Fachhochschule des Mittelstands

Future Classroom

Workshop University of Montenegro

4.6.26

Session 1:

13.00 – 15.00 – Changing role of education, technology and the future classroom

Prof. Dr. Rulf J. Treidel

European Commission

SPHERE Support and Promotion for Higher Education Reform Experts

UCG Univerzitet Crne Gore

UDG

Changing role of education, technology and the future classroom

1. Introduction: Why Education must Change
2. Future Skills
3. Development of Higher Education
4. The increasing role of technology in education
5. Trends and prerequisites for shaping the future classroom: Some examples
6. Chances for assessment

1. Why Education must change

- Higher Education Transformation
  - Higher education is undergoing profound changes in purpose, structure, and practice due to global pressures.
- Global Context Challenges
  - Universities face environmental disruption, technological acceleration, social inequality, and geopolitical tension.
- Role in Social Transformation
  - Universities are expected to drive social change and educate students for uncertain futures.
- Demand for Relevance and Impact
  - Students and society demand clearer evidence of higher education's relevance and societal impact.

https://unesdoc.unesco.org/ark:/48223/pf0000397582

1. Why Education must change?

- **The world is changing rapidly:**
  - Half of the jobs that will exist in 10 years do not even exist today (WEF, 2023).
  - Climate change, AI, and globalization require new skills such as critical thinking and intercultural competence.
- **Students expect more:**
  - 80% of today's students want practical applications and individualized learning paths (Deloitte, 2024).
  - They ask: 'Why am I learning this? What do I need this for?'
- **Society needs different kinds of graduates:**
  - Employers are looking not only for expertise, but also for problem-solvers, team players, and creative minds.

1. Why Education must change?

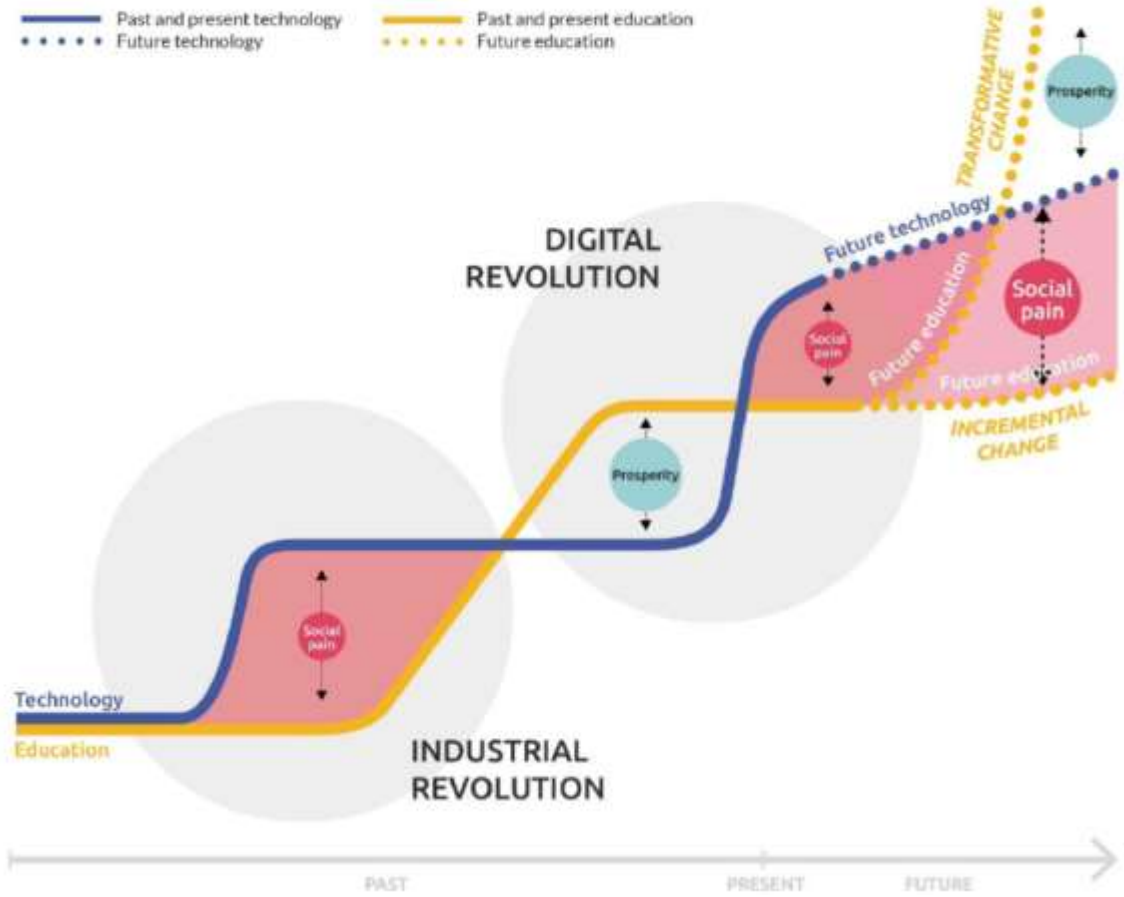
"Education is no longer about teaching students something alone; it is more important to be teaching them to develop a reliable compass and the navigation tools to find their own way in a world that is increasingly complex, volatile and uncertain. Our imagination, awareness, knowledge, skills and, most important, our common values, intellectual and moral maturity, and sense of responsibility is what will guide us for the world to become a better place"

Andreas Schleicher, Director of the OECD Directorate for Education and Skills.

