

# Healthcare Simulation Dictionary™



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Please use the following citation for this document:

Lopreiato, J. O. (Ed.), Downing, D., Gammon, W., Lioce, L., Sittner, B., Slot, V., Spain, A. E. (Associate Eds.), and the Terminology & Concepts Working Group. (2016). *Healthcare Simulation Dictionary™*. Retrieved from <http://www.ssih.org/dictionary>.

# Preamble

In January 2013, an international group of simulation experts gathered in Orlando, Florida USA to form a working team whose mission was to create a dictionary of terms used in healthcare simulation. It was recognized by this group that there was a need to compile terms that had been completed by other groups in healthcare simulation and to add more terms. The document you see represents the work of many individuals and their societies to compile and refine the dictionary. The goal of this project is to enhance communication and clarity for healthcare simulationists in teaching, education, assessment, research, and systems integration activities.

**There are some key points to keep in mind when looking at this document, because it is not perfect, nor complete.**

- *This is a living document and represents the sum of the work at this moment. Terms and definitions will change and be edited, added, or deleted over time.*
- *The intent was to be inclusive of the various definitions in use, not to exclude any definitions or areas of healthcare simulation.*
- *This collection of definitions shows how the terms are being used in healthcare simulation. It is not intended to dictate one particular definition over another.*
- *This dictionary focuses on healthcare simulation specific terms and meanings. Many terms that are generally used in education (e.g. educational design) and healthcare (e.g. ventricular fibrillation or anxiety) are not defined. The reader is referred to standard dictionaries and resources for these definitions.*
- *This list of terms is not a taxonomy, nor should it be used as such. It may inform taxonomical work.*
- *Terms that have been identified as potentially controversial have been noted with a \* prior to the word.*
- *The terms and spellings are written in standard American English. This was at the recommendation of our consultant lexicographer to aid in reducing clutter and support translation to other languages.*
- *As a living document, all are encouraged to submit feedback using the form located at [www.ssih.org/dictionary](http://www.ssih.org/dictionary). We realize there may be better insights into other terms or definitions, additional references, etc.*
- *Citations have been included wherever possible. Should you know of additional and/or missing citations, please submit those as above. Original citations are preferred.*
- *The Society for Simulation in Healthcare (SSH) acknowledges the participation and input of many individuals and also the Societies they represent. Without you, this would not have been possible! Thank you for your time and efforts in the creation of this dictionary over the last three years.*

Joseph O. Lopreiato MD, MPH

JUNE 2016

# A

## \***Actor** \ 'ak-tər \ *noun*

**Etym.** late 14c., “an overseer, guardian, steward,” from Latin actor “an agent or doer,” also “theatrical player,” from past participle stem of agere. Sense of “one who performs in plays” is 1580s, originally applied to both men and women.

### **Definition**

- In healthcare simulation, professional and/or amateur people trained to reproduce the components of real clinical experience, especially involving communication between health professionals and patients or colleagues (ASSH).

**See also:** CONFEDERATE, EMBEDDED PARTICIPANT, ROLE PLAYER, SIMULATED PATIENT, SIMULATED PERSON, STANDARDIZED PATIENT

## **Advocacy and Inquiry** \əd-və-kə-sē \ in- 'kwī(-ə)r-e \ *noun*

**Etym. advocate** (n.) mid-14c., “one whose profession is to plead cases in a court of justice,” a technical term from Roman law. Also in Middle English as “one who intercedes for another,” and “protector, champion, patron.”

**Etym. inquest** (n.) mid-15c., enquiry, from enquire (see ‘inquire’). From Latin methodus “way of teaching or going,” from Greek methodos “scientific inquiry,” method of inquiry, investigation.

### **Definition**

- A method of debriefing in which an observer states what was observed or performed in a simulation activity (advocacy) or shares critical or appreciative insights about it explicitly (advocacy) and then asks the learners for an explanation of their thoughts or actions (inquiry)(Rudolph et al, 2007).
- Inquiry seeks to learn what others think, know, want, or feel; whereas advocacy includes statements that communicate what an individual thinks, knows, wants or feels (Bolman and Deal).

## **Assessor** \ ə-'se-sər \ *noun*

**Etym.** late 14c., from Old French assessor “assistant judge, assessor (in court)” (12c., Modern French assesseur) and directly from Latin assessor “an assistant, aid; an assistant judge.”

### **Definition**

- A person who performs assessment of individuals according to pre-established criteria.
- Assessors must have specific and substantial training, expertise, and competency in assessment (Dictionary.com).

## **Augmented Reality** \óg-'men-təd \ rē-'a-lə-tē \ *noun*

**Etym. augment** (v.) c. 1400, from Old French augmenter “increase, enhance” (14c.), from Late Latin augmentare “to increase,” from Latin augmentum “an increase,” from augere “to increase, make big, enlarge, enrich.” **Related:** Augmented; augmenting.

**Etym. reality** (n.) 1540s, “quality of being real,” from French réalité and directly Medieval Latin realitatem (nominative realitas); Meaning “real existence, all that is real.”

### **Definition**

- A type of virtual reality in which synthetic stimuli are superimposed on real world objects usually to make information that is otherwise imperceptible to human senses perceptible (M&S Glossary).
- A technology that overlays digital computer-generated information on objects or places in the real world for the purpose of enhancing the user experience.
- The combination of reality and overlay of digital information designed to enhance the learning process.
- A spectrum of mixed reality simulation that is part way between the real world and the virtual world.
- A form of virtual reality that includes head mounted displays, overlays of computer screens, wearable computers or displays projected onto humans and manikins (D.R. Berryman et al; M. Bajura et al; H. Fuchs et al).

## **Avatar** \ 'a-və-, tär \ *noun*

**Etym.** 1784, “descent of a Hindu deity,” from Sanskrit. In computer use, it seems to trace to the novel “Snowcrash” (1992) by Neal Stephenson.

### **Definition**

- A computer generated graphic representation of a participant in a virtual reality simulation or game (ASSH).
- A virtual object used to represent a physical object (e.g. a human) in a virtual world.

*\*Term that has been identified as potentially controversial.*

# B

**Brief (Briefing)** \ brēf\ *noun* (\ 'brē-fīŋ\ *verb* )

*Note: this term is often not clearly distinguished from Orientation or Prebriefing*

**Etym.** “fact or situation of giving preliminary instructions.” 1910

**Definition**

- An activity immediately preceding the start of a simulation activity where the participants receive essential information about the simulation scenario such as background information, vital signs, instructions, or guidelines. For example: before beginning a session, faculty conduct a briefing about the scenario to review the information being provided to the participants.
- The information and guidelines given to faculty or simulated patients participating in a scenario to allow them to fully prepare for interactions with the participants. Briefing materials could include a handover, physician referral letter, or an ambulance call transcript. For example, at the start of the simulation scenario, participants receive a notification from ambulance personnel regarding a patient being transported to their facility with a gunshot wound. (Alinier, 2011; Husebø et al, 2012).

**See also:** ORIENTATION, PREBRIEFING

# C

## Clinical Scenario \kli-ni-kəl \ sə-'ner-ē-,ō \ noun

**Etym. scenario** (n.) 1868, “sketch of the plot of a play,” from Italian scenario, from Late Latin scenarius “of stage scenes,” from Latin scena “scene.”

**Etym. clinical** (adj.) 1780, “pertaining to hospital patients or hospital care,” from clinic + -al.

### Definition

- The plan of an expected and potential course of events for a simulated clinical experience. A scenario usually includes the context for the simulation (hospital ward, emergency room, operating room, clinic, out of hospital, etc.). Scenarios can vary in length and complexity depending on the learning objectives.
- A detailed outline of a clinical encounter that includes: the participants in the event, briefing notes, goals and learning objectives, participant instructions, patient information, environmental conditions, manikin, or standardized patient preparation, related equipment, props, and tools or resources for assessing and managing the simulated experience.
- A progressive outline of a clinical encounter including a beginning, an ending, a debriefing, and evaluation criteria (INACSL, 2013).

**See also:** SCENARIO, SCRIPT, SIMULATED-BASED LEARNING EXPERIENCE, SIMULATION ACTIVITY

## Coaching \kōch-ij \ verb

**Etym.** Meaning “to prepare (someone) for an exam.”

**Related:** Coached; coaching.

### Definition

- To direct or instruct a person or group of people in order to achieve goals, develop specific skills, or develop competencies.

## Computer-Based Simulation \kəm-'pyü-tər \ bāst \ sim-yuh-ley-shuh n \ noun

**Etym. computer** (n.) 1640s, “one who calculates,” agent noun from compute (v.). Meaning “calculating machine” (of any type) is from 1897; in modern use, “programmable digital electronic computer” (1945 under this name; theoretical from 1937, as Turing machine). ENIAC (1946) usually is considered the first.

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The modeling of real life processes with inputs and outputs exclusively confined to a computer, usually associated with a monitor and a keyboard or other simple assistive device (Textbook of Simulation). Subsets of computer-based simulation include virtual patients, virtual reality task trainers, and immersive virtual reality simulation (ibid).

**See also:** SCREEN-BASED SIMULATION, SIMULATOR

## Conceptual Fidelity \kən-'sep-chə-wəl \ fə-'de-lə-tē, fī- \ noun

**Etym. conceptual** (adj.) 1820, “pertaining to mental conception” (there is an isolated use from 1662), from Medieval Latin conceptualis, from Latin conceptus “a collecting, gathering, conceiving,” past participle of concipere. **Related:** Conceptualism; conceptualist.

**Etym. fidelity** (n.) early 15c., “faithfulness, devotion,” from Middle French fidélité (15c.), from Latin fidelitatem (nominative fidelitas) “faithfulness, adherence.”

### Definition

- In healthcare simulation, ensures that all elements of the scenario relate to each other in a realistic way so that the case makes sense as a whole to the learner(s) (*For example: Vital signs are consistent with the diagnosis*). To maximize conceptual fidelity, cases or scenarios should be reviewed by subject matter expert(s) and pilot-tested prior to use with learners (Rudolph et al. (2007) and Dieckmann et al. 2007).

\***Confederate** \ kən-'fē-d(ə-)rət \ *noun*

**Etym.** late 14c., from Late Latin *confoederatus* “leagued together,” past participle of *confoederare* “to unite by a league,” from *com-* “with, together.”

**Definition**

- An individual(s) who, during the course of the clinical scenario, provides assistance locating and/or troubleshooting equipment. This individual(s) may provide support for participants in the form of ‘help available’, e.g. ‘*nurse in charge*’, and/or to provide information about the manikin that is not available in other ways, e.g., *temperature, color change*, and/or to provide additional realism by playing the role of a relative or a staff member (ASSH).
- An individual other than the patient who is scripted in a simulation to provide realism, additional challenges or additional information for the learner e.g., *paramedic, receptionist, family member, laboratory technician* (Victorian Simulated Patient Network).

**See also:** ACTOR, EMBEDDED PARTICIPANT, SIMULATED PATIENT, SIMULATED PERSON, STANDARDIZED PATIENT

**Cueing** \ 'kyü – iŋ \ *verb*

**Etym. cue** (n.) “stage direction,” 1550s, from *Q*, which was used 16c., 17c. in stage plays to indicate actors’ entrances, probably as an abbreviation of Latin *quando* “when” or a similar Latin adverb.

**Definition**

- To provide information during the simulation that helps the participant progress through the activity to achieve stated objectives (modified from NLN-SIRC, 2013).
- *noun* Information provided to help the learner reach the learning objectives (conceptual cues), or to help the learner interpret or clarify the simulated reality (reality cues); Conceptual cues help the learner reach instructional objectives through programmable equipment, the environment, or through responses from the simulated patient or role player; Reality cues to help the learner interpret or clarify simulated reality through information delivered during the simulation (modified from Paige & Morin, 2013).

\*Term that has been identified as potentially controversial.

# D

## Debrief (Debriefing) \ dē'brēf \ *noun* (\ dē 'brē-fīŋ \ *verb*)

**Etym. debrief** “obtain information (from someone) at the end of a mission,” 1945, from de- + brief (v.). **Related:** Debriefed; debriefing.

### Definition

- (*noun*) A formal, collaborative, reflective process within the simulation learning activity.
- An activity that follows a simulation experience and led by a facilitator.
- (*verb*) To conduct a session after a simulation event where educators/instructors/facilitators and learners re-examine the simulation experience for the purpose of moving toward assimilation and accommodation of learning to future situations (Johnson-Russell & Bailey, 2010; NLN-SIRC, 2013); debriefing should foster the development of clinical judgment and critical thinking skills (Johnson-Russell & Bailey, 2010).
- To encourage participants’ reflective thinking and provide feedback about their performance while various aspects of the completed simulation are discussed.
- To explore with participants their emotions and to question, reflect, and provide feedback to one another (i.e., *guided reflection*).

**Compare:** ADVOCACY AND INQUIRY, FEEDBACK, GUIDED REFLECTION

## Debriefing \ dē-'brēf - ur \ *noun*

**Etym. debrief** “obtain information (from someone) at the end of a mission,” 1945, from de- + brief (v.). **Related:** Debriefed; debriefing.

### Definition

- The individual who facilitates a debriefing session and is knowledgeable and skilled in performing appropriate, structured, and psychologically safe debriefing sessions (Fanning & Gaba, 2007).
- The person who leads participants through the debriefing; Debriefing by competent instructors and subject matter experts is considered important to maximize the opportunities arising from simulation (Raemer et al, 2011).

**Compare:** FACILITATOR, SIMULATIONIST

## Deliberate Practice \ di-'li-bə-rāt \ prak-təs \ *noun*

**Etym. deliberate** (adj.) 15th century Middle English, from Latin *deliberatus*, past participle of *deliberare* to consider carefully, perhaps alteration of \**delibrare*, from de- + *libra* scale, pound.

**Etym. practice** (n.) 14th century Middle English *practisen*, from Middle French *practiser*, from Medieval Latin *practizare*, alteration of *practicare*, from *practica* practice, noun, from Late Latin *practice*, from Greek *praktikē*, from feminine of *praktikos*.

### Definition

- A theory of general psychology that states the differences between expert performers and normal adults reflect a life-long period of deliberate effort to improve performance in a specific domain. (Ericsson, K. A.).
- A systematically designed activity that has been created specifically to improve an individual’s performance in a given domain (Ericsson, K. A., R. Th. Krampe, R.Th. and Tesch-Römer, C, 1993).

**Compare:** MASTERY LEARNING

## Deterministic \ di-'tər-mə-, ni- stik \ *adj*

**Etym. determinism** (n.) 1876 in general sense of “doctrine that everything happens by a necessary causation,” from French *déterminisme*; deterministic (*adj.*) 1874, from determinist (see determinism) + -ic.

### Definition

- Pertaining to a process, model, or variable whose outcome, result, or value does not depend on chance (M&S Glossary).

**Contrast with:** STOCHASTIC



## Discrete Simulation (Discrete-Event Simulation)

\ dis-'krēt \ sim-yuh-ley-shuh n \ *noun*

**Etym. discrete** (adj.) mid-14c., “morally discerning, prudent, circumspect,” from Old French *discret* “discreet, sensible, intelligent, wise,” from Latin *discretus* “separated, distinct;” in Medieval Latin, “discerning, careful;” past participle of *discernere* “distinguish.” Meaning “separate, distinct” in English is late 14c.

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A simulation that relies on variables changed only at a countable number of points in time; discrete event simulation (DES) is the process of codifying the behavior of a complex system as an ordered sequence of well-defined events.
- The operation of a system as a discrete sequence of events in time. Each event occurs at a particular instant in time and marks a change of state in the system. Between consecutive events, no change in the system is assumed to occur; thus the simulation can directly jump in time from one event to the next (Robinson, 2004).
- One or more variables that completely describe a system at any given moment in time (Sokolowski and Banks).

## Distributed Simulation

\ di-'stri-byüt \ sim-yuh-ley-shuh n \ *noun*

**Etym. distribute** (v.) early 15c., “to deal out or apportion,” from Latin *distributus*, past participle of *distribuere* “to divide, distribute.”

**Related:** Distributable; distributed; distributing.

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The concept of simulation on-demand, made widely available wherever and whenever it is required; DS provides an easily transportable, self-contained ‘set’ for creating simulated environments, at a fraction of the cost of dedicated, static simulation facilities (Kneebone et al, 2010).
- A set of simulations operating in a common environment and distributed to learners; a distributed simulation may be composed of any of the three modes of simulation: live, virtual, and constructive, and are seamlessly integrated within a single exercise (M&S Glossary).

