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# Intercampus Health Care Simulation Model for Development of Students' Interprofessional Socialization and Competency

Cody Marie Busch
*University of Wisconsin, Whitewater*, buschc@uww.edu

Lynn Gilbertson
*University of Wisconsin, Whitewater*, gilbertl@uww.edu

Colleen Gullickson
*Edgewood College*, cgullickson@edgewood.edu

*See next page for additional authors*

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## Cover Page Footnote

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## Authors

Cody Marie Busch, Lynn Gilbertson, Colleen Gullickson, and Elizabeth Laessig

Simulated learning experiences (SLE) between healthcare professionals are recognized as a viable means to achieving proficiency of interprofessional practice competencies (International Nursing Association for Clinical Simulation and Learning, 2016c). The Interprofessional Education Collaborative (IPEC) noted that in order to achieve improved competency for interprofessional collaborative practice (ICP), students should engage in continuous development and learning to be better prepared to enter the workforce (Interprofessional Education Collaborative, 2016). Despite this, 71% of surveyed speech-language pathologists (SLPs) and audiologists reported lack of formal education or training on ICP (American Speech-Language-Hearing Association, 2019). Further, the majority of respondents reported that their interprofessional skills were learned on the job or self-taught. Given that SLPs and nurses interact as part of an interdisciplinary team in various settings including hospitals, skilled nursing facilities, and outpatient settings, the presented intercampus model provided an opportunity for students to learn with colleagues from a different discipline. As such, simulated learning experiences offer students across the interdisciplinary spectrum an opportunity to deconstruct educational silos and learn across disciplines to improve health care outcomes.

## Background

A systematic review completed in 2018 found that interprofessional education (IPE) integrated into medical fields resulted in better acquisition of content knowledge, competencies, and dispositional qualities appropriate for professionals (Guraya & Barr, 2018). IPE, which prepares students for ICP is, "When two or more health professions learn about, from, and with each other to foster effective collaboration and improve the outcomes and quality of care" (World Health Organization, 2010, p. 7). Further, the American Speech-Language-Hearing Association (ASHA) Ad Hoc Committee on IPE reinforced commitment for advancement of initiatives for better preparation of speech-language pathology and audiology graduate students to enter the workforce (Burkard et al., 2013). Interprofessional SLEs allow students to gain experience and practical application of knowledge for each content area as required by ASHA and facilitates effective problem-solving and communication within a team (Eichorn et al., 2020; Goldberg, 2015). According to ASHA, 78% of healthcare SLPs, 81% of school-based SLPs, and 82% of audiologists reported that they engaged in ICP in their primary work settings. However, only 44% of healthcare SLPs, 43% of school-based SLPs, and 33% of audiologists reported that they felt prepared to effectively participate on teams of professionals (American Speech-Language-Hearing Association, 2019).

**IPE Standards.** IPE is necessary in allied health professions for emphasis on a holistic plan of care. The ASHA Ad-Hoc Committee was tasked with determining the education and competencies of IPE for undergraduate and graduate programs in SLP and audiology. They identified four key areas to address including: (a) education on interprofessional practice (IPP) for faculty, staff, and practitioners, (b) communication with other healthcare organizations, (c) research to measure effectiveness of IPP learning experiences, and (d) modifications to standards for certification and licensure (Burkard et al., 2013). ICP engages multiple health care disciplines who work in collaboration with the patient, families, and communities with a goal of high-quality care (Interprofessional Education Collaborative, 2016).

In 2020, ASHA implemented new certification standards that included collaboration between professionals. The new standard indicates that student experiences need to be sufficient in breadth and depth to achieve the ability to "manage the care of individuals receiving services to ensure an

interprofessional, team-based collaborative practice" (American Speech-Language-Hearing Association, 2020, para. 30). Further, the Council on Academic Accreditation (CAA) which establishes accreditation standards for SLP and audiology programs, updated its standards in 2017 to include knowledge and skills related to IPE and ICP. The CAA indicates that IPE/ICP needs to be infused through both academic and clinical courses (American Speech-Language-Hearing Association, 2020). Standard 3.1.1 of the Professional Practice Competency for collaborative practice states, "Understand how to apply values and principles of interprofessional team dynamics and understand how to perform effectively in different interprofessional team roles to plan and deliver care—centered on the individual served—that is safe, timely, efficient, effective, and equitable" (Council on Academic Accreditation, 2020, p. 11). These requirements are consistent with the IPE/ICP standards for nurse education. The accreditation standards defined by the American Association of Colleges of Nursing (AACN) defines interprofessional partnership as, "intentional collaboration across professions and with care team members, patients, families, communities, and other stakeholders to optimize care, enhance the healthcare experience, and strengthen outcomes" (American Association of Colleges of Nursing, 2021).