(OECD FUTURE OF EDUCATION AND SKILLS 2030, OECD 2019, p. 5)

1. Why Education must change?

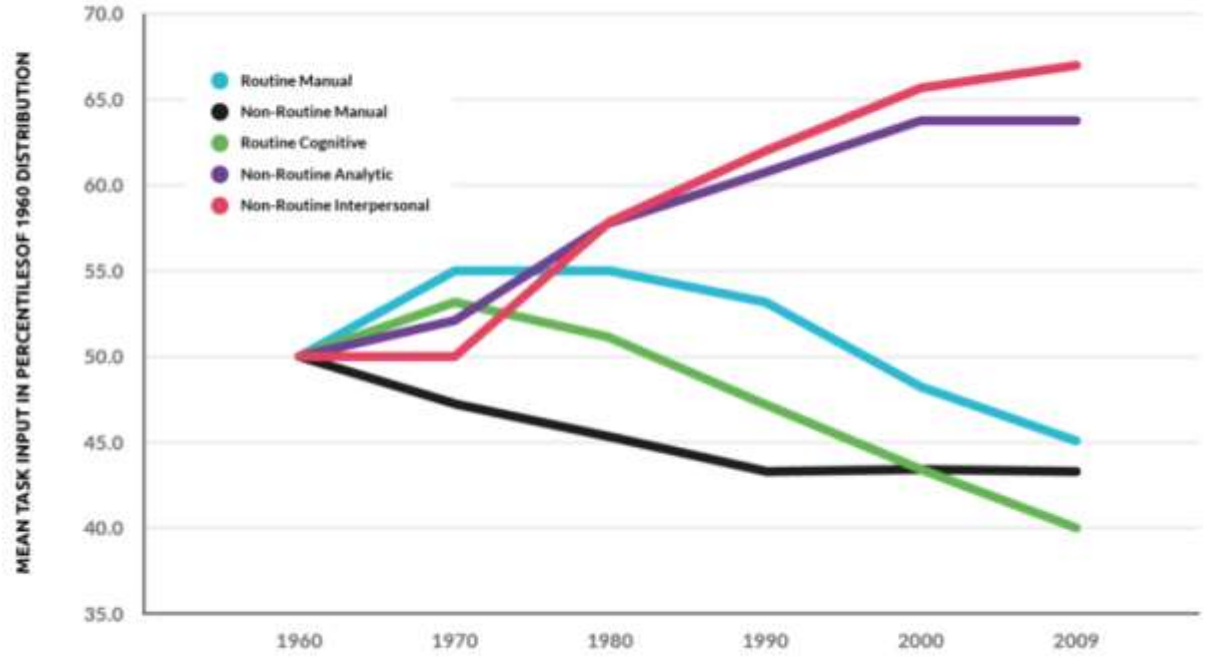
Figure 2. The race between technology and education



OECD FUTURE OF EDUCATION AND SKILLS 2030, OECD 2019, p. 7

1. Why Education must change?

Figure 3. Change since 1960 in prevalence of types of tasks required for work



Note: This figure shows how the task composition performed by US workers has changed from 1960 to 2009.
Source: Autor and Price (2013) in Bialik and Fadel (2018[7]), p.7.

OECD FUTURE OF EDUCATION AND SKILLS 2030, OECD 2019, p. 8

1. Why Education must change?

- Global Megatrends
- Demographic Shifts
- Globalisation 2.0
- Climate Change & Green Transition
- Remote & Hybrid Work Models
- Automation Trends
- AI & Machine Learning
- Digital Plattforms

1. Why Education must change?

Global Megatrends

- Demographic change, urbanization, climate crisis, digitalization, geopolitics
- Trends interact and amplify each other – creating uncertainty and non-linear change
- UNESCO: “No trend is destiny” – policy and education can still shape outcomes (UNESCO, Reimaging our Future together, 2021, S. 1)

1. Why Education must change?

Demographic Shifts

- Ageing populations in many OECD countries – pressure on pensions and health systems
- Youth bulges in parts of Africa and Central Asia – risk of unemployment or brain drain
- Migration and mobility reshaping talent flows and higher education enrolment

1. Why Education must change?

Globalization 2.0

- Shift from trade in goods to trade in services, data and ideas
- Regional blocs, “friend-shoring” and supply-chain reconfiguration
- Global competition for talent – remote work expands labour markets beyond borders

