

The SEP Learning Concept

The SEP Learning Concept is an intergraded part of the SEP simulator and utilized in all SEP products. This document will give a brief overview of the concept. For more information, please contact SimSurgery (www.simsurgery.com).

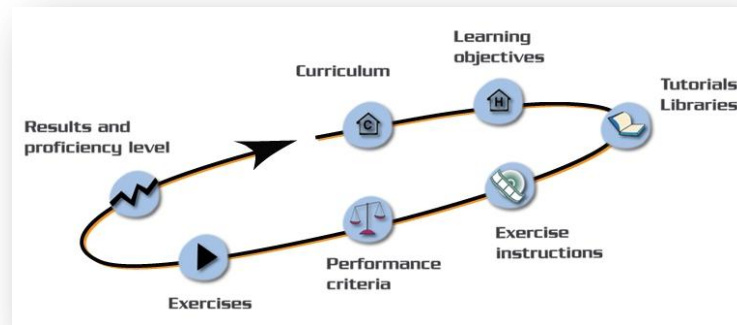


Figure 1. The SEP Learning Concept diagram

SimSurgery Educational Platform - SEP - offers the surgical community a comprehensive and continual learning system that allows the novice, the advanced resident and even the practicing surgeon to develop and test their technical, cognitive and medical decision-making skills in a safe environment. The learning concept is based on validated educational principles, combining simulation and multimedia content to support training and education of skills, knowledge and judgment.

The SEP Learning Concept represents a systematic approach to training with clear objectives, instructions, onscreen guidance, and performance evaluation. The flexibility allows objective measuring and assessment of the learner's progress and helps to ensure each competency level is met and mastered.

Structure

The SEP learning concept has its basis in a curriculum, which is set by a program director/administrator at your hospital/training facility. The curriculum can be set up in sessions containing a number of modules with specifically chosen exercises in each module. Figure 2 shows an example of a session with modules and exercises. The system allows for any number of sessions with any combination of modules and exercises to best suit the individual learner or a course environment.

