

# Introducing Interprofessional Education to BSN and CLS Students Using a Simulated Healthcare Setting

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## ABSTRACT

Healthcare professions face complex care environments with growing attention to the number of preventable hospital deaths. Interprofessional communication and teamwork are key elements in reducing medical errors, and are core competencies of interprofessional collaborative practice. Interprofessional education occurs when students from different disciplines learn together, and/or when faculty from one discipline instruct students in another. Simulated healthcare scenarios provide high-impact learning environments for students with many benefits. Simulation-interprofessional education has been used very little between Clinical Laboratory Sciences and BSN nursing students. The faculty from a growing university sought to improve student-learning outcomes through team-teaching and student role playing in simulation and science laboratories. Two IPE projects were undertaken. Both projects demonstrated increases in the cognitive, psychomotor and affective domains of learning.

**ABBREVIATIONS:** IPCP – Interprofessional collaborative practice, IPE – Interprofessional education, CLS – Clinical Laboratory Science, BSN – Bachelor of Science in Nursing, NSSL – Nursing Skills and Simulation Learning Center, NAACLS – National Accrediting Agency for Clinical Laboratory Sciences

**INDEX TERMS:** Interprofessional education, Simulation

*Clin Lab Sci* 2017;30(4):224

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## INTRODUCTION

Education has traditionally been delivered to a discipline-specific audience by an instructor from that discipline. It happens within the four walls of a lecture hall. Learning is categorized into three domains: cognitive (knowledge), psychomotor (skills), and affective (values).<sup>1</sup> In the college classroom setting, the cognitive domain is typically assessed by written examination. In healthcare education, students are also required to demonstrate proficiency in clinical skills, with most of the training occurring at a medical facility. Students in clinicals are assessed for these psychomotor skills by a preceptor, someone of the same discipline. Specific goals can be listed as competencies and students can be checked off when they become proficient. Assessing values is not as straight forward. Bloom et al. describe relative and increasing levels of maturity for the affective domain, beginning with receiving the new experience, responding to the experience, and progressing to valuing the experience, reflecting on the experience to organize its value with other values, and internalizing those values as character traits.<sup>1</sup> Clinical experiences may influence the affective domain more than classroom work. Accrediting bodies for medical laboratory scientist and nurse training programs highlight all three learning domains in their standards/essentials.<sup>2,3</sup>

Healthcare professions face complex care environments with growing attention to the number of preventable hospital deaths.<sup>4</sup> The modern healthcare setting requires a deeper understanding of the multiple factors that contribute to patient outcomes. Interprofessional communication and teamwork are key elements in reducing medical errors, and are core competencies of interprofessional collaborative practice (IPCP). The tenets of IPCP can be introduced into the curriculum of healthcare students. At our university, the administration promoted IPCP by funding projects that involved

interprofessional education between departments in the College of Health. Interprofessional education (IPE) occurs when students from different disciplines learn together, and/or when faculty from one discipline instructs students in another.

The Interprofessional Education Collaborative Expert Panel (IPEC) designated four core competency domains for IPE to increase quality and safety in healthcare. The interprofessional communication domain concentrates on effective communication between professions. The values/ethics domain aligns professional values with ethical considerations for healthcare and attitudes. The roles/responsibilities domain is intended to develop complementary professional relationships. The teams and teamwork domain promotes team-based care.<sup>5</sup> The IPEC competencies align well with Bloom's Affective Domain.<sup>1</sup> Table 1 lists the categories in the affective domain, and cites specific examples from the IPEC core competencies that align to the categories. There is no direct alignment between the lowest level (receiving knowledge passively) and the IPEC core competencies.

Typically instruction and internalization of the IPEC competencies occurs in the clinical setting. Three drawbacks to the clinical setting are that it is restrictive in its physical capacity for students, the medical conditions that are experienced are limited to the patients at hand, and that some events are subject to variables beyond the instructors' control. Introduction to the IPEC competencies can also take place in a simulated healthcare setting. Simulation provides a safe and controlled environment to improve psychomotor skills and provide opportunities for group discussions, and reflection on values and ethics. Simulation scenarios can be written for any medical condition and repeated for all students in the program. Common intellectual experiences are considered high-impact practices in education.<sup>6</sup> Simulation has been used in industries with high potential for human loss, and healthcare professions now recognize the many benefits of simulated learning. Deliberate practice during simulation leads to skill improvement.<sup>7</sup>

### THE UWF EXPERIENCE

The Nursing Skills and Simulation Learning Center (NSSL, aka SIM-lab) at our university is set up to look like a hospital wing. The hospital beds are occupied by high-fidelity Laerdal manikins (Wappingers Falls, NY)

