Original Research Paper

Enhancing interprofessional competence among Speech Pathology, Nursing, Social Work, and Psychology students using simulated case presentations

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Abstract

Background: This study assesses the impact of an Interprofessional Education (IPE) program (which included simulated case presentations), on the perceived competence and quality of interprofessional (IP) work products of undergraduate social work, nursing, psychology students, and graduate students in speech-language pathology. **Methods:** Participants included 123 students who participated in IP colloquiums through reviewing clinical cases, developing IP assessment and treatment goals, and presenting these to fellow students and faculty. Pre- and post-testing using IPEC Competency Self-Assessment Tool was used for assessment. For each colloquium, the students from all disciplines also submitted a single worksheet for their assigned case, which outlined two to three short-term goals, functional patient-centered outcomes, intervention steps, and professionals involved for each goal. The quality of the IP goals worksheet was assessed by faculty using a rubric, which examined whether each goal was interprofessional, patient-centered, met SMART criteria, and whether the suggested interventions were appropriate. **Results:** Significant improvement was observed after participation in the IP Colloquium from pre- to post-test on students´ self-rating of IP competence, and no significant differences were observed between disciplines in the degree of improvement in perceived competence. Faculty-completed rubrics of students' IP work products revealed average (SMART goal criteria) to outstanding (interprofessional criteria) performance. **Discussion:** Based on the outcome data from two years, students participating in the IPE program showed statistically significant gains in their self-ratings of IP competence from pre- to post-ratings. Additionally, students showed similar levels of improvement from pre- to post-ratings, regardless of their major or program of study. IPE programs can provide opportunities for students to learn about interprofessional practices, and create opportunities to practice skills necessary for the interprofessional collaboration required in their future careers.

Keywords: interprofessional education, nursing, speech-language pathology, psychology, social work

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Background

Interprofessional collaboration is routine practice in health and clinically based professions. As a result, undergraduate and graduate students in health and clinically related majors are increasingly exposed to interprofessional education (IPE) as preparation. IPE is a growing field that has been incorporated in higher educational settings to reflect the prevalence of interprofessional collaboration in healthcare.[1] IPE describes the reciprocal learning process between students from at least two or more professions with the purpose of enhancing group collaboration and ultimately patient care.[2,3,4] Within a group setting, students are exposed to the roles and competencies of different healthcare professions as well as learning how to effectively perform their own role.[5] The resulting interprofessional and discipline-specific competencies represent the desired outcomes of IPE programs as they pertain to what the student should learn and apply in their

careers as healthcare professionals.[2] IPE aims to teach students skills that relate to interprofessional competencies such as collaboration, communication, and an understanding of the roles and responsibilities within multiple professions.[5]

Many of the IPE programs described in the literature are health team simulations that reflect competency statements or learning objectives.[2] The simulations are often developed as simulation-based training (SBT), which consists of realistic experiential learning in a supervised clinical setting. IPE using SBT competencies has been found to increase student knowledge and skills.[6,7,8] Even though SBT has been commonly implemented for IPE, discussion-based learning has also been utilized.[5] Thus, IPE has been implemented via a variety of methods that are often developed to include simulation-based training, and range from a formal class with course credit to a seminar that is hours long. Regardless of the program, IPE has been reported to increase student interprofessional skills and competencies,[9,10]such as values and ethics, roles and responsibilities, teamwork, and communication.[11] IPE in nursing curricula has been shown to lead to stronger patient-centered care, more individualized care, and a treatment plan that is tailored to the holistic needs of patients.[12]

The current study aims to describe the model (IPE colloquiums), which incorporates aspects of SBT (realistic scenarios, interactive video case elements, structured debriefing and assessment) and discussion-based learning, adopted for IPE at Calvin University from 2020–2023, where nursing, psychology, social work, and speech-language pathology students collaborated to create multiple interprofessional presentations for fellow students and faculty. The current model of IPE colloquiums is based on the constructivist approach to learning, where active and contextual learning are integral to students´ education.[13] The framework for the IPE colloquium followed the basic characteristics of constructivist learning environments,[14] where students worked in small heterogenous teams, and the role of the faculty was primarily that of facilitating discussions. The study also assessed outcomes such as pre-/post self-ratings of competence, and faculty ratings of IPE work products.

