educators also must consult about students. Because the school system includes an ongoing demand for interprofessional communication, there exists a need to examine the efficacy of IP-PBL in an education context.

Curran et al. (2008) discussed the importance of face-to-face interaction in an interprofessional learning environment when employing PBL. That is, students preferred a synchronous learning environment where they could personally interact with colleagues as opposed to an online, asynchronous, computer-mediated experience with PBL. Further, the authors found that students had greater satisfaction with interprofessional

learning when they interacted in person. This finding fits well with the relevant theoretical frameworks discussed above. Both contact hypothesis and SCT include mention of face-to-face interactions as vital components of effective IPE programs (Hean & Dickson, 2005). As well, these theoretical perspectives and PBL require interprofessional communication to include more complex interactions rather than for participants to simply be working on the same task in the same place at the same time.

Since PBL was introduced to medical education programs over fifty years ago, there have been various evidence-based recommendations for maximizing the benefit of PBL made in the literature. Azer, Mclean, Onishi, Tagawa, and Scherpbier (2013) identified a number of factors that would help maximize the benefits of PBL training. The authors noted that training of and providing ongoing feedback to PBL tutors was very important. Specifically, the authors suggested that it was vital to provide tutors with explicit instruction about learning objectives, the process to providing constructive feedback, opportunities for professional development, and ongoing communication regarding the PBL process and their role as a tutor. Other recommendations were centered on ongoing program evaluation. The authors noted that it was important to review past years' student feedback to consider improvements, publish results in peer-reviewed research, and ensure that tutors were not providing instruction beyond the prescribed curriculum modules. The authors also made recommendations specific to student needs. These included the need for immediate conflict resolution, establishing group etiquette, and making student accountability a priority.

Simulation-Based Education. Recent medical research has examined features of instructional design in simulation-based education (Cook et al., 2013; Issenberg et al.,

2005; McGaghie, Issenberg, Cohen, Barsuk, & Wayne, 2011). In medical simulation-based education, participants interact with a virtual or physical tool to mimic clinical care. Issenberg et al. (2005) identified ten features associated with effective learning in a simulation-based, medical training condition: clinical variation (i.e., providing multiple different patient scenarios); curriculum integration (i.e., requiring students to have training using simulation-based education); distributed practice (i.e., training over at least 41 days); group practice (i.e., two or more students training simultaneously); providing feedback (i.e., giving instruction and comments during or after simulation); individualized learning (i.e., ensuring training adapts to participant performance as they progress or make errors); mastery learning (i.e., participants should be required to reach a predetermined standard before progressing to more difficult tasks); multiple learning strategies (i.e., provide instructional strategies such as discussion, feedback, worked examples, patient case, or task variation); repetitive practice (i.e., allow more than one attempt on a simulation); range of difficulty (i.e., as participants reach mastery at a task, increase the difficulty on subsequent tasks).

In a systematic review of studies of medical training, Cook et al. (2013) found that the ten features suggested for instructional design by Issenberg et al. (2005) were all supported. However, it would also be possible to apply Issenberg et al.'s ten instructional design features in other contexts. For example, curricular integration, group practice, feedback, individualized learning, multiple learning strategies, clinical variation, distributed practice, and range of difficulty would all be applicable to an education context. It would be more difficult to apply repetitive practice and mastery learning (as described by Issenberg et al.) in an education context, because these features require

participants to reach a standard of training specific to a medical context (i.e., proficiency performing a medical procedure

Electronic-Learning. Electronic-learning (e-learning), sometimes called Internet-based learning, mobile learning, or distance learning, has been examined as an instructional method for students in health related fields (e.g., Bednar et al., 2007; Carbonaro et al., 2008; Cook et al., 2010; Ellman et al., 2012; King, Greidanus, Carbonaro, Drummond, & Patterson, 2009; Lemaire & Greene, 2003; Little, Passmore, & Schullo, 2006; Ruggeri, Farrington, & Brayne, 2013; Seefeldt et al., 2012; Solomon et al., 2010). This method of instruction uses the Internet as a platform for teaching and learning. Solomon et al. (2010) reported that health science students who experienced an e-learning environment had an improved ability to problem-solve and identify their role as a professional in the healthcare field after the online IPE program.

Due to the nature of e-learning, a common limitation noted in the literature has been the technical difficulties experienced by participants (e.g., King et al., 2009; Seefeldt et al., 2012). In any situation where technology is to be used, it is important to attend to the level of expertise participants have in this domain. Pulman, Scammell, and Martin (2009) identified that both student and facilitator technological skill levels impacted perceived learning in a blended learning IPE for health and social care. The authors recommended providing explicit instruction on how to use the technological component of the blended learning experience to both students and facilitators.

As previously noted, IPE in medicine aims to improve professional collaboration and patient quality of care. In an education context, improving collaboration may be done, in part, by promoting interprofessional understanding. McKenna et al. (2014)

conducted a qualitative examination of interprofessional understanding after an e-learning activity. This activity was composed of students working through online modules of videos and documents related to interprofessional practice with the opportunity to use discussion boards to communicate with their group. It was found that health care students had improved interprofessional understanding after this e-learning activity. The authors concluded that an e-learning environment not only has potential as a platform for IPE, but also removes several logistical issues of requiring students to be co-located. The key limitation from this IPE using e-learning was that the students had limited ability to interact in-person and that this should be a consideration in future research.

