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# The Effectiveness of an Introductory Interprofessional Course in Building Readiness for Collaboration in the Health Professions

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## Abstract

**INTRODUCTION** Interprofessional Education (IPE) prepares collaborative-ready health professionals although the actual process of learning “about, from and with” each other is widely debated in the literature (World Health Organization, 2010). The goal of the study was to examine the effectiveness of an introductory IPE course in improving students’ collaboration skills.

**METHODS** Undergraduate, health professions students completed the 11-item Self-Assessed Collaboration Skills (SACS) survey before and after completing an introductory IPE course.

**RESULTS** Results of paired samples t-tests suggest that there were significant improvements in students’ self-assessed collaboration skills and on the learning, information sharing, and team support dimensions.

**DISCUSSION** This study highlights the role of an introductory IPE course in improving self-assessed collaboration and teamwork skills of entry-level learners. Features of the course design that contribute to its effectiveness include: interactive class sessions, a culminating team project, and using in-class time for team meetings.

**CONCLUSION** An introductory IPE course can be effective in improving learners’ self-assessed collaboration skills and can prepare them for future IPE courses.

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## Implications for Interprofessional Practice

- Intentional and authentic learning experiences in an entry-level IPE course promote improved self-perceived collaboration skills.
- In this course, pedagogy for entry-level IPE includes interactive class sessions, a culminating team project, and in-class time for team meetings.
- Focusing on collaboration skills acquired in an entry-level IPE course will prepare students for future coursework and clinical experience in IPE.

## Introduction

Interprofessional Education (IPE) has been established as a widely accepted strategy for preparing health professionals to be collaborative-ready as they enter the health care system upon graduation from their respective programs (Institute of Medicine (IOM), 2015; Rogers et al., 2016; World Health Organization, 2010). However, the actual process of learning “about, from and with” each other is widely debated in the literature (World Health Organization, 2010). Some researchers advocate for IPE to be contextual, embedded into professional programs in practice settings, and other researchers feel that IPE is best initiated early in the students’ professional preparation. The best answer is likely somewhere in between with a hybrid of these approaches that begins with early courses that build readiness for collaboration followed by later courses that contextualize Interprofessional Collaborative Practice (IPCP) with clinical integration (Dow, Blue, Konrad, Earnest, & Reeves, 2013; Freeth, Hammick, Reeves, Koppel, & Barr, 2005; Oandasan & Reeves, 2005; Reeves et al., 2016). This study focuses on the assessment of a large introductory course that is part of a comprehensive IPE program, using a newly validated instrument which allows students to self-assess collaboration skills.

## Background

Courses designed to provide an introduction to interprofessional health care have been implemented to engage students early as a part of many emerging IPE initiatives. Introductory IPE engagement helps

decrease professional stereotypes, allowing for a better understanding of roles and responsibilities across the professions. Additionally, IPE has been shown to promote more positive perceptions among health professional students in several studies (Ateah et al., 2011; Ruebling et al., 2014). These positive perceptions are the critical component of collaboration identified by Baggs and Schmitt (1997) as “being receptive” to working with others. “Being receptive” involves an open attitude and recognizing when others have something to offer (Baggs & Schmitt, 1997).

Research supports the development of IPE early in the students’ professional education. In a study comparing the learning outcomes of younger students to more mature students, the younger learners were more eager to participate in IPE learning and showed greater increases in knowledge than the learners who did not enter the program directly from secondary education. Specifically, the younger learners experienced significant gains in knowledge related to teamwork and collaborative practice (Anderson & Thorpe, 2008). Students may feel more comfortable relating to other professions before they have been fully immersed in their own professional training, which may help reduce biases about other professions. Early IPE also helps develop a “common bond” among the students (Cooper, Spencer-Dawe, & McLean, 2005).

Early introduction of IPE does have its challenges. IPE initiatives involving multiple professional programs create large cohorts of students participating in the learning activities (Breitbach et al., 2013). Many times, these are large classes that require creative pedagogy

to create authentic collaborative learning experiences (Lockeman et al., 2017). Additionally, these students may encounter difficulty connecting the IPE coursework to their future profession because they have little experience providing patient care in a clinical context (Oandasan & Reeves, 2005).

Thus, the challenge is to deliver an introductory course that provides foundational knowledge and skills designed to foster a level of readiness for collaboration and a positive attitude towards IPCP while, at the same time, creating a dynamic and relevant learning environment for a large group of students with minimal clinical experience as health professionals. Research by Blue, Mitcham, Smith, Raymond, and Greenberg (2010) supports this approach, suggesting that a critical component to successful IPE pedagogy includes providing opportunities for shared learning that are interactive. Additionally, a culminating team project

is beneficial in reinforcing IP concepts learned in class (Blue et al., 2010).