These recommendations are consistent with the World Health Organization (WHO) that recognized the need for more healthcare workers who are highly competent to serve the growing and diverse healthcare needs across the globe (World Health Organization, 2010). Further, there is a need to develop effective members of the workforce who not only recall skills and applicable knowledge but also exemplify the ability to adapt, use critical judgement, and demonstrate the capacity to work well with peers (Meizrow, 1997). The Institute of Medicine (IOM) has called for enhanced IPE to strengthen patient centered care through the work of interdisciplinary teams (Institute of Medicine, 2015).

**Benefits of IPE.** IPE has several benefits which include better job satisfaction, more effective problem solving for complex issues, and changing inaccurate perceptions of other professionals' roles (Guraya & Barr, 2018). Evidence to support ICP simulated learning experiences integrated into the curriculum include a deeper understanding and respect for various professionals, the ability to view the patient and healthcare setting holistically, and the development of communication skills as they relate to working on a team (Copley et al., 2007; Goldberg, 2015; Shorland et al., 2018). Dudding and Nottingham (2018) surveyed accredited SLP graduate programs and found that simulation helped prepare students for off-campus placements and put academic content into practice. Further, students who participated in an IPE simulation experience reported better confidence, greater understanding of roles and responsibilities, better overall preparedness, better awareness of the leadership role on an ICP team, and increased readiness and willingness to collaborate (Oxelmark et al., 2017; Weir-Mayta et al., 2020). According to the IOM, IPE integrated in healthcare promotes greater productivity, a more comprehensive plan of care, and improved quality of care (Institute of Medicine, 2015).

**Barriers.** Evidence available to provide a rationale for IPE coupled with SLEs is noted in health care literature but is discipline specific (Guraya & Barr, 2018). Simulation as a teaching methodology is new in the education of SLPs. SLP training programs are interested in using simulation to train students; however, limited knowledge on simulation for SLP students contributes to lack of implementation (Dudding & Nottingham, 2018). There are limited studies focused on simulation for SLP students and studies specific to SLP students are generally small and vary greatly in their design (Shorland et al., 2018). Further, literature to address the interdisciplinary work between SLP and Nursing students is minimal. Several barriers for ICP

implementation include: (a) limited time to collaborate, (b) high caseload, (c) limited understanding of various roles, (d) lack of training, and (e) limited support from administration (American Speech-Language-Hearing Association, 2019).

Meeting the IPE/ICP requirement presents unique challenges to colleges and universities that have SLP programs but do not offer other professional medical programs such as pharmacy, pre-med, nursing, occupational therapy, or physical therapy. As such, IPE opportunities are sought out through collaborative partnerships. The college and university described in this study offer limited programs for IPE opportunities. Faculty from both institutions realized the benefits that an interdisciplinary simulation could offer. To effectively implement IPE SLEs through an intercampus partnership, it is essential to understand the underlying theories, competencies, and models associated with best practice.

**Theoretical Framework and IPE Models.** Cognitive learning theory and constructivism are foundational for clinical simulation pedagogy and reinforce the need to deviate from didactic teaching methods and integrate meaningful, experiential learning opportunities. Simulation facilitators monitor for cognitive overload, guide the link between old and new concepts, provide clear objectives, and model skills as appropriate (Nestel & Bearman, 2015; Rutherford-Hemming, 2012). Constructivism enables simulation participants to make sense of new learning through actual hands-on experiences (Nestel & Bearman, 2015). Practicing in a low risk environment and opportunities for meaningful reflection allow for critical thinking and modification of behaviors for future learning opportunities (Nestel & Bearman, 2015; Rutherford-Hemming, 2012). Kaldheim and colleagues (2020) found that a physical experience with applicable problem-solving helped generalize knowledge and skills into clinical practice.

IPEC, established in 2009, developed competencies for ICP that focused on a broader context to engage students in various areas of study and/or professions (Interprofessional Education Collaborative, 2016). ASHA and the Commission on Collegiate Nursing Education (CCNE) are members of the accrediting body for IPEC. IPEC identified four core competencies for ICP including: (a) Values/Ethics for Interprofessional Practice, (b) Roles/Responsibilities, (c) Interprofessional Communication, and (d) Teams and Teamwork with sub-competencies for further clarity (Interprofessional Education Collaborative, 2016, p. 10). The IPEC core competencies provide a standardized framework from which healthcare education programs can develop meaningful IPE opportunities and determine if these types of learning opportunities fit within the mission, vision, and standards for their programs.

Knowledge of IPE models for SLP graduate students and best practice recommendations from IPEC aids in the development of unique experiences. Studies have implemented IPE SLEs with various models for execution. Potter and Allen (2013) created an IPE SLE for SLP and nursing students, who were all from the same campus, focused on a clinical bedside swallow examination. Roberts and colleagues (2019) developed an IPE workshop for students and healthcare professionals using the IPEC core competencies that allowed for interprofessional discussion groups. Saldanha and colleagues (2020) organized a virtual simulation event with students and professionals on their campus that engaged approximately 150 students across a variety of disciplines in virtual breakout rooms for collaboration and discussion on a case. The theories, competencies, and models outlined served as a foundation in the development of the IPE SLE described here.