# E

## **Embedded Participant** \ im-'bed \ id \ pä-r-'ti-sə-pənt \ noun

**Etym. embed** (v.) 1778, “to lay in a bed (of surrounding matter),” from em- (1) + bed (n.). Originally a geological term, in reference to fossils in rock; figurative sense is by 1835; meaning “place (a journalist) within a military unit at war” is from 2003 and the Iraq war. **Related:** Embedded; embedding.

**Etym. participant** (n.) 1560s, from Middle French participant, from Latin participantem, present participle of participare “to share in, partake of” from particeps “sharing, partaking.”

### **Definition**

- An individual who is trained or scripted to play a role in a simulation encounter in order to guide the scenario, and may be known or unknown to the participants; guidance may be positive or negative, or a distractor based on the objectives, level of the participants, and the needs of the scenario.
- A role assigned in a simulation encounter to help guide the scenario; the embedded participant’s role is part of the situation, however the underlying purpose of the role may not be revealed to the participants in the scenario or simulation (INACSL, 2013).

**See also:** ACTOR, CONFEDERATE, ROLE PLAYER, SIMULATED PATIENT, SIMULATED PERSON, STANDARDIZED PATIENT

## **Environmental Fidelity**

\ en - vī-rə(n)-'men-tə- l \ fə-'de-lə-tē \ noun

**Etym. environmental** (adj.) 1887, “enviroming, surrounding,” from environment + -al (1). Ecological sense by 1967.

**Related:** Environmentally.

**Etym. fidelity** (n.) early 15c., “faithfulness, devotion,” from Middle French fidélité (15c.), from Latin fidelitatem (nominative fidelitas) “faithfulness, adherence, trustiness,” from fidelis “faithful, true, trusty, sincere,” from fides “faith.” From 1530s as “faithful adherence to truth or reality;” specifically of sound reproduction from 1878.

### **Definition**

- The degree to which the simulated environment (manikin, room, tools, equipment, moulage, and sensory props) replicates reality and appearance of the real environment.

**See also:** FIDELITY, HIGH FIDELITY SIMULATION, PHYSICAL FIDELITY, REALISM

## **Event** \ i-'vent \ noun

**Etym.** 1570s, “the consequence of anything” (as in in the event that); 1580s, “that which happens;” from Middle French event, from Latin eventus “occurrence, accident, event, fortune, fate, lot, issue,” from past participle stem of evenire “to come out, happen, result,” from assimilated form of ex- “out” + venire “to come.” Meaning “a contest or single proceeding in a public sport” is from 1865. Events as “the course of events” is attested from 1842.

### **Definition**

- The occurrences that cause variation or changes in the state of a system (Sokolowski and Banks, 2009); in healthcare simulation, this term is common when programming manikins and often refers to learner actions.
- An event is described by the time it occurs and event lists can be created to drive changes in a simulation.

**See also:** STATE/STATES

# F

## **Facilitator (Simulation Facilitator)** \fə-'si-lə-, t̄ā-tər\ *noun*

**Etym.** 1806, agent noun in Latin form from facilitate.

### **Definition**

- An individual who is involved in the implementation and/or delivery of simulation activities. *For example, faculty, educators, etc.*
- An individual that helps to bring about an outcome (such as learning, productivity, or communication) by providing indirect or unobtrusive assistance, guidance, or supervision; for example: *The debriefing facilitator kept the discussion flowing smoothly.*

**Compare:** DEBRIEFER, SIMULATIONIST

## **Feedback** \ fēd-, bak \ *noun*

**Etym.** 1920, in the electronics sense, “the return of a fraction of an output signal to the input of an earlier stage,” from verbal phrase, from feed (v.) + back (adv.). Transferred use, “information about the results of a process” is attested by 1955.

### **Definition**

- An activity where information is relayed back to a learner; feedback should be constructive, address specific aspects of the learner’s performance, and be focused on the learning objectives (SSH).
- Information transferred between participants, facilitator, simulator, or peer with the intention of improving the understanding of concepts or aspects of performance (INACSL, 2013); feedback can be delivered by an instructor, a machine, a computer, a patient (or a simulated person), or by other learners as long as it is part of the learning process.

**Compare:** ADVOCACY AND INQUIRY, DEBRIEF/DEBRIEFING, GUIDED REFLECTION

## **Fiction Contract** \ 'fik-shən\ 'kän-, trakt\ *noun*

**Etym. fiction** (n.) something that is not true; something invented by the imagination or feigned; an assumption of a possibility as a fact irrespective of the question of its truth; a useful illusion or pretense; the action of feigning or of creating with the imagination.

**Etym. contract** (n.) a binding agreement between two or more persons or parties.

### **Definition**

- A concept which implies that an engagement in simulation is a contract between the instructor and the learner: each has to do his or her part to make the simulation worthwhile (Rudolph, Dieckmann, et al.).
- The degree of engagement that healthcare trainees are willing to give the simulated event; also known as the “suspension of disbelief,” it is a literary and theatrical concept that encourages participants to put aside their disbelief and accept the simulated exercise as being real for the duration of the scenario.

## **\*Fidelity** \ fə-'de-lə-tē \ *adj*

**Etym. fidelity** (n.) early 15c., “faithfulness, devotion,” from Middle French *fidélité* (15c.), from Latin *fidelitatem* (nominative *fidelitas*) “faithfulness, adherence, trustiness,” from *fidelis* “faithful, true, trustworthy,” from *fides* “faith.” From 1530s as “faithful adherence to truth or reality;” specifically of sound reproduction from 1878.

### **Definition**

- The degree to which the simulation replicates the real event and/or workplace; this includes physical, psychological, and environmental elements.
- The ability of the simulation to reproduce the reactions, interactions, and responses of the real world counterpart. It is not constrained to a certain type of simulation modality, and higher levels of fidelity are not required for a simulation to be successful.
- The level of realism associated with a particular simulation activity; fidelity can involve a variety of dimensions, including (a) physical factors such as environment, equipment, and related tools; (b) psychological factors such as emotions, beliefs, and self-awareness of participants; (c) social factors such as participant and instructor motivation and goals; (d) culture of the group; and (e) degree of openness and trust, as well as participants’ modes of thinking (INACSL, 2013).

**See also:** ENVIRONMENTAL FIDELITY, FUNCTIONAL FIDELITY, HIGH FIDELITY, HIGH FIDELITY SIMULATION, IMMERSIVE SIMULATION, LOW FIDELITY, PHYSICAL FIDELITY, PSYCHOLOGICAL FIDELITY, REALISM, SIMULATION FIDELITY

\*Term that has been identified as potentially controversial.

## Fixation Error \ fik-'sā-shən \ er-ər \ noun

**Etym. fixation** (n.) late 14c., *fixacion*, an alchemical word, “action of reducing a volatile substance to a permanent bodily form,” from Medieval Latin *fixationem* (nominative *fixatio*), noun of action from past participle stem of Latin *fixare*, frequentative of *figere* “to fix.” Meaning “condition of being fixed” is from 1630s. Used in the Freudian sense since 1910.

**Etym. error** (n.) also, through 18c., *errour*; c. 1300, “a deviation from truth made through ignorance or inadvertence, a mistake.” From late 14c. as “deviation from what is normal; abnormality, aberration.” From 1726 as “difference between observed value and true value.”

### Definition

- A principle of crisis resource management wherein humans fail to revise a situation assessment in risky and dynamic systems or events (Decker 2011).
- The persistent failure to revise a diagnosis or plan in the face of readily available evidence suggesting that a revision is necessary.

**Compare:** SITUATIONAL AWARENESS

## Frame(s) \ frāmz \ noun

**Etym.** From 1660s in the meaning “particular state” (as in *Frame of mind*, 1711). *Frame of reference* is 1897.

### Definition

- The perspectives through which individuals interpret new information and experiences for the purpose of decision-making; frames are formed through previous experiences and can be based on knowledge, attitudes, feelings, goals, rules, and/or perceptions.
- The mindset of the internal participant or facilitator; their knowledge, thoughts, feelings, actions (speech/body language), attitudes (verbal/non-verbal), and perceptions (adapted from Rudolph, J.W. et al.).

## Functional Fidelity \ fəŋ(k)-shnəl, -shə-nəl \ fə-'de-lə-tē \ noun

**Etym. functional** (adj.) 1630s, “pertaining to function or office,” from *function* (n.) + *-al* (1), or from Medieval Latin *functionalis*. Meaning “utilitarian” is by 1864. **Related:** Functionally; functionality.

**Etym. fidelity** (n) early 15c., “faithfulness, devotion,” from Middle French *fidélité* (15c.), from Latin *fidelitatem* (nominative *fidelitas*) “faithfulness, adherence, trustiness,” from *fidelis* “faithful, true, trusty, sincere,” from *fides* “faith” (see *faith*). From 1530s as “faithful adherence to truth or reality.”

### Definition

- The degree in which the equipment used in the simulation responds to the participant’s actions; e.g. a static ventilator would offer low functional fidelity compared to a working ventilator in a simulation requiring a ventilator alarm.

**See also:** FIDELITY, HIGHT FIDELITY SIMULATOR, REALISM

# G

## **Guided Reflection** \ gīd – id \ ri- 'flek-shən\ *noun*

**Etym. guide** (v.) late 14c., “to lead, direct, conduct,” from Old French guider “to guide, lead, conduct” (14c.), earlier guier, from Frankish \*witan “show the way” or a similar Germanic source.

**Etym. reflection** (n.) Of the mind, from 1670s. Meaning “remark made after turning back one’s thought on some subject” is from 1640s.

### **Definition**

- The process encouraged by the instructor during debriefing that reinforces the critical aspects of the experience and encourages insightful learning allowing the participant to link theory with practice and research (INACSL, 2013).
- The facilitated intellectual and affective activities that allow individuals to explore their experience in order to lead to new understanding and appreciations (adapted from Boud et al, 1985).
- A mentor facilitated process that allows the learner to “integrate the understanding gained into one’s experience in order to enable better choices or actions in the future, as well as enhance one’s overall effectiveness” (Rogers, 2001).

**Compare:** ADVOCACY AND INQUIRY, DEBRIEF/DEBRIEFING, FEEDBACK

**See also:** REFLECTIVE THINKING

## **Gynecological / Genitourinary Teaching Associate (GTA, GUTA, MUTA)** \,je-nə-tō- 'yūr-ə-,ner-ē \ 'tēch ng \ə- 'sō-shē-,āt, -sē-\ *noun*

**Etym. genitourinary** (adj.) of or relating to the genital and urinary organs or functions. genitals (n.) “reproductive organs,” especially the external sexual organs, late 14c. Compare Genitalia.

### **Definition**

- A Genitourinary Teaching Associate (GUTA) is an individual trained to teach the techniques and protocol for performing the gender-specific physical examination to learners, using himself or herself as a demonstration and practice model.
- A Gynecological Teaching Associate (GTA) is a female specifically trained to teach, assess, and provide feedback to learners about accurate pelvic, rectal and/or breast examination techniques. They also address the communication skills needed to provide a comfortable exam in a standardized manner, while using their bodies as teaching tools in a supportive, non-threatening environment (ASPE).

- A Male Urogenital Teaching Associates (MUTA) is a male specifically trained to teach, assess, and provide feedback to learners about accurate urogenital and rectal examination techniques. They also address the communication skills needed to provide a comfortable exam in a standardized manner, while using their bodies as teaching tools in a supportive, non-threatening environment (ASPE).

# H

## Haptic (Haptics) \ˈhap-tik \ *adj*

**Etym.** (adj.) “pertaining to the sense of touch,” 1890, from Greek *haptikos* “able to come into contact with,” from *haptein* “to fasten.”

### Definition

- In healthcare simulation, refers to devices that providing tactile feedback to the user. Haptics can be used to simulate touching, palpating an organ, or body part, and the cutting, tearing or traction on a tissue.
- Devices that capture and record a trainee’s ‘touch’ in terms of location and depth of pressure at specific anatomical sites (McGaghie et al, 2010; Jackson et al).

## Healthcare Simulation

\ helth \ ker \ sim-yuh-ley-shuh n \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A technique that creates a situation or environment to allow persons to experience a representation of a real healthcare event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems or human actions (SSH).
- The application of a simulation activity to training, assessment, research, or systems integration toward patient safety (SSH).

**See also:** SIMULATION

## High-Fidelity Simulator

\ hī \ fə-ˈde-lə-tē \ ˈsim-yə-, lā-tər \ *noun*

**Etym. fidelity** (n.) early 15c., “faithfulness, devotion,” from Middle French *fidélité* (15c.), from Latin *fidelitatem* (nominative *fidelitas*) “faithfulness, adherence, trustiness,” from *fidelis* “faithful, true, trusty, sincere,” from *fides* “faith.” From 1530s as “faithful adherence to truth or reality;” specifically of sound reproduction from 1878.

**Etym. simulator** (n.) 1835, of persons, from Latin *simulator* “a copier, feigner,” agent noun from *simulare* “imitate,” from stem of *similis* “like.” In reference to training devices for complex systems, from 1947 (flight simulator). *simulated* (adj.) 1620s, “feigned,” past participle adjective from *simulate* (v.). Meaning “imitative for purposes of experiment or training” is from 1966 (agent noun *simulator* in the related sense dates from 1947. In commercial jargon, “artificial, imitation” by 1942.

### Definition

- A term often used to refer to the broad range of full-body manikins that have the ability to mimic, at a very high level, human body functions.
- Also known as a high complexity simulator. Other types of simulators can also be considered high-fidelity, and that fidelity (realism) has other characteristics beyond a particular type of simulator.

**See also:** FIDELITY, FUNCTIONAL FIDELITY, REALISM

## High-Fidelity Simulation

\ hī \ fə-ˈde-lə-tē \ sim-yuh-ley-shuh n \ *noun*

**Etym. fidelity** (n.) early 15c., “faithfulness, devotion,” from Middle French *fidélité* (15c.), from Latin *fidelitatem* (nominative *fidelitas*) “faithfulness, adherence, trustiness,” from *fidelis* “faithful, true, trusty, sincere,” from *fides* “faith.” From 1530s as “faithful adherence to truth or reality;” specifically of sound reproduction from 1878.

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- In healthcare simulation, high-fidelity refers to simulation experiences that are extremely realistic and provide a high level of interactivity and realism for the learner (INACSL, 2013); Can apply to any mode or method of simulation; *for example: human, manikin, task trainer, or virtual reality.*

**See also:** ENVIRONMENTAL FIDELITY, FIDELITY, REALISM

## Human Factors \ hyü-mən \ fak-tərz \ noun

**Etym. factor** (n.) Sense of “circumstance producing a result” is attested by 1816, from the mathematical sense.

### Definition

- The discipline or science of studying the interaction between humans and systems and technology; it includes, but is not limited to, principles and applications in the areas of human engineering, personnel selection, training, life support, job performance aids, and human performance evaluation (M&S Glossary).
- The psychological, cultural, behavioral, and other human attributes that influence decision-making, the flow of information, and the interpretation of information by individuals or groups (M&S Glossary).

## Hybrid Simulation \ hī-brəd \ sim-yuh-ley-shuh n \ noun

**Etym. hybrid** (n.) “a product of two heterogeneous things” emerged c. 1850.

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The union of two or more modalities of simulation with the aim of providing a more realistic experience.
- In healthcare simulation, hybrid simulation is most commonly applied to the situation where a part task trainer (e.g., a urinary catheter model) is realistically affixed to a standardized/simulated patient, allowing for the teaching and assessment of technical and communication skills in an integrated fashion (Kneebone, Kidd et al, 2002).
- The use of two or more simulation modalities in the same simulation activity (Zulkepli et al).

**Compare:** MIXED SIMULATION/MIXED METHODS SIMULATION, MULTIPLE MODALITY SIMULATION

# I

## **Immersion** \i-'mər-zhən \ *noun*

**Etym.** (n.) c. 1500, from Late Latin *immersionem* (nominative *immersio*), noun of action from past participle stem of *immergere* “to plunge in, dip into, sink, submerge,” from assimilated form of *in-* “into, in, on, upon” (see *in-* (2)) + Latin *mergere* “plunge, dip” (see *merge*). Meaning “absorption in some interest or situation” is from 1640s.