Blended Learning. In order to address limitations set by communicating online when using an e-learning platform, a combined face-to-face and e-learning method (referred to as blended learning) has been explored in past research (Graham, Woodfield, & Harrison, 2013). In an interprofessional medical context, blended learning has been done using various types of e-learning. For example, Riesen, Morley, Clendinneng, Ogilvie, and Murray (2012) held a two-day IPE workshop with one e-learning virtual reality simulation and two in-person simulations. The virtual simulation involved participants selecting an avatar and then working through a domestic violence simulation with other participants' avatars. The in-person simulations used the same domestic violence simulation as the virtual format. After completing all three simulations, the authors found that there was an improvement in participants' attitude towards other professions, ratings of their own competency in an interprofessional environment, and self-rating of performance on tasks requiring clinical skills. The authors stated that

blended learning was an effective tool to improve interprofessional skills but also highlighted the importance of face-to-face interaction in a simulation-based IPE experience. In another example, Carbonaro et al. (2008) compared a blended learning experience to a face-to-face only condition for interprofessional healthcare students. In this example, the blended learning group met online on a weekly basis after learning and reviewing IPE program content through an online learning management system. The blended group also met in person a few times for introductions, group presentations, and evaluations. The outcomes indicated that both groups were equivalent with regard to attitudes towards IPE and self-reports of communication skills, but the blended learning group self-reported greater competence in identifying their strengths and weaknesses in an interprofessional environment.

Electronic Cases (E-cases). E-cases are computer-mediated representations of information about a case (Posel et al., 2008) such as would be found in a patient chart in medicine or a cumulative record in education. An e-case is a tool that may be used in e-learning, traditional face-to-face learning, or blended learning. Technology has the capability of providing a multimedia experience that can simulate a real-world case file review through video, animations, audio, and images.

Bateman, Allen, Samani, Kidd, and Davies (2013) conducted a study to identify the key factors for consideration when building an e-case. Four main factors emerged as important to the design process. First, construct a case with meaningful information. This category was further explained by including the following information in each case: clinical information (e.g., medically relevant data), educational information (e.g., new medical concepts to be learned for the case), and electronic information (e.g., tips to

navigate the e-case). Second, consider environmental factors that may influence the use of an e-case. For example, participants' prior knowledge, attitudes, or beliefs about using technology could change the amount of exploring done on an e-case. Third, pay attention to factors that mediate the interaction between the participant and the e-case. For example, the skipping threshold is the point where a participant decides to skip reading information in an e-case and move on to another section. The final important factor in creating an e-case was determining the desired outcomes of using an e-case as a learning tool. The authors suggested that it was important to have clear learning objectives for the participant and to provide incentive through a well-structured learning experience.

The research on e-cases, sometimes referred to as virtual patients, has primarily been conducted in a medical context. However, many of the evidence-based guidelines may be applied across multiple contexts. Posel, Fleiszer, and Shore (2009) provided a synthesized list of twelve guidelines for the creation and implementation of an e-case in medical education. Many of these guidelines do not need any alterations to apply across contexts. Each guideline is presented and discussed in an education context below.

Determine Case Content and Choose a Design Model. This may be applied in an education context by ensuring that the case is relevant, interesting, and motivating for participants (e.g., construct a case where the student has difficulty learning to read in an elementary class). In addition, outline clear learning objectives for the activity and expectations for using the e-case for the participants.

Organize and Storyboard Your Case Before You Start. Design an e-case such that participants can explore different types of data in various tabs of a cumulative record.

Ensure that the base (i.e., cumulative record) stays the same but has the ability to include/exclude different information. Use storyboarding to map the user experience step-by-step and work through multiple iterations to find the simplest structure.

Manage Case Complexity and Match it to the Case Objectives. Case complexity is determined by: preliminary knowledge of participants, content of the e-case (e.g., previous report cards, previous assessment information), knowledge required to achieve learning objectives, and participants' skills with respect to conceptualization of student difficulties in school. Create objectives that are challenging to a point where tasks are not simplistic but not overly difficult.

Include Assessment and Feedback From the Start. Include self-assessment and participant feedback as components of the e-case (e.g., include on a learning management system, such as a Moodle site). Specifically, it would be useful to have a mechanism built-in to the e-case where participants are provided specific and constructive feedback. For example, the e-case may require participants to answer multiple-choice questions as they move on to a new section of the e-case (i.e., "which statement is false").

Support an Individualized Approach to Learning. Allow each participant to navigate the e-case at his or her own pace without time constraints. Provide multimedia to support the notion that an e-case is a virtual representation of a potential real-world student. However, do not let multimedia hinder the process of finding information.

Use Your Virtual Patient Case to Encourage Collaboration and Collaborative Learning. Deliver an e-case to an interprofessional group of preservice professionals who work in the education system. Build an e-case using a Shareable Content Object Reference Model (SCORM) package. SCORM is the industry standard for online

learning management systems, such as Moodle (Kumar, Anand, Kumaresan, Senthil, & VijayKumar, 2013). Include workshop activities that require participants to collaborate in a variety of ways.

Tackle Interactivity. Provide participants with a dynamic as opposed to static e-case. For example, allowing users to choose which additional information they would like to acquire to answer questions posed to their interprofessional group.

Anticipate and Navigate. Use heuristics and take core principles from human-computer interaction and usability into account when designing the interface. Consider the process a professional in education would use to find information from a real cumulative record.

Ensure Privacy and Confidentiality of Data. Participants should not have to worry about their data being shared with external sources while navigating an e-case. The online application should exist on a learning management system (such as Moodle), which protects users' data by requiring that an instructor enrol any participants in order to participate. In addition, develop a feasible e-case that does not use data from a real student.