## Purpose

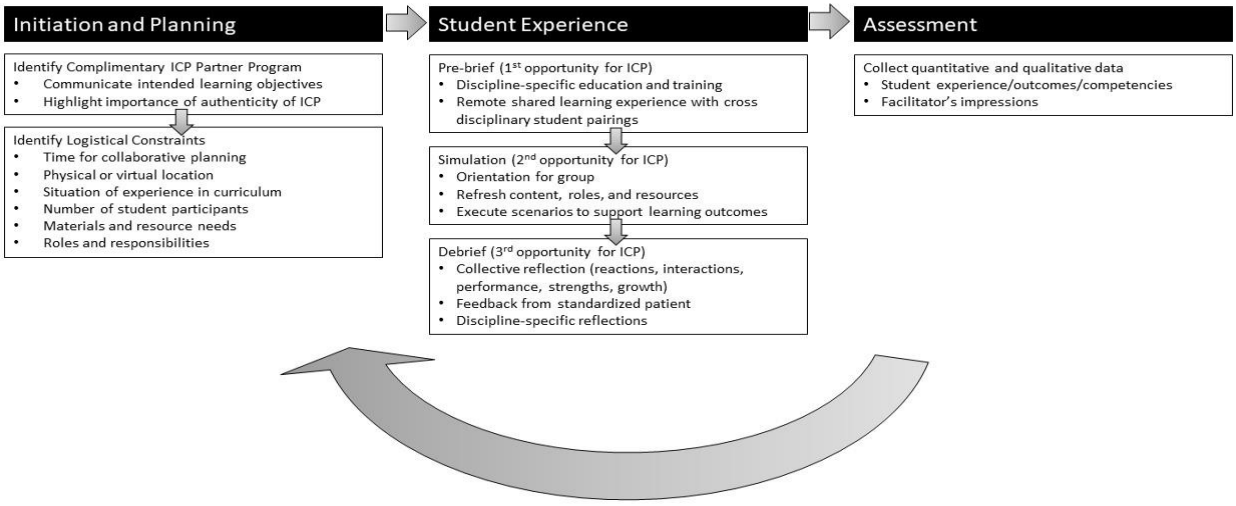
Both Master of Science Speech-Language Pathology (MS-SLP) and Bachelor of Science in Nursing (BSN) clinical education programs have standards that require and/or emphasize development of interprofessional skills and collaborative practice. However, published models of IPE most often include clinical training programs housed in the same campus or system with strong hospital affiliations and multiple allied health programs. In 2018, there were 4,324 postsecondary institutions in the United States (Carnegie Classification of Institutions of Higher Education, 2018). The majority of these institutions are baccalaureate or master's colleges. Given the program requirements and benefits of IPE, the current paper aims to present an intercampus IPE health care simulation model that can be applied to programs that have limited access to a variety of interprofessional programs and complimentary medical specialties at their home institution. This model of an intercampus IPE health care simulation is unique in that it not only connects faculty, staff, and students across programs and specialties, but also across campuses in a region. This model offers guidance and consideration to accommodate a wider range of institutions considering IPE implementation through various healthcare simulations.

## Methods

The following methods section details the specifics of the case study used to evaluate the intercampus health care simulation model for development of students' interprofessional socialization and competency. Recognizing that the specific case study presented might not fit the situations of other departments interested in intercampus IPE health care simulation, Figure 1 provides an overview of the essential and generalizable components of the intercampus IPE health care simulation model from initiation through assessment. Further, the model shows that creation of an intercampus simulation experience requires consideration of learning theories, coordination of various components, and the need for continuous assessment and revision of the experience.

**Figure 1**

*Intercampus Healthcare Simulation Model*



**Initiation.** A critical first step toward a successful partnership was identifying a partner program with complimentary specialty and goals. The primary need for the MS-SLP program was ICP in an inpatient setting; the MS-SLP program, however, exists on a campus with no associated teaching hospital or allied health professions outside of counseling and social work. Email correspondence was sent to five regional nursing program administrators to solicit interest and provide context on the program's intended competency focus for the simulation. Nursing programs were targeted because of the high frequency of interaction between SLPs and nurses in an inpatient setting. Additionally, inclusion of BSN students in SLEs are noted to improve SLP students' understanding of other roles and a broader understanding of patient-centered care overall (Weir-Mayta et al., 2020). Addressing communication in the context of a hearing loss is in the scope of practice for speech-language pathologists; therefore, integration of an audiology program into this SLE was not considered. One nursing program responded to the email inquiry and agreed to pursue the SLE.