## Description of Learning Experience

Saint Louis University developed a course, IPE 1100 – Introduction to Interprofessional Health Care, designed to lay the foundation for a 4 course Concentration in Interprofessional Practice (Breitbach et al., 2013). This course has been in place since 2007 but was revised with a new teaching team in fall term 2015 as a part of a strategic realignment of Saint Louis University's IPE program (Reynolds-Kueny, Toomey, Pole, & Hinyard, 2017). The course teaches students from 12 professional programs along with pre-medicine students (Table 1). The students are at variable points in their professional preparation, with several in the professional phase of their programs and others in the pre-professional phase of early assurance post-baccalaureate programs. Table 1 details the programs participating in the course.

**Table 1.** *Professional Programs Participating in Course*

Profession	Level
Exercise Science - Athletic Training	Pre-professional in early assurance model
Communication Sciences and Disorders	Pre-professional student, will apply to post-baccalaureate professional program
Cytotechnology	Baccalaureate professional program
Medical Laboratory Science	Baccalaureate professional program
Health Information Management	Baccalaureate professional program
Magnetic Resonance Imaging	Baccalaureate professional program
Nuclear Medicine Technology	Baccalaureate professional program
Nursing	Baccalaureate professional program
Nutrition and Dietetics	Pre-professional student, will apply to post-baccalaureate professional program
Radiation Therapy	Baccalaureate professional program
Occupational Therapy	Pre-professional in early assurance model
Exercise Science - Physical Therapy	Pre-professional in early assurance model
Pre-medicine/Pre-professional	Pre-professional student, will apply to post-baccalaureate professional program

The main focus areas of the course are: Teamwork, Communication and Collaboration, Roles and Responsibilities, Health Literacy, and Evidence Based Practice. Table 2 details the specific assignments and learning activities in the course. Students in the course are assigned to teams of 5-7 students from a minimum of

3 professions per team. Team size is determined by course enrollment, ensuring that there are no more than 40 total teams in a specific term. The course relies heavily on coordination from the central IPE office through the Blackboard Learning Management System (LMS).

**Table 2.** *IPE 1100 Learning Experiences*

<b>Content</b>	<b>Activities</b> (RD = Readings due before class)
Introduction to Course/Meet your Team	Team Report in class
Interprofessional Education	RD: "Cowboys and Pit Crews"(Gawande, 2011) Team Report in class
Interprofessional Collaborative Practice	RD: "The Triple Aim: Care, Health, and Cost"(Berwick, Nolan, & Whittington, 2008) Team Report in class
Evidence Based Medicine/Academic Searching	Team Report/Searching Assignment in class
Health Professional's Roles and Responsibilities	RD: "Expectations and Obligations: Professionalism and Medicine's Social Contract with Society"(Cruess & Cruess, 2008) Team Report in class
Exploring Specific Health Professions	My Profession assignment due <u>before</u> class Panel followed by "Name that Profession" Activity Team Report in class
Teamwork and Collaboration	RD: "Duke's Coach K: Healthcare Leaders Should Set the Standards, Ditch the Excuses"(Gamble, 2013) Team Report in Class
Communication	RD: "Professional Communication and Team Collaboration"(O'Daniel & Rosenstein, 2008) Team Report in class
Addressing Conflict	RD: "The Silent Treatment: Why Safety Tools and Checklists Aren't Enough to Save Lives."(David Maxfield, 2010) Team Report in class
Health Literacy	RD: "Quick Guide to Health Literacy"("Quick Guide to Health Literacy;") Review AHRQ Health Literacy Toolkit (link in Blackboard) Team Report in class
Teamwork in Health Care	RD: "Collaborative Caring: Stories and Reflections on Teamwork in Health Care"(Heyd, 2016) Team Report in class
Interprofessional Grand Rounds	RD: Review case for Interprofessional Grand Rounds.
Advocacy	RD: "Narrative and Medicine"(Charon, 2004) Grand Rounds Assignment due <u>before</u> class
Video Project Review	Video Project Assignment due before class Team Report in class

Learning experiences culminate with a video project, in which the teams develop a one-minute evidence-based Public Service Announcement (PSA) video on assigned health topic. These are presented for peer review on the last class meeting. Assignments also include team reports that are completed in class and

uploaded to the LMS at the end of class. This approach was used to alleviate student concerns about the challenge of coordinating regular out of class meeting times for students with varied responsibilities. There are also readings, taken from relevant current literature and other primary sources, and two assignments: "My

Profession” and “Grand Rounds Reflection,” done individually outside of class.

