

Legacy Institute for Surgical Education and Innovation

Curriculum Development Guidelines

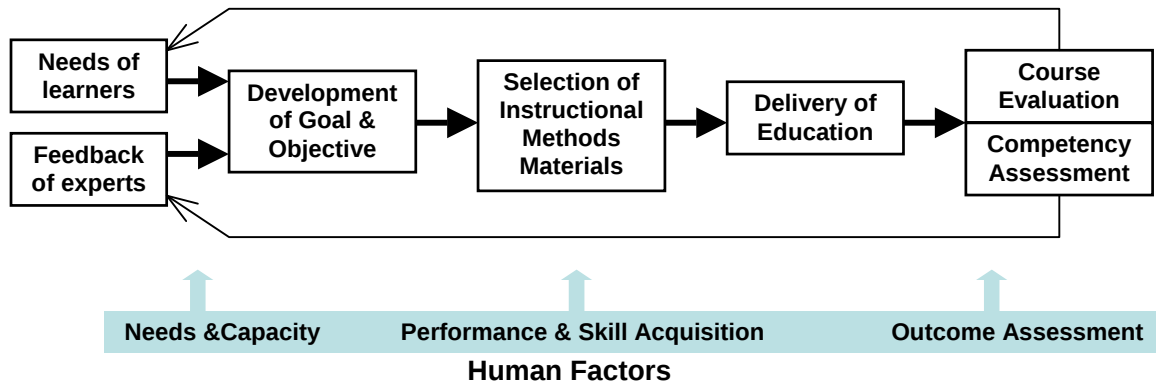


Figure 1. ADDIE model of instructional design.

Analysis: Understand the learners – their current status, learning needs, and desired outcomes;

Design: Include appropriate course content to match the learning outcomes and needs of the learners;

Development: Test the validity, reliability and feasibility of the teaching curriculum;

Implementation: Select the best way to teach the material- time, location, number of learners per class, teaching methods, and equipment needed are all important considerations;

Evaluation: measure teaching outcomes – content learned and improvements in practice.

Curriculum Development at the Legacy Institute for Surgical Education and Innovation

At the Legacy Institute for Surgical Education and Innovation (LISEI), we implement a well-known education model to develop and improve curricula for our educational courses (Fig. 1). This model includes five elements for building effective educational and training courses: Analysis, Design, Development, Implementation, and Evaluation.

In the **analysis** phase, the learner's existing knowledge and skills are assessed. Based on this assessment, educational objectives and learning outcomes are established. Decisions regarding course content are typically based on, but not limited to, quality indicators, a review of sentinel events, reported clinical incidences, practice trends, regulatory initiatives, and clinical expert input for safe and best practice. These evaluation activities are performed in cooperation with Quality and Compliance, clinical experts, department managers and educators, the resident training program at Legacy Health, and Oregon Health & Science University.

The **design** phase deals with learning outcomes, course content planning, and selection of appropriate teaching methodologies. Educators design specific instructional tools to meet individual needs for learners with different learning objectives. As many of our courses are CME approved (often by the ACS), we have integrated guidelines from these prestigious organizations to develop course content, select instructional methods, and design course evaluations for all courses given by LISEI.

The **development** phase is where the course designers create and assemble teaching tools for effective delivery in a team context. This is often best achieved by collaborating with other departments and programs. For example, at LISEI we have developed a new education simulator for surgical team training. The innovative Legacy Inanimate System for Endoscopic Team Training funded by SAGES is set up to define authentic behavioral markers for surgical team dynamics and to design valid training courses for improving team skills. Future program development includes a project to systematically train OR nurses to improve the coordination between nurse and surgeon, which will serve our goal to ultimately improve OR efficiency and reduce medical errors in the operating theatre.

The **implementation** phase is when the education is delivered. Prior to the course, staff at LISEI make preparation for the learners including selected readings, setting up hands-on equipment, developing simulation scenarios, compiling educational handouts, and preparing the didactic lecture. During the course, the learner is encouraged to ask questions and communicate with the course instructors. Teaching methods are carefully selected to suit the needs of the learners, including the use of different types of simulation and the use of multimedia such as CD-ROMs, videos and audio materials. LISEI has a website in which learners can access a variety of these instructional tools.

Delivering high quality educational courses depends on the quality of presentations by the course instructors and faculty. LISEI staff receives proficient training to maintain their competency for medical education. The Director of LISEI, Dr. P. Ashley Wackym, is a Fellow of the American College of Surgeons (FACS). Dr. Duncan Neilson, LISEI Director of the Surgical Program, is Board Certified by the American Board of Obstetrics and Gynecology, and Dr. Bin Zheng, human factors and team training specialist, is a member of the Human Factors and Ergonomics Society. They are active in the surgical education field. The Simulation Specialists at the Carl Peterson Clinical Education Center, including Janine Jacobs, RN, have over five years of experience practicing within a simulation training environment and have completed training at Harvard Center for Medical Simulation Course, OHSU Simulation Specialist Course, and other workshops.

Finally, an essential element for constructing effective education is through course **evaluation**. LISEI mandates that a formal evaluation should be conducted at the end of each course. Specifically, feedback regarding course goals, objectives, content, instructor performance, and methods for teaching is collected from all attendees. LISEI staff makes great efforts to use current evaluation models, such as the Fundamentals of Laparoscopic Surgery (FLS) test, to evaluate long-term outcomes of our training courses in the clinic context. We believe that the gold standard of any surgical educational outcome is to assess the competency/skill improvement of the trainee in the real work environment, i.e. operating room. This long-term, more reliable evaluation will be obtained from experts inside the OR, including clinical experts, nurse educators, and OR managers. Information received from both learners (short-term evaluation of course) and experts (long-term evaluation of competence) is used for improving the design of future courses.

The above model for education has been integrated into all courses held at LISEI. In addition, we hold regular LISEI Steering Committee meetings to evaluate previous and future educational offerings. These are, of course, based on feedback we receive from our course attendees as well as the opinions of healthcare professors and our teaching faculty. For internal courses, such as our surgical nurse training courses, needs assessment is performed on an ongoing basis as a part of Legacy Health's management structure. OR managers, clinical experts, and nursing instructors identify needs, e.g., the introduction of new procedures and technologies, and in conjunction with LISEI educators, specific simulator and lab based courses are designed.

In addition to feedback received from learners and instructors, input is received from human factors experts. By evaluating the needs and capacity of the learners, resources available at LISEI, and educational goals and objectives, human factors principals (psychomotor and skill acquisition ability) are applied to the process of selecting appropriate instructional materials, educational models, and methods for effective delivery. As a result, course development, implementation, assessment, and evaluation are integrated throughout the entire educational process; representing a dynamic model for building effective training and performance tools for learners in different specialties.