



VR TECHNOLOGY IN MEDICAL EDUCATION

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President of RM
Sverdlovsk region
Sverdlovsk region

Relevance and Regulatory Framework



World Economic Forum Forecast

- By 2030, an artificial intelligence revolution is expected in education: organizations will become closer to tech companies.
- The teaching profession will require a deep understanding of digital tools, including virtual reality.



Global and National Statistics



Investments in nursing education resulted in 150% growth of the number of graduates in 2015-2025

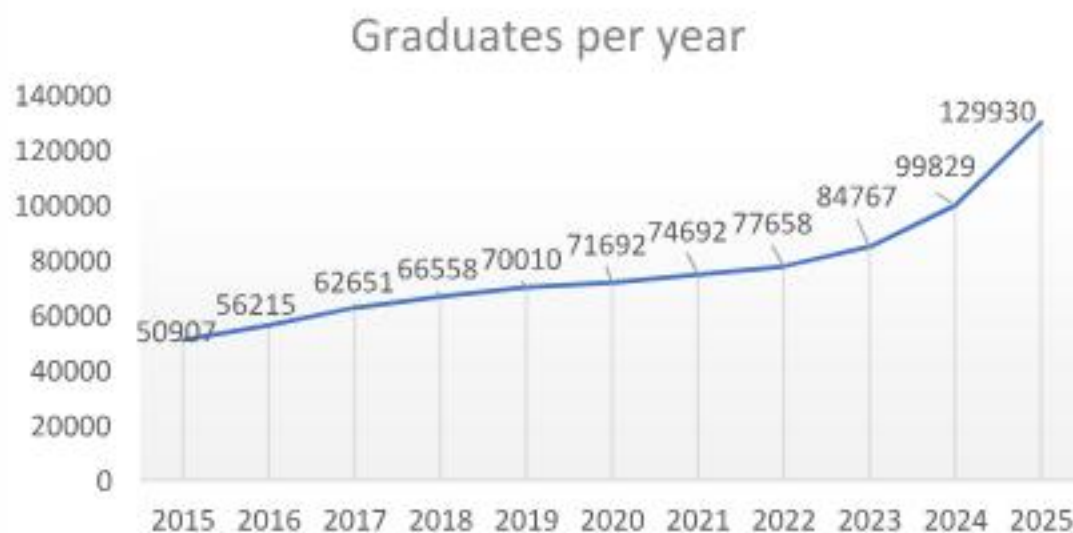


Figure 6.3 Distribution of countries by duration (in years), by WHO region



Basic general
education –
9 years

3 years of
nursing
education

Enter nursing
program at the
age of 14-16

Secondary
education –
12 years

2 years of
nursing
education

Enter nursing
program at the
age of 17-18

What is Virtual Reality?

An environment created using specialized hardware and software that allows for maximum immersion in the subject matter and interaction with it.



VR in the Educational Standard

VR is becoming firmly integrated into daily educational practices.



VR as Part of Practical Training

As digital transformation progresses, VR platforms are becoming an integral part of learning.