The IPE 1100 course presents a diverse range of opportunities for experiential learning. Considering the structure of the course and learning experiences provided to students, participation in the course should develop foundational skills in collaboration. The main goal of the current study is to examine the effectiveness of the course as a whole in improving the collaboration skills of students and seeks to answer the research question, “Does participation in IPE 1100 improve students’ perceptions of their collaboration skills?” We hypothesized that students’ perceptions of their collaboration skills will improve as a result of taking the course.

## Participants

In the spring term of 2017, 270 participants were recruited using a convenience sample from IPE 1100. As part of routine course assessment, participants completed a measure of collaboration at two time points: 1) directly after their first meeting, and 2) upon completion of the final semester project. The primary intervention was IPE 1100 introductory course content and activities intentionally designed to enable authentic collaboration and teamwork. The study was approved by the university’s institutional review board. There were 227 completed questionnaires at the beginning of the course, and 215 were collected at the end, resulting in 176 matched pretest and posttest questionnaires. Attrition was attributable to missing data on the linking variable and participants not consenting to the use of their data in research. The represented health professions in the final sample were: nursing, exercise science-physical therapy, occupational therapy, communication sciences and disorders, nutrition/dietetics, investigative medical science, biology, biochemistry, occupational science, radiation therapy, pre-med, health science, magnetic resonance imaging, neurology, physician assistant, undecided, and other. Participants were predominantly female (80.1%) and white (77.3%), with an average age of 18.78 (SD = 1.16). The sample characteristics are presented in Table 3.

## Procedure

Undergraduate, health professions students enrolled in IPE 1100 at Saint Louis University were invited to participate in a study examining the impact of the intro-

ductory course on the development of self-assessed collaboration skills. Participants were informed that participation in the study was completely voluntary and that if they did not wish have their information used for research purposes to choose the option “I do not wish to participate in the study.” Data from five individuals who selected to not participate are not included in the current study, and there were no meaningful differences between those completed measures at both time points and those who had missing data. Participants were sent individual emails at the first meeting of the class and at the final class meeting containing the study’s recruitment statement, link to the survey containing the pre- and post-measure of collaboration, and a random numeric code to be used to pair the pre and post surveys to one another. The participant email addresses were only used to inform participants of the availability of the surveys. These addresses were not associated with the information provided by the participants in the study and the master list containing the email addresses and numeric codes was destroyed upon completion of data collection. The main hypothesis of the study was that the introductory course and the team-based activities would improve students’ perceptions of their collaboration skills.

## Measures

### *Self-assessed Collaboration*

The Self-assessed Collaboration Skills survey (SACS) is an 11-item scale that measures self-assessed collaborative behaviors (Hinyard, Toomey, Eliot, & Breitbach, 2017). The tool uses a multi-dimensional approach to measuring collaboration. These dimensions include: learning, information sharing, and team support. This measure asks respondents to rate their level of agreement with each statement reflecting their abilities. Example items include: “I routinely listen to the opinions of my fellow team members” and “I encourage other team members to get involved in the decisions that affect the team.” These items are rated using a 1 (strongly disagree) to 7 (strongly agree) Likert-type scale. The scale demonstrated high internal consistency at both time points with alphas,  $\alpha_{pre} = 0.82$  and  $\alpha_{post} = 0.78$ . Exploratory and confirmatory factor analyses provide evidence for the three-factor nature of the SACS (Hinyard et al., 2017).

**Table 3.** *Demographic characteristics of samples*

<b>Characteristic</b>	<b>Mean (SD) or N (%)</b>
Age	18.78 (1.16)
Gender	
Female	141 (80.1)
Male	22 (13.1)
Race/Ethnicity	
White/Caucasian	136 (77.3)
Black or African American	5 (2.8)
Asian/Pacific Islander	12 (6.8)
Hispanic or Latino	6 (3.4)
Identify as more than one ethnicity	4 (2.3)
Prefer not to answer	1 (0.6)
Other	1 (0.6)
Profession	
Nursing	37 (21.0)
Physical Therapy	37 (21.0)
Occupational Therapy	14 (8.0)
Communication Sciences and Disorders	14 (8.0)
Nutrition/Dietetics	9 (5.1)
Investigative Medical Science	8 (4.5)
Biology	5 (2.8)
Radiation Therapy	3 (1.7)
Biochemistry	3 (1.7)
Occupational Science	3 (1.7)
Other	3 (1.7)
Undecided	3 (1.7)
Neurology	2 (1.1)
Physician Assistant	1 (0.6)
Health Science	1 (0.6)
Pre-medicine	1 (0.6)
Magnetic Resonance Imaging	1 (0.6)
<i>Note: (N = 176).</i>	

## Analyses

To test the hypothesis that participation in the introductory course improves students' perceptions of their collaboration skills, paired samples t-tests were performed on the three dimensions and the composite SACS score using SPSS 22. Statistical significance was established at  $\alpha = 0.05$ . Following the guidelines of Cohen (1988), the effect size of the mean differences were calculated. Consistent with Cohen's D guidelines, an effect size of 0.2-0.5 is considered small, 0.5-0.8 medium, and  $> 0.8$  large.

