Simulation Based Learning

Presented

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Outlines

- Simulation in medical education
- Simulation based learning
- Why do you use the simulation based learning?
- Types of simulators
- Advantages
- Obstacles
- Challenges

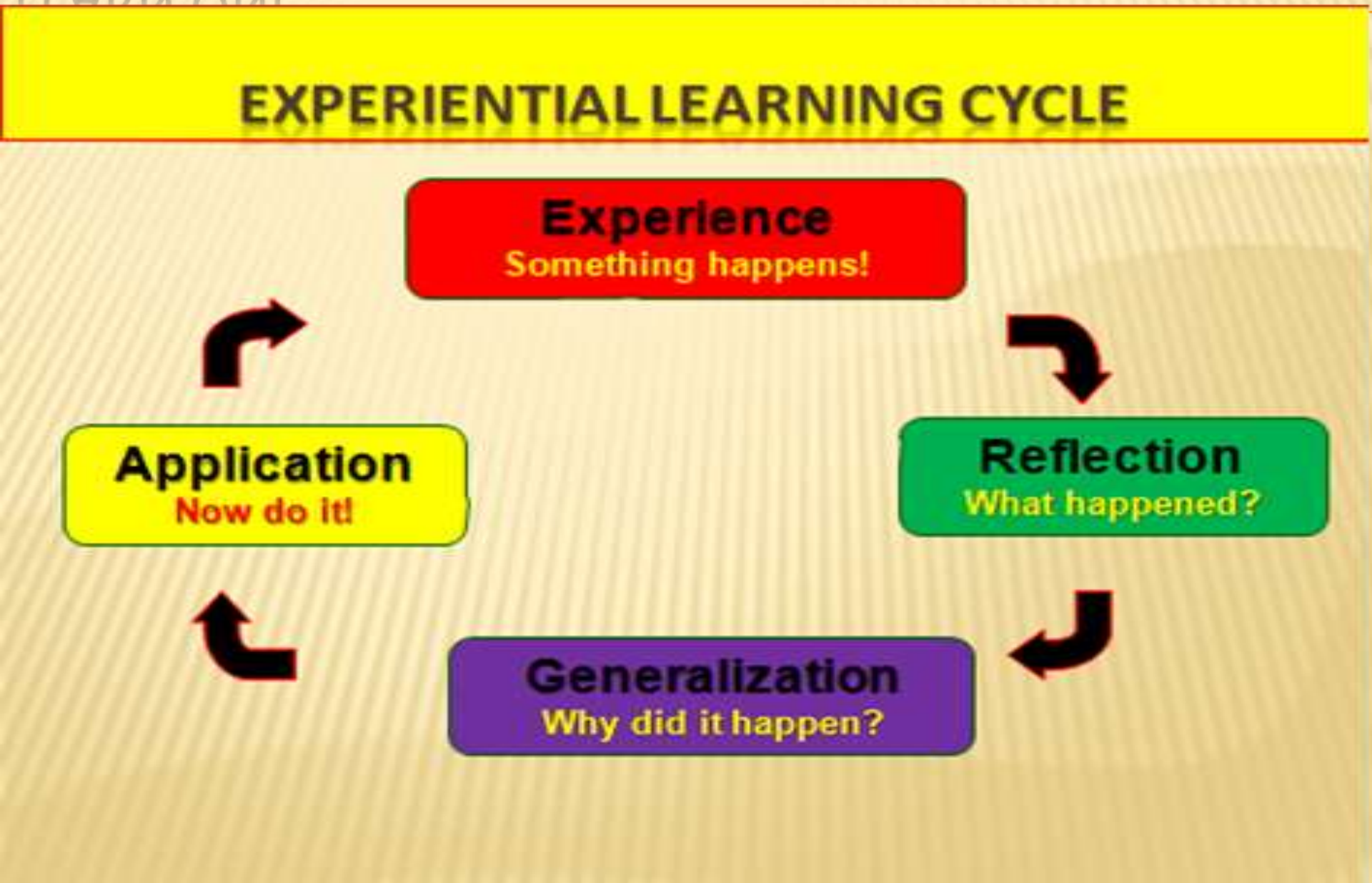
SIMULATION IN MEDICAL EDUCATION

- Simulation is a teaching tool for education, training and improving the quality of student performance.
- It is an assessment tool by assessing the student performance.
- It is the best alternative solution to overcome the problems of using the real patient in the teaching such as: ethical and legal rights, and the lack of critical events that are source of learning.

SIMULATION BASED LEARNING

- It is the field of clinical skills **training** that should precede the field of clinical skills **practice**.
- It is helper and supportive tool not a substitute for the hospital.
- It is transition and preparatory stage.
- It is an active experiential and reflective learning.
- It facilitates skills learning in a safe, efficient, qualified and interactive method through immersion, reflection, feedback and practice without any risk to the patient or the healthcare professionals.