Integrate Evaluation. Have individuals or focus groups provide feedback about the whether the case was designed so that participants achieved the intended objectives from the creators. Continue to improve the interface, content, and design using an iterative workflow.

Recognize the Potential of Expert Traces and the Use of Script Concordance. Track participants' data (e.g., clicks or information viewed) such that it can be traced and

reviewed. After the IPE program, allow participants to review their selections when they make the decision to view new data (e.g., open a new tab in the cumulative record).

Choose the Right Authoring Application for Your Case. Ensure that any software used to create an e-case has the flexibility necessary to make amendments and extract data for future research.

The Education Context

Research has noted difficulty in communication between teachers and other professionals who provide ancillary support (e.g., psychologists, occupational therapists, speech and language pathologists; Margison & Shore, 2009; Ritzema, Sladeczek, Ghosh, Karagiannakis, & Manay-Quian, 2014). This difficulty in communication might result from differences in models of training, professional terminology used, and/or job demands. Further, communication may be hindered by logistical problems. For example, teachers have noted that it would be helpful to have additional time to consult with school psychologists (Farrell, Jimerson, Kalambouka, & Benoit, 2005).

Given the issues that exist in the education system, the training that professionals receive has important implications for their work. Clear communication has the potential to alleviate some of the time constraints placed on multiple professionals collaborating. Acquiring an interprofessional understanding before entering the education system has the potential to benefit to both students and professionals. Hence, an interprofessional education program to facilitate this understanding has the potential to be of great benefit to the professionals working in the educational system and to the students with whom they work.

Chapter 2: An IPE Program for Preservice Professionals in Education

Rationale

The Centre for the Advancement of Interprofessional Education (CAIPE) has defined two important goals of IPE: improving collaboration amongst professionals and the quality of care for clients (Hammick et al., 2007). IPE programs have been used and researched extensively in a medical context (Abu-Rish et al., 2012; Reeves et al., 2013). Some studies have included educational professionals but only one study examining the efficacy of IP-PBL with the variety of professionals who work in school systems was located. Wellmon, Gilin, Knauss, and Inman Linn (2012) examined clinical psychology, education, physical therapy, and social work students' attitude change towards other professions after an IPE program. Although this study included teachers in their IPE program, the case presented in the course of the program involved a child with a problem that was primarily medical and not educational in nature. While it is important for teachers to develop interprofessional understanding to help them work with professionals to assist children with significant medical complications to cope in the school environment, this is not the most common situation where interprofessional cooperation would be important for teachers. More commonly, teachers would interact with school psychologists, speech language pathologists, and/or occupational therapists, so these professions also need to learn to collaborate, consult, and communicate with each other on a daily basis with the goal of improving the quality of education for students. Therefore, it makes sense to develop and test IPE programs specific to the context of the professionals working primarily within the education system.

An IPE Program for Preservice Professionals in an Education Context

Defining the target audience. CAIPE's definition of IPE states that the goal is for professionals to learn "with, from and about" one another (i.e., improve understanding) in order to "improve collaboration and quality of care." The foundation of this definition (i.e., learning with, from and about one another) seems to be the development of interprofessional understanding. Improving understanding has the potential to improve professionals' collaboration, which then has the potential to improve quality of care (or education). The preservice stage of professional development likely serves as the beginning of developing an identity in that profession. Therefore, the target for this IPE program (hereafter referred to as *interprofessional training for preservice professionals in education, or ITPPE*) will be preservice professionals (here teachers and school psychologists) who will work primarily in the education system.

Theoretical Framework. Past research has suggested that using a theoretical framework is pivotal to an IPE program. In addition, the literature has shown that organizational theory does not account for the complexity of group interactions and neither contact hypothesis nor social categorization theory (SCT) seems adequate on their own. Therefore, the ITPPE program will use elements of contact hypothesis and SCT to complement each other.

Contact Hypothesis. This framework describes a set of preconditions necessary for successful group interaction. Contact hypothesis states that mutually agreed upon goals are necessary to help change attitudes. Therefore, developing goals together will be the first activity in the ITPPE program. This activity will also help ensure that participants have positive expectations of the workshop. This is another element of

contact hypothesis. The workshop will be organized to help the facilitator ensure that both groups of students have equal opportunity to share their ideas in discussion. Small discussion groups will have an equal number of participants from each profession (e.g., groups of 2 preservice teachers and 2 preservice school psychologists). Equal representation from each profession may help participants have the opportunity to learn with, from and about one another without feeling singled out or overwhelmed in discussion and help with achieving equal group status which is another important element emphasized by contact hypothesis.

Social Contact Theory (SCT). This framework proposes that when individuals identify with their ingroup (in this case, their own profession), they may engage in negative actions towards outgroups (e.g., stereotyping). In a professional context, this could lead to situations where one profession discounts the knowledge and expertise of another group which could be damaging to interprofessional cooperation and to the ability of an interprofessional team to assist a child who is experiencing difficulty. Ideally, individuals would begin to develop interprofessional understanding at the preservice stage of professional development, as it may prevent negative attitudes and actions toward other professional groups. In order to achieve this for this ITPPE program, two strategies were used. First, the ITPPE program is targeted at participants who have already completed coursework or practica in their program so they can bring some theoretical and practical professional knowledge as well as some experience with interprofessional teams to the workshop. Second, the program will include components designed to facilitate an interprofessional discussion between participants that highlights similarities and differences between their professions. This interprofessional discussion

will involve discussion of training, professional certification/registration requirements, and job requirements with the goal of improving interprofessional understanding. It will also include an e-case to provide a simulated experience of the practical application of the content in the ITPPE program.