## Results

Pre- and post-test means for each scale and the results of the paired samples t-tests are presented in Table 4. The results of the paired samples t-tests suggest that there were significant improvements on students' self-assessed collaboration skills and on the learning, information sharing, and team support dimensions as well. Specifically, average SACS scores were higher after the introductory IPE course than before the course. In regards to the learning subscale, results suggest that scores improved significantly after the introductory IPE course from before the course. Average information sharing scores improved significantly after the intro-

ductory IPE course from before the course. Finally, in regards to the team support subscale, results suggest that average scores on the subscale improved significantly after the introductory IPE course from before the course.

## Discussion

The results of this study highlight the role of an introductory IPE course in improving self-assessed collaboration and teamwork skills of entry-level learners. As stated earlier, literature provides support for early integration of IPE into health professions education. However, this is the first to use the SACS instrument for evaluation of students' self-assessed collaboration skills. A critical difference in the SACS compared to previously used instruments is that it is not a context-specific measure and can be used to examine collaborative skill-building in an academic setting (Hinyard et al., 2017). As a self-reported measure, the SACS provides a feasible method of collecting data on a large cohort. Instruments, such as the SACS, that use self-assessment provide a practical alternative to assessing behavior change and have been shown to provide valuable information on interpersonal skills and abilities (Ferris et al., 2005; Riggio & Riggio, 2001).

**Table 4.** Results of paired sampled t-tests

		<i>n</i>	M (SD)	Difference	<i>t</i> *
Self-Assessed Collaboration Skills Composite Score	(Pretest)	176	5.53 (0.63)	0.44	9.94
	(Posttest)		5.97 (0.62)		
Dimension I: Learning	(Pretest)	176	5.38 (0.72)	0.52	9.18
	(Posttest)		5.90 (0.80)		
Dimension II: Information Sharing	(Pretest)	176	5.14 (1.13)	0.43	4.84
	(Posttest)		5.61 (1.05)		
Dimension III: Team Support	(Pretest)	176	6.06 (0.67)	0.27	5.26
	(Posttest)		6.33 (0.60)		

\*All paired-samples t-tests were significant at  $p < .001$

\*\*All scales were rated on a 1 = *strongly disagree*, 7 = *strongly agree* Likert-type scale.

The critical components required for collaboration that were improved as a result of this course included information sharing and team support. As other introductory courses report in the literature, necessary components of an IPE course for early learners should include interactive opportunities for shared learning and the use of a team project (Blue et al., 2010). While all course activities were intentionally created to be interactive, the “Name that Profession” activity was specifically designed for interaction among team members and teams as a whole. The activity enabled students as individuals to provide expertise at an early stage in their professional training to their teams, thereby engaging in shared goals and outcomes along with mutual interdependence (D’Eon, 2004).

The team PSA video project, as described earlier, serves as a culminating activity that relies on the best evidence, content presented in class, and collaborative skills modeled throughout the course. The peer review component, consistent with findings from other research (Lockeman et al., 2017), plays an important role in making the activity authentic for the students involved.

Additionally, a factor that was carefully considered when designing this course was the creation of opportunities for team activities to be completed in class. Students remained in the same assigned teams for the duration of the course, which is supported by the literature (D’Eon, 2004). Aside from the culminating team project, all team activities were completed during class time. This reduced the need for coordinating students’ out of class schedules and allowed for direct instructor feedback of students’ team behaviors.

An important benefit, shown through improved self-assessed collaboration skills seen in this course, is the contribution to students’ readiness to engage in upper level IPE and professional coursework. Most, if not all, health professions have incorporated IPE into their professional competencies with the hope that this translates into IPCP with the goal of improving patient outcomes. This course provides the students with a common baseline for collaboration moving forward as they enter their chosen professions, regardless of what further training they receive in their professional preparation.

Courses such as the one presented in this research show great promise in preparing interprofessional students for future work in collaboration. However, as this is the first study to use the SACS instrument for evaluation, future research is needed to establish ranges for substantive changes in attitudes and behaviors in early IPE learners as well as validation in diverse populations and professions.

## Conclusion

As IPE becomes routinely included across health professions, it often begins with the earliest of learners, thus it is critical to investigate best practices for the development of collaboration skills. It appears from this research that early integration of IPE is beneficial, specifically in improving students’ perceived abilities to collaborate. As students move through their professional preparation, it is hoped they are provided with a critical foundation for future education and training where the ultimate objective is to develop a collaborative-ready workforce that improves personal and population health outcomes.

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