Climate Change & Green Transition

- Climate change already affecting livelihoods, productivity and migration
- Net-zero and green transition creating new sectors and “green skills” demand
- ILO and OECD highlight need for just transition and reskilling in carbon-intensive regions

1. Why Education must change?

Remote & Hybrid Work Models

- COVID-19 accelerated remote and hybrid work in knowledge-intensive sectors
- Global talent pools: firms can hire across borders; workers compete globally
- Implications for graduates: digital collaboration, self-management and cross-cultural skills

1. Why Education must change?

Automation Trends

- Robotics and software automation replacing routine manual and cognitive tasks
- OECD: ~9–27% of jobs automatable or at high risk across member countries
- New jobs emerge in design, maintenance, data and human-centred roles

1. Why Education must change?

AI & Machine Learning

- Automation Trends Generative AI can now produce text, code, images and even scientific drafts
- WEF: employers expect ~39% of core skills to change by 2030 due to AI and other trends
- AI is a general-purpose technology – transforming most disciplines and professions

1. Why Education must change?

Digital Platforms

- Platforms organise markets (work, learning, finance, mobility, entertainment)
- Winner-takes-most dynamics: a few platforms coordinate global ecosystems
- Graduates need platform literacy: understanding algorithms, data and governance

2. Future Skills

Question: *"What do you think is the most important skill students will need in 2030?"*

2. Future Skills: The 4 Cs

- Critical Thinking — questioning and analysing information.
- Creativity — developing new ideas.
- Communication — expressing ideas clearly and convincingly.
- Collaboration — working effectively in teams, even across cultures

2. Future Skills: Which Future Skills Are Most Relevant Across All Sectors?

- Critical thinking & problem solving — essential for dealing with uncertainty and complexity.
- Communication & collaboration (across disciplines, cultures, generations) — important for teamwork, global cooperation, social inclusion.
- Digital & data literacy — as digitalisation affects almost all sectors.
- Sustainability & environmental awareness — given global challenges such as climate, environment and social justice.
- Creativity, innovation & adaptability — to respond flexibly to new problems and opportunities.
- Self-regulated learning / lifelong learning & reflective ability — because demands change rapidly.
- Empathy, socio-emotional competence & ethical awareness — essential for peaceful coexistence and global responsibility.
- These skills are relevant for education, economy, society, environment and politics according to all examined frameworks.

2. Future Skills: Comparison of Frameworks

Framework / Organisation	Focus / Emphasis	Typical Competencies / Skills
• **UNESCO (Futures)**	Holistic education, future readiness, social/emotional & hybrid skills	Social, emotional, cognitive, hybrid competencies; responsibility, adaptability
OECD (Learning Compass 2030)	Preparation for uncertainty, sustainable learning, reflection & agency	Digital & data literacy; critical & creative thinking; empathy; self-regulation; competence in complex contexts
EU (Key Competences & DigComp)	Lifelong learning, citizenship, employability, digital transformation	Digital & technological, literacy/numeracy, social & intercultural, entrepreneurial, civic & cultural competencies, data literacy

2. Future Skills and the European Skills Agenda

- **Strategic initiative of the European Commission**
- **Objective: Aligning the skills of European citizens with the demands of the digital and green transitions**
- **Relevance for the higher education sector:**
    1. Integrating modern technologies
    2. Fostering future skills
    3. Enabling flexible learning formats
    4. Transnational cooperation
    5. Industry-academia collaboration

2. Future Skills

- **Digital Literacy**
- **AI Literacy**
- **Human Machine Cooperation**

2. Future Skills: Implications for Higher Education

- Universities should not only teach subject knowledge but systematically develop Future Skills (e.g., through interdisciplinary projects, sustainability education, digital education, teamwork, reflection).
- Curricula and teaching methods need flexibility, openness to new competencies and continuous adaptation — in line with lifelong learning.
- Partnerships with society, economy and environmental stakeholders (e.g., NGOs, communities, industry) help develop skills that are practice-oriented and context-relevant.
- Higher education becomes a tool for societal transformation — not only for labour markets but also for sustainable development, democracy and global responsibility.

2. Future Skills

What is your opinion:

- Are Future Skills relevant for your Universities?
- Do you already consider Future Skill for your course development?
- Are there difficulties in changing for the future?
- What is about Cooperation between Universities and the Industry?

3. Development of Higher Education: Expansion and Diversification of Higher Education

- **Global Enrollment Growth**
  - Higher education enrollment has surged to 269 million students worldwide, transforming it into a mass system.
- **Institutional Diversity**
  - A wide variety of institution types coexist, including public, private, research-focused, and teaching-centered universities.
- **Challenges of Expansion**
  - Rapid growth creates challenges in quality assurance, governance, equity, and resource management.
- **Inclusive Teaching Innovations**
  - Innovative, scalable, and inclusive teaching methods are essential to meet diverse learner needs and reduce inequalities.