Measuring IPE Outcomes. To evaluate the effectiveness of the ITPPE program, it will be important to select a measure that was normed for use with preservice professionals and measures interprofessional understanding. The Interprofessional Collaborative Competency Attainment survey (ICCAS; Archibald, Trumpower, & MacDonald, 2014) was validated using a participant pool of 584 participants; the majority of which were students. As well, the ICCAS measures one's roles and skills in interprofessional collaboration and one's understanding of their role on an interprofessional team. Many of the items on the survey would translate directly to an education context without changes; however, some items required alterations in language.

Language was amended on the ICCAS so that it was clear that items were referring to an education, rather than a medical, context. Specifically, the term *care* was replaced with *intervention* for item numbers 7, 8, and 19. The term *patient* was replaced with *child* for item 15. Two items required additional amendments. Item 13 was changed from *use an IP team approach with the patient to assess the health situation* to *use an IP team approach to assess the educational challenges of the child* and item 14 was changed from *use an IP team approach with the patient to provide whole person care* to *use an IP team approach with the child to provide an optimal educational setting*.

Instructional Design. When designing an educational program, it is important to consider approaches to instructional design. A review of the literature of instructional

design has informed choices about the format, the content, and the decision to use an e-case in the ITPPE program (Cook et al., 2010).

Format. The need for a face-to-face learning experience where participants are co-located has been identified as important for IPE (Riesen et al., 2012). At the same time, both teachers and school psychologists are adapting to new technology (e.g., laptops, tablets, smartphones) in the workplace (Williams et al., 2009). Post-secondary institutions are adapting to this by the use of online learning management systems and school districts are moving to storing student data (e.g., cumulative records) in an online format. Blended learning leverages the benefits of both face-to-face and e-learning in IPE (Riesen et al., 2012). Therefore, the ITPPE program will use a blended learning format to structure the learning experience. This will include the use of online content along with face-to-face interaction.

Content. It is possible to improve interprofessional collaboration by having participants learn about the roles and responsibilities of other professionals with whom they interact on a daily basis (e.g., Eccott et al., 2012; McKenna et al., 2014; Riesen et al., 2012; Santy, Beadle, & Needham, 2009). For the ITPPE program, this will be accomplished by having participants interview each other and participate in small group discussions about the similarities and differences in roles and responsibilities of teachers and school psychologists. Additionally, as the participants will be in the preservice stage of professional development, learning about similarities and differences in university training programs for education and school psychology students will be included.

Research about IPE has suggested several instructional approaches to be effective in improving interprofessional collaboration. These include problem-based learning (e.g.,

Eccott et al., 2012), e-learning (e.g., Carbonaro et al., 2008; Santy et al., 2009), blended learning (e.g., Riesen et al., 2012), and simulation-based learning (e.g., Cook et al., 2013). Past research has shown that the use of problem solving with a practical example (i.e., problem-based learning, or PBL) has been highly effective in IPE (Curran et al., 2008; Dahlgren, 2009; Eccott et al., 2012; Goelen et al., 2006; Loutzenhiser & Hadjistavropoulos, 2008). Therefore, PBL will be used to frame interprofessional discussions in a practical context. Importantly, the objective of using a PBL e-case will not be to *solve* the case, as is often the goal of PBL in a medical context, but rather to foster an understanding of how different professions are trained to conceptualize learning and behaviour and the reasons why students experience difficulty in school. This example case will use a brief narrative to present general information about the challenges a hypothetical student is having in the classroom.

Chapter 3:

The Interprofessional Training for Preservice Professionals in Education (ITPPE)

Program Facilitator Manual

Notes:

The following guide has been created using information specific to a graduate school psychology program and undergraduate education program in Nova Scotia. Please be aware that you might need to make alterations to reflect the context of your province and programs.

Text written in **bold** should be read aloud to workshop participants. Objectives for each activity are *italicized*.

Introduction

Introduce yourself by sharing who you are and your experience working in education. For example:

Welcome to today's workshop. My name is _____. I am a professor in (department) and teach (course) at (institution). I have experience in _____.

Explain the groups that are present at the workshop, the objectives, and an overview for the day.

Today's workshop will be approximately three hours long and we will have discussions in small groups as well with the whole group. We have two different groups of students here today. We have students who are training to become teachers and students who are training to become psychologists who will work in schools.

Today's workshop has been designed to help students who are training to work in an educational setting learn about some of the factors that can complicate working on an interprofessional team.

Generally, the workshop will consist of discussions about a variety of topics in small, interprofessional groups and then some consolidation of the information gleaned in the small groups when the whole group comes together.

Forming Goals

Objective: Develop four goals for the workshop

The first thing we are going to do today is develop some goals for the workshop. As I said before, everyone here today is a student – either in education or in school psychology. I would like to start by asking each group what you know about each other’s programs.

First, school psychology students, what do you know about the BEd program?

Allow for brief participant responses. Respond to information as appropriate.

Ok, now BEd students, what do you know about the school psychology program?

Allow for brief participant responses. Respond to information as appropriate.

So, it would seem that each group has some knowledge about the other program. Would either group agree that the discussion included all the important information about your program?

Allow for brief participant responses.

So, the conclusion seems to be that neither group has a full understanding of the other group’s program. Given that there may be gaps in our knowledge, perhaps we could say that one goal for this workshop is to “learn about training in the BEd and school psychology programs”?