Method

Participants

Four groups of students participated in the IPE colloquiums, held in the spring semester of each academic year (2020 to 2023). They were (1) nursing students in their senior year; (2) social work students in their junior or senior year; (3) psychology students in their junior or senior year; and (4) speech-language pathology (SPAUD) students in the first year of the graduate program. Outcome data was assessed from students who participated in 2021 and 2022, of which matched pre-test and post-test data were available from 123 participants (62 nursing, 2 social work, 5 psychology, and 54 SPAUD students), who provided informed consent. Even though all students who participated in the IPE colloquiums completed the pre- and post-testing for their respective class requirements, only the data from students who provided informed consent was included in the present data analysis. Nursing students who participated in the colloquium were all seniors enrolled in the nursing course, Strategies: Young, Middle, and Older Adults. The nursing students were required to participate in one of the three IPE colloquiums in the spring semester. Students were assigned a date to ensure that even numbers of nursing students were represented in each IPE colloquium event. Each colloquium had 20 to 30 nursing students, of which three to four volunteered as leaders, and the remaining students reviewed the cases and participated in the colloquium as attendees.

Two to three different senior social work students presented in each colloquium over the years, and while all social work majors were invited, students from the Social Work Field Education course were expected to attend at least one IPE colloquium. Only presenting social work students were invited to complete the pre-post measures, and complete pre-/post-test data from two social work students were obtained. Five senior psychology students participated in colloquiums and presented in all three colloquiums in their given semester. Students from the course, Internship in Psychology, were expected to attend at least one IPE colloquium, though they did not complete pre/post questionnaires.

First-year graduate students in the SPAUD department signed up for one of the three colloquiums in spring semester. Thus, there were nine to 10 SPAUD students assigned to each colloquium and these students were expected to review and present the case, while the remaining students in the cohort were expected to attend all the colloquiums as a part of the course, Clinical Practicum II. Of the nine to 10 SPAUD students

assigned to each colloquium, three to four students were presenters, while the remaining students contributed in different roles to the case study. Students from each program were oriented by their faculty regarding the differences in groups with respect to number and year as well as respective course expectations. Approval from the Calvin University Institutional Review Board was obtained (#20-034).

Development of the Cases for the IPE Colloquiums

The IPE vignettes were created by faculty in the SPAUD department in collaboration with faculty in the nursing and social work department. In the initial years of the IPE colloquiums (before 2019), the students were provided with hypothetical case studies in a written format. After acquiring funding in 2018, six short film vignettes with actors portraying patients and caregivers were created, highlighting cases that were specialized for the professions involved in the IPE colloquium. The development of these vignettes, which served as an alternate mode of case delivery, was more reflective of real-life situations as students needed to be capable of identifying nonverbal cues in addition to information provided verbally and/or in written descriptions while providing patient-centered assessment and treatment services.

For the development of vignettes, case studies were adapted from the open access interprofessional case studies developed by the Office of Interprofessional Health Education and Research at Western University of Ontario (2018-2019). The cases were adapted to ensure that the patient portrayal captured the requirements and needs of the different disciplines. After the cases were finalized and actors were recruited, scripts were sent to the actors that highlighted background information, verbal and nonverbal characteristics of the disorder and situation, and conversation leads. The vignettes were filmed in varying locations depending on the case study and included in-patient (recorded in a nursing simulation lab), outpatient, school, and home health settings. The six vignettes developed involved the following hypothetical patients and/or their caregivers, and professionals involved in service delivery: (1) an 18-year-old female with a diagnosis of Down syndrome; (2) a 62-year-old male with Parkinson's disease; (3) a 65-year-old female admitted post-stroke; (4) an 80-year-old male admitted post-stroke; (5) a 3-year-old with autism; (6) 34-year-old male with ALS. The development of the vignettes as well as modifications to the structure of the IPE colloquiums aimed to further solidify and improve the IPE colloquiums, inviting a more open audience and creating safe, realistic, and engaging avenues of discussion for non-hierarchical patient-centered service delivery.