**Table 1.** IPEC core competencies align to categories of Affective Domain

Bloom's Taxonomy	IPEC Core Competencies
Level of affective domain with increasing levels of growth	VE Values/Ethics RR Roles/Responsibilities CC Interprofessional Communication TT Teams and teamwork
Receiving	None of the IPEC competencies are at this level
Responding (not passively but with a reaction)	VE5. Work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevent and health services RR1. Communicate one's roles and responsibilities clearly to patients, families and other professionals
Valuing (with respect to knowledge)	VE4. Respect the unique cultures, values, roles/responsibilities and expertise of other health professions VE6. Develop a trusting relationship with patients, families, and other team members RR2. Recognize one's limitations in skills, knowledge, and abilities TT4. Integrate the knowledge and experience of other professions – appropriate to the specific care situation – to inform care decisions, while respecting patient and community values and priorities/preferences for care CC7. Recognize how one's own uniqueness, including experience level, expertise, culture, power and hierarchy within the health care team, contributes to effective communication, conflict resolution, and positive interprofessional working relationships
Organizing (putting together ideas and values, developing sense of other perspectives, comparing and relating information to arrange and prioritize values)	RR3. Engage diverse healthcare professionals who complement one's own professional expertise, as well as associated resources, to develop strategies to meet specific patient care needs CC3. Express one's knowledge and opinions to team members involved in patient care with confidence, clarity and respect, working to ensure common understanding of information and treatment and care decisions. TT6. Engage self and others to
Characterization (integration of values such that the student's character consistently reflects these values)	

constructively manage disagreements about values, roles, goals, and actions that arise among health care professionals and with patients and families

capable of voice interaction, audible heart, lung, and bowel sounds, and palpable pulses. The NSSL suite includes a debriefing room with a large video display that records and projects activities in the bays. We used the SIM-lab to indoctrinate the BSN and CLS students to IPE.

Prior to a simulation experience, the students are presented with a patient scenario during a briefing session. Students are prompted to discuss the course of action, prioritize care needs, and gather any necessary information. The simulation experience can be video recorded, and students can review their actions during debriefing and receive peer and instructor feedback. During the session, students role-play in small groups with assigned healthcare roles, and observation roles. Observation students evaluate the participating healthcare students using a formative assessment tool. For nursing students, roles are assigned as the primary caretaker, a secondary caretaker as assistant, and a resource caretaker responsible for communication and/or documentation. Roles can be assigned as family members to simulate family-centered care and family conflict.

The Clinical Laboratory Sciences (CLS) and Nursing faculty developed two IPE projects. The first project included an Introduction to Simulation scenario for CLS students led by nursing faculty. This focused on patient safety, primarily patient identification and hand hygiene practices when collecting blood. Phase 1 was designed to familiarize CLS students with the SIM-lab facilities and the simulation process. The CLS students played all of the roles. In the second phase, the Bachelor of Science in Nursing (BSN) students attended the patient and the CLS students interacted with them during blood collection. One group of CLS students (the intervention group) was instructed by lecture and given deliberate practice using the World Health Organization method for handwashing by nursing faculty. The control group received a similar lecture, but did not have the psychomotor practice. The effect of deliberate practice was evaluated by comparing the cognitive and psychomotor skills of the intervention group to the

control group. The intervention group had significant and sustained improvement in technique. This project is detailed in Cavnar et al. in this issue.<sup>8</sup>

The second project began in the SIM-lab with a postpartum patient scenario. Both CLS and BSN students were involved in caring for a critical patient experiencing a venous thromboembolism. This scenario was followed by molecular genetic testing for thrombophilia in the CLS teaching lab. The CLS students performed real-time PCR on the patient sample, and instructed the nursing students on how to interpret the tests. Students were surveyed before and after each SIM-IPE to evaluate cognitive learning gains. Students were also surveyed about their professional attitudes to evaluate their affective domain. Students showed significant and sustained learning gains, and many students showed changes in their attitudes and beliefs. This project is detailed in Behan et al. in this issue.<sup>9</sup>

## CONCLUSION

Other universities have utilized simulation to introduce IPE. The author had the privilege of personal experience with SIM-IPE for practice immersion hours at the University of Miami (UM) IPE Patient Safety Course. The course was attended by UM medical and nursing students, and the students had a variety of opportunities to practice communication and teamwork. SIM-IPE is often a single experience, but the University of Colorado also has a successful program for medical, nursing, pharmacy, dentistry, physical therapy, and others. This program has been in place since 1999, and all students participate in SIM-IPE.<sup>10</sup> Other examples were found through a refined search (i.e., scholarly & peer-reviewed, journals, and nursing) of CINAHL Plus and MEDLINE databases using the search term simulation interprofessional education, which resulted in 730 articles. One systematic review by Zhang and colleagues reviewed 25 studies using a variety of designs, and reported positive outcomes from all authors (i.e., students' satisfaction with and perception of learning, time to complete tasks, and observable target behaviors).<sup>11</sup> More research is needed to define best practices for IPE between Clinical Laboratory Sciences (CLS) and nursing students.

The use of IPE provides an efficient way to teach and assess multiple domains, and now many accrediting bodies incorporate IPEC language in the curriculum

requirements.<sup>12</sup> The CLS program at our institution is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). While the NAACLS document does not specifically refer to IPEC, Standard 8A5 of the NAACLS accreditation document requires that the curriculum cover “Communications sufficient to serve the needs of patients, the public, and members of the health care team”, and Standard 8A7 requires that “Education methodologies and terminology to train/educate users and providers of laboratory services.” The IPEC core competencies incorporate these standards, and fully address teaching and assessing affective domain. The IPE projects discussed here provide excellent examples for the accreditors’ review. We share them here as models for other CLS programs who are interested in devising an IPE project for this purpose.

## ACKNOWLEDGEMENTS

The faculty and students gratefully acknowledge the Dean of College of Health, Dr. Ermalynn M. Kiehl, for supporting IPE at the University of West Florida.

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