Write this goal on board: “learn about training in the BEd and school psychology programs.”

Both groups of students here today have finished at least one year of their training program and both have had practical experiences in school and know something about the actual job demands of their profession. But, what do you know about the job demands of the other professions you’ll be working with? School psychology students, what do you know about the day-to-day job demands of a teacher?

Allow for brief participant responses.

So, BEd students, did this information cover everything about the job demands of a teacher or was some information missing?

Acknowledge that some information was missing.

BEd students, what do you know about the day-to-day job demands of a school psychologist?

Allow for brief participant responses.

So, school psychology students, did this information cover everything about the job demands of a school psychologist or was some information missing?

Acknowledge that some information was missing.

So, given that both groups have incomplete knowledge of the job demands of the other profession, perhaps our second goal could be to “learn about the job demands of each profession.”

Write this goal on the board: “learn about the job demands of each profession.”

Let’s think about your practicum experiences again. BEd students, did you interact with any school psychologists when on practicum and school psychology students, did you interact with any teachers?

Allow for brief discussion.

Some of you have had interactions with members of the other profession. If you think back to these interactions, what was the reason for the meeting or the other type of interaction that you had?

Allow for brief participant responses. Ensure participants conclude that interaction would likely happen because there was a need to discuss something to do with a student who was experiencing difficulty in school. There might also be other reasons that are equally valid and help to support the idea that it is important to be able to work with members of other professions.

Most of the time, teachers and school psychologists end up working together because a child is having difficulty in school.

Children experience many different difficulties in school. Perhaps our third goal ought to be to explore what some of these difficulties are and, because our overall goal today is to learn about working on interprofessional teams, perhaps we could also include a discussion of the expertise each profession would bring to helping with these difficulties.

For our third goal, we could say that we want to “learn about the types of problems children have in school and what expertise each profession has to help these children.”

Write this goal on the board: “learn about the types of problems children have in school and what expertise each profession has to help these children.”

When learning about the skills of another profession, it can be difficult to only talk in general terms. Having a concrete example can be helpful for learning what each profession can bring to the table. That is why you were asked to read the narrative and answer three questions before the workshop today.

The last thing we will be doing today is using that example case to develop a better understanding of each profession’s expertise.

For our last goal, we will “work through an example to help think about how different professions approach helping a child who is having difficulty in school.”

Write this goal on the board: “work through an example to help think about how different professions approach helping a child who is having difficulty in school.”

Activity #1 – One-on-One Interview about Training

Written goal: Learn about training in the BEd and school psychology programs

Broad goal: Develop understanding of similarities and differences in training between groups

Ask BEd students to stand on one side of the room and school psychology students on the other. Match one student from each group with a student from the other group and ask them to find a place to work together in the room.

Now that we have our goals, we are going to work towards our first goal in a one-on-one discussion activity.

I am passing out a sheet with a series of questions. Discuss the answers to these with your partner and take notes about what answers your partner gives you about his or her program.

Let's take about 10 minutes to do this.

See interview questions and student worksheet in "One-on-One Interview about Training" in Appendix B.

After about 10 minutes have passed, say...

I am now going to bring around a worksheet to help you think about how the training for your professions is the same and how it is different. I want you to take about 10 more minutes and organize the information from your interviews into this table. Then we will get back together as a full group and summarize this information together.

After about 10 minutes have passed and you have your guide (see facilitator guide for "One-on-One Interview about Training" in Appendix B) in front of you, say...

Let's come back together as one big group.

After the big group is formed, say...

In your interviews, what did you note as similar across programs?

Ensure that most topics from the guide are discussed. Clarify any points of confusion.

In your interviews, what did you note as differences between programs?

Ensure that most topics from the guide are discussed. Clarify any points of confusion.

Activity #2 – One-on-One Interview about Job Demands

Written goal: Learn about the job demands in each profession

Broad goal: Develop understanding of similarities and differences in job demands between groups

Again, ask BEd students to stand on one side of the room and school psychology students on the other. Match one student from each group with a student from the other group and ask them to find a place to work together in the room. If the students can do this on their own, let them do so but emphasize that you would like them to be in different pairs this time.

As with the last interview, I am passing out a sheet with a series of questions. Discuss the answers to these with your partner and take notes about what answers your partner gives you about what he or she learned about professional job demands during practicum experiences. DO NOT fill in the sheet with information about your own job demands.

I will give you about ten minutes to do this.

See interview questions and student worksheet in “One-on-One Interview about Job Demands” in Appendix B.

After about 10 minutes have passed, say...

I am now going to bring around a worksheet to help you think about how the job demands of your professions are the same and how they are different. I want you to take about 10 more minutes and organize the information from your interviews into this table. Then we will get back together as a full group and summarize this information together.

After about 10 minutes have passed and you have your guide (see facilitator guide for “One-on-One Interview about Job Demands” in Appendix B) in front of you, say...

Let’s come back together as one big group.

In your interviews, what did you note as similar about your job demands?

Ensure that most topics from the guide are discussed. Clarify any points of confusion.

In your interviews, what did you note as different about your job demands?

Ensure that most topics from the guide are discussed. Clarify any points of confusion.

We are now going to take a 15 minute break before we move on to our next activity.