### **Definition**

- Describes the level to which the learner becomes involved in the simulation; a high degree of immersion indicates that the learner is treating the simulation as if it was a real-life (or very close to real-life) event (SSH).
- A state (or situation) in which trainees dedicate most of their time doing something related to or thinking about a simulation, and becomes involved in it; the level of immersion might vary, where a high degree indicates that the trainee is fully involved; for example: realistic *environments facilitate a participant’s full immersion in the simulation.*

**See also:** IMMERSIVE SIMULATION

## **Immersive Simulation** \ɪ'mɜːsɪv\ sim-yuh-ley-shuh *n* \ *adj* (*immersive*); *n* (*simulation*)

**Etym. immersion.** (n.) c. 1500, from Late Latin *immersionem*, noun of action from past participle stem of *immergere* “to plunge in, dip into, sink, submerge,” from assimilated form of *in-* “into, in, on, upon” (see *in-* (2)) + Latin *mergere* “plunge, dip” (see *merge*). Meaning “absorption in some interest or situation” is from 1640s.

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### **Definition**

- *adj:* A real-life situation that deeply involves the participants’ senses, emotions, thinking, and behavior; creating an immersive simulation depends on the alignment with learning objectives, the fidelity of the simulation (physical, conceptual and emotional), and participant’s perception of realism.
- *noun:* A simulation session influenced by participants’ characteristics, experiences, level of training, and preparation for the case or task. The perceived physical, conceptual and emotional fidelity, the appropriate level of challenge, and the simulators and actors can all effect the simulation experience (Hamstra et al, 2014; Rudolph et al, 2007).

**See also:** FIDELITY, IMMERSION, REALISM

## **Incognito Standardized Patient** \ in-,käg-'nē- \ stan-dər-,dīzd \ pā-shənt \ *noun*

**Etym. incognito** (*adj./adv.*) 1640s as both adjective (“disguised under an assumed name and character”) and adverb (“unknown, with concealed identity”), from Italian *incognito* “unknown,” especially in connection with traveling, from Latin *incognitus* “unknown, not investigated.”

**Etym. standard** “authoritative or recognized exemplar of quality or correctness” (late 15c.). Meaning “rule, principal or means of judgment” is from 1560s. That of “definite level of attainment” is attested from 1711 (as in *standard of living*, 1903).

**Etym. patient** (n.) “suffering or sick person under medical treatment,” late 14c.

### **Definition**

- A person who plays a role as a patient in real healthcare situations, while the healthcare workers in those situations are unaware of the fact that the person is not a real patient (Rethans et al. review *Med Educ* 2007).

**See also:** UNANNOUNCED STANDARDIZED PATIENTS, STEALTH PATIENTS, SECRET SHOPPER

## **In Silico** \ in-'si-li-,kō \ *adj* or *adv.*

**Etym.** 1980s: Latin, literally ‘in silicon’ (with reference to the use of silicon chips in computer systems); on the pattern of *in vitro* and *in vivo*.

### **Definition**

- Performed on computer or via computer simulation; the phrase was coined in 1989 as an analogy to the Latin phrases *in vivo*, *in vitro*, and *in situ* (Sieburg, 1990).

**Compare:** IN SITU



## In Situ/In Situ Simulation

\ in 'stju \ sim-yuh-ley-shuh n \ adj

**Etym. *in situ*** 1740, Latin, literally “in its (original) place or position,” from ablative of *situs* “site.”

**Etym. *simulation*** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- Taking place in the actual patient care setting/environment in an effort to achieve a high level of fidelity and realism; this training is particularly suitable for difficult work environments, due to space constraints or noise. For example, *an ambulance, a small aircraft, a dentist's chair, a catheterization lab* (Kyle & Murray, 2008). This training is valuable to assess, troubleshoot, or develop new system processes.

**Compare:** IN SILICO

## Interactive Model or Simulation

\ in-ter-'ak-tiv \ mä-dəl \ or \ sim-yuh-ley-shuh n \ adj

**Etym. *simulation*** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- Simulating a situation in which the outcome varies depending on human participation (Thomas). This allows humans to practice different sets of actions in order to learn the correct response to an event.
- Modeling which requires human participation (Australian Dept. of Defense 2011).

## Interdisciplinary

\ in-ter-'dis-uh-pluh-ner-ee \ adj

**Etym. *discipline*** (n.) directly from Latin *disciplina* “instruction given, teaching, learning, knowledge,” also “object of instruction, knowledge, science, military discipline,” from *discipulus*. Meaning “branch of instruction or education” is first recorded late 14c. Meaning “military training” is from late 15c.; that of “orderly conduct as a result of training” is from c. 1500.

### Definition

- Involving two or more academic, scientific, or artistic disciplines (Merriam-Webster.com).
- The combining of two or more academic disciplines, fields of study, professions, technologies or departments (dictionary.reference.com).
- Of or relating to more than one branch of knowledge (oxforddictionaries.com).

**See also:** MULTIDISCIPLINARY

## Interdisciplinary / Interdisciplinary Learning

\ in-ter-'di-sə-plə-,ner-ē \ lərn-ing \ noun / adj

**Etym. *discipline*** (n.) directly from Latin *disciplina* “instruction given, teaching, learning, knowledge,” also “object of instruction, knowledge, science, military discipline,” from *discipulus*. Meaning “branch of instruction or education” is first recorded late 14c. Meaning “military training” is from late 15c.; that of “orderly conduct as a result of training” is from c. 1500.

**Etym. *learning*** (n.) Old English *leornung* “learning, study,” from *leornian*.

### Definition

- *noun:* The academic disciplines, such as psychology, or to subspecialties within professions. For example, within the profession of medicine, anesthesia or cardiology (Barr, Koppel, Reeves, Hammick and Freeth, 2005).
- *adj:* Working jointly, but address issues from their individual discipline's perspective (Gray and Connolly, 2008).
- Integrating the perspective of professionals from two or more professions by organizing the education around a specific discipline, where each discipline examines the basis of their knowledge” (Bray & Howkins, 2008).

**See also:** INTERPROFESSIONAL EDUCATION/TRAINING/LEARNING

## Interprofessional

\ in-ter - \ prə-'fesh-nəl \ adj

**Etym. *professional*** (n.) “one who does it for a living,” 1798, from *professional* (adj.). *professional* (adj.) 1747 of careers (especially of the skilled or learned trades from c. 1793). **Related:** profession.

### Definition

- Collaborating as a team with a shared purpose, goal, and mutual respect to deliver safe, quality health care (Freeth, Hammick, Reeves, Koppel, & Barr, 2005; World Health Organization (WHO), 2010).

## Interprofessional Education /Training/Learning

\ in-ter - prə-ˈfesh-nəl \ e-jə-ˈkā-shən\ trā-niŋ \ lərn-ing\ *noun*

**Etym. professional** (n.) “one who does it for a living,” 1798, from professional (adj.). professional (adj.) 1747 of careers (especially of the skilled or learned trades from c. 1793). **Related:** profession.

**Etym. education** (n.) 1530s, “childrearing,” also “the training of animals,” from Middle French education (14c.) and directly from Latin educationem (nominative educatio) “a rearing, training,” noun of action from past participle stem of educare. Originally of instruction in social codes and manners; meaning “systematic schooling and training for work” is from 1610s.

**Etym. training** (n.) From 1540s as “discipline and instruction to develop powers or skills;” 1786 as “exercise to improve bodily vigor.”

### Definition

- An educational environment where students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes (Interprofessional Education and Collaborative Expert Panel, WHO 2011).
- An initiative to secure learning, and promote gains through interprofessional collaboration in professional practice (Freeth et al.).

**See also:** INTERDISCIPLINARY LEARNING

## Interprofessionalism

\ in-ter - \prə-ˈfesh-nəl \ ˈi-zəm\ *noun*

**Etym. professional** (n.) “one who does it for a living,” 1798, from professional (adj.). professional (adj.) 1747 of careers (especially of the skilled or learned trades from c. 1793). **Related:** profession.

### Definition

- The effective integration of professionals through mutual respect, trust, and support, from various professions who share a common purpose to mold their separate skills and knowledge into collective responsibility and awareness that can be achieved through learned processes for communication, problem solving, conflict resolution, and conduct.

# J

## Just in Time Simulation

\jəst \ 'in \ tīm \ sim-yuh-ley-shuh n \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A method of training that is conducted directly prior to a potential intervention” (Palaganas, Maxworthy, Epps, & Mancini, 2015). The training that is utilized is “*just in time*” at the “*place near the site of the potential intervention*” (Palaganas, Maxworthy, Epps, and Mancini, 2015).
- A learning approach that meets the learner’s needs during or just before it is needed to maximize an educational outcome (Barnes, 1998).
- A cost reduction method that is derived originally from the Japanese car manufacturing industry where it was a strategy that was utilized to reduce flow times in both production and response time costs (Ohno, 1978).

# L

## Live, virtual, and constructed (LVC) simulation

\ˈlɪv\ˈvɜr-ʃə-wəl, -chəl; ˈvɜrch-wəl\kən-ˈstrək-tɪv\ *noun*

**Etym. live** 1540s, “having life,” later (1610s) “burning, glowing,” a shortening of alive. Meaning “in-person” (of performance) is first attested 1934.

**Etym. virtual** The meaning “being something in essence or effect, though not actually or in fact” is from mid-15c., probably via sense of “capable of producing a certain effect” (early 15c.). Computer sense of “not physically existing but made to appear by software” is attested from 1959.

**Etym. constructed** early 15c., “derived by interpretation,” from Middle French constructif or from Medieval Latin *constructivus*, from Latin construct-, past participle stem of *construere* “to heap up.”

### Definition

- A broadly used taxonomy describing a mixture of simulation modalities; a live simulation involves real people operating real systems; a virtual simulation is where a real person operates simulated systems; and a constructed simulation does not involve real people or real systems, but instead are computer programs that create an environment. (Sokolowski).

## Low-Fidelity \ ˈlō \ fə-ˈde-lə-tē \ *adj*

**Etym. fidelity** (n.) early 15c., “faithfulness, devotion,” from Middle French fidélité (15c.), from Latin fidelitatem (nominative fidelitas) “faithfulness, adherence, trustiness,” from fidelis “faithful, true, trusty, sincere,” from fides “faith.” From 1530s as “faithful adherence to truth or reality;” specifically of sound reproduction from 1878.

### Definition

- Not needing to be controlled or programmed externally for the learner to participate (Palaganas, Maxworthy, Epps, & Mancini, 2015); examples include case studies, role playing, or task trainers used to support students or professionals in learning a clinical situation or practice (Adapted from NLN-SIRC, 2013).

**See also:** FIDELITY

# M

\***Manikin** \ ma-ni-kən\ (also Mannequin) *noun*

**Etym.** 1560s, “jointed figure used by artists,” from Dutch manneken, literally “little man,” diminutive of Middle Dutch man.

### Definition

- A life-sized human like simulator representing a patient for healthcare simulation and education (Palaganas, Maxworthy, Epps, & Mancini, 2015).
- Full or partial body representation of a patient for practice.
- Full or partial body simulators that can have varying levels of physiologic function and fidelity.

**See also:** SIMULATOR

**Manikin-based Simulation** \ ma-ni-kən \ bāst \ sim-yuh-ley-shuh n \ *noun*

**Etym. manikin.** 1560s, “jointed figure used by artists,” from Dutch manneken, literally “little man,” diminutive of Middle Dutch man.

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The use of manikins to represent a patient using heart and lung sounds, palpable pulses, voice interaction, movement (e.g., seizures, eye blinking), bleeding, and other human capabilities that may be controlled by a simulationist using computers and software.
- The life-like aspects of people and situations generated by a manikin.

\***Mannequin** \ ma-ni-kən\ (also Manikin) *noun*

**Etym.** 1902, “model to display clothes,” from French mannequin. A French form of the same word that yielded manikin, and sometimes mannequin was used in English in a sense “artificial man” (especially in translations of Hugo). Originally of persons, in a sense where we might use “model.”

**See:** MANIKIN

**See also:** SIMULATOR

**Manual Input** \ 'man-yə-wəl \ 'in-,püt\ *noun*

**Etym. manual** (adj.) c. 1400, from Latin manualis “of or belonging to the hand; that can be thrown by hand,” from manus “hand, strength, power over; armed force; handwriting.”

**Etym. input** Middle English verb (late 14c.) meaning “to put in, place, set.”

### Definition

- The method of operation in which an operator inputs a value to a given parameter regardless of how it would affect any other parameter. The input of the parameter does not adjust the variables in any physiological manner (Palaganas, Maxworthy, Epps, & Mancini, 2015).

**Compare:** PHYSIOLOGIC MODELING, PREPACKAGE SCENARIO, “RUNNING ON THE FLY”

**Mastery Learning** \ 'mas-t(ə-)rē\ \ 'lɜrn- ɪŋ\ *noun*

**Etym. mastery** (adj.) early 13c., mesterie, “condition of being a master,” also “superiority, victory;” from Old French maistrie, from maistre “master” (n.). Meaning “intellectual command” (of a topic, etc.) is from 1660s.

**Etym. learning** (n.) Old English leornung “learning, study,” from leornian.

### Definition

- An instructional philosophy originally proposed by Benjamin Bloom that stated a student must first practice and study to meet the predetermined level criteria (>90%) through the formative assessment of a prerequisite domain prior to advancing in subject matter. If the learner does not achieve the level of mastery, information from the test is used to diagnose areas of deficiency necessary for additional prescriptive support. The student is later tested again. This cycle of feedback and corrective procedures is repeated until mastery is achieved, at which point the student will move on to the next level (Guskey, 2010).
- An instructional philosophy that highlights individualized feedback and adequate time, allowing the learner to progress through the subject in a customized manner, generally in smaller units to master the subject matter. This concept states that nearly all learners can achieve subject or skill mastery utilizing this method (Palaganas, Maxworthy, Epps, & Mancini, 2015).

**Compare:** DELIBERATE PRACTICE

\*Term that has been identified as potentially controversial.

## Mixed Reality Human \ mikst \ rē- 'a-lə-tē \ hyü-mən \ noun

**Etym. reality** (n.) 1540s, “quality of being real,” from French *réalité* and directly Medieval Latin *realitatem* (nominative *realitas*), from Late Latin *realis*. Meaning “real existence, all that is real” is from 1640s; that of “the real state (of something)” is from 1680s.

### Definition

- The use of a technology such as video, augmented reality, or virtual reality in conjunction with a physical manikin to simulate a human. (Costanza, E., Kunz, A., and Fjeld, M. 2009); for example, in team-based training, using TV monitors in portrait mode with interactive videos as a stand-in for a real team member (Palaganas, Maxworthy, Epps, & Mancini, 2015).

## Mixed Simulation (Mixed Methods Simulation)

\ mikst \ sim-yuh-ley-shuh n \ noun

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

**Etym. method** (n.) early 15c., “regular, systematic treatment of disease,” from Latin *methodus* “way of teaching or going,” from Greek *methodos* “scientific inquiry, method of inquiry, investigation,” originally “pursuit, a following after.” Meaning “way of doing anything” is from 1580s; that of “orderliness, regularity” is from 1610s.

### Definition

- The use of a variety of different simulation modalities; this is differentiated from hybrid simulation in that it is not characterized by the combining of one type of simulation to enhance another, but rather the use of multiple types of simulation in the same scenario or place. For example, a SP and a mannequin are used in a scenario or a task trainer paired with an SP for venipuncture, etc. (SSH).

**See also:** MULTIPLE MODALITY SIMULATION

**Compare:** HYBRID SIMULATION

## Mobile Simulation \ mō-bəl \ sim-yuh-ley-shuh n \ noun

**Etym. mobile** (adj.) late 15c., from Middle French *mobile* (14c.), from Latin *mobilis* “movable, easy to move; loose, not firm,” “pliable, flexible. contraction of \**movibilis*, from *movere* “to move.”

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The ability to move a simulator from one teaching location to another or to teach a scenario on the move (F.C. Forrest, Bristol Med Sim Center).

## \*Modality \ mō- 'da-lə-tē \ noun

**Etym.** 1610s, from Old French *modalité* or directly from Medieval Latin *modalitatem* (nominative *modalitas*) “a being modal,” from *modalis*. 1560s, term in logic, from Middle French *modal* and directly from Medieval Latin *modalis* “of or pertaining to a mode,” from Latin *modus* “measure, manner, mode.”

### Definition

- A term used to refer to the type(s) of simulation being used as part of the simulation activity, for example, task trainers, manikin-based, standardized/simulated patients, computer-based, virtual reality, and hybrid (SSH).