Materials

The learning management system, Moodle, was used to host the IPE colloquium course. The students were entered as participants in the course at the beginning of the semester. The general information provided at the beginning of the Moodle course for this IPE activity included contact information for faculty from each department and the scope of practice documents for professions involved in the colloquium. Each year, the faculty chose three of the six cases for the students. Each case study section on Moodle consisted of the following: the names of students from each department; a document that explained IPE colloquium; the link to the presurvey and consent form for assessment data; the vignettes developed for each case study; the case study details; a worksheet for IP goals; the postsurvey link for assessment data; and a folder for submitting the presentation and the worksheet following the presentation date.

Framework for the IPE Colloquiums

Students were given access to the course approximately one month before they were scheduled to present. Faculty in each discipline oriented their students to the process in-person or via email, assisting students in identifying key resources, connecting students across disciplines to initiate meetings, and answering questions that arose. For assessment of outcomes, students electronically provided informed consent to participate in the pre- and post-surveys, and the consent form was displayed as the first sheet of the pre-survey. The SPAUD, nursing, social work, and psychology students in each group reviewed the case study (written information and vignettes) as a group of professionals in training and presented non−hierarchical patient-centered evidence-based assessment and treatment recommendations. Each discipline who participated in the IPE colloquiums had different expectations and grading criteria for their students.

In the month after access was provided the students collaborated and reviewed information regarding the case. Members from each discipline were expected to meet and discuss interprofessional goals

either in-person or virtually at least once before the presentation date. Faculty met with students as needed during this month prior to the presentation to review and provide feedback on goals. Students were instructed to consider the IPE colloquiums as a peer-to-peer learning exercise, where they decided as a team the need for a lead profession, and which profession that would be, depending on the patient's needs. After the colloquium presentation, feedback was provided via email or orally to students regarding strengths and areas for growth regarding their presentation.

Format for the Presentation

Each student presenter was expected to introduce themselves to the audience by stating their name and profession. The introduction section of the presentation involved the presenters introducing the patient, providing relevant information, and showing sections of the vignettes to the audience (around 7 minutes). The information and sections of the vignette that were shared were decided by the students.

Then there was a period for profession-specific discussion (20 minutes), where each profession presented the unique roles of their profession with respect to this case in the following format: an overview of the different areas that the discipline might have assessment or treatment goals for, elaboration of the top two goals on the list, and a rationale behind the prioritization and choice.

This was followed by a breakout session and audience participation (10 minutes) where the audience formed small groups based on an interprofessional seating arrangement and students worked through the provided worksheet for determining interprofessional goals for the patient. Each group in the audience had a chance to briefly present their findings to the rest of the audience and/or respond to questions from faculty.

The presentation then resumed; the presenting group discussed overlapping roles and interprofessional assessment and/or treatment goals for the patient based on their work (10 minutes) as an interprofessional team. Discussion was expected to incorporate at least two goals from the worksheet, how the goals would be implemented, and a brief rationale behind the prioritization and choice.

There was then time for questions about the case and their experience working as an interprofessional team, which lasted from 5 to 10 minutes. Following the presentation, all students in the group were instructed to complete the IPE post-survey housed on Qualtrics for assessment of outcomes in 2021 and 2022.

Each presentation and discussion by the IP teams extended for approximately one hour.