EXPERIENTIAL LEARNING CYCLE "SEE ONE, DO ONE, LEARN ONE"



- It is simple and artificial representation of the real world of the patient experiences.
- It is risk-free learning environment (controlled safe environment)
- It covers knowledge, skills and attitude.
- It is on-demand learning.
- It builds higher levels of competence, quality and confidence with assessment the learner performance.
- It is achieved with a safe care based on the decrease of medical errors and quality improvement of the healthcare.

THE USE OF SIMULATION BASED LEARNING WHY?

It can deal with many problems:-

1-Bad performance of medical graduate in the clinical skills performance and application of problem solving and knowledge in the critical situations.

2-Shortage of clinical sites in some medical schools.

3- The low rate of patients attendance.

4- The limited high risk situations.

5-The limited qualified staff members in hospitals.

ASPECTS OF SIMULATION BASED LEARNING

- Manikin
- Standardized patient
- Role play
- Computer-based Manikin
- Demonstration
- Videotape interaction
- Online activity
- Virtual application.

DOMAINS OF SIMULATION BASED LEARNING

- **Training and assessment of technical procedures**

  By using simple models such as endotracheal intubation, nasogastric tube or urinary catheter insertion
- **Training and assessment of clinical skills performance** by using the standardized patient.
- **Team training in complex situations.**

  The real team may work in the real or simulated environment such as an operating room, delivery room and intensive care unit with a computerized simulator as the patient to acquire the skills of communication, decision-making and leadership (simulation in situ).

TYPES OF SIMULATION

- **Human simulation**

  role play and standardized patient
- **Non-human simulation**

  manikin and based computer simulation.

Compiler driven

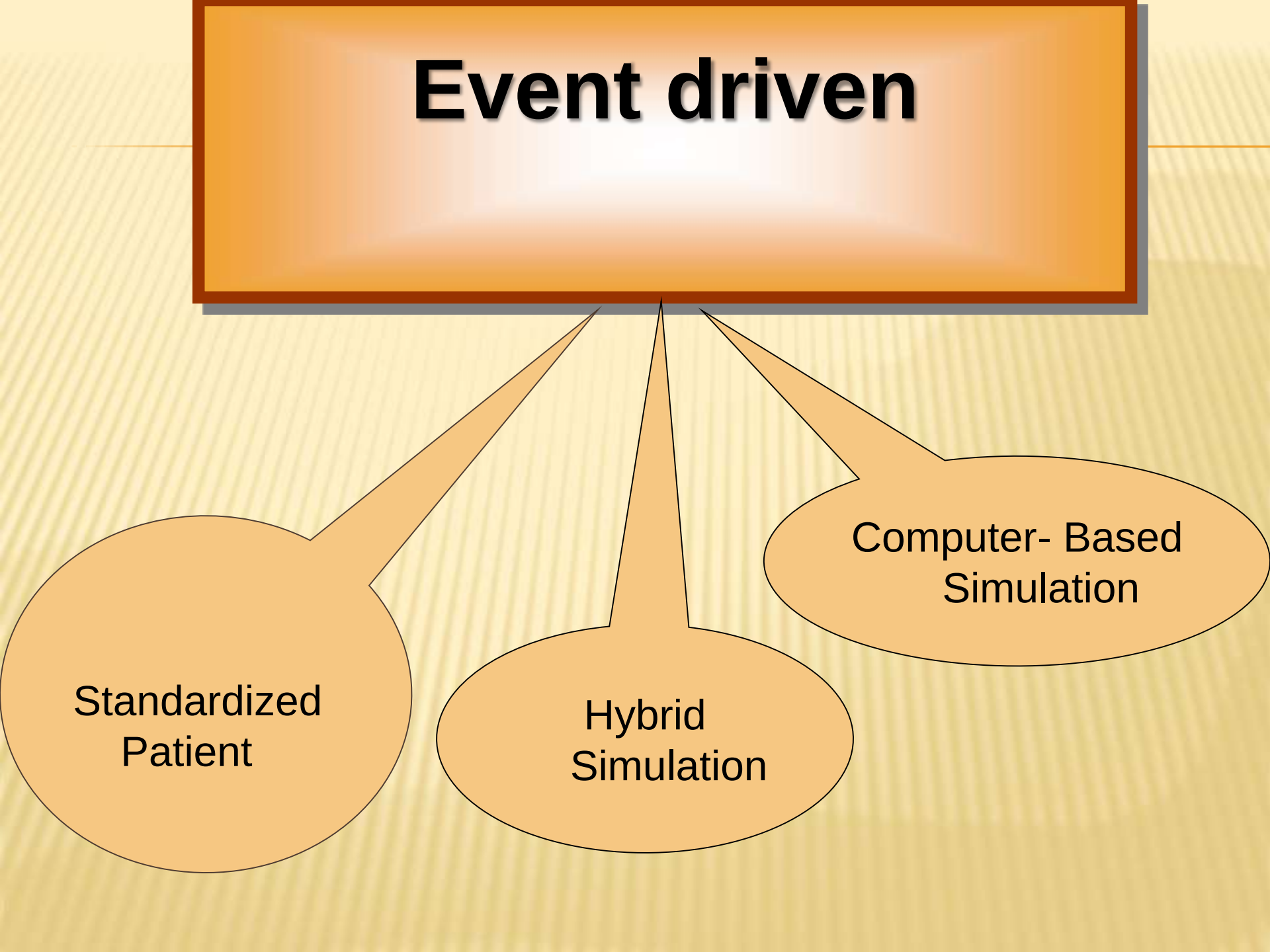
Event driven

Types of Simulators

Compiler driven

It is a specific task trainer representing a part of anatomy for a training on specific procedures such as the arm for intravenous line insertion, leg for suturing or urinary manikin for catheter insertion