**See also:** SIMULATED/SYNTHETIC LEARNING METHODS, TYPOLOGY

## Model (as in Modeling and Simulation) \ mā-dəl \ noun

**Etym.** Sense of “thing or person to be imitated” is 1630s.

### Definition

- A representation of an object, concept, event, or system; models can be physical models, computational models or theories of function (Sokolowski).

## Modeling and Simulation (M&S) (also Modeling and Simulation) \ mā-dəl – in \ and \ sim-yuh-ley-shuh n \ noun

**Etym model** sense of “thing or person to be imitated” is 1630s.

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The terms modeling and simulation are often used interchangeably.
- An academic discipline focused on the study, development and use of live, virtual, and constructive models, including simulators, emulators, and prototypes to investigate, understand, or provide data.
- The use of models, including emulators, prototypes, simulators, and stimulators, to develop data as a basis for making managerial or technical decisions.

\*Term that has been identified as potentially controversial.

## Monte Carlo Simulation

\mān-tē-'kār-(,)lō \ sim-yuh-ley-shuh n \ *noun*

**Etym. Monte Carlo fallacy** 1957, named for resort in Monaco famous for its gambling casinos. The fallacy of thinking that the probability of a particular outcome rises with the successive number of opposite outcomes.

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A simulation in which random statistical sampling techniques are employed such that the result determines estimates for unknown values (M&S Glossary).
- A mathematical model using probability distributions to calculate the possible outcomes for a given choice of action. Such a simulation involves many calculations and re-calculations to yield a range of possible outcomes.

## Moulage \mü-'läzh\ *noun*

**Etym.** (n.) From the French: casting/moulding.

### Definition

- The makeup and molds applied to humans or manikins used to portray lesions, skin findings, bleeding, and traumatized areas (Levine et al).
- The application of makeup and molds to a human or simulator’s limbs, chest, head, etc. to provide elements of realism (such as blood, vomitus, open fractures, etc.) to the training simulation.
- Techniques used to simulate injury, disease, aging, and other physical characteristics specific to a scenario; moulage supports the sensory perceptions of participants and supports the fidelity of the simulation scenario through the use of makeup, attachable artifacts (e.g. penetrating objects), and smells (INACSL, 2013).

## Multidisciplinary \mʌltɪ \ di-sə-plə-,ner-ē \ *noun*

**Etym. discipline** (n.) directly from Latin *disciplina* “instruction given, teaching, learning, knowledge,” also “object of instruction, knowledge, science, military discipline,” from *discipulus*. The Latin word is glossed in Old English by *þeodscepe*. Meaning “branch of instruction or education” is first recorded late 14c. Meaning “military training” is from late 15c.; that of “orderly conduct as a result of training” is from c. 1500.

### Definition

- The combining of professionals with different perspectives to provide a wider understanding of a particular problem (Bray & Hawkins, 2008).

**See also:** INTERDISCIPLINARY

## \*Multiple modality (Multi-modal) simulation

\'mʌltɪpl \ mɒs' dæləti \ sim-yuh-ley-shuh n \ *noun*

**Etym. modality.** 1610s, from Old French *modalité* or directly from Medieval Latin *modalitatem* (nominative *modalitas*) “a being modal,” from *modalis*. 1560s, term in logic, from Middle French *modal* and directly from Medieval Latin *modalis* “of or pertaining to a mode,” from Latin *modus* “measure, manner, mode.”

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The use of multiple modalities of simulation in the same simulation activity; differentiated from hybrid simulation in that it is not characterized by the combining of one type of simulation to enhance another, but rather the use of multiple types of simulation in the same scenario or place, e.g., SP and manikin used in a scenario or a task trainer paired with an SP for venipuncture, etc. (SSH).
- A mixture of textual, audio, and visual modes in combination with media and materiality with the aim of enhancing the realism of the simulation encounter (Lutkewitte).

**See also:** MIXED SIMULATION/MIXED METHODS SIMULATION

**Compare:** HYBRID SIMULATION

*\*Term that has been identified as potentially controversial.*

# N

## **Non-technical Skills** \ non \ 'tek-ni-kəl \ skilz \ noun

**Etym. techno** word-forming element meaning “art, craft, skill,” later “technical, technology,” from Latinized form of Greek tekhnō-, combining form of tekhnē “art, skill, craft in work; method, system, an art, a system or method of making or doing.”

**Etym. skill** (n.) late 12c., “power of discernment,” from Old Norse skil “distinction, ability to make out, discernment, adjustment,” related to skilja (v.) “to separate; discern, understand,” from Proto-Germanic \*skaljo. Sense of “ability, cleverness” first recorded early 13c.

### **Definition**

- In the healthcare field, the skills of communication, (patient-provider, team) leadership, teamwork, situational awareness, decision-making, resource management, safe practice, adverse event minimization/mitigation, and professionalism; also known as behavioral skills or teamwork skills (ASSH).





## Objective Structured Clinical Examination (OSCE)

\ əb-'jɛk-tɪv \ stræk-çhərd \ kli-ni-kəl \ ɪg-,zə-mə-'nā-shən \ noun

### Definition

- An approach to the assessment of clinical or professional competence in which the components of competence are assessed in a planned or structured way with attention being paid to the objectivity of the examination (Harden 1988).
- A station or series of stations designed to assess performance competency in individual clinical or other professional skills. Learners are evaluated via direct observation, checklists, learner presentation, or written follow-up exercises. The examinations may be formative and offer feedback or summative and be used for making high stakes educational decisions (ASPE).
- A method of assessment where learners perform specific skills and behaviors in a simulated work environment.

## Operations Specialist

\ ɒp-uh-rey-shuh nɪz \ spesh-uh-list \ noun

**Etym. operation** (n.) late 14c., “action, performance, work,” also “the performance of some science or art,” from Old French operacion “operation, working, proceedings,” from Latin operationem (nominative operatio) “a working, operation,” from past participle stem of operari “to work, labor.” Military sense of “series of movements and acts” is from 1749.

**Etym. specialty** (n.) From early 15c. as unusual, or extraordinary thing; specialized branch of learning; peculiar quality, distinctive characteristic.

### Definition

- An individual whose primary role is the implementation and delivery of a simulation activity through the application of simulation technologies such as, computers, audio-visual, or networking technologies.
- An inclusive “umbrella” term that embodies many different roles within healthcare simulation operations, including simulation technician, simulation technology specialist, simulation specialist, simulation coordinator, and simulation AV specialist. While many of these individuals also design simulation activities, this term refers to the functional role related to the implementation of the simulation activities (SSH).

## Orientation

\ ɔr-'ē-ən-'tā-shən,-, en- \ noun

**Etym.** (n.) 1839, originally “arrangement of a building, etc., to face east or any other specified direction,” noun of action from orient (v.). Sense of “action of determining one’s bearings” is from 1868. Meaning “introduction to a situation” is from 1942.

### Definition

- The process of giving participants information prior to a simulation event to familiarize them to a simulation activity or environment, such as center rules, timing, and how the simulation modalities work, with the intent of preparing the participants.
- An activity that occurs prior to a simulation activity in order to prepare the faculty/instructors or learners; for example, a *PowerPoint presentation that all participants must review to understand how the center operates, or how the activity is being conducted.*

**See also:** BRIEF/BRIEFING, PREBRIEF/PREBRIEFING

# P

## **Participant** \ pahr-tis-uh-puh nt \ *noun*

**Etym.** 1560s, from Middle French participant, from Latin participantem (nominative participans), present participle of participare “to share in, partake of” from particeps “sharing, partaking.”

### **Definition**

- In healthcare simulation, a person who engages in a simulation activity for the purpose of gaining or demonstrating mastery of knowledge, skills, and/or attitudes of professional practice (INACSL, 2013).
- A person engaged in a simulation activity or event and for those involved in simulation research.

## **Physical Fidelity** \ fi-zi-kəl\ fə-'de-lə-tē, fi-\ *noun*

**Etym. physical** early 15c., “of or pertaining to material nature” (in medicine, opposed to surgical), from Medieval Latin physicalis “of nature, natural,” from Latin physica “study of nature” (see *physic*). Meaning “pertaining to matter” is from 1590s; meaning “having to do with the body, corporeal” is attested from 1780. Meaning “characterized by bodily attributes or activities” is attested from 1970. Physical education first recorded 1838; abbreviated form phys ed is from 1955. Physical therapy is from 1922. **Related:** Physically.

**Etym. fidelity** early 15c., “faithfulness, devotion,” from Middle French fidélité (15c.), from Latin fidelitatem (nominative fidelitas) “faithfulness, adherence, trustiness,” from fidelis “faithful, true, trusty, sincere,” from fides “faith” (see *faith*). From 1530s as “faithful adherence to truth or reality;” specifically of sound reproduction from 1878.

### **Definition**

- A level of realism associated with a particular simulation activity.
- The degree to which the simulation looks, sounds, and feels like the actual task (Alexander, Brunyé, Sidman, & Weil, 2005).

**See also:** ENVIRONMENTAL FIDELITY, FIDELITY, REALISM

## **Physiologic Modeling** \ fiz-ee-uh-loj-i-k \ mod-l-ing \ *noun*

**Etym. physiology** (n.) 1560s, “study and description of natural objects,” from Middle French physiologie or directly from Latin physiologia “natural science, study of nature,” from Greek physiologia “natural science, inquiry into nature,” from physio- “nature” + logia “study.” Meaning “science of the normal function of living things” is attested from 1610s. **Related:** Physiologic; physiologist.

**Etym model.** Sense of “thing or person to be imitated” is 1630s.

### **Definition**

- The mathematical computer models governing complex human physiology in a simulated patient case so that reasonable responses occur automatically to events inputted into the program; for example, a pharmacodynamic model could predict effects of drugs on heart rate, cardiac output, or blood pressure and display them on a simulated clinical monitor. (Howard Schwid, Rosen, K. (2013); in Levine et al. Chapter 2 and 14).
- A computer model that allows for a method of operation in which an operator inputs a value to a given parameter, and it automatically adjusts the other variables in a physiologically realistic manner (Palaganas, Maxworthy, Epps, and Mancini, 2015).

**Compare:** MANUAL INPUT, PREPACKAGED SCENARIO, “RUNNING ON THE FLY”

## **Portable Simulator** \ pawr-tuh-buh l \ sim-yuh-ley-ter \ *noun*

**Etym. portable** (adj.) Early 15c., from French portable “that can be carried,” from Late Latin portabilis “that can be carried,” from Latin portare “to carry.” **Related:** Portability.

**Etym. simulator** (n.) 1835, of persons, from Latin simulator “a copier, feigner,” agent noun from simulare “imitate,” from stem of similis “like.” In reference to training devices for complex systems, from 1947 (flight simulator); simulated (adj.) 1620s, “feigned,” past participle adjective from simulate (v.). Meaning “imitative for purposes of experiment or training” is from 1966 (agent noun simulator in the related sense dates from 1947). In commercial jargon, “artificial, imitation” by 1942.

### **Definition**

- A simulator that has the capabilities of being moved, and may also be able to operate independently of tethers such as power cords or communication cables.

**\*Prebrief (Prebriefing)** \ pri'brēf \ *noun* (\pri'brē-fīŋ\ *verb* )

**Etym. brief** “fact or situation of giving preliminary instructions,” 1910 (but popularized by World War II pre-flight conferences).

**Definition**

- An information or orientation session held prior to the start of a simulation activity in which instructions or preparatory information is given to the participants. The purpose of the prebriefing is to set the stage for a scenario, and assist participants in achieving scenario objectives.
- The time used by educators, researchers, facilitators, or staff to plan their roles prior to the simulation; suggested activities in a prebriefing include an orientation to the equipment, environment, manikin, roles, time allotment, objectives, and patient situation. *For example: Before starting the simulation session, there is a prebriefing where the equipment and its capabilities are reviewed and they are reminded of the equipment available to them in the room* (INACSL, 2013).
- The collaboration and planning of co-facilitators/co-debriefers prior to the simulation activity.

**See also:** BRIEF/BRIEFING, ORIENTATION

**Prepackaged / Preprogrammed Scenario** \ pree - pak-ijid \ si-nair-ee-oh \ *noun*

**Etym. scenario** (n.) 1868, “sketch of the plot of a play,” from Italian scenario, from Late Latin scenarius “of stage scenes,” from Latin scena “scene.” Meaning “imagined situation” is first recorded 1960, in reference to hypothetical nuclear wars.

**Definition**

- A method of operation in which the simulator is programmed to be in one state and to respond to an input and transition to another state based on a script or algorithm.
- A scenario where a script will assign initial values (such as heart rate, blood pressure, emotional state or concern) at the start of the scenario that will require specific actions by the participant or certain time frames, for the scenario to transition to the next state (Palaganas, Maxworthy, Epps, and Mancini, 2015).

**Compare:** PHYSIOLOGIC MODELING, “RUNNING ON THE FLY”

**Procedural Simulation**

\ pruh-see-jer-uh l \ sim-yuh-ley-shuh n \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

**Definition**

- The use of a simulation modality (for example, task trainer, manikin, computer) to assist in the process of learning to complete a technical skill(s), or a procedure, which is a series of steps taken to accomplish an end (INACSL).

- A simulation that incorporates cognitive knowledge and technical skill into a precise sequence of actions that are safe and efficient, targeting any level of learner (Palaganas, Maxworthy, Epps, & Mancini, 2015).

**Compare:** PROCESS-ORIENTED SIMULATION

**Process-Oriented Simulation** \ pros-es \ awr-ee-uh nt-id \ sim-yuh-ley-shuh n \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

**Definition**

- A simulation in which the process is considered more important than the outcome; for example, a model of a radar system in which the objective is to replicate exactly the radar’s operation, and duplication of its results is a lesser concern (M&S Glossary).
- In healthcare, the use of simulation to examine the process of care rather than the outcome of care. For example, using simulation to re-create an emergency in a patient area to see what latent safety threats exist, such as poor availability of patient equipment, inadequate emergency call buttons or unsafe obstacles.

**Compare:** PROCEDURAL SIMULATION

**Prop** \ prop \ *noun*

**Etym. prop** (n.) “object used in a play,” 1898, from props (1841), shortened form of properties (which was in theatrical use from early 15c.).

**Definition**

- In simulation, an element or accessory used in a given scenario to enhance realism, or to provide a cue to learners.
- A physical object used as an interface to a virtual world; a prop may be embodied by a virtual object and might have physical controllers mounted on it (Australian Dept. of Defense).

*\*Term that has been identified as potentially controversial.*

## Psychological Fidelity

\ sahy-kuh-loj-i-kuh l \ fə-'de-lə-tē \ *noun*

**Etym. psychology** (n.) 1650s, “study of the soul,” from Modern Latin *psychologia*, probably coined mid-16c. in Germany by Melanchthon from Latinized form of Greek *psykhe*- “breath, spirit, soul” + *logia* “study of.” Meaning “study of the mind” first recorded 1748, from Christian Wolff’s “*Psychologia empirica*” (1732); main modern behavioral sense is from early 1890s.

**Etym. fidelity** (n.) early 15c., “faithfulness, devotion,” from Middle French *fidélité* (15c.), from Latin *fidelitatem* (nominative *fidelitas*) “faithfulness, adherence, trustiness,” from *fidelis* “faithful, true, trusty, sincere,” from *fides* “faith.” From 1530s as “faithful adherence to truth or reality;” specifically of sound reproduction from 1878.

### Definition

- A level of realism associated with a particular simulation activity.
- The extent to which the simulated environment evokes the underlying psychological processes necessary in the real-world setting (Dieckmann et al., 2008).
- The degree of perceived realism, including psychological factors such as emotions, beliefs, and self-awareness of participants in simulation scenarios (Dieckmann et al., 2008).

**See also:** FIDELITY, REALISM

## Psychological Safety

\ sahy-kuh-loj-i-kuh l \ seyf-tee \ *noun*

**Etym. psychology** (n.) 1650s, “study of the soul,” from Modern Latin *psychologia*, probably coined mid-16c. in Germany by Melanchthon from Latinized form of Greek *psykhe*- “breath, spirit, soul” + *logia* “study of.” Meaning “study of the mind” first recorded 1748, from Christian Wolff’s “*Psychologia empirica*” (1732); main modern behavioral sense is from early 1890s.

**Etym. safety** (n.) early 14c., from Old French *sauvete* “safety, safeguard; salvation; security, surety,” earlier *salvetet* (11c., Modern French *sauveté*), from Medieval Latin *salvitatem* (nominative *salvitas*) “safety,” from Latin *salvus*.