3. Development of Higher Education: A Transforming Knowledge Landscape

- **Expanding Knowledge Production**
  - Knowledge is rapidly expanding through digital technologies and global research networks beyond traditional universities.
- **Challenges to Academic Authority**
  - New actors like industry and online communities challenge universities' monopoly on expertise and knowledge dissemination.
- **Critical Thinking Importance**
  - The vast amount of information requires enhanced critical thinking and discernment from students and researchers.
- **Future Classroom Pedagogies**
  - Future education emphasizes inquiry, interpretation, and responsible information use over passive content consumption.

3. Development of Higher Education: Technology, Power, and Knowledge Governance

- **Influence on Knowledge Ecosystems**
  - Technology and private funding shape research agendas and dissemination, impacting knowledge ecosystems globally.
- **Governance Challenges**
  - Governance questions arise on who controls research funding, publication, and value in knowledge production.
- **Educational Implications**
  - Students must critically engage with technology, understanding ethical and social facets of digital knowledge production.

3. Development of Higher Education: Evolving Learning Pathways

- **Flexible Admission and Recognition**
  - Alternative admissions and recognizing prior learning offer learners varied entry points into higher education.
- **Increased Mobility Across Institutions**
  - Learners now move more freely between institutions and countries, enhancing educational opportunities and diversity.
- **Adapting Curriculum and Support**
  - Universities must redesign curricula and support to meet diverse learner needs and varied learning speeds.
- **Future Classroom Implications**
  - Future classrooms require environments that accommodate diverse goals, entry points, and maintain learning quality.

3. Development of Higher Education: From One-Time Education to Lifelong Learning

- **Lifelong and Life-wide Learning**
  - Education extends beyond one phase to span entire careers and personal growth stages.
- **Flexible Learning Formats**
  - Microcredentials and modular programs adapt education to labor market changes and personal goals.
- **Challenges for Traditional Institutions**
  - Institutions face challenges adapting degree programs to more responsive and inclusive education models.
- **Future Classroom Pedagogies**
  - Self-directed learning and adaptability enable continuous updating of knowledge and skills.

3. Development of Higher Education: Pedagogical Transformation

Critique of Traditional Pedagogy

Traditional listen-and-repeat methods are criticized for limiting student engagement and creativity in higher education.

Learner-Centered Approaches

Shift towards active learning emphasizes creativity, collaboration, and problem-solving for relevant skill development.

Redefining Academic Rigor

Academic rigor is maintained by engaging students as active participants in knowledge construction.

4. The increasing role of technology in education: AI and the Future of Learning

AI's Dual Role in Education

AI can either substitute teachers or augment human capabilities to enhance learning experiences.

Risks of Uncritical AI Adoption

Uncritical use of AI risks widening inequalities by favoring expert users over novices.

Supporting Deep and Ethical Learning

Integrating AI should promote deep learning, critical thinking, and ethical awareness in the future classroom.

4. The increasing role of technology in education: Learning as Process, Not Just Product

- **Process-Oriented Learning**
  - Learning should emphasize development of capabilities, judgment, and understanding beyond just final credentials.
- **Critical and Ethical Thinking**
  - Critical and ethical thinking skills are essential to navigate misinformation and rapid societal changes.
- **Future Classroom Assessment**
  - Assessment should value reflection, inquiry, and growth over time rather than just grades or outputs.
- **Supportive Learning Environments**
  - Learning environments should encourage experimentation, dialogue, and continuous growth for students.

4. The increasing role of technology in education:

Technology as Education Driver

Technology drives innovation in teaching, learning, and assessment in modern universities worldwide.

Practical Focus

How to integrate technology effectively in education.

Blended Learning Environments

Combining physical and virtual spaces creates flexible blended and digital learning environments.

Focus on Quality and Accessibility

Technology enhances education quality, accessibility, and effectiveness as a support system.

4. The increasing role of technology in education: How Technology is Transforming Learning Processes

Expanded Access to Education

Digital platforms expand education access by overcoming geographical and financial barriers worldwide.

Individualized Learning Experiences

Adaptive learning systems personalize content and pace, increasing student motivation significantly.

Cross-Border Collaboration

Virtual tools facilitate international seminars, joint research, and collaborative classrooms seamlessly.

Innovative Learning Formats

Flipped classrooms and gamification promote active engagement and problem-solving in education.