Event driven



Standardized Patient

- Standardized patient is an actor who is trained to the role play of the patient for practice the following skills by the trainee

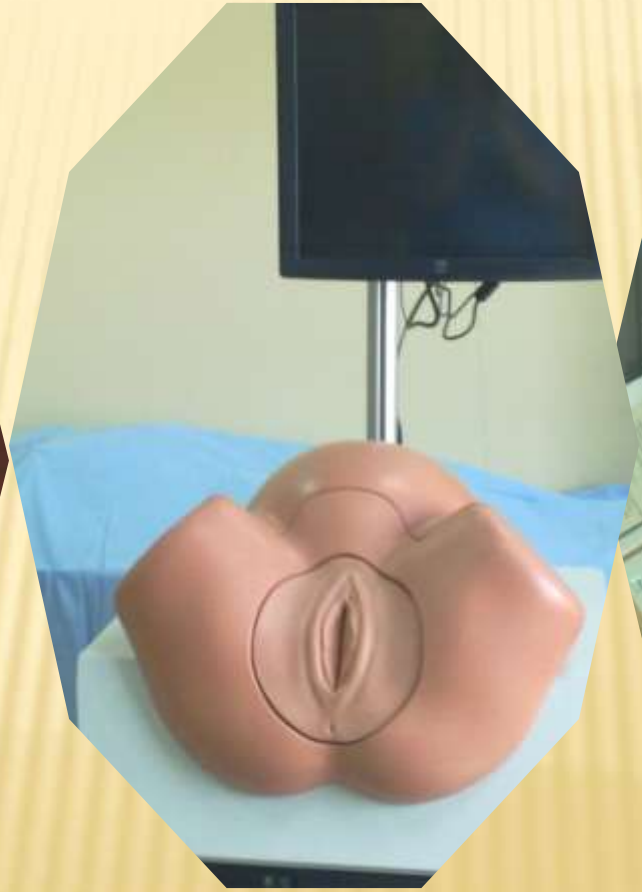
Standardized Patient

Specific Part-Task Trainer

Hybrid simulation

Computer-Based Simulators

- It is different according to the fidelity that reflects the degree of realism and technical complexity.



Fidelity

It is full interactive simulation and suitable clinical environment.

It gives the chance to the trainer to use the equipment and perform a task in a real environment with psychological adaptation for the situation.

TYPES OF SIMULATORS ACCORDING TO FIDELITY

It permits the trainer to be fully immersed with a response to the treatment interventions.

It is a more realistic simulation

It does not allow the trainer to be fully immersed in the situation.

It focuses on single skill.

It allows the trainer to practice in isolation.

1
High-Fidelity

2
Medium Fidelity

3
Low Fidelity

Types of Simulators

Low-fidelity simulators

screen-based text simulators
static manikins

Medium-fidelity simulators

screen-based graphical simulators - mechanical manikins

High-fidelity simulators

full-body manikin that likes the real patient

ADVANTAGES

- Well implementation of the simulation based learning programs give the chance for:-
- the health care costs reduction by improving the patient care and by reducing the training time in the clinical situations.
- It provides a relaxed and safe simulation environment.
- It provides a suitable atmosphere psychologically to make mistakes and its correction during the training .
- It is bridging the gap between theory and practice
- It is an integration between basic and clinical sciences.
- It gives an opportunity to the trainee for practice, repetition and remediation

ADVANTAGES

- It gives the chance for the trainee to assess his own ability and to measure his own progress.
- It fosters the independent work of the trainee.
- It helps the trainee for acquiring many skills such as professionalism, communication, self-evaluation, time management and teamwork.
- It increases the degree of the trainee acceptance by the health workers in the clinical field leading to a good psychological support for him.

High cost of simulators

Lack of studies that validate the use of simulation

Availability of resources (financial, logistic and administrative aspects, and a well-equipped place of the lab

Resistance of staff members

OBSTACLES

we can simulate anything if we have enough money

Lack of skillful Human resources (trainer, planner, technician)

lack of standards for using the simulation in student assessment

CHALLENGES

- It needs good infrastructure support and funding
- Flexible educational programs.
- Well trained human resources stand at the same level of sophisticated technology importance.
- The success of the simulation based learning as an educational tool depends on the curriculum that uses the simulation and how the simulation is used by the qualified trainers for training the trainees whereas the type of simulator fidelity is not a measure for the simulation program success but it is a helping factor.
- high cost and a suitable infrastructure require high investment.

Thank you

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