### Definition

- A feeling (explicit or implicit) within a simulation-based activity that participants are comfortable participating, speaking up, sharing thoughts, and asking for help as needed without concern for retribution or embarrassment.
- The perception of members of the team that the team is safe for risk taking, and mistakes will be considered learning opportunities rather than there being embarrassment or punitive consequences (Edmondson, 1999; Higgins et al, 2012).

**See also:** SAFE LEARNING ENVIRONMENT, SIMULATION ENVIRONMENT

# R

## **Realism** \ rēə,lizəm \ *noun*

*Note: this term often used synonymously with fidelity but not all agree these are the same*

**Etym. realism** (n.) 1794, from real (adj.) + -ism; after French réalisme or German Realismus; from Late Latin realis “real.” Meaning “close resemblance to the scene” (in art, literature, etc., often with reference to unpleasant details) is attested from 1856.

### **Definition**

- The ability to impart the suspension of disbelief to the learner by creating an environment that mimics that of the learner’s work environment; realism includes the environment, simulated patient, and activities of the educators, assessors, and/or facilitators (SSH).
- A statement about the similarity of something (a ‘copy’) to something else (the ‘original’) (Dieckmann, Gabe, et al, 2007).
- The quality or fact of representing a person, thing, or situation accurately in a way true to life; this enables participants to act “as if” the situation or problem was real.
- Refers to the physical characteristics of the activity, semantical aspects of the activity (theories and conceptual relations – if A happens then B occurs), and/or the phenomenal aspects of the activity (emotions, beliefs and thoughts experienced).

**See also:** FIDELITY, FUNCTIONAL FIDELITY, HIGH FIDELITY SIMULATION, HIGH FIDELITY SIMULATOR, IMMERSIVE SIMULATION, PHYSICAL FIDELITY, PSYCHOLOGICAL FIDELITY, SIMULATION FIDELITY

## **Reflective Thinking** \ ri-flek-tiv \ thing-king \ *noun*

**Etym. reflection** (n.) Of the mind, from 1670s. Meaning “remark made after turning back one’s thought on some subject” is from 1640s.

### **Definition**

- The engagement of self-monitoring that occurs during or after a simulation experience; this self-monitoring is performed by participants during or after a simulation experience.
- A process to assist learners in identifying their knowledge gaps and demonstrating the areas in which they may need further improvement; it requires active involvement in the simulation and facilitator guidance to aid in this process (Rodgers, 2002; Decker et al., 2013 Kuiper and Pesut, 2004).
- The conscious consideration of the meanings and implications of the events of the simulation; this process allows participants to make meaning out of the experience, to identify questions

generated by the experience, and ultimately, to assimilate the knowledge, skills, and attitudes uncovered through the experience with pre-existing knowledge.

- A process to assist learners in identifying their knowledge gaps and demonstrating the areas in which they may need further improvement; this reflection requires conscious self-evaluation to deal with unique patient situations (INACSL, 2013).

**See also:** GUIDED REFLECTION

## **Role Player** \ rohl-pley- r \ *noun*

**Etym. role** (n.) “part or character one takes,” c. 1600, from French rôle “part played by a person in life,” literally “roll (of paper) on which an actor’s part is written,” from Old French rolle.

**Etym. player** (n.) Old English plegere, agent noun from play (v.). Stage sense is from mid-15c.

### **Definition**

- One who assumes the attitudes, actions, and discourse of (another), especially in a make-believe situation, in an effort to understand a differing point of view or social interaction. For example: Nursing students were given a chance to role play a patient or a surgeon. This term is sometimes used interchangeably with the terms ‘simulated’ and ‘standardized patient’ and may include medical, nursing or other health professionals. (Victorian Simulated Patient Network).

**See also:** ACTOR, CONFEDERATE, EMBEDDED PARTICIPANT, SIMULATED PATIENT, SIMULATED PERSON, STANDARDIZED PATIENT.

## **“Running on the Fly”** \ ruhn-ing \ on \ th uh \ flahy \ *noun*

### **Definition**

- The method of operation for running a simulation whereby the operator changes the parameters of the scene, the SP, or the simulator as the scenario unfolds; the changes are dependent on the observations and knowledge of the instructor or the operator, which is based on the actions of the participant.
- Running a simulation with minimal planning and preparation; a more impromptu type of simulation experience.

**Compare to:** MANUAL INPUT, PHYSIOLOGIC MODELING, PREPACKAGE SCENARIO

# S

## Safe Learning Environment

\ˈsɑːf \ ˈlɔːnɪŋ \ ɛn·vi·ron·mənt \ ɪn-ˈvī-rə(n)-mənt \ *noun*

**Etym. safe** (adj.) not able or likely to be hurt or harmed in any way; not in danger.

**Etym. environment** (n.) the conditions that surround someone or something; the conditions and influences that affect the growth, health, progress, etc., of someone or something.

### Definition

- A learning environment where it is clarified that learners feel physically and psychologically safe to make decisions, take actions and interact in the simulation.
- A learning environment of mutual respect, support, and respectful communication among leaders and learners; open communication and mutual respect for thought and action encouraged and practiced.

**See also:** PSYCHOLOGICAL SAFETY

## Scenario \si-nair-ee-oh \ *noun*

**Etym.** (n.) 1868, “sketch of the plot of a play,” from Italian *scenario*, from Late Latin *scenarius* “of stage scenes,” from Latin *scena* “scene.” Meaning “imagined situation” is first recorded 1960, in reference to hypothetical nuclear wars.

### Definition

- In healthcare simulation, a description of a simulation that includes the goals, objectives, debriefing points, narrative description of the clinical simulation, staff requirements, simulation room set up, simulators, props, simulator operation, and instructions for SPs (Alinier, 2011).
- The scripts, stories, or algorithms created for instructing the participants, including the simulators (human or robotic), on how to interact with the students.
- The description of an exercise (including initial conditions), of events for a simulation that includes details for everyone taking part.
- An initial set of conditions and timeline of significant events imposed on trainees or systems to achieve exercise objectives (M&S Glossary).

**See also:** CLINICAL SCENARIO, SCRIPT

## Screen - based Simulation / Screen - based Simulator

\ skreen \ bāst \ sim-yuh-ley-shuh n \ *noun*

**Etym. screen** (n.) Meaning “flat vertical surface for reception of projected images” is from 1810, originally in reference to magic lantern shows; later of movies. Related **screenshot** (n.) by 1991, from (computer) screen (n.) + shot (n.) in the photograph sense.

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

**Etym. simulator** (n.) 1835, of persons, from Latin *simulator* “a copier, feigner,” agent noun from *simulare* “imitate,” from stem of *similis* “like.” In reference to training devices for complex systems, from 1947 (flight simulator); simulated (adj.) 1620s, “feigned,” past participle adjective from *simulare* (v.). Meaning “imitative for purposes of experiment or training” is from 1966 (agent noun simulator in the related sense dates from 1947). In commercial jargon, “artificial, imitation” by 1942.

### Definition

- A simulation presented on a computer screen using graphical images and text, similar to popular gaming format, where the operator interacts with the interface using keyboard, mouse, joystick or other input device. The programs can provide feedback to, and track actions of learners for assessment, eliminating the need for an instructor (Ventre & Schwid, in Levine Chapter 14).
- A computer generated video-game simulator which can create scenarios that require real-time decision-making (Bonnetain; Biese, et al, 2009).

**See also:** COMPUTER-BASED SIMULATION, SIMULATOR

## Scribe / Scribing \ˈskriːb \ *noun / verb* \ˈskriːbiŋ\

**Etym.** special use of Latin *scriba* “keeper of accounts, secretary, writer,” from past participle stem of *scribere* “to write.” Sense “one who writes, official or public writer” in English is from late 14c.

### Definition

- The act of making notes about a scenario and documenting the actions taken or not taken.



**Script** \ skript \ *noun*

**Etym.** (n.) late 14c., “something written.” Meaning “handwriting” is recorded from 1860. Theatrical use, short for manuscript, is attested from 1884.

**Definition**

- The written plan for a simulation event that includes various sets of topics, subtopics, skills, and triggers that will create the situation to induce the desired observable behaviors by the participant(s).
- A preordained series of actions based on the time and sequence of specific events.
- A written set of instructions providing a detailed plan of action for a simulation case; similar to a theatrical play.
- The lines to be spoken by operators, embedded actors or simulated patients during a simulation event.

**See also:** CLINICAL SCENARIO, SCENARIO

**Serious Games** \ seer-ee-uh s \ geymz \ *noun*

**Etym. serious** (adj.) mid-15c., “expressing earnest purpose or thought” (of persons), from Middle French sérieux “grave, earnest” (14c.), from Late Latin *seriosus*, from Latin *serius* “weighty, important, grave.” Gothic . . . .” honored, esteemed,” literally “weighty.” Meaning “attended with danger” is from 1800.

**Etym. games** (n.) 1200, from Old English *gamen* “joy, fun; game, amusement,” “participation, communion.” “contest for success or superiority played according to rules” is first attested c. 1200 (of athletic contests, chess, backgammon).

**Definition**

- A mental contest played with a computer in accordance with specific rules, that uses entertainment to further training, education, health, public policy, and strategic communication objectives (Zyda, 2005).
- A game designed for a primary purpose other than pure entertainment. Serious games have an explicit and carefully thought out educational purpose, and are not intended to be played primarily for amusement (Michael and Chen, 2006). Serious games are simulations of real-world events, or processes designed for the purpose of solving a problem.
- In the defense context, serious games are used to rehearse, train, or explore military options in a simulation of real-world events or processes (Australian Dept. of Defense); The “serious” adjective is generally appended to refer to products used by industries like defense, education, scientific exploration, healthcare, emergency management, city planning, engineering, religion, and politics.

**See also:** SIMULATOR

**Shared Mental Model** \ shaird \ men-tl] \ mod-l] \ *noun*

**Etym. share** (n.) (v.) 1580s, “to apportion to someone as his share; to apportion out to others; to enjoy or suffer (something) with others,” from share. Meaning “to divide one’s own and give part to others” is recorded from 1590s. **Related:** Shared, sharer, sharing

**Etym. mental** (adj.) early 15c., “pertaining to the mind,” from Middle French *mental*, from Late Latin *mentalis* “of the mind,” from Latin *mens* (genitive *mentis*) “mind;” cognates: Sanskrit *matih* “thought, mind;” Old English *gemynd* “memory, remembrance.”

**Etym. model.** Sense of “thing or person to be imitated” is 1630s.

**Definition**

- A means of describing that each participant in a simulation has a shared understanding of the purpose and process of the simulation activity and participant’s roles.
- The knowledge framework of the relationships between the task the team is engaged in and how the team members will interact, for example, facilitates team’s ability to predict what team members will do when faced with a task, and what they will need to do it.
- A framework whereby an individual team member develops a perception of the situation, it is shared, allowing the team to reflect on the information and revise their situational awareness and their own mental model based on new information; for example, sharing can be done by vocalizing observations, calling out information, using a structured time-out to communicate new information and thinking out loud to allow others to relate and appreciate the associations, assessments, and plans. Shared mental models facilitates collaboration, and is crucial when team communication in a situation is difficult (due to time pressure, etc.).

**Compare:** SITUATIONAL AWARENESS

## Simulated-Based Learning Experience

\ sim-yuh-leyt -id \ bäst \ lur-ning \ ik-speer-ee-uh ns \ noun

**Etym. simulated** (adj.) 1620s, “feigned,” past participle adjective from simulate (v.). Meaning “imitative for purposes of experiment or training” is from 1966; commercial jargon, “artificial, imitation” by 1942.

**Etym. learning** (n.) Old English leornung “learning, study,” from leornian. Learning curve attested by 1907.

**Etym. experience** (v.) 1530s, “to test, try, learn by practical trial or proof;” (n.). Sense of “feel, undergo” first recorded 1580s. **Related:** Experienced; experiences; experiencing.

**Etym. experience** (n.) late 14c., “observation as the source of knowledge; actual observation; an event which has affected one,” from Old French esperience “experiment, proof, experience” (13c.), from Latin experientia “a trial, proof, experiment; knowledge gained by repeated trials;” Meaning “state of having done something and gotten handy at it” is from late 15c.

### Definition

- An array of structured activities that represent actual or potential situations in education and practice. These activities allow participants to develop or enhance their knowledge, skills, and attitudes, or to analyze and respond to realistic situations in a simulated environment. (Pilcher, Goodall, Jensen, Huwe, Jewell, Reynolds, and Karlson, 2012).

**See also:** CLINICAL SCENARIO, SIMULATION ACTIVITY

## Simulated Patient (SP) \ sim-yuh-leyt -id \ pey-shuh nt \ noun

*Note: this term is often synonymous with Standardized Patient*

**Etym. simulated** (adj.) 1620s, “feigned,” past participle adjective from simulate (v.). Meaning “imitative for purposes of experiment or training” is from 1966; commercial jargon, “artificial, imitation” by 1942.

**Etym. patient** (n.) “suffering or sick person under medical treatment,” late 14c., from Old French pacient (n.), from the adjective, from Latin patientem.

### Definition

- A person who has been carefully coached to simulate an actual patient so accurately that the simulation cannot be detected by a skilled clinician. In performing the simulation, the SP presents the gestalt of the patient being simulated; not just the history, but the body language, the physical findings, and the emotional and personality characteristics as well (Barrows 1987). Often used interchangeably with standardized patients in the USA and Canada, but in other countries simulated patient is considered a broader term than standardized patient because the simulated patient scenario can be designed to vary the SP role in order to meet the needs of the learner.
- An individual who is trained to portray a real patient in order to simulate a set of symptoms or problems used for healthcare education, evaluation, and research (SSH).

- SPs can be used for teaching and assessment of learners including but not limited to history/consultation, physical examination, and other clinical skills in simulated clinical environments (ASPE). SPs can also be used to give feedback and evaluate learner performance (ASPE).

**See also:** ACTOR, CONFEDERATE, EMBEDDED PARTICIPANT, ROLE PLAYER, SIMULATED PERSON, STANDARDIZED PATIENT.

## Simulated Person \ sim-yuh-leyt -id \ pur-suh n \ noun

**Etym. simulated** (adj.) 1620s, “feigned,” past participle adjective from simulate (v.). Meaning “imitative for purposes of experiment or training” is from 1966; commercial jargon, “artificial, imitation” by 1942.

### Definition

- A person who portrays a patient (simulated patient), family member, or healthcare provider in order to meet the objectives of the simulation; a simulated person may also be referred to as a standardized patient/family/healthcare provider if they have been formally trained to act as real patients in order to simulate a set of symptoms or problems used for healthcare education, evaluation, and research. Simulated persons often engage in assessment by providing feedback to the learner (Palaganas, J.C. (2012) Annex A).

**See also:** CONFEDERATE, EMBEDDED PARTICIPANT, ROLE PLAYER, SIMULATED PATIENT, STANDARDIZED PATIENT, STANDARDIZED/SIMULATED PARTICIPANT



## Simulated/Synthetic Learning Methods

\ sim-yuh-leyt -id \ sin-thet-ik \ lur-ning \ meth-uh dz *noun*

**Etym. simulated** (adj.) 1620s, “feigned,” past participle adjective from simulate (v.). Meaning “imitative for purposes of experiment or training” is from 1966; commercial jargon, “artificial, imitation” by 1942.

**Etym. synthetic** (adj.) 1690s, as a term in logic, “deductive,” from French *synthétique* (17c.) and directly from Modern Latin *syntheticus*, from Greek *synthetikos* “skilled in putting together, constructive,” from *synthetos* “put together, constructed, compounded,” past participle of *syntithenai* “to put together” (see *synthesis*). **Related:** *Synthetical* (1620s in logic).

**Etym. learning** (n.) Old English *leornung* “learning, study,” from *leornian*.

**Etym. method** (n.) from Latin *methodus* “way of teaching or going,” from Greek *methodos* “scientific inquiry, method of inquiry, investigation,” originally “pursuit, a following after,” from *meta-* “after” + *hodos* “a traveling, way.” Meaning “way of doing anything” is from 1580s; that of “orderliness, regularity” is from 1610s.