Tools for Outcomes Assessment

Pre- and post-tests were administered via a Qualtrics link on Moodle. The *IPEC Competency Self-Assessment Tool* was used for pre- and post-assessment (VERSION 3, July 2015). The internal reliability was high for both the pre- (Cronbach's $\alpha = .915$) and the post-test (Cronbach's $\alpha = .934$). A total score was calculated separately for the pre- and post-test by adding together ratings for each of the 16 statements, with higher scores indicating a more positive self-assessment of competence.

For each colloquium, the students from all disciplines also submitted a single worksheet for their assigned case. In this worksheet, each IP group outlined two to three short-term goals, functional patient-centered outcomes, intervention steps, and professionals involved for each goal. The quality of the IP goals worksheet was assessed by faculty using a rubric (see Appendix). The rubric assessed whether each goal was interprofessional, patient-centered, whether the goal met SMART (specific, measurable, achievable, relevant, and time-bound) criteria, and whether the suggested interventions were appropriate. Each criterion was rated on a 3-point scale (unacceptable, average, excellent/outstanding) and each of the four faculty members independently rated the first two IP goals for each case presentation. Initial interrater reliability across the four raters was good (Fleiss'$\kappa = .67$, $p < .001$). Discussion amongst the four faculty was conducted following initial independent rating to reach consensus for each goal where there had been initial disagreement.

Results

To examine the change in self-assessment from pre-test to post-test, a paired samples t-test was conducted. It revealed significant improvement after participation in the IP Colloquium from pre-test ($M = 67.1$, $SD = 6.75$) to post-test ($M = 72.7$, $SD = 6.17$), $t(119) = -10.8$, $p < 0.001$, d=-.985. A repeated measures ANOVA revealed that there was no significant difference in student self-assessment among the four disciplines ($F(3, 116) = 1.02$, $p = 0.39$), though due to a significant imbalance in sample size across disciplines, results are

underpowered and should be interpreted with caution (Table 1).

The overall average across all goals for all four criteria on the faculty-completed rubric was 2.54 (*SD* = 0.50, Range 2-3), midway between average and outstanding. A one-way ANOVA examining between criteria differences showed significant differences among the faculty ratings of the four criteria, F (3, 44) = 16.2, p = 0.001 (Table 2). Post-hoc tests revealed that faculty rated the interprofessional criteria (*M* = 3, *SD* = 0), the patient-centered criteria (*M* = 2.5, *SD* = 0.52), and the intervention criteria (*M* = 2.67, *SD* = 0.49) as significantly higher than the SMART criteria (*M* = 2.0, *SD* = 0). Additionally, the interprofessional criteria was also rated as significantly better than the patient-centered criteria.

Table 1: IPEC Competency Self-Assessment Scores by discipline

Department	Pre-Test *M* (SD)	Post-Test *M* (SD)
Speech Pathology	67.6 (6.73)	74.0 (5.27)
Nursing	66.2 (6.27)	71.5 (6.90)
Psychology	70.2 (4.79)	72.0 (2.94)
Social Work	68.9 (7.32)	77.0 (4.24)
Combined Total	67.1 (6.75)	72.7 (6.17)

Table 2: Faculty ratings of student IP work products

Rubric Criteria	Rating *M* (SD)
Interprofessional[a]	3 (0)
Intervention[a, b]	2.67 (.49)
Patient-Centered[b]	2.5 (.52)
SMART[c]	2 (0)
Average	2.54 (.5)

Note. Ratings were on a 1-3 scale (unacceptable, average, excellent/outstanding), means with different superscripts are significantly different (p<.05)

Discussion

The current study aims to describe IPE colloquiums, a model which incorporates aspects of SBT, specifically realistic scenarios, interactive video case elements, structured debriefing and assessment, and discussion-based learning. Based on the outcome data from two years, students participating in the IPE program showed significant gains, roughly one standard deviation, in their self-ratings of IP competence from pre- to post-ratings.

Additionally, students showed similar levels of improvement from pre- to post-ratings, regardless of their major or program of study. These self-ratings of competence gains corresponded closely with faculty ratings of the students' IPE work products (i.e., IP goals and assessment plan completed for each simulated case). Overall, students performed in the average range indicating that their goals and treatment recommendations usually met two to four of the SMART aspects.

