VRinHE

VIRTUAL REALITY IN HIGHER EDUCATION

MODULE 7
METHODOLOGY FOR IMPLEMENTING VR/AR TECHNOLOGIES - STEP BY STEP

BRAINSTORMING

- What comes to mind when you think of „virtual reality"?

TODAY'S AGENDA

- What is AR/VR/XR?

- Objectives of implementation of AR/VR/XR in higher education

- Teaching models

- Learning theories

- Benefits and challenges

- Metodology of implementation – Step by step

- Hands-on activity

- Quizz

- Reflection

AUGMENTED REALITY – AR

- An integration of digital elements in the real-world environment

- Does not offer interaction between the digital elements and the physical world elements
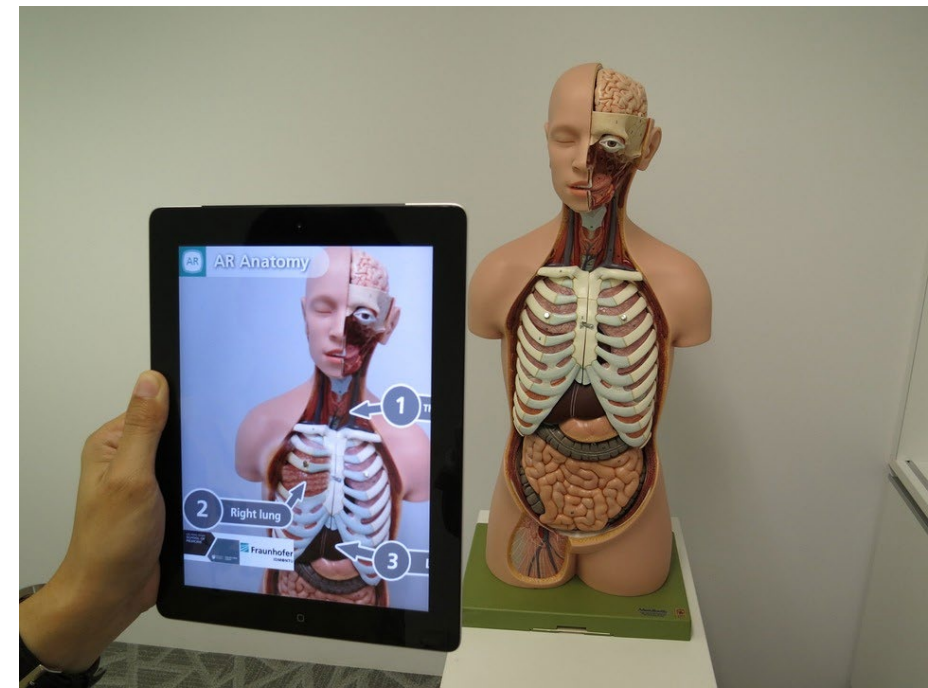
VIRTUAL REALITY – VR

- Allows for an immersive experience also called a
  computer-simulated reality

- Creates an imaginary environment using sounds,
  images and sensations

- The physical world is blocked out – the entire
  focus is on the virtual world

The most immersive language learning experience in VR!? –
YouTube (https://www.youtube.com/shorts/hIT3ZF50XTA)

EXTENDED REALITY – XR

- Includes all environments that are a combination of the physical world and the virtual world through computer-generated content and wearables

- Includes technologies like Augmented Reality (AR), Virtual Reality (VR), Mixed Reality (MR)

OBJECTIVES OF IMPLEMENTATION AR/VR/XR IN HIGHER EDUCATION

Implementing extended reality in higher education allows for:

- supporting teaching and learning processes

- visualization of 3D models and abstract concepts

- simulating real-time situations and providing students with a controlled environment for practice and experimentation

TEACHING MODELS

AR/VR technologies are implemented in HE curricula in the following forms:

- **Hands-on practice** – as an addition after theoretical lessons

- **Virtual lectures** with real-time participation as avatars

- **Asynchronous learning** – as supportive material for practicing or as feedback and guidance to trainees' individual learning process

- **Visual aids during lecture** – to visualize abstract or complex concepts

LEARNING THEORIES – VIRTUAL REALITY

The implementation of VR in higher education is based on the

Constructivist Learning Theory, which includes different approaches:

- active learning

- experiential learning

- exploratory learning

- game-based learning

LEARNING THEORIES – AUGMENTED REALITY

Augmented reality in higher education learning processes is primarily based on the **Constructivist Learning Theory** as well as the **Situated Learning Theory** and enables the blending of social interactions and learning through active observation, peer coaching and reciprocal teaching.