### Definition

The principles, pedagogies, and educational strategies used in healthcare simulation. They include:

- **Case-based learning** - written and oral presentations used to present and review clinical scenarios but do not involve hands-on learning. e.g., table-top simulation.
- **Computer simulation** – see Computer Simulation.
- **Procedural or Partial Task Training** - see Part-task Trainer or Task Trainer.
- **Hybrid Simulation**- see Hybrid Simulation.
- **Integrated procedural training (psychomotor focus)** - Combines a series of discrete tasks that are conducted simultaneously or in sequence to form a complex clinical task (e.g. endotracheal intubation and cervical spine immobilization in a trauma patient).
- **Integrated procedural training (whole procedure)** - Integrates task training with role play (actors) to enable procedural and communication tasks to be practiced simultaneously.
- **Mixed simulation**- see Mixed Simulation.
- **Simulation / Scenario-based learning** - Learners interact with people, simulators, computers or task trainers to accomplish learning goals that are representative of the learner’s real world responsibilities. The environment may resemble the workplace. Depending on the learning objectives, realism can be built into the equipment or the environment.
- **Standardized/Simulated Patient** - see Standardized/Simulated Patient. **Role play** - see Role Play.
- **Debriefing** – see Debriefing.
- **Multimodal formats** – see Multiple Modality.

**See also:** MODALITY, TYPOLOGY

## Simulation \ sim-yuh-ley-shuh n \ noun

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A technique that creates a situation or environment to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems or human actions.
- An educational technique that replaces or amplifies real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner (Gaba Future Vision Qual Saf Health Care 2004).
- A pedagogy using one or more typologies to promote, improve, or validate a participant’s progression from novice to expert (INACSL, 2013).
- The application of a simulator to training and/or assessment (SSH).
- A method for implementing a model over time.

## Simulation Activity \ sim-yuh-ley-shuh n \ ak-tiv-i-tee \ noun

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The entire set of actions and events from initiation to termination of an individual simulation event; in the learning setting, this is often considered to begin with the briefing (prebriefing) and end with the debriefing.
- All the elements in a simulation session including the design and setup required.

**See also:** SIMULATED-BASED LEARNING EXPERIENCE

## Simulation-Enhanced Interprofessional Education / (Sim-IPE)

\ sim-yuh-ley-shuh n \ in-'han(t)st \ in-'tər\ prə-'fesh-nəl  
\ e-jə-'kā-shən\ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

**Etym. education** (n.) the action or process of teaching someone especially in a school, college, or university; the knowledge, skill, and understanding that you get from attending a school, college, or university; a field of study that deals with the methods and problems of teaching.

### Definition

- The education of health care professionals with different but complementary knowledge and skills in a simulation environment that promotes a collaborative team approach. Simulation-enhanced interprofessional education (Sim-IPE) occurs when participants and facilitators from two or more professions are engaged in a simulated health care experience to achieve shared or linked objectives and outcomes (Decker, S. et al., 2015); It is designed for the individuals involved to... “*learn about, from and with each other to enable effective collaboration and improve health outcomes*” (WHO, 2010, p.13).
- A collaborative educational approach that brings together health care professionals of varying specialties in a simulation environment engaging learners in an interprofessional teamwork model (Decker et. al).
- A simulation environment of equal and mutual respect and recognition of each team member’s knowledge and skills.

## Simulation Environment / Simulation Learning Environment / Synthetic Learning Environment (SLE)

\ sim-yuh-ley-shuh n \ lur-ning \ en-vahy-ruh n-muh nt  
\ sin-'the-tik\ 'lɔrn-ing \ in-'vī-rə(n)-mənt \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

**Etym. synthetic** (adj.) 1690s, as a term in logic, “deductive,” from French synthétique (17c.) and directly from Modern Latin syntheticus, from Greek synthetikos “skilled in putting together, constructive,” from synthetos “put together, constructed, compounded,” past participle of syntithenai “to put together” (see synthesis). **Related:** Synthetical (1620s in logic).

**Etym. learning** (n.) Old English leornung “learning, study,” from leornian.

**Etym. environment** (n.) 1887, “enviroming, surrounding,” Ecological sense by 1967.

### Definition

- The physical setting where simulation activities may take place, inclusive of the people and equipment that forms part of the simulation experience.
- A location where a simulation-based learning experience takes place, and where a safe atmosphere is created by the facilitator to foster sharing and discussion of participant experiences without negative consequences.
- A context for learning that consists of a controlled and shielded representation of real world situations, and a set of educational methods and procedures in which trainees feel simultaneously challenged and psychologically safe to practice and reflect on their performance (Rudolph et al).
- An atmosphere that is created by the facilitator to allow for sharing and discussion of participant experiences without fear of humiliation or punitive action.
- A setting, surrounding, or conditions that reproduce components or aspects of the real world environment, for the purpose of learning and related activities, and/or research (ASSH).

**See also:** PSYCHOLOGICAL SAFETY

## Simulation Fidelity \ sim-yuh-ley-shuh n \ fə-'de-lə-tē \ *noun*

*Note: the term fidelity is often used synonymously with realism but not all agree these are the same*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The level of realism associated with a particular simulation activity.
- The physical, semantic, emotional and experiential accuracy that allows persons to experience a simulation as if they were operating in an actual activity (SSH).
- The believability, or the degree to which a simulated experience approaches reality. Fidelity can involve a variety of dimensions, including (a) physical factors such as environment, equipment, and related tools; (b) psychological factors such as emotions, beliefs, and self-awareness of participants; (c) social factors such as participant and instructor motivation and goals; (d) culture of the group; and (e) degree of openness and trust, as well as participants’ modes of thinking (Rudolph et al, 2007).

**See also:** FIDELITY

## Simulation Guideline

\ sim-yuh-ley-shuh n \ gahyd-lahyn \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A recommendation of the qualities for simulation fidelity, simulation validity, simulation program, or for formative or summative evaluation (SSH).
- A set of procedures or principles that are recommended to assist in meeting standards. Guidelines are not necessarily comprehensive, they provide a framework for developing policies and procedures based on best practice.
- A set of recommendations, incorporating currently known best practice, based on research and/or expert opinion.

**Compare:** SIMULATION STANDARD

## Simulationist

\ sim-yuh-ley-shuh n - ist \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- An individual who is involved in the design, implementation, and/or delivery of simulation activities; for example, educators, technologists, operations specialists, technicians (SSH).
- A modeling and simulation professional (Tucker).
- A person “who is involved, full-time or part-time, in modeling or simulation activities” for example, develops models to be used for simulation purposes; performs simulation studies; develops simulation software; manages simulation projects; advertises and/or markets simulation products and/or services; maintains simulation products and/or services; promotes simulation-based solutions to important problems; advances simulation technology; and advances simulation methodology and/or theory (Ören, 2000).

**Compare:** DEBRIEFER, FACILITATOR

## Simulation Reliability

\ sim-yuh-ley-shuh n \ ri-lahy-uh-bil-i-tee \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

**Etym. reliable** (adj.) 1560s, raliabill, Scottish; see rely + -able.

### Definition

- The consistency of a simulation activity, or the degree to which a simulation activity measures in the same way each time it is used under the same conditions with the same participants.

**Compare:** SIMULATION VALIDITY

## Simulation Standard

\ sim-yuh-ley-shuh n \ stan-derd \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A statement of the minimum requirements for simulation fidelity, validity, formative or summative evaluation, or any other element related to a simulation activity or program (SSH).

**Compare:** SIMULATION GUIDELINE

## Simulation Testing Environment

\ sim-yuh-ley-shuh n \ tee-ching \ en-vahy-ruh n-muh nt \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A context for formative or summative evaluation of an individual’s or team’s performance. The goals of the simulation testing environment are to create an equivalent activity for all participants in order to test their knowledge, skills, and abilities in a simulated setting (INACSL, 2013).

## Simulation Time

\ sim-yuh-ley-shuh n \ tahym \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A simulation’s internal representation of time; simulation time may accumulate faster, slower, or at the same pace as real-time.
- A time established by the simulation educator before the start of the simulation exercise irrespective of the actual real time (Hancock et al, 2008).

## Simulation Validity

\ sim-yuh-ley-shuh n \ vuh-lid-i-tee \ *noun*

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The degree to which a model or simulation accurately represents or measures what it intends to measure.
- In healthcare simulation, the quality of a simulation or simulation program that demonstrates that the relationship between the process and its intended purpose is specific, sensitive, reliable, and reproducible (Dieckmann, 2009; SSH).

**Compare:** SIMULATION RELIABILITY

## Simulator \ sim-yuh-ley-ter \ noun

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- A setting, device, computer program or system that performs simulation (Hancock et al, 2008).
- Any object or representation used during training or assessment that behaves or operates like a given system and responds to the user’s actions (SSH).
- A device that duplicates the essential features of a task situation. A simulator generally has three elements – a modelled process which represents, emulates, or otherwise simulates a real world system, a control system, and a human machine interface which is representative of the inputs found in the real world system (Australian Dept. of Defense); examples include manikins and part-task trainers.

**See also:** COMPUTER-BASED SIMULATION, MANIKIN, SERIOUS GAMES, SCREEN-BASED SIMULATION, SIMULATED PATIENT, STANDARDIZED PATIENT, TASK TRAINER, VIRTUAL REALITY

## Situated Learning \sich-oo-ey-tid \ lur-ning \ noun

**Etym. situate** (v.) early 15c., “to place in a particular state or condition,” from Medieval Latin situatus, past participle of situare “to place, locate,” from Latin situs “a place, position” (see site). **Related:** Situated; situating, situation (n.).

**Etym. learning** (n.) Old English leorning “learning, study,” from leornian (see learn). Learning curve attested by 1907.

### Definition

- A theory that posits that learning occurs within authentic activity, context, and culture. Social interaction and collaboration are considered essential components (Lave and Wenger, 2008). This is opposed to a classroom learning activity that is abstract and out of context.

## Situational Awareness

\sich-oo-ey-shuh n-ul \ ə-’wer-nis\ noun

**Etym. situate** (v.) early 15c., “to place in a particular state or condition,” from Medieval Latin situatus, past participle of situare “to place, locate,” from Latin situs “a place, position” (see site). **Related:** Situated; situating, situation (n.).

**Etym. awareness** (n.) 1828, from aware + -ness. Late Old English gewær, “wary, cautious.”

### Definition

- Situation awareness (SA) is the perception of environmental elements within time and space, and a perception of their meaning; it involves being aware of what is happening around you to understand how information, events, and your own actions impact the outcomes and objectives.

- A field of study concerned with understanding of the environment critical to decision-makers in complex, dynamic areas; situational awareness refers to the degree to which one’s perception of a situation matches reality.
- The awareness of fatigue and stress among team members (including oneself), environmental threats to safety, immediate goals, information sharing, and the deteriorating status of the crisis or patient. Most commonly used in the context of crisis resource management training (Hancock et al, 2008).

**Compare:** SHARED MENTAL MODEL

**Contrast with:** FIXATION ERROR

## Standardized Patient (SP) \ stan-dər-, dīz-d \ pā-shənt \ noun

[Note: this term is often synonymous with Simulated Patient]

**Etym. standard** - “authoritative or recognized exemplar of quality or correctness” (late 15c.). Meaning “rule, principal or means of judgment” is from 1560s. That of “definite level of attainment” is attested from 1711 (as in standard of living, 1903).

**Etym. patient** – (n.) “suffering or sick person under medical treatment,” late 14c.

### Definition

- A person who has been carefully coached to simulate an actual patient so accurately that the simulation cannot be detected by a skilled clinician. In performing the simulation, the SP presents the gestalt of the patient being simulated; not just the history, but the body language, the physical findings, and the emotional and personality characteristics as well (Barrows 1987).
- An individual trained to portray a patient with a specific condition in a realistic, standardized, and repeatable way and where portrayal/presentation varies based only on learner performance; this strict standardization of performance in a simulated session is what can distinguish standardized patients from simulated patients.
- SPs can be used for teaching and assessment of learners including but not limited to history/consultation, physical examination, and other clinical skills in simulated clinical environments (ASPE). SPs can also be used to give feedback and evaluate learner performance (ASPE).
- An individual who is trained to portray a real patient in order to simulate a set of symptoms or problems used for healthcare education, evaluation, and research (SSH).

More commonly used in the USA and Canada in large part because SPs participate in high stakes assessments in which SP responses to the learner were standardized; in recent years as SPs have been included in more formative teaching scenarios, its meaning has become interchangeable with the term simulated patient.

**See also:** ACTOR, CONFEDERATE, EMBEDDED PARTICIPANT, ROLE PLAYER, SIMULATED OR STANDARDIZED PATIENT OR PARTICIPANT, SIMULATED PERSON.

**Standardized Patient Simulation** \ stan-dər-, dīz-d \ pā-shənt \ sim-yuh-ley-shuh n \ *noun*

*Note: the term Standardized Patient is often synonymous with Simulated Patient*

**Etym. standard** (n.) “authoritative or recognized exemplar of quality or correctness” (late 15c.). Meaning “rule, principal or means of judgment” is from 1560s. That of “definite level of attainment” is attested from 1711 (as in standard of living, 1903).

**Etym. patient** (n.) “suffering or sick person under medical treatment,” late 14c.

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

#### Definition

- A simulation using a person or persons trained to portray a patient scenario or actual patient(s) for healthcare education (SSH).
- A modality used for the purpose of practice, learning, assessment, or to gain an understanding of systems or human actions in which standardized (or simulated) patients play a central role.

**Standardized/Simulated Participant** \ stan-dər-, dīz-d \ sim-yə-, lāt-id \ pər-ti-sə-pənt \ *noun*

**See Also:** SIMULATED PATIENT, STANDARDIZED PATIENT

**State/states** \ stāt \ *noun*

**Etym.** Meaning “physical condition as regards form or structure” is attested from late 13c. Meaning “mental or emotional condition” is attested from 1530s (phrase state of mind first attested 1749).

#### Definition

- A term used when programming manikins; state variables may include vital signs, monitor readings, body sounds, and verbalizations made by the simulator.
- [plural] A sequence of events that change over time (Sokolowski and Banks, 2009).

**Compare to:** EVENT

**Stochastic** \ stə-'kas-tik \ *adj*

**Etym.** (adj.) 1660s, “pertaining to conjecture,” from Greek stokhastikos “able to guess, conjecturing,” from stokhos “a guess, aim, target, mark,” literally “pointed stick set up for archers to shoot at;” the sense of “randomly determined” is from 1934, from German stochastik (1917).

#### Definition

- Pertaining to a process, model, or variable whose outcome, result, or value depends on chance (M&S Glossary).

**Contrast with:** DETERMINISTIC

**Synthetic Learning Technologies** \ sin-'the-tik \ 'lɔrn-ing \ tek-'nā-lə-jē-z \ *noun*

**Etym. synthetic** (adj.) 1690s, as a term in logic, “deductive,” from French synthétique (17c.) and directly from Modern Latin syntheticus, from Greek synthetikos “skilled in putting together, constructive,” from synthetos “put together, constructed, compounded,” past participle of syntithenai “to put together” (see synthesis). **Related:** Synthetical (1620s in logic).

**Etym. learning** (n.) Old English leornung “learning, study,” from leornian.

**Etym. techno** - word-forming element meaning “art, craft, skill,” later “technical, technology,” from Latinized form of Greek tekhnō-, combining form of tekhnē “art, skill, craft in work; method, system, an art, a system or method of making or doing.”

#### Definition

- The technologies used in synthetic or simulated learning environments including manikin; computer-based virtual reality; haptics; actors; simulated patients; part-task / task trainers; hybrid; video (ASSH).

**Systems Integration** 'sis-təmz \ ,in-tə-'grā-shən \ *noun*

**Etym. system** - (n.) 1610s, “the whole creation, the universe,” from Late Latin systema “an arrangement, system,” from Greek systema “organized whole, a whole compounded of parts,” from stem of synistanai “to place together, organize, form in order,” from syn- “together.” Meaning “set of correlated principles, facts, ideas, etc.” first recorded 1630s.

**Etym integration** (n.) 1610s, from French intégration and directly from Latin integrationem (nominative integratio) “renewal, restoration.” **Integrate** - Meaning “to put together parts or elements and combine them into a whole” is from 1802. **Related:** Integrated; integrating.

#### Definition

- An engineering term meaning to bring together the component subsystems into one system that functions together. In healthcare, the ability to improve the quality of care and patient outcomes through re-engineering of care delivery processes.
- A category of simulation program accreditation that recognizes programs that demonstrate consistent, planned, collaborative, integrated, and iterative application of simulation-based assessment, research, and teaching activities with systems engineering, and risk management principles to achieve excellent bedside clinical care, enhanced patient safety, and improved outcome metrics across the healthcare system(s) (SSH).