**Planning.** As noted in Figure 1, logistical constraints were abundant and required substantial efforts to problem-solve towards a successful partnership. Planning included two in-person meetings at the simulation facility. At the first meeting, discussions focused on the desired learning objectives for each set of students, both unique and shared. Modifications to each scenario allowed for discipline-specific tasks that had to be accomplished and shared tasks for MS-SLP and BSN students to complete collaboratively. An existing nursing simulation was modified to achieve the learning objectives with an eye towards authenticity for both professional roles. Tasks and objectives specific to nurses that would be addressed in future SLEs were removed to accommodate the additional content specific to the SLP scope of practice. This attention to detail allowed for clear objectives for each discipline but fair balance of tasks. In addition to mapping the simulated experience from pre-brief to debrief, the faculty discussed the timing of the simulation experience in each program's curriculum to maximize the students' preparation and learning outcomes. It was also important to determine the number of students engaging in the simulation, the materials needed, and the roles and responsibilities of both students and staff from pre-brief to debrief. After several months of asynchronous work on collaborative documents, the simulation collaborators met again at the simulation facility. The second meeting focused on running through the simulation and troubleshooting any areas of concern.

**Learning Objectives.** Discipline specific learning objectives were identified to address areas with limited clinical experience in the individual program curriculum. Further, shared learning objectives between the two disciplines were identified. Learning objectives identified for this IPE SLE were consistent with the IPEC core competencies (Interprofessional Education Collaborative, 2016). Discipline-specific and shared learning objectives are summarized in Figure 2.

**Figure 2**

*Discipline-Specific and Shared Learning Objectives*

| **Speech-Language Pathology Graduate Student Learning Objectives** | **Nursing Student Learning Objectives** |
|---|---|
| • Identifies primary slp diagnosis for each scenario<br>• Prioritizes and implements slp interventions based on patient care needs<br>• Provides evidence-based evaluation and treatment interventions for dysphagia, hearing, augmentative and alternative communication, and language | • Identifies primary nursing diagnosis for each scenario<br>• Implements patient safety measures<br>• Makes physical assessments based on developmental stage and identifies critical findings related to condition |
| **Shared Learning Objectives** | |
| • Provides therapeutic patient and family information<br>• Identifies and integrates past medical history<br>• Demonstrates effective teamwork within assigned roles<br>• Demonstrates effective interdisciplinary communication with members of the healthcare team | |

**Study Participants.** A total of 14 students (seven MS-SLP and seven BSN) participated in the SLE. All students completed the SLE as part of their semester practicum requirement, meaning students did not elect to participate. IRB approval was obtained in order to retrospectively analyze the data that was collected as part of routine educational practices. The MS-SLP student group included all females ranging in age from 22-24 years of age ($M$ = 23 years) and were assigned randomly to a simulation scenario and BSN simulation partner. MS-SLP students had completed three semesters of a five-semester program and earned eighteen academic credits and nine clinical credits at the graduate level. MS-SLP students had participated in two discipline specific SLEs prior to this IPE SLE. They were concurrently enrolled in six academic credits and three clinical credits during the semester of the SLE. The BSN student group included two males and five females ranging in age from 21-42 years of age ($M$ = 24.7 years). BSN students completed previous coursework including twenty-seven credits in math/science prerequisite courses and eighteen credits in Nursing. They previously engaged in three discipline specific SLEs prior to this IPE SLE. BSN students were concurrently enrolled in thirteen nursing credits and were in their third semester of a five-semester program.

## Student Experience

**Pre-Brief.** The pre-brief component of the simulation experience offered time for student preparation. According to Rutherford-Hemming and colleagues (2019), the pre-brief experience also aids in minimizing associated feelings of anxiety for learning through simulation. The pre-brief was even more critical given that the students from the two programs had no previous shared experience or interaction and were at different stages of academic programming (i.e., undergraduate versus graduate). According to the International Nursing Association for Clinical Simulation and Learning (INACSL), pre-briefing should be structured, have established expectations, and have activities integrated that help establish trust and respect for the simulation experience (International Nursing Association for Clinical Simulation and Learning, 2016b). As noted in Figure 1, the simulation collaborators focused on two elements: (a) discipline specific education module and training, and (b) a shared learning experience via an educational assignment activity with cross-disciplinary student pairings.

**Discipline-Specific Trainings.** The MS-SLP students participated in a two-hour lecture and training to prepare for the simulation. The lecture portion focused on content domains (dysphagia, augmentative and alternative communication [AAC], expressive and receptive language, and hearing loss) to target low incidence populations with whom MS-SLP students may have limited hands-on clinical experience and was also used to highlight the complexity of various medical conditions. After the lecture, the students were provided with four possible simulation scenarios and were instructed to prepare for all four scenarios. Although students were later provided with their assigned simulation scenario to collaborate with their BSN student partner, the choice to not assign scenarios initially was intentional to encourage preparation for all scenarios. Students were trained on how to complete a chart review through discussion of the medical chart. They were asked to identify diagnoses, medications, and orders from various medical professionals. Students were provided with resources on evaluation measures (e.g., screeners and standardized assessments), intervention activities, and documentation expectations. The intentionality of providing students with resources and materials to prepare for the simulation experience is consistent with the INACSL criteria for best practices in simulation.