ADVANTAGES AND CHALLENGES

ADVANTAGES	CHALLENGES
Flexibility in terms of time and place of use	Possibly higher cost (depending on the used technology)
Versatility in fields of use and contents	More effort for the creation of contents
Enriches remote-learning and collaboration	Possibly limited interpersonal contacts
Safer and more efficient trainings	Potential health risks for users
Allows the processing of complex topics	Low percentages of staff educated for the use of AR/VR technologies
Possible gamification	
Less expensive learning materials and trainings	

METHODOLOGY OF IMPLEMENTATION AR/VR IN HIGHER EDUCATION CURRICULAS

Step 1: Identify learning objectives

Step 2: Determine the appropriate AR/VR technology

Step 3: Create learning experiences

Step 4: Integrate the AR/VR context into the curriculum

Step 5: Provide training and support

Step 6: Evaluate the results

METHODOLOGY OF IMPLEMENTATION 1

Step 1: **Identify learning objectives**

- Define objectives of the project through the goals and topics of the course as well as the skills that students should acquire

METHODOLOGY OF IMPLEMENTATION 2

Step 2: **Determine the appropriate AR/VR technology**

- Find the right technology (hardware and software) based on the objectives of the project and the needs and possibilities of the target group

METHODOLOGY OF IMPLEMENTATION 3

Step 3: **Create learning experiences**

- Choose or develop learning scenarios based on the learning goals and the needs of the target group

- Some programmes for AR: Arize, Arloopa, Assemblr

- Some programmes for VR: Aftereffects, Unreal Engine, Unity

METHODOLOGY OF IMPLEMENTATION 4

Step 4: **Integrate the AR/VR context into the curriculum**

- Determine the appropriate place and time to use the AR/VR technology with your students to reach the learning goals

- Keep in mind that the students might need some time to get used to the technology

METHODOLOGY OF IMPLEMENTATION 5

Step 5: **Provide training and support**

- Using AR/VR in a learning setting includes providing guidance on how to use the technology, troubleshooting issues, and answering any questions

METHODOLOGY OF IMPLEMENTATION 6

Step 6: **Evaluate the results**

- The evaluation includes measuring the impact of the AR/VR learning experiences on student learning outcomes, gathering feedback from students and instructors, and identifying areas for improvement

HANDS ON ACTIVITY

Find an example for the practical implementation for one of these AR/VR practices in a higher education curriculum.

Create a poster and a short presentation.

- Group 1: Virtual Labs

- Group 2: Immersive Learning

- Group 3: Simulation-Based Learning

- Group 4: Virtual Field Trips

- Group 5: Collaborative Learning

HANDS ON ACTIVITY

When creating the poster and presentation, ideate on these questions:

1. Which scientific field could benefit from this method?

2. How can this approach be integrated into the curriculum in this example?

3. What are the benefits of implementing this method in the curriculum?

4. What are the challenges that could arise when implementing this method?

5. How could those challenges be handled?
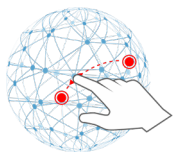
TEST YOUR KNOWLEDGE

Use the test below to check what

you learned today!

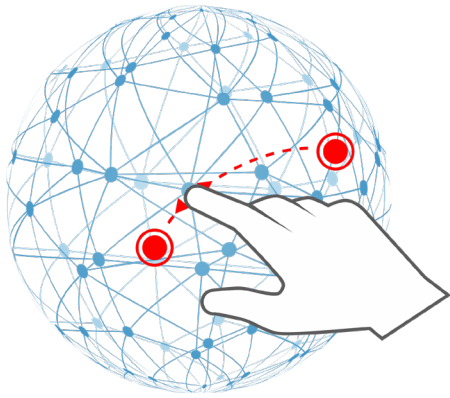Link: https://forms.gle/VqWy36JfDDZovuJb9

REFLECTION

Talk to the person next to you about the following questions:

- What was the most important thing you learnt today?

- What is your impression of the integration of VR in higher education?

- Can you imagine VR being used in a higher education institution that you are part of? How could that look like?

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THANK YOU!

FIND OUT MORE:

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GET IN TOUCH:
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