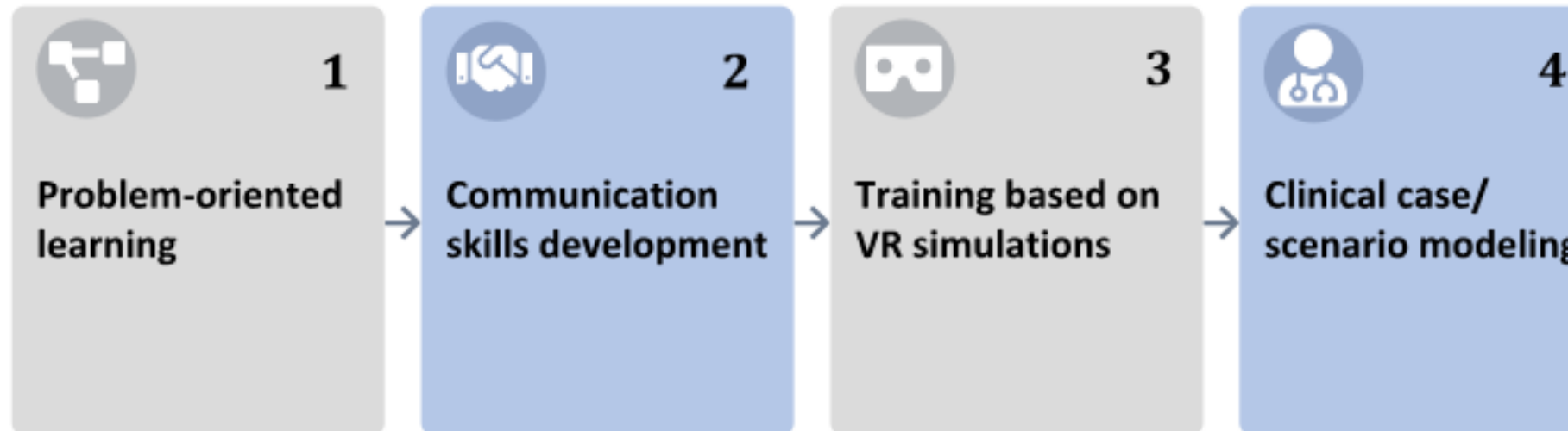


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VR in Medical Specialist Training

Training in medical colleges has shifted from mechanical memorization of facts to developing patient care strategies.



Devices for VR-learning

1

VR - Devices

VR Headsets:
Controlled via a
joystick or controller



2

Mobile VR

The smartphone
display is used as the
headset screen



3

Smartphones and Tablets

Interaction via
touchscreen



Virtual Reality Concept



Scenario creation
(manipulations,
interventions, emergencies)



Image transmission to the
student's senses



Student action
movements,



Realistic

What is seen in the headset
closely resembles real life —
this allows for an authentic
experience.



Safe

Whatever happens in VR is
not real. The biggest risk is
stubbing your pinky toe on a
table.



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What is Studied with VR?



Anatomy

- Structure of the body and its systems: musculoskeletal, respiratory, and internal organs.
- Real-time physiological processes.
- Tissues and processes at cellular and molecular levels.



Nursing

- Taking blood samples
- Intravenous injection.
- Blood pressure measurement.
- Assistance in emergencies and injuries



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- Stop
- Seiz
- Card (CPR)



Teacher Competencies for Working with VR



Technical Knowledge

Setting up and using VR glasses, launching software, managing controllers and gestures



VR Pedagogical Methods

Understanding how VR is applied in education and research.



Env

Creating v
environm
education



Assessment and Feedback

Evaluating student progress, exporting results to office applications.



Technical Support

Assisting students with technical questions regarding VR glasses use.



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VR-training advantages

- Reducing the gap between theory and practice.
- Repeatedly practicing procedures until they become second nature.
- Modeling extreme and rare situations.
- Personalization of learning, individual schedules.
- Standardized approach to student assessment.



90%

of students feel confident after VR training in real practice situations.

-30%

of training cost and consumption of resources required.

Reduced workload for teachers and students with dangerous substances and high student engagement.

The Main Point: Do Not Lose Touch with Reality

An error in a VR scenario is an opportunity to learn. The same error in real life carries a high price. The learner must always clearly separate these two experiences.



Mandatory Debriefing

After every scenario — analysis of actions, errors, and their real consequences for the patient



Different Simulator Modes

Demonstration → training → simulation → reality
boundary between practice and reality



Risk Differentiation

The teacher explicitly addresses the difference between virtual and real consequences of an error



VR complements, but does not replace

Practical training on manikins and real patients under supervision remains essential

Key Takeaways

- ❑ Implementing VR in medical education has triggered a long-term trend shaping the development of the educational process.
- ❑ The technology is safe and reduces risks for patients.
- ❑ The impact of VR is just beginning to be fully realized due to methodological, technical, and manufacturing breakthroughs in recent years.
- ❑ In the future, VR will continue to gain popularity and will be able to help millions of people worldwide.





**THANK YOU
FOR YOUR
ATTENTION**



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