BSN students prepared by reviewing the chart for the patient. A medication summary was reviewed noting the prescribed pharmaceuticals the patient received. Further, laboratory tests and treatments were also reviewed in detail. Students developed a tentative plan to care for the patient for all simulation scenarios and considered potential patient and family learning needs, psychosocial needs, and post-hospitalization needs. Finally, Nursing students were given preparation questions to answer prior to coming to the simulation. BSN students were provided with their assigned scenario at a later date.

**Shared Learning Experience.** After discipline specific preparation and training opportunities, the simulation collaborators focused on a shared educational assignment to prepare for the interprofessional simulated learning experience. Students were randomly assigned to a MS-SLP and BSN student pair. Students were expected to contact their cross-disciplinary partner via phone, email, or social media given that the participating campuses were separated by an hour drive. The activity was designed intentionally as a small group collaboration as these types of IPE activities are perceived with greater relevance when compared to lecture format activities (Olson & Bialocerkowski, 2014). Students were provided with a variety of reading materials to educate their partners on discipline specific information. MS-SLP students were tasked with educating their

BSN partner on the SLP role/scope of practice with the following topics: (a) cognitive/communication deficits specific to left cerebrovascular accident (CVA), (b) nasogastric (NG) tube impact on swallow function, (c) variety of diet textures and rationale for use, (d) augmentative and alternative communication (AAC) methods post CVA, and (e) hearing aid check and care for patients with a hearing loss. BSN students were tasked with educating their MS-SLP student partner on the nurse's role in the following topics: (a) care for the patient with diabetes, (b) care for the patient post stroke (CVA), (c) basic physiological relationship between CVA and diabetes, and (d) care of diabetic foot ulcerations.

Content was further reinforced on the day of the SLE at the simulation facility as the collaborators facilitated a shared in-person 30-minute pre-briefing experience. This was executed immediately before the simulation to provide a brief refresher on the SLP and nurse roles for the assigned topics. The SLP educator and MS-SLP students reviewed videofluoroscopic swallow studies (VFSS), discussed the NG tube with potential impact on swallowing, diet textures and rationale for modified textures, AAC methods post CVA, and hearing aid check and care for a patient with a hearing loss. The nurse educator and BSN students discussed issues related to diabetes (e.g., signs of hypo/hyperglycemia), signs and symptoms of a stroke and anticipated nursing management, and warning signs that other practitioners should be aware of related to hypoglycemia. Students were provided a 15-minute orientation to the physical simulation space including location of supplies, overview of assessment of a live patient, and technology used in the simulation space.

**Simulation**. There were four simulation scenarios with a standardized patient (role assumed by a simulation collaborator). Each scenario built upon information from the previous scenario by progressing through the different stages of care (i.e., admission through discharge) with the same standardized patient. Each scenario ran one time. Four students were assigned to each scenario; two MS-SLP and two BSN students. Additionally, a family member (role assumed by a simulation collaborator) was added in scenarios three and four for continuity and training. Each scenario lasted approximately 15 minutes with MS-SLP and BSN students working together to assess and treat the patient and complete assigned responsibilities. MS-SLP and BSN students who were not directly participating in the simulation scenario were able to view the simulation in a separate room via live video feed and were instructed to observe the simulation (e.g., interactions, language, patient response) and be prepared to discuss during the debrief. By the end of the simulation, each student participated in at least one scenario and observed their peers in the remaining scenarios. Clinical supervisors viewed the simulation through a one-way mirror. For specific scenario information see Figure 3.

**Figure 3**

*Scenario Expectations*

| | **Patient** | **SLP Student** | **Nurse Student** |
|---|---|---|---|
| Scenario 1 | Fatigued; decreased attention; anomia; coughs with any drinking/ swallowing saliva; cognition ok; weakness on right side; unhappy about nothing by mouth (npo) status/nasogastric (ng) tube | Complete bedside swallow screen; refer for video swallow study; suggest npo status until testing complete; discuss ng tube and impact on swallowing; identify aphasia symptoms; consider augmentative and alternative communication (aac) tools | Complete full assessment; monitor blood glucose; administer daily medications; confirm diet status; provide education to patient about insulin/meal choices/diabetic care; determine aspiration risk and request slp consult |
| Scenario 2 | Patient returns from Magnetic resonance imaging (mri); shaky/weak/lethargic; confused; difficulty hearing without hearing aid; difficulty with communication; refusing to have ng replaced | Troubleshoot hearing aid; consider and provide aac tools; provide education to patient regarding condition/tools | Complete full assessment; treat hypoglycemia; provide education to patient about insulin; review symptoms of stroke; identify difficulty hearing; determine plan for medication administration without ng |
| Scenario 3 | Report headache and pain in toe; confused about swallow study results; asks questions about why the stroke happened/long-term effects; worried about toe | Report nail care issue to nursing staff; provide education to patient regarding results of swallow study; provide education on compensation for safe intake | Complete full assessment; educate on diabetic nail care/wound care; clean toe wound and place gauze; administer medications/IV antibiotic; pain management; identify/attend to safety issues |

| | Patient | SLP Student | Nurse Student |
|---|---|---|---|
| Scenario 4 | Unable to reach tray (right-sided weakness); family member brought cookies; coughing with eating/drinking; frustrated with inability to eat preferred foods; continued weakness | Identify inappropriate food item; set-up tray on left side; reassess hearing aid; provide education to patient/family regarding food choices; review swallow exercises; provide education on precautions to follow at home | Complete full assessment; monitor blood glucose; provide education/discharge planning; identify/attend to safety issues |