Activity #3 – Small Group Discussion about Difficulties Children Have in School

Written goal: Learn about the types of problems children have in school and what expertise each profession has to help these children

Broad goals: Conceptualize problems as falling under difficulties with learning and difficulties with behaviour; Develop understanding of expertise/knowledge each profession has about these areas

At the beginning of today’s workshop, we talked about the fact that teachers and school psychologists often end up working together because a child is having difficulty in school. This fact led us to decide that our third goal would be to learn about the types of problems children have in school and what knowledge and expertise each profession brings to helping these children. Let’s start with the first part of this goal. What are some common difficulties that children experience in school?

Write the contributions from participants on the board. As you do this, organize the difficulties conceptually to facilitate the next discussion of the categories of learning and behaviour. Refer to “Difficulties Children Experience in School” in the facilitator guide (Appendix B) to ensure that most topics from the guide are discussed.

Now that we have a list of difficulties children might experience in school, how do you think we could organize them into categories?

Allow participants to share ideas and write them on the board. Lead discussion to the conclusion that all difficulties can be categorized as either learning or behaviour.

For the next part of this activity, we will be using these two categories.

Leave the list of difficulties children experience on the board for later in this activity.

Again, ask BEd students to stand on one side of the room and school psychology students on the other. Match two students from each group with two students from the other group and ask them to find a place to work together in the room. If the students can do this on their own, let them do so but emphasize that you would like them to be with different partners again.

See student worksheet in “Difficulties Children Experience in School” in Appendix B.

In your groups, I would like you to imagine you are working on school-based team. Using what you know about the professions you are training to join, talk about the knowledge and expertise each profession would you bring to the team in order to help students with learning or behaviour difficulties. You will have 10 minutes to discuss and take notes about your discussion on the worksheet.

Allow 10 minutes for small group discussion. Circulate through the room to answer any questions participants might have. At the end of 10 minutes, say...

Let's take a few minutes to talk about what conclusions you could come to based on your discussion about the knowledge and expertise of each profession.

Use the information in the facilitator guide – Professional Expertise in “Difficulties Children Experience in School” in Appendix B to assist with guiding this discussion. You might need to encourage discussion by asking participants if they noticed:

- Areas where knowledge/expertise was similar
- Areas where expertise was very different
- Any differences in terminology or language used to talk about difficulties or approaches
- Any differences in perspective on how to help children (e.g., looking for underlying root cause of issue vs. dealing with specific problem at a time)
- Whether differences were across professions or between different individuals because both can cause interprofessional difficulties

Activity #4 – Example Case

Written goal: work through an example to help participants think about how different professions approach helping a child who is having difficulty in school

Broad goal: participants develop an understanding about the fact that, when working together to help a child who is experiencing difficulty, each profession has important knowledge and expertise

Again, ask BEd students to stand on one side of the room and school psychology students on the other. Match two students from each group with two students from the other group and ask them to find a place to work together in the room. If the students can do this on their own, let them do so but emphasize that you would like them to be with different partners again.

Before you came to the workshop today, you read about Daniel Davidson and the difficulties he was having in school and took some notes to answer three questions. In your groups, I would like you to discuss these answers for about 10 minutes in your small groups. Then we will come back together as a full group and talk about the case.

After about 10 minutes, ask the group to come back together. When the large group is together, say...

Let's start with the first question. When discussing the answer to the first question from the case, did everyone in the group find that they had written down the same information about Daniel?

The goal of this discussion is to have participants understand that there were many similarities in what they wrote down about Daniel but there were also many differences.. Once this has been acknowledged, say...

Let's work through the beginning of the case step-by-step to see what we notice about the types of information that it is easy to agree on and the types of information where there might have been disagreement.

What is the first fact in the case you read?

This could be the teacher's name or Daniel's name. Either is fine.

Work through the facts on the list found in Facts from Example Case in "[Example Case](#)" in Appendix B asking the group whether there is any disagreement or whether everyone agrees that this is a fact about Daniel.

Things will likely go smoothly until you reach the information about reading. Here some participants will likely continue to state the facts that are known but some will come to a conclusion by stating that Daniel does not like to read or Daniel has a problem with reading or cannot read or has a reading disability or...

Lead a discussion that:

- Reviews the facts we know about Daniel and reading (see Facts from Example Case in “Example Case” in Appendix B)
- Acknowledges that Daniel might not like to read, might have a problem with reading, might not be able to read, might have a reading disability, might... (Whatever other reasonable interpretations of the facts that the group generates)
- Emphasizes that these are interpretations of the facts
- Generates other possible interpretations of the facts (e.g., Daniel is highly anxious about reading; Someone told Daniel that he should only read books with pictures and not very many words; Daniel has difficulty with attention; Daniel likes to move around and having to get up to get a new book allows him to do this; Daniel would rather read an easy book)
- End with a definite statement about the fact that we know what Daniel is doing but that we do not know why he is doing it

Then ask about any interprofessional (or interpersonal) differences students noticed by saying...

When you were discussing Daniel in your groups, did you notice any differences in the way that education students and school psychology students looked at the information about reading?

If differences were not noted, state that different interpretation of this sort of information can sometimes cause conflict between professions or even between individuals in the same profession. Move on to a discussion about possible reasons for differences.

If differences were noted, lead a discussion about what the reasons for these differences might be. In general, this discussion should center on differences in training and in experiences. Acknowledge other reasons for these differences as well.

Let's move on to talking about the second question you were to answer before the workshop today. What else would you like to know about Daniel? Would anyone like to share what they thought about this?

Allow for some discussion. Write down contributions from participants on the board.

Lead a discussion about what made people choose what they wanted to know more about. In general, this will be linked to an area that they saw as a problem.