4. The increasing role of technology in education: Learning Management Systems in Higher Education

Tool	Purpose	Link	Typical Use
Moodle	Full LMS	moodle.org	Universities worldwide
Google Classroom	Simple LMS	classroom.google.com	Schools and universities
Canvas (Free)	Feature-rich LMS	canvas.instructure.com	Individual educators

4. The increasing role of technology in education: Video Tools and the Flipped Classroom Model

Tool	Purpose	Link	Example
OBS Studio	Screen recording	obsproject.com	University of Edinburgh
Loom	Easy video creation	loom.com	Lecturers worldwide

4. The increasing role of technology in education: Collaboration and Interaction Tools

Tool	Purpose	Link	Example
Miro	Digital whiteboards	miro.com	Aarhus University
Padlet	Digital pinboards	padlet.com	Schools and universities
Kahoot!	Live quizzes	kahoot.com	University of Oslo

4. The increasing role of technology in education: Assessment and Feedback Technologies

Tool	Purpose	Link
Kahoot!	Live quizzes	kahoot.com
Mentimeter	Live polling	mentimeter.com
Google Forms	Surveys	forms.google.com

5. Trends and prerequisites for shaping the future classroom

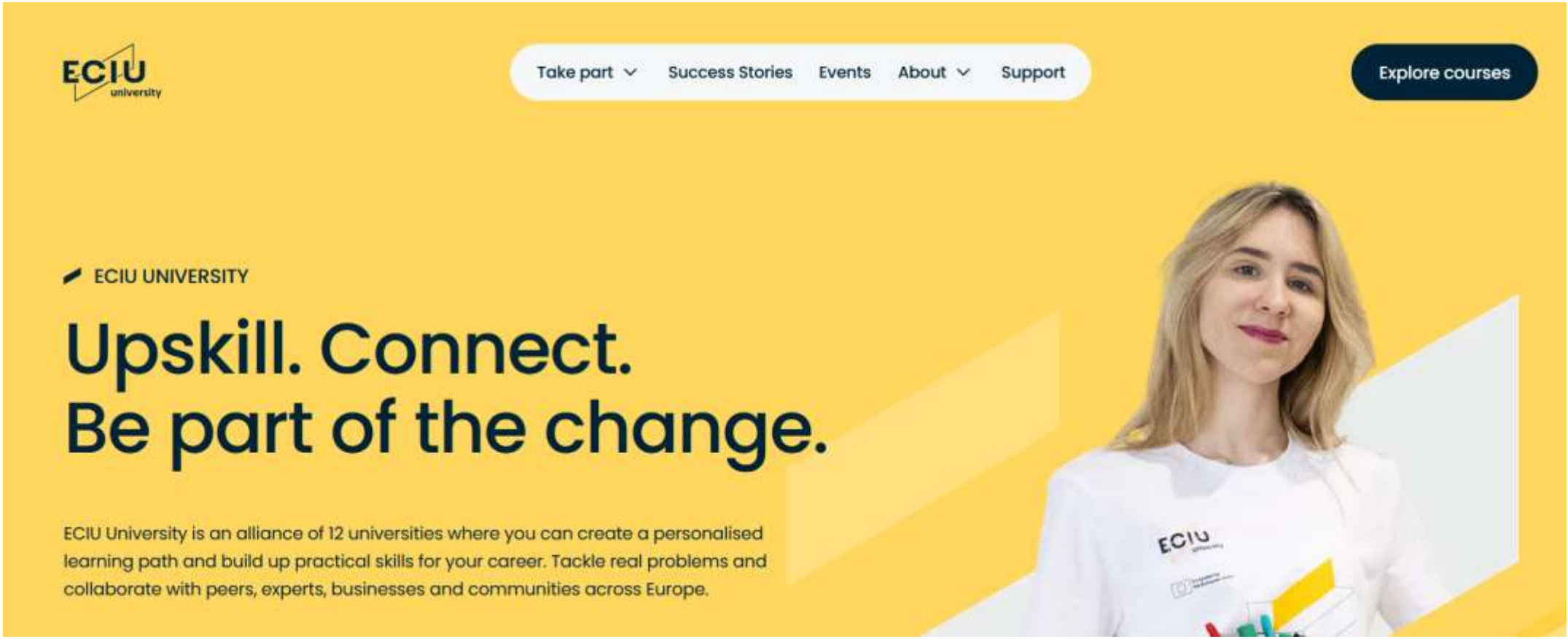
EUROPEAN SKILLS AGENDA:

FUTURE SKILLS & TECHNOLOGY

BEST PRACTICE EXAMPLES OF MODERN TECHNOLOGY IN ACADEMIC TEACHING

The following examples demonstrate how European higher education institutions are already successfully implementing these objectives—through innovative teaching formats, technology-enhanced education, and the imparting of future skills.