**Debrief.** The debriefing opportunity is often highlighted as a key strength of the simulated learning experience (Clinard & Dudding, 2019). Figure 1 highlights three unique components of the debrief experience including collective reflection, feedback from the patient, and discipline-specific reflections. Consistent with the INACSL Standards of Best Practice (International Nursing Association for Clinical Simulation and Learning, 2016a), shared and program specific debriefing sessions took place immediately after the simulation. The INACSL recommends that the debriefing session provide the opportunity for individual and team performance reflection and the discussion be primarily driven by the participants as they "critically analyze their own performance and provide input into other's performance" (International Nursing Association for Clinical Simulation and Learning, 2016, S22). Initially, all students and simulation collaborators gathered together to debrief and reflect. Students were given the opportunity to reflect on their individual and/or team performance. Simulation collaborators facilitated a shared discussion about strengths and opportunities for growth. Students were provided with feedback from the simulation collaborators and the standardized patient (SP) actor who was also part of the collaborating team. Previous studies documented the value of SP feedback in providing students with personal reactions and comments on interactions that mostly reflect how statements and interactions would be perceived by actual patients and caregivers (Eichorn et al., 2020; Nestel & Bearman, 2014). This leads to a deeper understanding of the overall experience (Eichorn et al., 2020; Nestel & Bearman, 2014). The SP provided constructive feedback on the importance of maintaining dignity and self-determination for the patient. For example, during the simulation the students spoke more to the SP's sister (role assumed by another simulation collaborator) as opposed to communicating directly with the SP. Additionally, the students received feedback on how to better support an individual with a hearing loss and how to adjust their communication based on hearing status. Finally, the MS-SLP and BSN students and instructors split into separate rooms so that each group of students could have a discipline specific debriefing and reflection opportunity. Time devoted to each discipline was necessary as IPEC core competencies encourage competence in professional scope of practice and the recognition of the unique role each member of the IPP team plays (Interprofessional Education Collaborative, 2016).

## Assessment

Assessment of the intercampus IPE healthcare simulation included informal and formal measures. Informally, the simulation collaborators gathered after the simulation debrief to discuss strengths and opportunities to improve the collaborative simulation experience. Progress towards attainment of several of the 2020 standards and implementation procedures for the Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP) were captured in student evaluations (see Appendix). Formally, The Interprofessional Socialization and Valuing Scale-21 (ISVS-21; King et al., 2016a) was used to quantify the perceptions of all fourteen students who participated in the IPE SLE experience.

The ISVS-21 is a 21-item unbalanced 7-point Likert-scale self-report post-test tool used to assess change in interprofessional socialization as a result of IPE (King et al., 2016b). The ISVS-21 asks students to consider the degree to which they display specific behaviors, hold certain opinions, or demonstrate described attitudes after participating in IPE or clinical practice (King et al., 2016b). Responses are measured on a 7-point scale with seven indicating "To a Very Great Extent," four indicating "To a Moderate Extent," and one indicating "Not at All." Students can indicate zero if they feel that the statement does not apply to them. The ISVS-21 was validated for use with students in healthcare disciplines and has a Cronbach's alpha of 0.90. Benefits of the ISVS-21 include ease of administration, relevance for educational purposes, and a holistic perspective on team socialization through collaboration (De Vries et al., 2016; King et al., 2016b). It is important to clarify that this tool was not designed to measure effectiveness, rather; it was used to measure student's perceived change after they participated in the IPE activity. The retrospective post-test evaluating change was selected over the pre- and post-test design because individuals with limited knowledge and experience have been reported to have difficulty with accurate self-assessment. This often results in over estimation of knowledge, skills, and abilities on the pretest and lower scores on the posttest (Kruger & Dunning, 2009).

## Results

The ISVS-21 paper survey was administered to all students (seven MS-SLP and seven BSN students) upon completion of the simulation experience with 100% completion for this self-report measure. An independent-samples t-test conducted to compare MS-SLP and BSN students revealed no significant differences ($p < .001$) in the scores (MS-SLP student $M = 6.24$, $SD = .95$; BSN student $M = 6.74$, $SD = .52$). Overall, students rated in agreement (i.e., 6 = "to a great extent" and 7 = "to a very great extent") to the questions posed in the ISVS-21. Mean scores and standard deviations for MS-SLP and BSN students are summarized in Table 1 by question number.

