Total Joint Surgery Simulation

Department/Program: Health & Public Safety – Surgical Technology
Project Dates: Spring 2015- Spring 2017 · Project Leader: Diana Montoya, CST, FAST, BSCHM

Problem

As the first cohort of PCC Surgical Technology students entered their first of three clinical externships, orthopedic surgeons provided feedback that the students were weak in the area of total joint instrumentation and implants. The program's goal was to create an educational opportunity in the spring semester of the student's first year that would give them hands-on experience with various total joint systems, including individualized instruction and assessment of skills and performance, to develop their Critical Thinking & Problem Solving.

Plan

The plan was to develop a hands-on orthopedic workshop in colaboration with local surgeons and selected orthopedic representatives with the purpose of providing knowledge, skills, and necessary training using specialized total joint instrumentation, implants, and surgical devices. The workshop was designed to include both the Anatomage Table and use of the cadaver in the PCC HALC lab to demonstrate and perform a total joint surgical procedure. This opportunity will enhance the students' learning by providing individualized instruction and a chance to assist the surgeon in a simulated environment while performing in the first scrub role. Student performance data would be collected and assessed through a skills demonstration and a written exam.

Assessment Activity

Our Surgical Technology faculty collaborated with Dr. Shawn Nakamura (on the right in the below photograph with PCC students), orthopedic surgeon at St. Mary-Corwin Medical Center, and selected representatives to provide an annual hands-on workshop on total joint instrumentation:

Instruction	Instructors arranged the PCC HALC lab to simulate an operating room, and Dr. Nakamura used the Anatomage Table and cadaver to perform a total joint surgical procedure. He talked through the procedural steps in real-time while the total joint representative assisted students with identifying specialized total joint instrumentation, implants, and devices.
Activity	Students participated in prepping and draping out the knee and creating a sterile set up using total joint instrumentation, implants, and devices. Students performed the surgical procedure in the first scrub role while assisting Dr. Nakamura.
Evaluation	Faculty performed analysis through observation and written exams and results were used to identify individual student needs and develop a new total joint lab with comprehensive skill competencies covering several manufacturers.

Additional activities used to prepare and evaluate the students included total joint case studies, written evaluations, and skills demonstrations, participation scores, peer feedback, and formative and summative reviews.

Results and Data

Implementation of the total joint workshops have proven to increase our student's skill level in performing total joint procedures. Assessment data provided an immediate path for developing new curriculum and will continue to support faculty in delivering quality classroom and hands-on training. Key findings identified that students needed to learn several different total joint systems to meet the many demands for hospital and surgeon preferences.

Total Joint System Score Trends	Spring 2015 (First Year)	Spring 2017 (Final Year)
Minimum	**5%**	**5%**
Average	**26%**	**56%**
Maximum	**50%**	**100%**

Closing the Loop & Next Steps

Our faculty sees student success as a cooperative effort, and we value interaction between our students, faculty, surgeons, and other surgical technologists and operating room staff. Faculty will continue to assess student learning with the goal of increasing the student's level of skills and knowledge while promoting critical thinking and reasoning, all of which are necessary to gain employment as a surgical technologist while becoming a contributing member of the health care team.