5. Trends and prerequisites for shaping the future classroom: European Consortium of Innovative Universities (ECIU)



https://university.eciu.eu/

5. Trends and prerequisites for shaping the future classroom: ECIU University

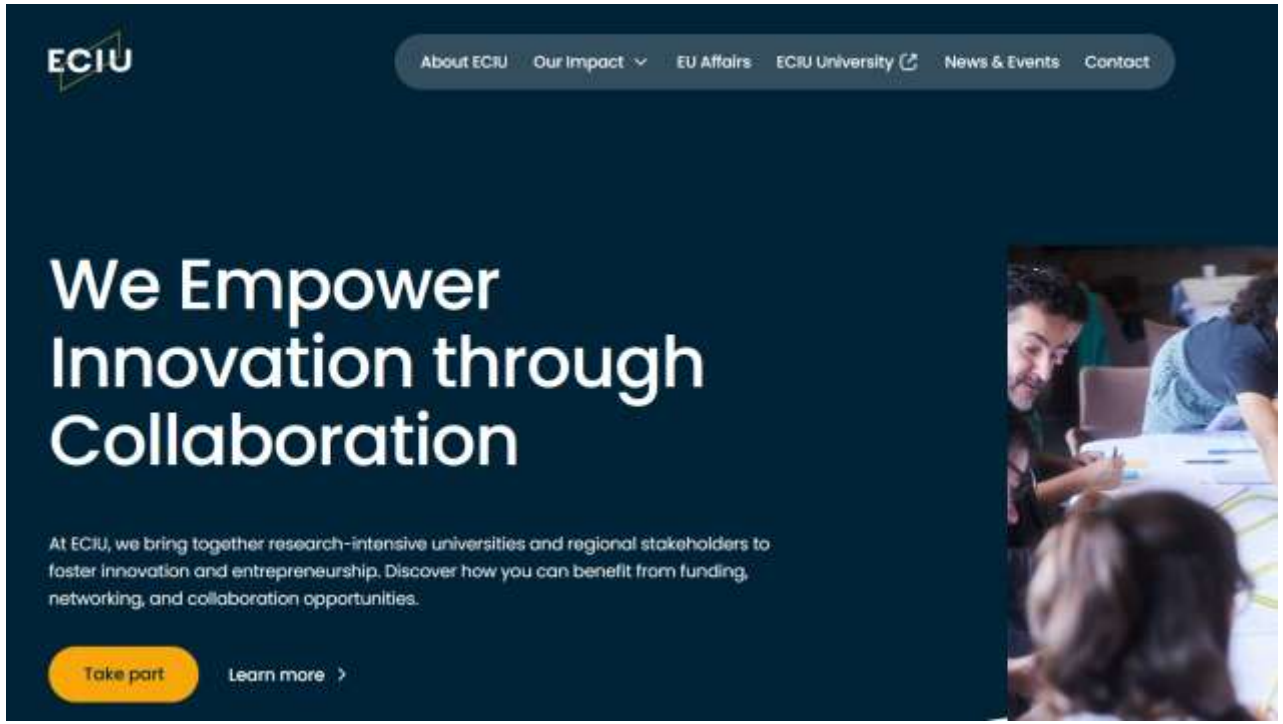
ECIU University is one of Europe's leading university alliances: 12 Universities in 12 Countries

- They developed a revolutionary educational model.
- At its core lies **challenge-based learning**, in which students and lifelong learners work on real-world problems facing business and society.
- **Flexible learning formats**: Micro-modules and challenges Europass Skills Passport for digital proof of competence
- Over 170 international companies and organizations as partners

5. Trends and prerequisites for shaping the future classroom: ECIU University

ECIU University is a pioneer in challenge-based learning, driving digital transformation across European higher education. The initiative emphasizes AI application in curricula and offers flexible micro-credentials for lifelong learners. Through its collaborative network of partner universities, ECIU delivers an adaptable, student-centered curriculum that prepares graduates for future workforce demands.