### Task Trainer / Part-Task Trainer / Partial Task Trainer \ təhsk \ trey-ner \ noun

**Etym. task** (n.) early 14c., “a quantity of labor imposed as a duty,” from Old North French *tasque* (12c., Old French *tasche*, Modern French *tâche*). General sense of “any piece of work that has to be done” is first recorded 1590s.

**Etym. trainer** (n.) c. 1600, “one who educates or instructs,” agent noun from *train* (v.). Meaning “one who prepares another for feats requiring physical fitness” is from 1823, originally of horse trainers.

#### Definition

- A device designed to train in just the key elements of the procedure or skill being learned, such as lumbar puncture, chest tube insertion, central line insertion or part of a total system, *for example, ECG simulator* (Center for Immersive and Simulation Based Learning [CISL] & Levine et al).
- A model that represents a part or region of the human body such as an arm, or an abdomen. Such devices may use mechanical or electronic interfaces to teach and give feedback on manual skills such as IV insertion, ultrasound scanning, suturing, etc.... Generally used to support procedural skills training; however they can be used in conjunction with other learning technologies to create integrated clinical situations (ASSH).

**See also:** PROCEDURAL SIMULATION, SIMULATOR

### Team-based Learning \ 'tēm \ 'bāst \ 'lārn-ing \ noun

**Etym. team** (n.) applied in Old English to groups of persons working together for some purpose, especially “group of people acting together to bring suit;” modern sense of “persons associated in some joint action” is from 1520s. Team spirit is recorded from 1928. Team player attested from 1886, originally in baseball.

**Etym. learning** (n.) Old English *leornung* “learning, study,” from *leornian*.

#### Definition

- A learning method which makes use of small group discussion and collaborative, self-directed study to foster new learning as opposed to imparting information. After a period of preliminary individual accountability, teams of learners complete with each other to learn information and solve problems, This is in distinction to traditional learning in which information is imparted from teacher to learner.
- A learning method with many similarities to Problem Based Learning (PBL). Unlike PBL, where a complex, open ended, case is given without the information to solve it, team-based learning capitalizes on the use of carefully chosen learning activities based on reading assignments (Michaelson & Parmelee).

### Technical skills \ 'tek-ni-kəl \ 'skil \ noun

**Etym. technical** (adj.) 1610s, “skilled in a particular art or subject,” formed in English from *technic* + *al* (1), or in part from Greek *tekhnikos* “of art; systematic,” in reference to persons “skillful, artistic,” from *tekhne* “art, skill, craft.” The sense narrowed to “having to do with the mechanical arts” (1727).

**Etym. skills** (n.) late 12c., “power of discernment,” from Old Norse *skil* “distinction, ability to make out, discernment, adjustment,” related to *skilja* (v.) “to separate; discern, understand,” from Proto-Germanic \**skaljo-* “divide, separate” (cognates: Swedish *skäl* “reason,” Danish *skjel* “a separation, boundary, limit,” Middle Low German *schillen* “to differ,” Middle Low German, Middle Dutch *schele* “separation, discrimination;” Sense of “ability, cleverness” first recorded early 13c.

#### Definition

- A skill that is required for the accomplishment of a specific task.
- In healthcare, the knowledge, skill and ability to accomplish a specific medical task; for example, inserting a chest tube or performing a physical examination.

**Technology Enhanced Healthcare Simulation (encompasses high and low technology healthcare simulation)** \ tek-'nä-lə-jē\ in-'han(t)s \ 'helth \ 'ker \ sim-yuh-ley-shuh n \ *noun*

**Etym. techno** - word-forming element meaning “art, craft, skill,” later “technical, technology,” from Latinized form of Greek tekhnō-, combining form of tekhnē “art, skill, craft in work; method, system, an art, a system or method of making or doing.”

**Etym. simulation** (n.) noun of action from past participle stem of simulare “imitate,” from stem of similis “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

**Definition**

- A group of materials and devices created or adapted to train healthcare professionals in a simulated environment. Examples include such diverse products as computer-based virtual reality simulators, high-fidelity and static mannequins, plastic models, live animals, inert animal products, and human cadavers (Cook et al.).
- An educational tool or device with which the learner physically interacts to mimic an aspect of clinical care for the purpose of teaching or assessment.

**Trigger(s)** \ 'tri-gər \ *noun*

**Etym. trigger** (n.) “device by means of which a catch or spring is released and a mechanism set in action.”

**Definition**

- An event or events that move the simulation from one state to another.

**Typology** \ tī-'pä-lə-jē \ *noun*

**Etym. typology** (n.) “doctrine of symbols,” 1845, from Greek typos.

**Related:** Typological; typologically.

**Definition**

- The classification of different educational methods or equipment; for example, 3-dimensional models, computer software, standardized patients, partial-task trainers, or high-fidelity patient simulators (INACSL, 2013).

**See also:** MODALITY, SIMULATED/SYNTHETIC LEARNING METHOD



## Virtual Patient \ 'vər-chə-wəl \ pā-shənt \ noun

**Etym. virtual** (adj.) The meaning “being something in essence or effect, though not actually or in fact” is from mid-15c., probably via sense of “capable of producing a certain effect” (early 15c.). Computer sense of “not physically existing but made to appear by software” is attested from 1959.

**Etym. patient** (n.) “suffering or sick person under medical treatment,” late 14c.

### Definition

- A representation of an actual patient. Virtual patients can take many forms such as software-based physiological simulators, simulated patients, physical manikins and simulators, (Ellaway, Terry & Poulton).
- A computer program that simulates real-life clinical scenarios in which the learner acts as a healthcare provider obtaining a history and physical exam, and making diagnostic and therapeutic decisions (ASSH).

## Virtual Reality \ 'vər-chə-wəl \mrē-'a-lə-tē \ noun

**Etym. virtual** (adj.) The meaning “being something in essence or effect, though not actually or in fact” is from mid-15c., probably via sense of “capable of producing a certain effect” (early 15c.). Computer sense of “not physically existing but made to appear by software” is attested from 1959.

**Etym. reality** (n.) 1540s, “quality of being real,” from French *réalité* and directly Medieval Latin *realitatem* (nominative *realitas*), from Late Latin *realis*. Meaning “real existence, all that is real” is from 1640s; that of “the real state (of something)” is from 1680s. Sometimes 17c.-18c. also meaning “sincerity.” Reality-based attested from 1960.

### Definition

- The use of computer technology to create an interactive three-dimensional world in which the objects have a sense of spatial presence; virtual environment and virtual world are synonyms for virtual reality (M&S Glossary).
- A computer-generated three-dimensional environment that gives an immersion effect.

**See also:** SIMULATOR

## Virtual Reality Environment \ 'vər-chə-wəl \rē-'a-lə-tē \ in-'vī-rə(n)-mənt \ noun

**Etym. virtual** (adj.) The meaning “being something in essence or effect, though not actually or in fact” is from mid-15c., probably via sense of “capable of producing a certain effect” (early 15c.). Computer sense of “not physically existing but made to appear by software” is attested from 1959.

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### Definition

- A wide variety of computer-based applications commonly associated with immersive, highly visual, 3D characteristics, that allow the participant to look about and navigate within a seemingly real or physical world. It is generally defined based on the type of technology being used, such as head-mounted displays, stereoscopic capability, input devices, and the number of sensory systems stimulated (ASSH).

## Virtual Reality Simulation \ 'vər-chə-wəl \mrē-'a-lə-tē \ sim-yuh-ley-shuh n \ noun

**Etym. virtual** (adj.) The meaning “being something in essence or effect, though not actually or in fact” is from mid-15c., probably via sense of “capable of producing a certain effect” (early 15c.). Computer sense of “not physically existing but made to appear by software” is attested from 1959.

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### Definition

- Simulations that use a variety of immersive, highly visual, 3D characteristics to replicate real-life situations and/or healthcare procedures; virtual reality simulation is distinguished from computer-based simulation in that it generally incorporates physical or other interfaces such as a computer keyboard, a mouse, speech and voice recognition, motion sensors, or haptic devices (ASSH).



## Virtual Simulation \ˈvɜr-ʃə-wəl \ sim-yuh-ley-shuh n \ noun

**Etym. virtual** (adj.) The meaning “being something in essence or effect, though not actually or in fact” is from mid-15c., probably via sense of “capable of producing a certain effect” (early 15c.). Computer sense of “not physically existing but made to appear by software” is attested from 1959.

**Etym. simulation** (n.) noun of action from past participle stem of *simulare* “imitate,” from stem of *similis* “like.” Meaning “a model or mock-up for purposes of experiment or training” is from 1954.

### Definition

- The recreation of reality depicted on a computer screen (McGovern, 1994).
- A simulation involving real people operating simulated systems.. Virtual simulations may include surgical simulators that are used for on-screen procedural training and are usually integrated with haptic device(s) (McGovern, 1994; Robles-De La Torre, 2011).
- A type of simulation that injects humans in a central role by exercising motor control skills (*for example, flying an airplane*), decision skills (*committing fire control resources to action*), or communication skills (*as members of an air traffic control team*) (Hancock et al, 2008).

# References

- Alexander, A.L., Brunye, T., Sidman, J., & Weil, S.A. (2005). From gaming to training: A review of studies on fidelity, immersion, presence, and buy-in and their effects on transfer in pc-based simulations and games (*DARWARS technical report*)  
Available: <http://www.darwars.com/downloads/DARWARS%2520Paper%252012205.pdf>
- Alinier, G. (2011). Developing High Fidelity Health Care Simulation Scenarios: A Guide for Educators and Professionals. *Simulation Gaming*, 42, 9-26.
- Alinier, G. (2007). A typology of educationally focused medical simulation tools. *Medical Teacher*, 29, e243-250.  
doi:10.1080/01421590701551185
- Bajura, M., Fuchs, H., & Ohbuchi, R. (1992, July). Merging virtual objects with the real world: Seeing ultrasound imagery within the patient. In *ACM SIGGRAPH Computer Graphics* 26(2), 203-210.
- Balci, O. (1997, December). Verification validation and accreditation of simulation models. In Proceedings of the 29th conference on Winter simulation (pp. 135-141). IEEE Computer Society.
- Barnes, B.E. (1998). Creating the practice-learning environment using information technology to support a new model of continuing medical education. *Academic Medicine*, 73, 278-281.
- Barrows, H. S. (1993). An overview of the uses of standardized patients for teaching and evaluating clinical skills. AAMC. *Academic Medicine*, 68(6), 443-451.
- Beaubien, J. M., & Baker, D. P. (2004). The use of simulation for training teamwork skills in healthcare: How low can you go? *Quality Safety Health Care*, 13(Suppl 1), i51-i56. doi:10.1136/qshc.2005.009845
- Berryman, D. R. (2012). Augmented reality: a review. *Medical reference services quarterly*, 31(2), 212-218.
- Bolman, L. G., & Deal, T. E. (2013). *Reframing Organizations: Artistry, Choice, and Leadership*. San Francisco: Jossey-Bass.
- Bonnetain, E., Boucheix, J.-M., Hamet, M. & Freysz, M. (2010), Benefits of computer screen-based simulation in learning cardiac arrest procedures. *Medical Education*, 44, 716-722. doi: 10.1111/j.1365-2923.2010.03708.x
- Boud D., Walker D., & Keogh, R. (1985). Promoting reflection in learning: a model. In Boud, Walker, Keogh (eds). *Reflection: Turning experience into Learning*. London, England: Kogan Page 3, 18-40.

- Boyd, E. M., & Fales, A. W. (1983). Reflective learning key to learning from experience. *Journal of Humanistic Psychology*, 23(2), 99-117.
- Bray, J., & Howkins, E. (2006). Facilitating interprofessional learning in the workplace: a research project using the Delphi technique. *Work Based Learning In Primary Care*, 4(3), 223-235.
- CISL (Center for Immersive and Simulation-based Learning). (2014). *Part-Task Trainers*. Retrieved from [http://cisl.stanford.edu/what\\_is/sim\\_modalities/phys\\_trainers.html](http://cisl.stanford.edu/what_is/sim_modalities/phys_trainers.html).
- Collaborative, I. E. (2011). *Team-based competencies: building a shared foundation for education and clinical practice*. Washington, DC: Interprofessional Education Collaborative.
- Cook, D. A., Hatala, R., Brydges, R., Zendejas, B., Szostek, J. H., Wang, A. T., Erwin, P., & Hamstra, S. J. (2011). Technology-enhanced simulation for health professions education: a systematic review and meta-analysis. *Jama*, 306(9), 978-988.
- Cook, D. A., Brydges, R., Hamstra, S. J., Zendejas, B., Szostek, J. H., Wang, A. T., Erwin, P., & Hatala, R. (2012). Comparative effectiveness of technology-enhanced simulation versus other instructional methods: a systematic review and meta-analysis. *Simulation in Healthcare*, 7(5), 308-320.
- Cooper Ph. D, M. D. (2000). Towards a model of safety culture. *Safety Science*, 36(2), 111-136.
- Cowie N, Premkumar K, Bowen A, Kuling S, Kawchuk J, Rooney M, Morris G, Burbridge M, Martel J, Sivertson J, Campbell D, Coupal C, & Boechler K. (2012). *Teamwork and Communication in Acute Care: A Teaching Resource for Health Practitioners*. MedEdPORTAL Publications. Available from: <https://www.mededportal.org/publication/9109>  
[http://dx.doi.org/10.15766/mep\\_2374-8265.9109](http://dx.doi.org/10.15766/mep_2374-8265.9109)
- Cram, R. S., & Sime, J. A. (2014). Improving Safety Culture Understanding Using a Computerised Learning Environment. Achieving Sustainable Construction Health and Safety. *Professional Safety*, 52-61 Thomas, R (2003). – The JeLSIM Perspective. Retrieved from <http://www.simulationfirst.com/s1.html>
- D'amour, D., & Oandasan, I. (2005). Interprofessionality as the field of interprofessional practice and interprofessional education: An emerging concept. *Journal of interprofessional Care*, 19(S1), 8-20.
- Decker, S., Sportsman, S., Puetz, L., & Billings, L. (2008). The evolution of simulation and its contribution to competency. *Journal of Continuing Education in Nursing*, 39(2), 74-80.
- De Freitas, S., & Oliver, M. (2006). How can exploratory learning with games and simulations within the curriculum be most effectively evaluated? *Computers & Education*, 46(3), 249-264.
- Dictionary-Complete, C. E. (1979). Unabridged 10th Edition 2009© William Collins Sons & Co. Ltd. Retrieved from <http://dictionary.ference.com/browse/>
- Dictionary. com. Lexico LLC., 2002.
- Dictionaries, O. (2010). *Oxford dictionaries*. Oxford University Press. Retrieved from <http://oxforddictionaries.com/definition/english/VAR>

- Dictionary, M. W. S. C. (1996). Merriam-Webster. *Incorporated*, 10th edition edition.
- Dieckmann, P., & Rall, M. (2008). Designing a scenario as a simulated clinical experience: The TuPASS scenario script. *Clinical simulation: Operations, Engineering, and Management*, 541-550.
- Dieckmann, P., Gaba, D., & Rall, M. (2007). Deepening the theoretical foundations of patient simulation as social practice. *Simulation in Healthcare*, 2(3), 183-193.
- Dieckmann, P., Friis, S. M., Lippert, A., & Østergaard, D. (2012). Goals, success factors, and barriers for simulation-based learning: A qualitative interview study in health care. *Simulation & Gaming*, 43(5), 627-647. doi: 10.1177/1046878112439649
- Dieckmann, P., Phero, J. C., Issenberg, S. B., Kardong-Edgren, S., Østergaard, D., & Ringsted, C. (2011). The first Research Consensus Summit of the Society for Simulation in Healthcare: conduction and a synthesis of the results. *Simulation in Healthcare*, 6(7), S1-S9
- Dieckmann, P., Molin Friis, S., Lippert, A., & Østergaard, D. (2009). The art and science of debriefing in simulation: Ideal and practice. *Medical Teacher*, 31(7), e287-e294.
- Dieckmann, P., Molin Friis, S., Lippert, A., & Østergaard, D. (2009). The art and science of debriefing in simulation: Ideal and practice. *Medical Teacher*, 31(7), e287-e294.
- Drews, F. A., & Bakdash, J. Z. (2013). Simulation training in health care. *Reviews of Human Factors and Ergonomics*, 8(1), 191-234.
- Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44, 350-383.
- Ellaway, R., Poulton, T., Fors, U., McGee, J.B., & Albright, S. (2008). Building a virtual patient commons. *Medical Teacher*, 30(2), 170-4.
- Endsley, M. (1995). Toward a theory of situation awareness in dynamic systems. *Human Factors and Ergonomics Society*, 37(1), 32-64.
- Fanning, R. M., & Gaba, D. M. (2007). The role of debriefing in simulation-based learning. *Simulation in Healthcare*, 2(2), 115-125.
- Freeth, D. S., Hammick, M., Reeves, S., Koppel, I., & Barr, H. (2008). *Effective interprofessional education: development, delivery, and evaluation*. John Wiley & Sons.
- Fuchs, H., State, A., Pisanp, E., Garrett, W., Hirota, G., Livingston, M., Whitton, M., & Pizer, S. (1996). Towards performing ultrasound guided needle biopsies from within a head-mounted display. Proceedings of the Fourth International Conference on Visualization in Biomedical Computing (VBC), 591-600.
- Gaba, D. M. (2004). The future vision of simulation in health care. *Quality and Safety in Health Care*, 13(suppl 1), i2-i10.