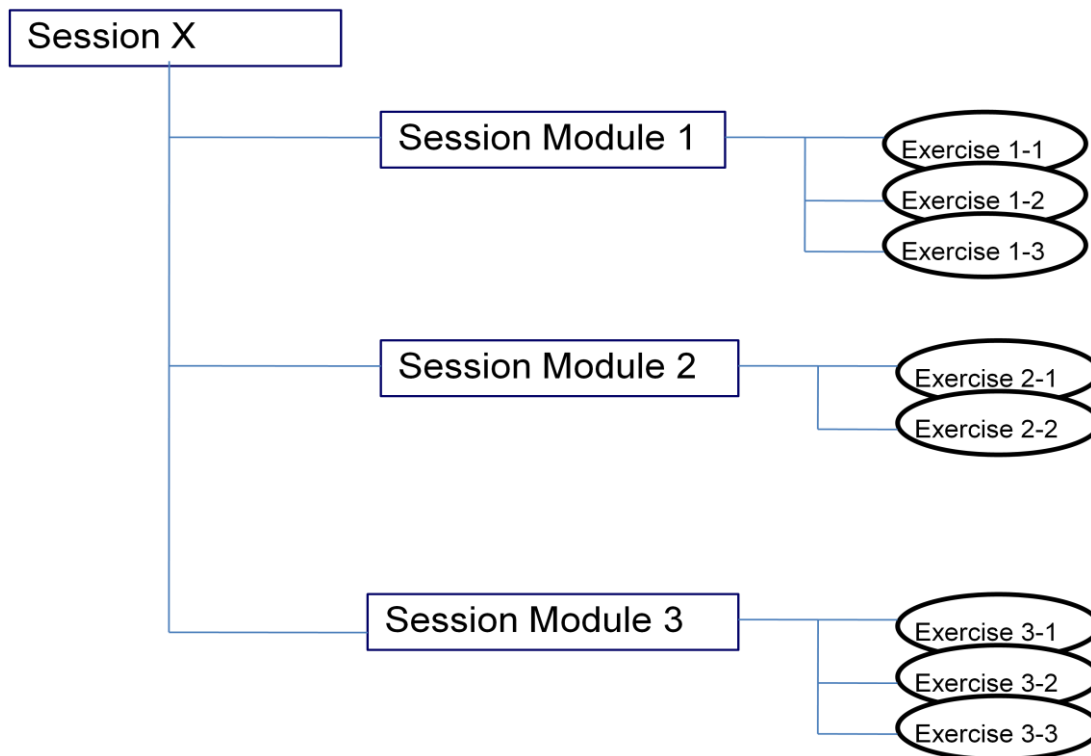


Figure 2. Example of a session with modules and exercises

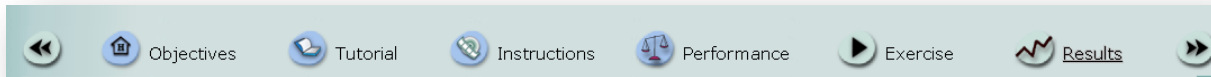


Figure 3. The steps of the SEP Learning Concept

Each exercise starts with the learning **Objectives** for the particular exercise, supported by **Tutorials** with multimedia material. Thereafter clear exercise **Instructions** are given with precise instructions on how to do the particular exercise. After acquiring the knowledge of how to do the exercise, the **Performance** criteria for the exercise will be displayed. The **Exercise**, with on screen guidance, is thereafter performed and immediately after completion, performance **Results** will be displayed as feedback and to determine if the set performance criteria for that exercise has been met or not. This concept is one of the powerful features of the SEP system. It gives the possibility to develop structured training programs for the trainees so that certain criteria have to be met before he/she can progress to the next exercise or module.

Proficiency based learning

The progression requirements range from simple requirements, e.g. the user has to try the exercise once before moving to the next exercise or module, to more strict requirements where the user has to pass each exercise or module based on defined score requirements

before he/she can move on to the next exercise or module. The following are five different ways to set up score requirements:

1. Time requirement
2. Error requirement
3. Measure requirement
4. Global Score requirement
5. Critical Error requirement

The flow chart in Figure 4 shows how the five score requirements can be used to evaluate the simulation and give a pass or fail result.