https://www.eciu.eu/



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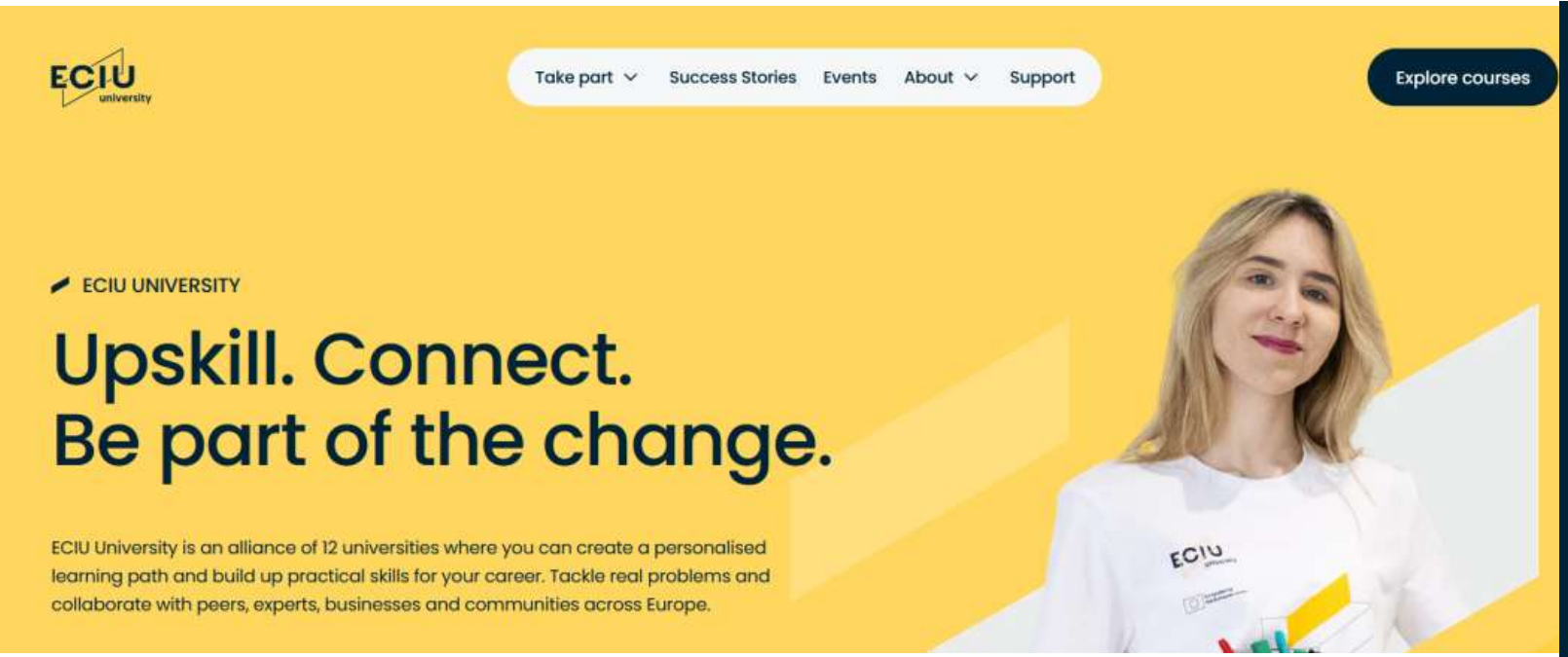

https://university.eciu.eu/

https://engage.eciu.eu/browse?learningOppStatuses=0&learningOppStatuses=1

ECIU university

Browse

MICRO-MODULE

Open for application

Technology for Health

ENGAGE OUR REAL WORLD TECHMED PROBLEMS TO DISCOVER AND SHARPEN YOUR BIOMEDICAL ENGINEERING TALENTS FOR A FUTURE PROFESSION DEVELOPING...

Description | Information | Value and progress | Providers

APPLY NOW - DEADLINE JUNE 01

Description

This course is primarily designed for students with an BSc-level technology background, who are interested in the Biomedical Engineering profession. The aim of biomedical engineering is to provide technological solutions for health care problems, for example for the

Study period
31 August – 6 November 2026

Study format
Blended ⓘ

Application period
1 May – 1 June 2026

The story

The application process

Participant information

Technology for Health is developed as a fully Blended Learning course that is offered in three online blocks (allowing participation from your home university) and one on campus block (for which you attend the University of Twente and meet your fellow students, our researchers and our campus). In this course, learning is not achieved by attending lectures, but by active engagement of learning materials and opportunities, combined individual and collaborative assignments, and real world sensemaking activities.

Block 1 (Online, Aug. 30 – Sept. 11): Explore

- Kickoff meeting (Hybrid=Online+OnCampus, Monday, Aug. 31, 10:45 - 12:30) - In this hybrid meeting, the purpose, content and organization of this course will be explained in an interactive way.
- Meet&Greet (Online, Monday, Aug. 31, 15:45 - 17:00) - In this online meeting, students can meet with the teacher, share their thoughts and ask questions about the course content and organisation.
- Q&A session, (Online, Friday, Sept. 4, 15:45-17:00) - In these meetings, student groups can discuss their approach and questions on the groupwork with the teacher and with each other.
- Q&A session, (Online, Friday, Sept. 11, 15:45-17:00) – See above.
- : Entry Statements (individual, deadline Wed, Sept 2), Capita Selecta Topic selection (group work, deadline Sept. 7), Self study (individual), Workshop preparation (group work)

Block 2 (OnCampus, Sept 14 – Sept. 23 2026): Analyse

- Meet&Greet (OnCampus, Monday, Sept. 14, 10:45 - 12:30) - In this OnCampus meeting, students can meet with the teacher, share their thoughts and ask questions about the course content and organisation.
- Workshop 1 on Health Problem Analysis (OnCampus, Tuesday Sept. 15, 13:45 - 17:30) - In this meeting, student groups will in turn present and discuss the HPA of theCapita Selecta topic they selected and the audience will practice with structured thinking about Health Problem Analysis.
- Q&A session (OnCampus, Friday, Sept.18, 13:45 - 17:00) - See above.
- Workshop 2 on Technology Research (OnCampus, Tuesday, Sept. 22, 13:45 - 17:30) - Same as Workshop 1, but now on Technology Research.
- Interview/Lab visit Capita Selecta Researcher (OnCampus, time and date to be announced) - As part of the groupwork, students are enabled to meet their Capita Selecta researcher and exchange information and thoughts about the Capita Selecta research.
- Assignments: Workshop & Interview preparation (group work), Essay writing and Peer Feedback (individual)
-