Discuss any differences between professions that were noted in group discussions as with the first question.

Now let's talk about the third question, "what is the most important issue for Daniel?" Would anyone like to share their answers here?

Allow for brief participant responses and make some notes on the board. Lead a discussion about reasons why different areas might be considered to be the most important issue for Daniel. Ensure there is discussion of any differences noted across professions.

Conclusion

Review goals.

We're going to review the four goals that we set at the start of this workshop. We wanted to:

- 1. Learn about each other's programs**
- 2. Learn about job demands of each profession**
- 3. Learn about the types of problems children have in school and what each profession can bring to the table**
- 4. Work through an example to help think about how different professions approach helping a child who is having difficulty in school**

What was your one take-away from today's workshop?

This open-ended question may elicit several different responses. Ensure participants address the following three points:

1. There are similarities and differences between professions, and it will be important to be aware of these.
2. Teachers and school psychologists interact with each other when there is a child who is experiencing difficulty.
3. When working together to help a child who is experiencing difficulty, each profession brings their own expertise to a team.

Together, these goals will have hopefully helped you start to develop an interprofessional understanding. When you work in a school system, interprofessional collaboration is necessary, and starting to learn about that now is vital to your professional development.

Thank you for participating in today's workshop. Please fill out this survey, and return it on the desk when you have completed it.

Hand out the ICCAS.

Chapter 4: Implementation Considerations

Future Directions

The ITPPE program was developed to be an interprofessional training workshop for an education context. Considerations for the initial implementation and pilot testing of this program are provided below.

Implementation Recommendations. This workshop was designed specifically for preservice teachers and school psychologists; therefore, it would make sense to conduct this program in a faculty of education at a university with both programs. Having both programs in the same faculty at the same university may help in solving logistical issues (e.g., booking rooms, coordinating schedules). Ideally, this workshop would be completed in approximately three consecutive hours. Dividing the three activities across multiple days may impact the effectiveness for participants (e.g., forgetting past activities, difficulty integrating information at the conclusion of the ITPPE program). Additionally, it would be optimal to recruit participants who have completed at least one practicum in a school setting. This practical experience will be important for the one-on-one interviews and group discussion segments of the ITPPE program. Due to the nature of creating an IPE program in a new context, starting with a small group of participants (i.e., $N = 16$) would be ideal. This would allow for four groups of four in small group discussion, and eight groups of two for the one-on-one interviews.

Pilot testing. Pilot testing the ITPPE program should be the next phase of this workshop's development. After running the workshop, it will be important to obtain feedback from the program facilitator and participants. This feedback will help to refine the materials and language used in the workshop and to clarify the workshop process. For

example, the case written for the ITPPE program (a fake case with a seven year old child named Daniel Davidson) could be refined to include additional content that addresses interprofessional differences. In addition, some logistics of this program (i.e., duration and location) may need to be adjusted depending on the success of group interactions.

Pilot testing may lead to the discovery of new goals, objectives, or outcomes that are important to an interprofessional program for graduate school psychology students and undergraduate education students. Interviews with participants may reveal factors they believe to be important in order to develop interprofessional understanding. Pilot testing would also allow for evaluation of appropriateness of the ICCAS for measuring change in a workshop of this nature.

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Appendix A

Amended ICCAS (from Archibald et al., 2014)

1= strongly disagree; 2= moderately disagree; 3=slightly disagree; 4= neutral; 5=slightly agree; 6=moderately agree; 7= strongly agree; na= not applicable.

Statement	Before participating in the learning activities I was able to:									After participating in the learning activities I am able to:								
	1	2	3	4	5	6	7	na		1	2	3	4	5	6	7	na	
Promote effective communication among members of an interprofessional (IP) team																		
Actively listen to IP team members' ideas and concerns																		
Express my ideas and concerns without being judgmental																		
Provide constructive feedback to IP team members																		
Express my ideas and concerns in a clear, concise manner																		
Seek out IP team members to address issues																		
Work effectively with IP team members to enhance intervention																		
Learn with, from and about IP team members to enhance intervention																		
Identify and describe my abilities and contributions to the IP team																		
Be accountable for my contributions to the IP team																		
Understand the abilities and contributions of IP team members																		
Recognize how others' skills and knowledge complement and overlap with my own																		
use an IP team approach to assess the educational challenges of the child																		
Use an IP team approach with the child to provide an optimal education																		
Include the child/family in decision-making																		
Actively listen to the perspectives of IP team members																		
Take into account the perspectives of IP team members																		
Address team conflict in a respectful manner																		
Develop an effective intervention plan with IP team members																		
Negotiate responsibilities within overlapping scopes of practice																		

Appendix B

ITTPE Program Supplementary Materials

Activity #1 – One-on-One Interview about Training

Interview Question Sheet

1. Prerequisites
 - a. What are the prerequisites for your program?
 - b. Was it competitive to be accepted?
2. Classes
 - a. How many classes do you take?
 - b. What do you learn about in class? (General information only. Do not take time to review the content of each class.)
3. Practica
 - a. How many hours of practica(/internship) do you have to complete?
 - b. How does supervision work in the practica/internship in your program?
4. Certification/registration
 - a. What is the process to become certified/registered in your field?
 - b. Is there anything else do you have to do after initial certification/registration to continue this process?

