Simulation in Medical Education: A Guide to Curriculum Design and Implementation

Clinical Skills Education and Assessment Center

The Ohio State University College of Medicine
Simulation Curriculum Development
Applying Kern’s Six Steps to Curriculum Development

1. Problem Identification
2. Targeted Needs Assessment
3. Goals and Objectives
4. Educational Strategies
5. Implementation
6. Evaluation and Feedback
1. Problem Identification

- **What are the GAPS?**
  - What is happening *vs* What should be happening
    - Issues in the clinical environment
    - Missing curriculum components
    - Low test scores
    - Misunderstanding of material
    - Related to communication, skill development, knowledge retention, etc?

✓ These gaps will help to form the overall topics and goals for your simulation scenarios
2. Targeted Needs Assessment

- Understand the Problem
  - What’s the Background?
  - Ask WHY
  - Speak with both instructors/managers AND learners
  - What are the Expectations?

- Understand the Learners
  - What do they know, what do they need to know, what is their perception of how they are taught?
    - Questionnaires, Interviews, Observations, Test Scores

✓ This will help you develop simulations that are meaningful learning experiences with goals and objectives that better address the problem.
3. Goal and Objectives

- What’s the goal?
  - What is the desired end result (broad)
    - Typically related back to the problem
  - Must be SMART

![SMART Image](image-url)
3. Goal and Objectives

- What’s the objective?
  - What do you want your learners to accomplish during the simulation
    - Directly related to your goal
    - This drives EVERYTHING!

- How to write objectives
  - Must be specific and measurable
  - Include 5 elements:
    - 1. Learner (who)
    - 2. Verb
    - 3. Criteria
    - 4. Noun
    - 5. Conditions of the performance
  - Who will do how much (how well) of what by when?
3. Goals and Objectives

How to write objectives cont.

- Choose the appropriate Verb
  - **Cognitive (knowledge)**
    - Identify, Define, Recite, Recognize, Describe, Explain, Apply, Analyze, Illustrate, Assess
  - **Affective (attitude):**
    - Listen, Gives, Understands, Discuss, Appreciate, Relate, Questions, Verifies, Revises
  - **Psychomotor (skill/behavior)**
    - Demonstrate, Incorporate into Performance, Use, Show, Diagnose, React, Respond, Constructs, Measures, Changes

- 3-5 objectives per scenario will maintain facilitator and learner focus
4. Educational Strategies

How will the objectives be achieved through Simulation?

1. Content
   - Derived from the nouns listed in the objectives
   - Set the scene of the scenario
   - Use the Scenario Development Form as a guide
   - What prerequisites are required of the learner?

2. Method
   - Which method will lead to achieving the objectives?
     - Task Training
     - Standardized Patient
     - Low vs High Fidelity Simulation
     - A combination of the above

Consider time, space, and resources!
4. Educational Strategies

- When choosing Simulation, consider...
  - Simulation Sequence
    - **Set-up**: 5 minutes - 1 hour!
    - **Intro to simulator**: 5 minutes
    - **Simulation**: 10 minutes
    - **Debrief**: AT LEAST 10 minutes
    - No more than 5 learners per group!
  - A marathon, not a sprint...
    - Development: Meeting & Form Completion (3-4 hours)
    - Preparation: Program & Supplies/Equipment (1-3 hours)
    - Practice: with ALL Facilitators (1 hour)

- Contact an Education Resource Specialist for support [jessica.liddil@osumc.edu](mailto:jessica.liddil@osumc.edu)
5. Implementation

- Identify Resources (Time, Space, Personnel, Cost)
  - One **appropriate** facilitator per simulation/activity
    - Knowledgeable on the subject matter
    - An active member of the learner’s field
    - An understanding of the Simulation Process
    - Typically NOT a direct peer/co-worker
  - Accurate Clinical Representation
    - **Environment**-Simulation Lab or Workplace
    - **Equipment/Supplies**- same as in clinical practice
      - Ex. drug labels, crash cart, etc.
    - **Time Frame**- when to “fast forward”
      - Ex. Progression of illness, Labs/Imaging Results

For scheduling space and obtaining cost estimates, contact Kelli Kaiser (kelli.kaiser@osumc.edu)
5. Implementation

- Obtain Support
  - Internal: faculty, learners, administration
  - External: Professional Societies, foundations, funding resources

- Develop Administrative Mechanisms to Support the Curriculum
  - Research?
    - An IRB approval letter must be kept on file at CSEAC
  - Communicate schedule to learners and faculty
  - Arrange space, materials, and instructors

- Anticipate and Address Barriers
  - Financial, Competing Demands, People
5. Implementation

- **Plan to Introduce Curriculum**
  - **Pilot First:** We recommend and practice session 2 weeks prior to a session

- **Create Learner “Buy In”** (aka Engaged Learners):
  - Why are they required to participate?
  - What will they get out of the experience?
  - How does the scenario impact them?
    - Work to solve a problem occurring in the workplace?
  - Is this for purposes of evaluation or learning?

- **Phase In:** For large curriculums, start small, obtain feedback/evaluations then fully implement
6. Evaluation and Feedback

- Closes the loop in the curriculum development cycle
  - Were the goals and objectives of the curriculum met?
  - Were the gaps filled in?
  - What did the learners gain?

- Evaluation Methods
  - **Cognitive (Knowledge):** written/oral exams
  - **Affective (Attitudes):** surveys/questionnaires, group/individual interviews, self assessment/reflection
  - **Psychomotor (Skill/Performance):** direct observation, performance audits, self-assessment

- Evaluation Instruments
  - Validity, Reliability, Bias
  - Consider length and amount of time required for completion
6. Evaluation and Feedback

- **Simulation Evaluation**
  - Evaluation is highly encouraged at CSEAC
  - Each learner will complete a Simulation Experience Survey following every session at CSEAC
    - Results will be sent to facilitators within one week of the session

- **Feedback**
  - **Formative**: to improve performance for the purposes of learning/improvement
  - **Summative**: to assess performance for the purposes of a grade/promotion/certification

- In simulation, it’s all about the debrief!
6. Evaluation and Feedback

- **Why Debrief?**
  - This is where the learning takes place!
    - Discuss mistakes
    - Answer questions
    - See things from the learners’ point of view
    - Provide information on best practice, technique, etc.

- **Simulation Debrief**
  - Should occur IMMEDIATELY following the simulation
  - Should last AT LEAST as long as the simulation itself (typically 10-15 minutes)
  - Not a lecture, a discussion!
    - What do you think went well?
    - What do you think didn’t go well? Why?
6. Evaluation and Feedback

- **T.O.F.E Debrief Tool**
  - Used by the facilitator during the simulation to aid the debrief discussion
  - **TARGET:** What are the objectives?
  - **OBSERVED:** What is observed during the simulation in relation to each objective?
  - **FEEDBACK:** For the learner, specific to the objective & what was observed. What went well, what didn’t, and suggestions for improvement
  - **EXPLORE:** Questions to ask the learner regarding their thought process and performance to better understand their perspective, actions, gaps, or errors.
Summary

- Applying Kern’s 6-step method to simulation curriculum can help you develop quality, objective-based simulations that will enhance learning.

- Want to learn more??? Faculty Development Courses are COMING SOON!

- For scheduling, contact Kelli Kaiser at Kelli.Kaiser@osumc.edu
- For curriculum development, contact Jessica Liddil at Jessica.Liddil@osumc.edu
Faculty Resources