- Hamstra, S. J., Brydges, R., Hatala, R., Zendejas, B., & Cook, D. A. (2014). Reconsidering Fidelity in Simulation-Based Training. *Academic Medicine*, 89(3) p. 387-392.
- Hancock, P. A, Vincenzi, D. A., Wise, J. A., & Mouloua, M, (Eds.). (2008). *Human Factors in Simulation and Training*. Aldershot: CRC Press.
- Harden, R. M. (1988). What is an OSCE? *Medical Teacher*, 10(1), 19-22.
- Harper, D. (2007). Online etymology dictionary. (2001). Available from: [www.etymonline.com/index.php](http://www.etymonline.com/index.php).
- Higgins, M., Ishimaru, A., Holcombe, R., & Fowler, A. (2012). Examining Organizational Learning in Schools: The Role of Psychological Safety, Experimentation, and Leadership that Reinforces Learning. *Journal of Educational Change*, 13(1), 67-94.
- Husebø, S. E., Friberg, F., Søreide, E., & Rystedt, H. (2012). Instructional Problems in Briefings: How to Prepare Nursing Students for Simulation-Based Cardiopulmonary Resuscitation Training. *Clinical Simulation in Nursing*, 8, 307-318.
- Issenberg, S. B., Ringsted, C., Østergaard, D., & Dieckmann, P. (2011). Setting a research agenda for simulation-based healthcare education: a synthesis of the outcome from an Utstein style meeting. *Simulation in Healthcare*, 6(3), 155-167.
- Johnson-Russell, J., & Bailey, C. (2010). Facilitated debriefing. In Nehring, W. M., and Lashley, F. R. (Eds.). *High-fidelity patient simulation in nursing education*. Boston: Jones and Bartlett. 369-385.
- Jovanović, J., & Chiong, R. (Eds.). (2014). *Technological and Social Environments for Interactive Learning*. Santa Rosa, CA: Informing Science Press.
- Jovanovic, J., & Chiong, R. (2012). Introduction to the special section on game-based learning: Design and applications. *Interdisciplinary Journal of Information, Knowledge and Management*, 7, 201.
- King, H. B., Battles, J., & Baker, D. P. (2008, August). TeamSTEPPS: Team Strategies and Tools to Enhance Performance and Patient Safety. *Advances in Patient Safety: New Directions and Alternative Approaches*, 3.
- Kneebone, R., Arora, S., King, D., Bello, F., Sevdalis, N., Kassab, E., Aggarwal, R., Darzi, A. & Nestel, D. (2010). Distributed simulation–Accessible immersive training. *Medical Teacher*, 32(1), 65-70.
- Kneebone, R., Kidd, J., Nestel, D., Asvall, S., Paraskeva, P., & Darzi, A. (2002). An innovative model for teaching and learning clinical procedures. *Medical Education*, 36(7), 628-634.
- Kuiper, R. A., & Pesut, D. J. (2004). Promoting cognitive and metacognitive reflective reasoning skills in nursing practice: self-regulated learning theory. *Journal of Advanced Nursing*, 45(4), 381-391.
- Kyle, R., & Murray, W. B. (2010). *Clinical simulation*. Cambridge, MA: Academic Press.
- Lave, J. (1991). Situating learning in communities of practice. In Resnick, L. B., Levine, J. M., and Teasley, S. D. (Eds.). *Perspectives on socially shared cognition* (pp. 63-82). Washington, D.C.: American Psychological Association.

- Lekalakala-Mokgele, E., & Du Rand, P. P. (2005). A model for facilitation in nursing education. *Curationis*, 28(2), 22-29.
- Lekalakala-Mokgele, E., & du Randt, P. (2005). Facilitation as a teaching strategy: The experiences of nursing students. *Curationis*, 28(4), 5-11.
- Levine, A. I., DeMaria Jr, S., Schwartz, A. D., & Sim, A. J. (2013). *The Comprehensive Textbook of Healthcare Simulation*. Springer Science & Business Media.
- Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E., & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology*, 85(2), 273.
- McComb, S., & Simpson, V. (2014). The concept of shared mental models in healthcare collaboration. *Journal of Advanced Nursing*, 70(7), 1479-1488.
- McGaghie, W. C., Issenberg, B., Petrusa, E. R., & Scalese, R. J. (2010). A Critical review of Simulation-based Medical Education Research: 2003–2009. *Medical Education*, 44(1), 50-63.
- McGovern, K. T. (1994). Applications of virtual reality to surgery. *BMJ: British Medical Journal*, 308(6936), 1054.
- Meads, G., Ashcroft, J., Barr, H., Scott, R., & Wild, A. (2008). *The case for interprofessional collaboration: In health and social care*. Malden, MA: Blackwell Publishing, Ltd.
- Meakim, C., Boese, T., Decker, S., Franklin, A. E., Gloe, D., Lioce, L., ... & Borum, J. C. (2013). Standards of best practice: Simulation Standard I: Terminology. *Clinical Simulation in Nursing*, 9(6), S3-S11.
- Michael DR, Chen SL. (2005). *Serious games: Games that educate, train, and inform*. Thomson Course Technology.
- Michaelsen, L. K., Parmelee, D. X., & McMahon, K. K. (2008). Team-based learning for health professions education: *A guide to using small groups for improving learning*. Sterling, VA: Stylus Publishing, LLC.
- Murray J. Composing multimodality. (2013). *Multimodal Composition: A Critical Sourcebook*. Boston: Bedford/St. Martin's.
- Nestel, D., Watson, M. O., Bearman, M. L., Morrison, T., Pritchard, S. A., & Andreatta, P. B. (2013). Strategic approaches to simulation-based education: A case study from Australia. *Journal of Health Specialties*, 1(1), 4.
- Nieva, V. F., & Sorra, J. (2003). Safety culture assessment: a tool for improving patient safety in healthcare organizations. *Quality and Safety in Health Care*, 12(suppl 2), ii17-ii23.
- Oren, T. I., Elzas, M. S., Smit, I., & Birta, L. G. (2002, July). Code of professional ethics for simulationists. In *Summer Computer Simulation Conference* (pp. 434-435). Society for Computer Simulation International.
- Ören, T. I. (2000). Responsibility, ethics, and simulation. *Transactions*, 17(4).

- Paige, J. B., & Morin, K. H. (2013). Simulation fidelity and cueing: a systematic review of the literature. *Clinical Simulation in Nursing*, 9(11), e481-e489.
- Palaganas, J. C., Maxworthy, J. C., Epps, C. A., & Mancini, M. E. (Eds.). (2014). *Defining excellence in simulation programs*. China: Wolters Kluwer.
- Panel, I. E. C. E. (2011). Interprofessional Education Collaborative Expert Panel. Core competencies for interprofessional collaborative practice: Report of an expert panel. Interprofessional Education Collaborative, Washington, DC.
- Pazarci., H. (2015). Online Etymology Dictionary. Review of the Faculty of Divinity University of Süleyman Demirel, 100(6 S 21), 177.
- Practice: Simulation Standard I: Terminology. (2013). *Clinical Simulation in Nursing*, 9(6S), S3-S11. <http://dx.doi.org/10.1016/j.ecns.2013.04.001>.
- Proctor, M. D., & Campbell-Wynn, L. (2014). Effectiveness, Usability, and Acceptability of Haptic-Enabled Virtual Reality and Mannequin Modality Simulators for Surgical Cricothyroidotomy. *Military medicine*, 179(3), 260-264.
- Raemer, D., Anderson, M., Cheng, A., Fanning, R., Nadkarni, V., & Savoldelli, G. (2011). Research regarding debriefing as part of the learning process. *Simulation in Healthcare*, 6(7), S52-S57.
- Reeves, S., Zwarenstein, M., Goldman, J., Barr, H., Freeth, D., Hammick, M., & Koppel, I. (2010). The ... Geneva: World Health Organization WHO (2010) Framework for Action on Interprofessional Education and Collaborative Practice.
- Rethans, J. J., Gorter, S., Bokken, L., & Morrison, L. (2007). Unannounced standardised patients in real practice: a systematic literature review. *Medical Education*, 41(6), 537-549.
- Richter, T. & Pawlowski, J. M. (2007, October). The need for standardization of context metadata for e-learning environments. In Proc. of e-ASEM Conference, Seoul, Korea.
- Riley, R. H. (2008). *Manual of simulation in healthcare*. Oxford University Press.
- Robinson, S. (2014). *Simulation: The Practice of Model Development and Use*. Palgrave Macmillan.
- Robinson-Smith, G., Bradley, P., & Meakim, C. (2009). Evaluating the Use of Standardized Patients in Undergraduate Psychiatric Nursing Experiences. *Clinical Simulation in Nursing*, 5(6), e203-e211. doi: 10.1016/j.ecns.2009.07.001.
- Robinson S. (2014). *Simulation: the practice of model development and use*. Palgrave Macmillan.
- Robles-De-La-Torre, G. (2008). *Principles of haptic perception in virtual environments in Human haptic perception: Basics and applications* (pp. 363-379). Birkhäuser Basel.
- Robles-De-La-Torre G. (2006). The importance of the sense of touch in virtual and real environments. *Ieee Multimedia*. 1(3), 24-30.



- Rodgers, C. (2002). Defining Reflection: Another Look at John Dewey and Reflective Thinking. *Teachers College Record*, 104(4), 842-866.
- Rogers, R. (2001). Reflection in Higher Education: A Concept Analysis. *Innovative Higher Education*. 26(1): 37-57.
- Rudolph, J., Simon, R., & Raemer, D. (2007). Which reality matters? Questions on the path to high engagement in healthcare simulation. *Simulation in Healthcare*, 2(3), 161-163.
- Rudolph, J. W., Simon, R., Dufresne, R. L., & Raemer, D. B. (2006). There's no such thing as "nonjudgmental" debriefing: a theory and method for debriefing with good judgment. *Simulation in Healthcare*, 1(1), 49-55.
- Rudolph, J. W., Simon, R., & Raemer, D. B. (2007). Which Reality Matters? Questions on the Path to High Engagement in Healthcare Simulation. *Simulation in Healthcare*, 2(3), 161-163.
- Rudolph, J. W., Simon, R., Rivard, P., Dufresne, R. L., & Raemer, D. B. (2007). Debriefing with Good Judgment: Combining Rigorous Feedback with Genuine Inquiry. *Anesthesiology Clinics*, 25(2), 361-376.
- Rudolph, J. W., Simon, R., & Raemer, D. B. (2007). Which reality matters? Questions on the path to high engagement in healthcare simulation. *Simulation in Healthcare*, 2(3), 161-163.
- Rudolph, J. W., Simon, R., Rivard, P., Dufresne, R. L., & Raemer, D. B. (2007). Debriefing with good judgment: combining rigorous feedback with genuine inquiry. *Anesthesiology clinics*, 25(2), 361-376.
- Rudolph, J. W., Simon, R., Raemer, D. B., & Eppich, W. J. (2008). Debriefing as formative assessment: closing performance gaps in medical education. *Academic Emergency Medicine*, 15(11), 1010-1016.
- Rudolph, J. W., Raemer, D. B., & Simon, R. (2014). Establishing a safe container for learning in simulation: the role of the presimulation briefing. *Simulation in Healthcare*, 9(6), 339-349.
- Satava, R. M. (2011). Future of Modeling and Simulation in the Medical and Health Sciences. In Sokolowski, J. A., and Banks, C. M. (Eds.). *Modeling and Simulation in the Medical and Health Sciences* (pp. 175-194). Hoboken, NJ: John Wiley & Sons, Inc.
- Satava, R. M., Morgan, K., & Sieburg, H. B. (Eds.). (1995). *Interactive Technology and the New Paradigm for Healthcare* (Vol. 18). IOS Press.
- Satava, R. M. (2001). Surgical education and surgical simulation. *World journal of surgery*, 25(11), 1484-1489.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action* (Vol. 5126). Basic books.
- Sieburg, H. B. (1990). Physiological studies in silico. *Studies in the Sciences of Complexity*, 12(2), 321-342.
- Smith-Stoner, M. (2011). Using moulage to enhance educational instruction. *Nurse Educator*, 36, 21-24.
- Sokolowski, J. A., & Banks, C. M. (Eds.). (2011). *Principles of Modeling and Simulation: A Multidisciplinary Approach*. Hoboken, NJ: John Wiley & Sons.
- Sundar, E., Sundar, S., Pawlowski, J., Blum, R., Feinstein, D., & Pratt, S. (2007). Crew resource management and team training. *Anesthesiology clinics*, 25(2), 361=376.



TEL Thesaurus and Dictionary meta-project (<http://www.tel-thesaurus.net>)

Thistlethwaite, J., & Moran, M. (2010). Learning outcomes for interprofessional education (IPE): Literature review and synthesis. *Journal of Interprofessional Care*, 24(5), 503-513.

Thompson, D. V., Hamilton, R. W., & Petrova, P. K. (2009). When mental simulation hinders behavior: The effects of process-oriented thinking on decision difficulty and performance. *Journal of Consumer Research*, 36(4), 562-574.

Tolk, A., Turnitsa, C. D., Diallo, S. Y., & Winters, L. S. (2006). Composable M&S web services for net-centric applications. *The Journal of Defense Modeling and Simulation: Applications, Methodology, Technology*, 3(1), 27-44.

Tsuda, S. T., Scott, D. J., & Jones, D. B. (Eds.). (2012). *Textbook of Simulation: Skills & Team Training*. Ciné-Med Pub.

Tucker, B. (2010). The M&S Workforce Profession. Retrieved from [http://www.scs.org/magazines/2010-04/index\\_file/Files/Tucker.pdf](http://www.scs.org/magazines/2010-04/index_file/Files/Tucker.pdf)

Uys, L. R., Van Rhyn, L. L., Gwele, N. S., McInerney, P., & Tanga, T. (2004). Problem-solving competency of nursing graduates. *Journal of Advanced Nursing*, 48(5), 500-509.

Van de Ridder, J. M., Stokking, K. M., McGaghie, W. C., & Ten Cate, O. T. J. (2008). What is feedback in clinical education?. *Medical Education*, 42(2), 189-197.

Waldner, M. H., & Olson, J. K. (2007). Taking the patient to the classroom: Applying theoretical frameworks to simulation in nursing education. *International Journal of Nursing Education Scholarship*, 4(1).

Watson, K., Wright, A., Morris, N., McMeeken, J., Rivett, D., Blackstock, F., ... & Jull, G. (2012). Can simulation replace part of clinical time? Two parallel randomised controlled trials. *Medical Education*, 46(7), 657-667.

Westli, H. K., Johnsen, B. H., Eid, J., Rasten, I., & Brattebo, G. (2010). Teamwork skills, shared mental models, and performance in simulated trauma teams: an independent group design. *Scandinavian Journal of Trauma, Resuscitation, and Emergency Medicine*, 18(1), 47-54.

WHO Study Group on Interprofessional Education and Collaborative Practice. World Health Organization, Geneva. ([http://www.who.int/hrh/resources/framework\\_action/en/index.html](http://www.who.int/hrh/resources/framework_action/en/index.html). Accessed 8 October 2012)

Zulkepli, J., Eldabi, T., & Mustafee, N. (2012, December). Hybrid simulation for modelling large systems: An example of integrated care model. In *Simulation Conference (WSC), Proceedings of the 2012 Winter* (pp. 1-12). IEEE.

Zyda, M. (2005). From visual simulation to virtual reality to games. *Computer*, 38(9), 25-32.

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