**Table 1**

*Summary of Means and Standard Deviations for MS-SLP and BSN*

| Question | MS-SLP *M* | MS-SLP *SD* | BSN *M* | BSN *SD* |
|---|---|---|---|---|
| 1 | 5.5 | 0.84 | 6.29 | 0.76 |
| 2 | 6 | 0.82 | 6.86 | 0.38 |
| 3 | 6.29 | 1.11 | 7 | 0 |
| 4 | 6.43 | 0.79 | 6.71 | 0.49 |
| 5 | 6.71 | 0.76 | 6.86 | 0.38 |
| 6 | 6.14 | 1.21 | 6.29 | 0.76 |
| 7 | 6 | 0.82 | 5.86 | 0.90 |
| 8 | 6.86 | 0.38 | 7 | 0 |
| 9 | 6.43 | 0.53 | 6.57 | 0.79 |
| 10 | 5.71 | 1.25 | 6.71 | 0.49 |
| 11 | 6.43 | 1.13 | 7 | 0 |
| 12 | 5.86 | 1.07 | 6.86 | 0.38 |
| 13 | 6.29 | 1.11 | 6.86 | 0.38 |
| 14 | 6.71 | 0.49 | 6.71 | 0.49 |
| 15 | 5.86 | 1.07 | 6.57 | 0.53 |
| 16 | 6.71 | 0.76 | 6.86 | 0.38 |
| 17 | 6.29 | 1.11 | 7 | 0 |
| 18 | 5.86 | 1.07 | 6.71 | 0.49 |
| 19 | 6 | 1 | 6.86 | 0.38 |
| 20 | 6.29 | 1.11 | 7 | 0 |
| 21 | 6.71 | 0.78 | 7 | 0 |

*Note.* Summary of means and standard deviations for the Interprofessional Socialization and Valuing Scale-21 (ISVS-21). *M* = Mean; *SD* = Standard Deviation. Per copyright license, authors did not include ISVS-21 questions. "Used under license from Holland Bloorview Kids Rehabilitation Hospital, Toronto."

The simulation collaborator's informal assessment of the simulation experience resulted in three agreed upon areas for improvement amid universal feelings of a successful partnership. All collaborators were eager for the partnership to continue. Identified areas of improvement with rationales are summarized in Figure 4.

**Figure 4**

*Informal Assessment of SLE*

| Areas of Improvement | Rationales |
|---|---|
| Provide less scenario specific information | • Maintain authenticity<br>• Simulation occasionally felt too scripted |
| Dedicate more time to cross-disciplinary interaction | • Students completed assigned discipline roles in parallel (i.e., working next to instead of with each other) |
| Develop a peer feedback form | • Emphasize critical thinking and self-reflection<br>• Facilitate rich, meaningful discussion |

## Discussion

The assessment results of the collaborative simulation strongly suggest that the experience was mutually beneficial for the MS-SLP and BSN students and is consistent with other studies that provide positive commentary about the ability to work collaboratively with other professionals (Kleib et al., 2021; Lewis et al., 2018; Oxelmark et al., 2017). This is noted by the unanimous desire of the simulation collaborators to continue the partnership as well as the lack of statistical significance between MS-SLP and BSN student responses on the ISVS-21.

**Strengths.** MS-SLP and BSN students reported that they felt confident with describing their professional role to other professionals (item 8 on ISVS-21: MS-SLP student $M = 6.86$; BSN student $M = 7$). Several studies noted improved confidence and a better understanding of other professional roles after participating in IPE SLEs (Copley et al., 2007; Eichorn et al., 2020; Oxelmark et al., 2017; Weir-Mayta et al., 2020). Overall, communication between team members was encouraging as MS-SLP and BSN students reported a greater understanding of their roles and the roles of other collaborative team members as a result of their participation in the IPE SLE (item 11 on ISVS-21: MS-SLP student $M = 6.43$; BSN student $M = 7$). This finding is consistent with Eichorn and colleagues who noted strengths as "flow of communication," not having to "fight for a chance to express themselves," and consistent communication with appropriate "turn-taking" (2020, p. 5). Recognition and a shared, positive respect for the unique roles and responsibilities of each team member is consistent with the IPEC competencies (Interprofessional Education Collaborative, 2016).

**Descriptive Differences.** Although not statistically significant, there were some minor descriptive differences between MS-SLP and BSN student ratings on the ISVS-21 that may serve as areas for improvement for the simulation collaborators. MS-SLP and BSN students reported mean scores