Activity #1 – One-on-One Interview about Training

Student Worksheet

	<u>BEd Program</u>	<u>School Psychology Program</u>
Differences		
Similarities		

Activity #1 – One-on-One Interview about Training

Facilitator Guide

	<u>BEd Program</u>	<u>School Psychology Program</u>
Differences	Undergraduate degree specific to teachable (unless elementary)	Undergraduate degree in psychology with research experience (honours or equivalent)
	Teaching license is granted upon graduate of BEd, no further supervision/training required	Must have additional supervision after registration (4 years in NS at master’s level)
	Practicum hours are not specified as “countable” and “uncountable”	Specific guidelines on what hours are countable during practica/internship (must be providing a psychological service)
	Course content: curriculum, instructional design, philosophy of teaching, educational measurement/evaluation, (more specific to teachable)	Course content: ethics, neuropsychology, child clinical, assessment, interviewing, diversity, managing behaviour, research methods, thesis
	No research required	Thesis required
Similarities	2 years in duration	
	Theoretical (classes) and practical (practicum/internship) training	
	Had to have experience working with children as a prerequisite	
	Had to have an undergraduate degree to apply	
	Need to become certified/registered in order to work	

Activity #2 – One-on-One Interview about Job Demands

Interview Question Sheet

1. If you had to summarize the job of your profession in one sentence, what would you say?
2. Briefly describe the day to day job demands of your profession
3. On practicum or internship, was there anything that surprised you about the job demands of your profession?

Activity #2 – One-on-one interview about Job Demands

Student Worksheet

	<u>Teachers</u>	<u>School Psychologists</u>
Differences		
Similarities		

Activity #2 – One-on-one interview about Job Demands

Facilitator Guide

	<u>BEd Program</u>	<u>School Psychology Program</u>
Similarities	Work with students	
	Work in schools	
	Have parent contact when students are experiencing difficulty with school	
	Follow workplace guidelines set by a school district	
	Participate in professional development	
	Collaborate with other professionals	
Differences	Work in one (maybe two) school(s)	Work in multiple schools
	Direct student contact majority of time	Direct student contact occasionally
	Use standardized tests (almost) never	Use standardized tests (almost) exclusively
	Work with many (at least 20) students at one time	Work with students 1:1
	Make recommendations for parents to follow (i.e., homework)	Make recommendations for teachers to follow

Activity #3 – Difficulties Children Experience in School

Facilitator Guide

Learning	Behavioural
Participants may refer to <u>specific</u> areas. For example, children may have difficulty with: Processing speed, working memory, expressive language, receptive language, perceptual reasoning, fluid reasoning, executive functioning, phonological processing	Participants may refer to <u>specific</u> areas. For example, children may have difficulty with: Attention, social skills, communication, self-regulation
Participants may refer to <u>general</u> areas. For example, children may have difficulty with: Learning to read/write/solve math problems,	Participants may refer to <u>general</u> areas. For example, children may have difficulty with: Making friends, staying on task, following directions,

Activity #3 – Difficulties Children Experience In School

Student Worksheet

	Learning	Behavioural
Teachers		
School Psychologists		

Activity #3 – Difficulties Children Experience In School

Facilitator Guide – Professional Expertise

	Learning	Behavioural
Teachers	Experience working with larger group of children (i.e., class size of +20)	Experience working with larger group of children (i.e., class size of +20)
	Knowledge of curriculum	Experience collaborating with other teachers to address behaviour difficulties
School Psychologists	Assessment of academic achievement	Functional behaviour assessment
	Knowledge of research into effective intervention strategies for academics	Knowledge of research into effective intervention strategies for behavioural difficulties

Activity #4 – Example Case

Ms. Johnson’s description of a boy in her class

“Daniel is a seven-year-old boy in my grade two class at Central Elementary School. I have been concerned about Daniel since school started in September. He will often choose books that children in Primary like, but grade two students would consider too immature. I have tried to get him to read books that a grade one or grade two would typically find enjoyable; but, he almost always refuses. To his credit, Daniel is great at participating in class discussions and always has valuable contributions to share. He thoroughly enjoys art, music, and sports. Daniel seems to really enjoy drawing pictures in his journal about school. However, during writing time, I often notice him wandering around the room, looking out the window, feeding the bunny, or talking to some of the other children. He almost never writes more than a sentence. The most frustrating part is that Daniel’s parents do not communicate with the school. They have never sent a signed permission slip to school in Daniel’s backpack. I asked the gym teacher, Mr. Alexander, if he was having the same troubles with the parents. He agreed and said that, even worse, Daniel rarely comes to school with his gym clothes. To me, it isn’t surprising that Daniel never brings his homework to school. ”

Please answer the following questions for discussion at the IPE session:

1. What do you know about the student? (Be ready to discuss with your group)
2. What more would you like to know about the student? Why?
3. What is the most important issue that needs to be addressed for this student?

Activity #4 – Example Case

Facts from Example Case

Note: some words are underlined. These words could be over-interpreted.

1. Teacher's name is Ms. Johnson
2. His name is Daniel
3. He is 7
4. He is in grade 2
5. His school is called Central Elementary School
6. Teacher has been concerned about Daniel since September
7. Chooses books typically liked by primary children
8. Chooses books grade two children would say are too immature
9. Teacher has tried to get him to read more difficult books (typically liked by children in grade one or two)
10. Daniel almost always refuses to read more difficult books
11. Daniel was described as "great at participating in class"
12. During writing time, the teacher has noticed Daniel "wandering around the room, looking out the window, feeding the bunny, or talking to some of the other children"
13. The teacher does not often see Daniel write more than a sentence
14. Multiple teachers have described Daniel's parents as non-communicative