This IP initiative aimed to provide an opportunity for students from various programs of study to work together collaboratively as a group of professionals in training, in preparation for developing patient-centered evidence-based assessment and treatment goals — a central tenet in healthcare service delivery.[2] The IPE initiative adopted in this study incorporates all three levels of competency: common, complementary, and collaboration competency[15] as well as SBT[2] and discussion-based learning.

This study adopted a pre-test/post-test self-report measure[8] of IP competence and added a rubric-based faculty assessment of the worksheet submitted. While self-assessment is an integral aspect of IPE and learning, self-assessment measures are subject to risk of objectivity and

timing bias.[16] The faculty assessment via the rubric reviewed student knowledge and skills in four areas: interprofessional, patient-centered, whether the goal met SMART criteria, and appropriateness of the suggested interventions. As noted, the faculty assessment of interprofessional criteria was significantly better than the patient-centered and SMART criteria, which suggests students focused more on collaboration with peers than on the patient-centered focus of IPCP. However, students were not provided with the rubric prior to completing the IP worksheets. This additional assessment allowed faculty to further clarify instructions for activities and expectations for each program, in addition to the role of the facilitator for the next round of IPE colloquium the following year.

While there are many strengths to our approach, several limitations should also be considered. Notably, our speech-language pathology and nursing cohorts were very large in comparison to social work and psychology. While each IP group had representatives from each discipline and all table discussion exercises also included at least one member from each discipline, this imbalance in size significantly limits our ability to draw firm conclusions about differences in IP competence growth between disciplines. Also, while students rated themselves as significantly more confident after the colloquiums, this study is not able to directly assess changes in behavior or practice within our study, thus future research that measures behavior change in real-world work contexts would be valuable. Additionally, future research could also assess the quality of the student interactions during the meetings that would provide insight into ways that students communicated with each other or resolved differences while discussing IP goals.

There are multiple implications for both teaching and practice resulting from this study. In teaching, there is a growing expectation that interprofessional competencies be included in the program curriculum. Additionally, since an interprofessional team model is frequently used in the healthcare field, it is essential for educators to consider how to prepare students for this aspect of their work. IPE should include common competencies, complementary competencies and collaboration which permits sharing across disciplines.[12] An experiential colloquium as outlined in this study creates an environment where students not only learn about interprofessional practice, but also have an opportunity to practice and reflect upon the benefits and challenges of interprofessional collaboration.

Being able to practice in an IP educational environment prepares students for increased competence and confidence as they enter their respective professional settings. Preparation in this domain will increase interprofessional understanding, appreciation, and communication skills that students carry into the field which will benefit their future patients, colleagues, agencies, or institutions.

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Appendix

Evaluation Rubric for Student Worksheet

Category	Outstanding (Score 3)	Average (Score 2)	Unacceptable (Score 1)
Short Term Goal - Interprofessional	• Students created an interprofessional short-term goal applicable to multiple professions	• Students created a short-term goal, but is only applicable to 1-2 professions	• Short-term goal is not interprofessional, and is only applicable to one (1) profession
Short Term Goal – Patient-Centered	• Short-term goal is patient-centered	• Short-term goal might be patient-centered with minor guidance from faculty	• Short-term goal is not patient-centered
Short Term Goal – SMART goal (Subject, Measurable, Attainable, Realistic, Time)	• Short-term goal meets all 5 aspects of SMART goals	• Short-term goal meets 2-4 aspects of SMART goals	• Short-term goal meets 0-1 aspects of SMART goals
Interventions	• Interventions are appropriate, thorough, and applicable to the short-term goal	• Interventions are somewhat appropriate, thorough, and/or applicable to the short-term goal, but could benefit from some modification	• Interventions are not appropriate, thorough, or applicable to the short-term goal

Total Score for Group: _____