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# INCLUSION IN THE VIRTUAL ERA: NEW HORIZONS OF ACCESSIBILITY

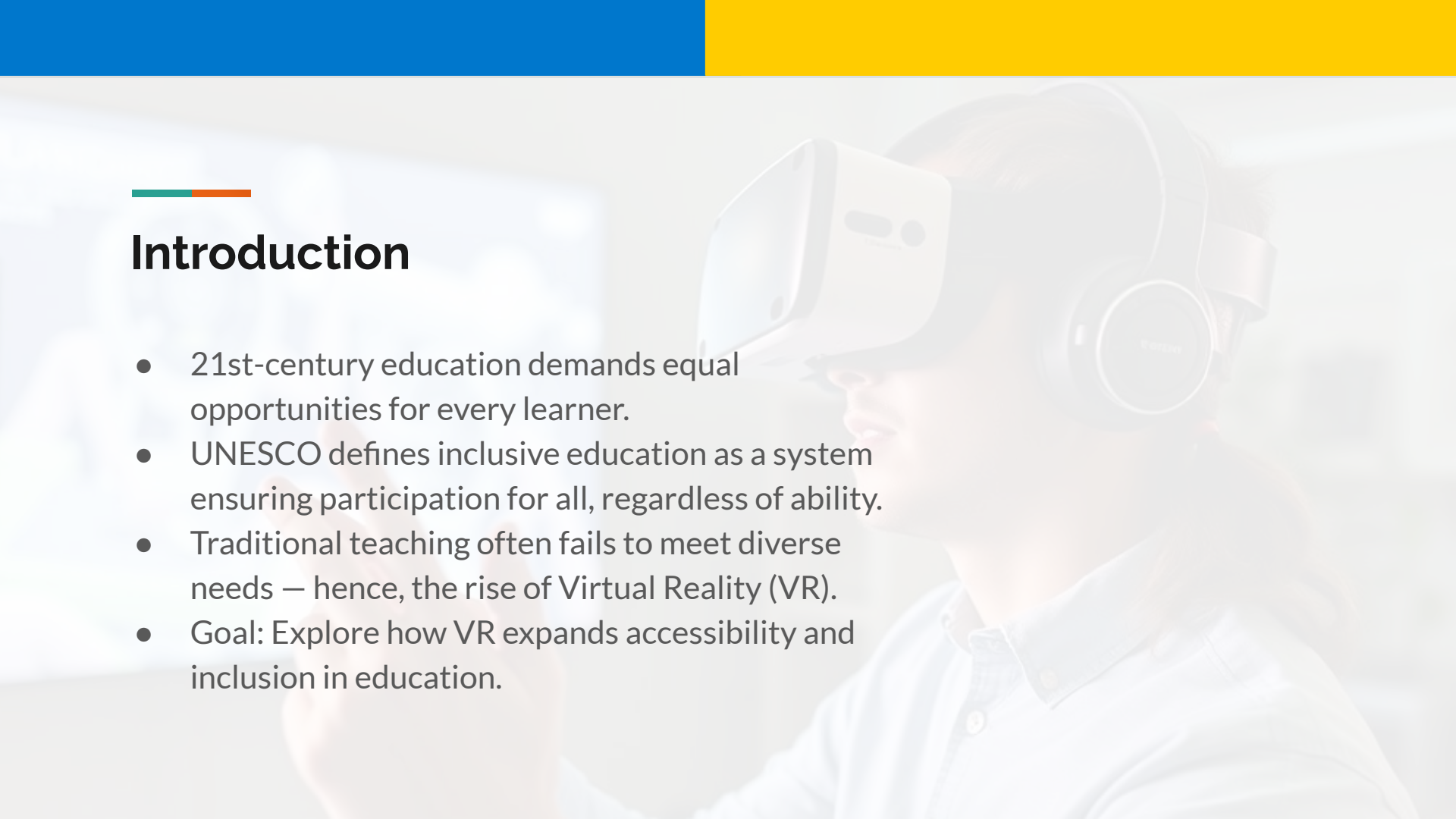


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## Introduction

- 21st-century education demands equal opportunities for every learner.
  - UNESCO defines inclusive education as a system ensuring participation for all, regardless of ability.
  - Traditional teaching often fails to meet diverse needs — hence, the rise of Virtual Reality (VR).
  - Goal: Explore how VR expands accessibility and inclusion in education.
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# Theoretical Foundations

## Inclusive Education

- Based on equality and non-discrimination.
- Focus on supporting all learners within shared classrooms.
- Goal: Adapt environments for learners with physical, cognitive, or sensory challenges.

## Virtual Reality in Education

- Immersive technology creating presence in 3D environments.
- Enables interaction, safety, and personalization in learning.



## Benefits of VR for Inclusive Learning

- **Visualization:** 3D models enhance understanding.
- **Interactivity:** Learners actively explore and experiment.
- **Safety:** Students can practice in risk-free environments.
- **Motivation:** Gamified experiences increase engagement.
- VR training can accelerate learning **up to 4× faster** (VirtualSpeech).



# Global Case Studies


## Switzerland (ZHAW)

- VR wheelchair simulators for students with mobility challenges.
- Safe space for practicing orientation and navigation.

## USA (Academy of Whole Learning)

- Sensory-controlled VR classrooms for students with autism (ASD).
- Supports emotional regulation, communication, and social skills.





## Other Examples

- **Floreo (USA):** VR app for autism — develops social communication.
- **UK/Europe:** Empathy training via VR storytelling about disability.
- **Romania (2023):** 86% of inclusive educators find VR promising for special education.



## VR for Different Learners

Category	Applications	Benefits
Hearing Impairment	Gesture-based VR, audio-visual simulations	Language and communication training
Visual Impairment	Audio/tactile VR environments	Orientation and spatial awareness
Autism (ASD)	Controlled sensory settings, social practice	Safe repetition and predictability
Physical/Cognitive Disabilities	VR training simulators	Independence and motivation



## Tools and Platforms

❖ **Hardware:** ClassVR, Meta Quest, HTC Vive.

**Software:**

❑ *CoSpaces Edu* – create custom 3D learning scenes.

❑ *Labster* – virtual science labs.

❑ *Floreo* – VR for autism support.

❖ **Inclusive accessories:** Yaw VR Chair, tactile VR gloves.

❖ **DIY VR content:** Using *Insta360* + *CoSpaces* for local lessons.





## Teaching Methodologies

- **Preparation:** Pre-briefing reduces anxiety.
  - **Step-by-step immersion:** Gradual complexity increase.
  - **Reflection:** Discussion after VR sessions to connect with real life.
  - **Individualization:** Personalize VR content per learner.
- Universal Design for Learning (UDL):** Flexibility for diverse needs.



## Challenges & Ethical Issues

- **Access inequality:** High cost of equipment.
- **Teacher readiness:** Lack of training in VR pedagogy.
- **Health & safety:** Risk of motion sickness, isolation.
- **Ethics & privacy:** Sensitive data (eye tracking, reactions).
- **Methodology:** Need for standardized assessment of VR's impact.
- **Technical limits:** Incomplete accessibility for all impairments.



## Future Directions

- Develop affordable and localized VR tools (Ukrainian language).
- Train teachers in inclusive VR pedagogy.
- Combine AI + VR for personalized accessibility solutions.
- Promote global collaboration on inclusive VR projects.



## Conclusion

- VR opens new horizons of accessibility in education.
  - Enhances engagement, empathy, and equity for all learners.
  - Success depends on ethical design, teacher training, and equal access.
  - The virtual era redefines inclusion — making education truly for everyone.
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