

Science Strand 8: Impact of Science, Technology and Human Activity

CLE: 8.1 The nature of technology can advance, and is advanced by, science as it seeks to apply scientific knowledge in ways that meet human needs

Health Profession: X-ray Technologist

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Reference:

**Bowers, Brian. (1970). X-Rays their discovery and Application [Electronic version].
www.cdrewu.edu/cosh/radiography/radiologic.techs.pdf**

Objectives:

At the completion of this presentation the high school student will be able to:

- 1. State three reasons why x-ray technology is advancing.**
- 2. Show where their radius, humerus, and femur are located on their body.**
- 3. Identify the importance of x-ray technology to your health.**

Background Summary of Information as Related to X-ray Technologists and CLE

The task of x-ray technologist is to take x-rays of patients. They have specialized training in the operation of equipment, positioning of x-ray slides, and positioning of patients. They also learn how to develop x-rays. The CLE of the nature of technology can advance, and is advanced by science as it seeks to apply to scientific knowledge in ways that meet human needs relates to x-ray techs. The field of x-ray technology has been advancing for many years and continues to grow. X-rays were first discovered in 1895. By 1898 they were being used for therapeutic application. In 1918 the invention of the line focus was invented and in 1931 tomography started. By 1953 the first commercial image intensifier was invented, and in 1973 MRI was developed. Today digital imaging is being used.

Scenario:

While playing basketball in gym class Sarah and another player ran into each other. Sarah fell to the floor and cried out in pain. She couldn't move her arm, she was in excruciating pain. The gym teacher sent Sarah to the nurse. The nurse decided to call Sarah's parents so they could take her to ER. Sarah was seen in the emergency room. The doctor ordered x-rays of Sarah's arm. The x-ray tech came to Sarah's room and x-rayed her arm. The technologist told Sarah and her parents that the results would be back soon. Her father asked how the x-rays could be developed so quickly. The x-ray tech told him that there have been many advances in the field of x-rays and processes are quicker now. She went on to explain that the x-ray is developed through a special machine that loads the information onto a digital file. This allows the doctors to pull the x-rays up on a computer screen. Sarah's Dad was amazed; they had actual x-ray films when he was a kid. The x-ray tech explained that plain films could still be obtained, but most films are given on a cd disc now. After the x-rays were developed the doctor showed them to Sarah and her family on the computer. Sarah had broken her left radius and would eventually have to get a cast.

Activities:

Show actual x-rays, have students identify large bones in their body on a worksheet and then point them out on their own body.

Supplies Needed: X-ray films or x-rays on cd, anatomy worksheets or book reference

Education and training.

Surgical technologists receive their training in formal programs offered by community and junior colleges, vocational schools, universities, hospitals, and the military. In 2006, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) recognized more than 400 accredited training programs. Programs last from 9 to 24 months and lead to a certificate, diploma, or associate degree. High school graduation normally is required for admission. Recommended high school courses include health, biology, chemistry, and mathematics. Programs provide classroom education and supervised clinical experience.

Students take courses in anatomy, physiology, microbiology, pharmacology, professional ethics, and medical terminology. Other topics covered include the care and safety of patients during surgery, sterile techniques, and surgical procedures. Students also learn to sterilize instruments; prevent and control infection; and handle special drugs, solutions, supplies, and equipment. Certification and other qualifications. Most employers prefer to hire certified technologists. Technologists may obtain voluntary professional certification from the Liaison Council on Certification for the Surgical Technologist by graduating from a CAAHEP-accredited program and passing a national certification examination. They may then use the Certified Surgical Technologist (CST) designation. Continuing education or reexamination is required to maintain certification, which must be renewed every 4 years.

Certification also may be obtained from the National Center for Competency Testing (NCCT). To qualify to take the exam, candidates follow one of three paths: complete an accredited training program; undergo a 2-year hospital on-the-job training program; or acquire 7 years of experience working in the field. After passing the exam, individuals may use the designation Tech in Surgery-Certified, TS-C (NCCT). This certification must be renewed every 5 years through either continuing education or reexamination.

Surgical technologists need manual dexterity to handle instruments quickly. They also must be conscientious, orderly, and emotionally stable to handle the demands of the operating room environment. Technologists must respond quickly and must be familiar with operating procedures in order to have instruments ready for surgeons without having to be told. They are expected to keep abreast of new developments in the field.

Advancement.

Technologists advance by specializing in a particular area of surgery, such as neurosurgery or open heart surgery. They also may work as circulating technologists. With additional training, some technologists advance to first assistant. Some surgical technologists manage central supply departments in hospitals, or take positions with insurance companies, sterile supply services, and operating equipment firms.

Colorado Technical University: North Kansas City

Colorado Technical University provides career-oriented education to those seeking careers in Criminal Justice, Nursing, Medical Assisting, Business Administration, IT, Visual Communications and more More Info

(<http://www.guidetohealthcareschools.com/coloradotechnicaluniversity.html>)

Offering Healthcare programs in: Healthcare Information Systems, Associate in Healthcare Management, Medical Assistant, Medical Billing & Coding, Medical Office Administration, Nursing, Associate in Nursing (RN), Licensed Practical Nurse, Licensed Vocational Nurse, Radiology Technician, Surgical Technician, X-Ray Technician

High-Tech Institute: Kansas City

High-Tech Institute, with 10 campus locations throughout US, offers diploma programs in Healthcare including Medical & Dental Assisting, Medical Billing & Coding, Pharmacy Tech, and Surgical Tech. More Info

(<http://www.guidetohealthcareschools.com/high-techinstitute.html>)

Offering Healthcare programs in: Dental Assistant, Massage Therapy, Medical Assistant, Medical Billing & Coding, Pharmacy Technician, Surgical Technician

Everest College: Springfield, St. Louis

Everest College, with multiple campuses located in AZ, CA, CO, IL, IN, MO, OR, TX, UT, and VA offers associate and diploma programs in Accounting, Business Administration, Criminal Justice, Information Technology, Homeland Security, Paralegal, Medical Administration, Medical Assisting, Medical Billing & Coding, and Computer Network Administration. In addition to diploma programs Everest also offers an AAS in Advanced Microcomputer Applications. More Info

(<http://www.guidetohealthcareschools.com/everestcollege.html>)

Offering Healthcare programs in: Dental Assistant, Holistic Health, Laboratory Technician, Massage Therapy, Medical Assistant, Medical Billing & Coding, Medical Office Administration, Medical Transcription, Nursing, Nurse Practitioner (NP), LPN, Licensed Vocational Nurse, Pharmacy Technician, Surgical Technician

Allied College: Fenton, Maryland Heights

Allied College, located in Missouri, offers programs in Dental & Medical Assisting, Massage Therapy, Medical Billing & Coding, Pharmacy Tech, and Surgical Tech. More Info

<http://www.guidetohealthcareschools.com/alliedcollege.html>

Offering Healthcare programs in: Dental Assistant, Laboratory Technician, Massage Therapy, Medical Assistant, Medical Billing & Coding, Pharmacy Technician, Surgical Technician