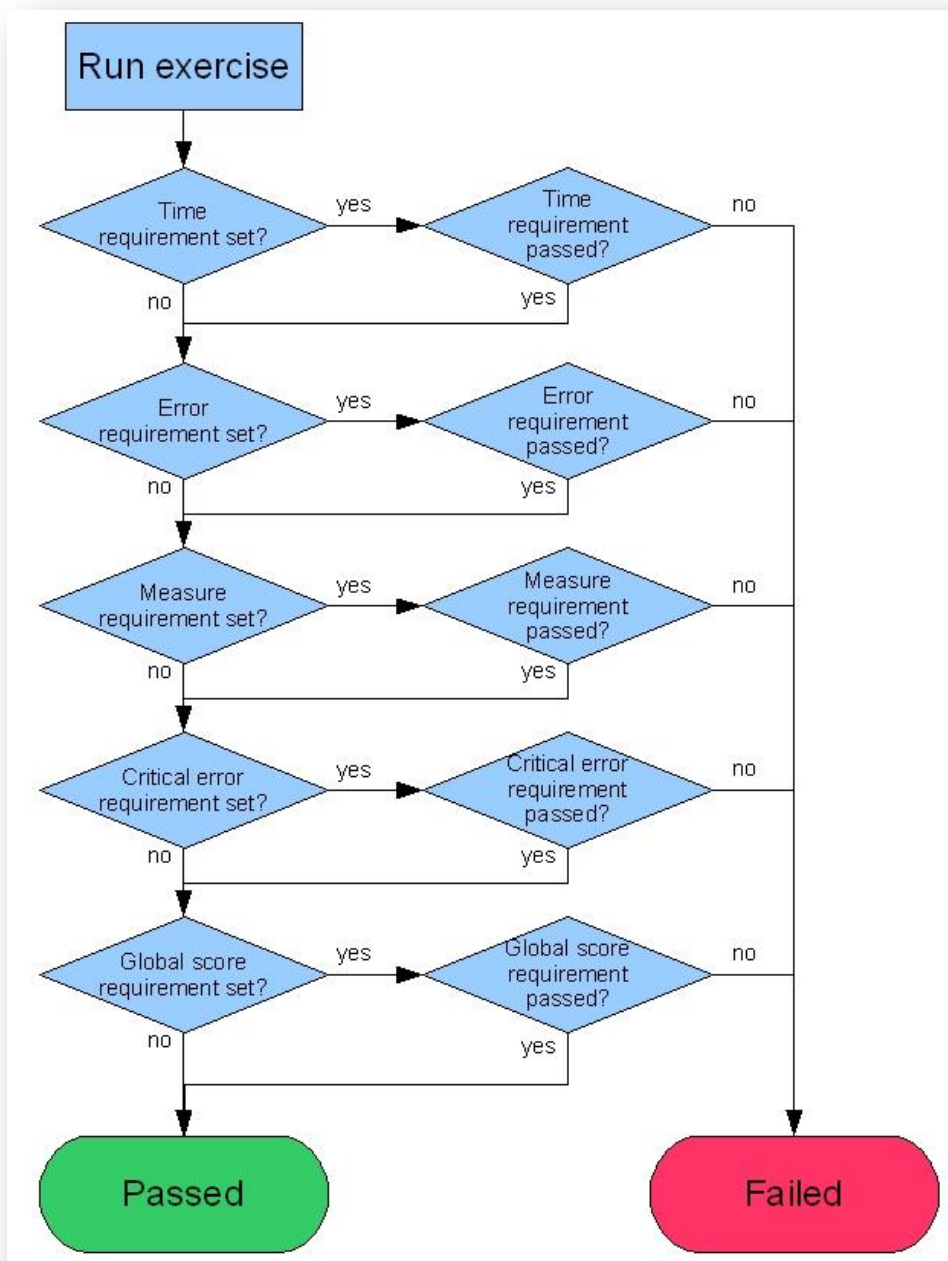


Figure 4. Requirement flow chart

In practice

In practice The SEP learning concept is broken down into 3 steps:

Step 1 – Pre exercise

Learning objectives and instructions

- Clear learning objectives for every exercise
- Tutorials - with relevant video clips from real surgery as instruction videos
- Instructions - Step-by-step descriptions, with video and text, of how to perform the exercise on the simulator
- Performance requirements - Dynamic measurements, error tracking, and performance requirement setup

Step 2 – During exercise

Onscreen guidance and feedback

- Onscreen text instructions
- Color coding to indicate where to grab, where to set the stitches, correct stretching etc.
- Guided and non-guided exercises

Step 3 – Post exercise

Result review and playback

- Numeric presentation of measurements, errors and trends
- Graphical presentations of measurements, errors and trends
- Video replay of exercises with 3D possibility
- Storing historical data for review
- Easy export of data to Excel

Login

To access the simulator, there are three modes of use, two modes for the learner and one mode for the administrator/program director. The administrator/program director sets up the simulator in **administrator mode**. The learner can access a curriculum set by the administrator/program director in either **learner mode** or **mentor mode**.

Administrator Mode: In this mode, the program director/administrator can create a specific learning curriculum for individual learners or for a specific course. This flexibility allows the set parameters to establish specific competency standards that will prevent the learner from progressing to the next exercise until the competency level is met.

Learner Mode: This is a mode for individual login with individual username and password. Learners are permitted to utilize the simulator in a self-directed session that moves at their own pace following the SEP learning concept. Each exercise in the Learner Mode must meet the set criteria before the system will allow progression to the next exercise or module.

Mentor Mode: Like the Learner Mode, this mode permits the use of the simulator in a self-directed session at the learners own pace following the SEP learning concept. The difference with this mode is that the learner can access exercises in any order they wish to work on skills he/she is having difficulties with, on their own or with a mentor. This allows the mentor, or learner, to isolate problem areas and repeatedly challenge the learner until the competency in that particular area is met.

The SEP Learning Concept allows you to acquire key concepts in a virtual environment before you work on the real task.