of 5.5 and 6.29 respectively on item 1 of the ISVS-21 which asked students to rate the extent of change in their awareness of preconceived ideas when entering into team discussions as a result of the IPE. These mean scores are high on the 7-point scale, but are lower than the means for the other items on the ISVS-21. Oxelmark and colleagues (2017) had similar findings as students in their SLE learned new information about other professions that confronted previous perceptions they had. Two additional targets for improvement are enhanced opportunities for patient collaboration and professional leadership. Not only did the SP provide feedback reminding the students of the need for self-determination for the patient during the scenarios, but the response to item 12 on the ISVS-21 revealed students did not perceive great change in their comfort engaging in shared decision making with clients (MS-SLP student $M = 5.86$ and BSN student $M = 6.86$). Communication between patients, families, and healthcare professionals is essential for the management of diseases and disorders and helps promote a holistic plan of care and enhance safety (Interprofessional Education Collaborative, 2016). Although still trending towards the higher end of the 7-point scale (MS-SLP $M = 6.14$ and BSN students $M = 6.29$), student responses on item 6 of the ISVS-21 suggested potential to build leadership opportunities into the SLEs. With SLPs and audiologists in various settings feeling between "Not very prepared" and "Somewhat prepared" to lead an ICP team, opportunities for leadership should be developed (American Speech-Language-Hearing Association, 2019). Further, comfort in a leadership role and the ability to support collaborative efforts is noted as integral in the IPEC core competencies (Interprofessional Education Collaborative, 2016).

## Limitations

**Time Commitment.** Faculty or staff with restrictive workloads or limited reassignment time may find this type of simulation partnership unrealistic. As described in this paper, there is a need for substantial time investment upfront to prepare for the experience. It would be expected, however, that the time needed for future collaborations once the partnership is established, would be greatly reduced. Student time may also be a concern for programs with rigid curricular and clinical schedules. In this model, the cross disciplinary student pairing was a part of all stages of the simulation (pre-brief to debrief). Because of the differences in schedules and even location of programs, most students connected in the evenings after classes and clinicals were complete, thus extending their work day. Additionally, there was variability in depth and breadth of student collaborations and preparation for this simulation. The simulation collaborators recognized the need for more time devoted to cross-disciplinary students' connection as a point of improvement. The benefits of the simulation should be weighed carefully against the time requirements.

**Location and Space.** Location and space may also pose limitations on the broad application of this model. The participating programs were physically distanced by a one-hour drive. Given that the simulation only required students to travel the distance once during the semester, this was not seen as an undue burden. Facilitators on the other hand required more travel for planning. A physical space was necessary for the simulation described. It was also important to the simulation facilitators that the physical space be as authentic to a typical inpatient setting as possible. The SP reduced the need for an expensive high-tech mannequin. However, an initial investment to outfit the facility with traditional hospital room materials would be required. The simulation facility used for this SLE charged programs a fee for services and space. Because clinical simulations are already a well-established practice in nursing programs, the nursing program participating in this collaboration already budgeted the fee as a part of their annual expenses; however, the MS-SLP program did not. The MS-SLP program fee was waived for the initial simulation, but cost for

future use of the simulation facility was prohibitive to continue. Future collaborations will likely need to utilize a campus or community space that does not require a substantial fee for use and allows for adaptation of the space to look like a hospital room for greater authenticity. With the pivot to virtual work and telepractice services and increased comfort with collaborative documents as a result of the pandemic, future collaborations may consider converting this model to fit an authentic telepractice scenario. Adapting the model for telehealth services would be one method for reducing the barriers of location, travel time, and facility space between participating programs.

## Conclusion

Measures of this IPE SLE model suggest not only feasibility but mutual benefit to participants. SLP and nursing programs that have limited access to medical facilities and complimentary medical specialties at their home institution may find this IPE clinical simulation model beneficial in expanding opportunities to support interprofessional socialization and professional competencies. IPE SLEs allow students to gain collaborative communication and problem-solving skills that are essential for student confidence and ability to lead. Further, these experiences within clinical education programs lead to a holistic service delivery model and better patient outcomes. The model presented may help facilitate IPE across campuses to address needs within the curriculum and needs within healthcare as a whole.

## Disclosures

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## Appendix

### Speech-Language Pathology Targeted Standards and Evidence for Meeting Standards

| Standard | Definition | Evidence |
|---|---|---|
| **Standard IV-C** | Demonstrated knowledge of communication and swallowing disorders and differences, including the appropriate etiologies, characteristics, and anatomical/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates in the following areas: Language, Hearing, Swallowing, and AAC | Pre-brief preparation, shared learning activity, simulation (clinical skill evaluation by SLP supervisor), debrief session participation |
| **Standard IV-D** | Demonstrated current knowledge of the principles and methods of prevention, assessment, and intervention for persons with communication and swallowing disorders, including consideration of anatomical/physiological, psychological, developmental, and linguistic and cultural correlates: Language, Hearing, Swallowing, and AAC | Simulation (clinical skill evaluation by SLP supervisor), debrief session participation |
| **Standard IV-E** | Demonstrated knowledge of standards of ethical conduct. | Pre-brief preparation, shared learning activity, simulation, debrief session participation |
| **Standard IV-F** | Demonstrated knowledge of processes used in research and of the integration of research principles into evidence-based clinical practice. | Discipline specific and shared pre-brief sessions, simulation |
| **Standard IV-G** | Demonstrated knowledge of contemporary professional issues. | Discipline specific and shared pre-brief sessions |
| **Standard V-A** | Demonstrated skills in oral and written or other forms of communication sufficient for entry into professional practice. | Simulation (clinical skill evaluation by SLP supervisor), client report write-up post simulation |