Block 3 (Online, Sept. 24 – Oct 23): Grant Competition Game

- Workshop 3 on Technology Transfer (Hybrid=Online+OnCampus, Tuesday, Sept 29, 13:45-17:30)
- Grant Competition game (Online groupwork, scheduled by student groups, but with submission deadlines) - In this game, student groups will propose the next step that the researcher of their Capita Selecta topic should make, in their opinion. The groups write a convincing proposal, provide expert comments on the proposal of other groups and rank the proposals in order of scientific quality and utilization potential.
- Wrap Up session (Online, Friday, Oct 23, 10:45 - 12:30) - In this online meeting, students and teachers look back on the course, the Grant Competition game and the learning experiences and students can ask questions on the final reflections.
- Assignments: Workshop preparation (group work), Essay writing and Peer Feedback (individual), Proposal writing + Expert Review + Rebuttal + Ranking Jury (group work)

Block 4 (Online, Oct. 24 – Nov. 6): Reflection

- Sessions: Q&A on request only
- Assignments: Reflections for final assessment (individual, deadline Nov. 6)

Learning Assessment

Your learning achievements are assessed based on a portfolio that includes your final reflections (learning statements) that are provided with evidence of learning (85%).The ranking of your groups Grant proposal also contributes to your final grade (15%).

You can formulate your learning statements by looking back on the products from your individual and group assignments, the workshop, feedback received from other students, the interview with your Capita Selecta researcher, etc. Note: these products are not assessed, only your reflections!

You can submit your final reflection on each course component separately through the online learning environment (Canvas). A rubric with criteria for reflection assessment will be provided.

5. Trends and prerequisites for shaping the future classroom: 4EU+ Alliance - Excellence in Digital Education

The 4EU+ Alliance brings together eight leading research universities (including Heidelberg, Sorbonne, Copenhagen, and Warsaw) and has established a Centre for Innovative and Digital Teaching and Learning, which serves as a hub for digital excellence.

- **Virtual Center**: A collaborative platform for educators across all member universities
- **Shared Digital Tools**: Web, intranet, and groupware for seamless collaboration
- **European Student Card**: Unique identification for mobility and credential exchange
- **MOOCs & Open Data Tools**: Open educational resources and webinars
- **GDPR-Compliant Data Management:** Secure handling of learning and research data

- **Transversal AI Courses:** Fundamentals of artificial intelligence for all academic disciplines
- **Data Literacy**: The ability to interpret data and distinguish between facts and opinions
- **Research-Based Lifelong Learning:** Flexible courses for working professionals

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Flagship 3

Digitisation - Modelling - Transformation

In Flagship 3, we use mathematical and computational methods to solve challenges related to both engineering and societal problems. Our goal is to contribute to solutions that aim not only to take technology to an unprecedented level, but also to support the transformation of society into the digital/AI age. This transformation will have a significant impact on issues such as quality of life through learning healthcare systems, Industry 4.0, and the digital transformation in society. It is also the key to tackling climate change and to using technology to achieve the EU's Green Deal targets. Students and the next generation of researchers are being trained in these technologies to be even better equipped to fulfil their societal responsibility as scientists.

https://4euplus.eu/4EU-419.html?

Projects and activities

Expand all Collapse all

Flagship 3 Summer School

Integrative Think Tank

Master's Programme Artificial Intelligence (in development)

Master's Programme Mathematical Modelling (in development)

Data Literacy

https://4euplus.eu/4EU-578.html?

Free Online 4EU+ Course: Data Literacy

Watch the trailer for the free online 4EU+ course: **Data Literacy - What is it and Why Does it Matter?**

https://4euplus.eu/4EU-415.html?test=1&newsID=19118

5. Trends and prerequisites for shaping the future classroom: VReduMED: Virtual Reality in Medical Education

About the project

The VReduMED Team aims to improve the cooperation between healthcare education and medtech suppliers (particularly SMEs/start-ups), using Virtual Reality as key enabler to make care work more attractive and ensure high-quality care services in the future. The partners are focusing on enrich the education of care students and the upskilling of care practitioners, in addition to foster the uptake of MedTech assistance systems by the care sector, and trigger the co-creative development of demand-tailored MedTech solutions. The goal is to respond comprehensively the joint challenges in the Central European region.

- **3D Environments:** Realistic simulations of nursing and emergency situations
- **Interactive Learning Modules:** Step-by-step instructions and feedback systems
- **Transnational Cooperation**: Exchange of best practices among EU countries
- Focus on **practical applicability** in daily professional practice

https://www.interreg-central.eu/projects/vredumed/

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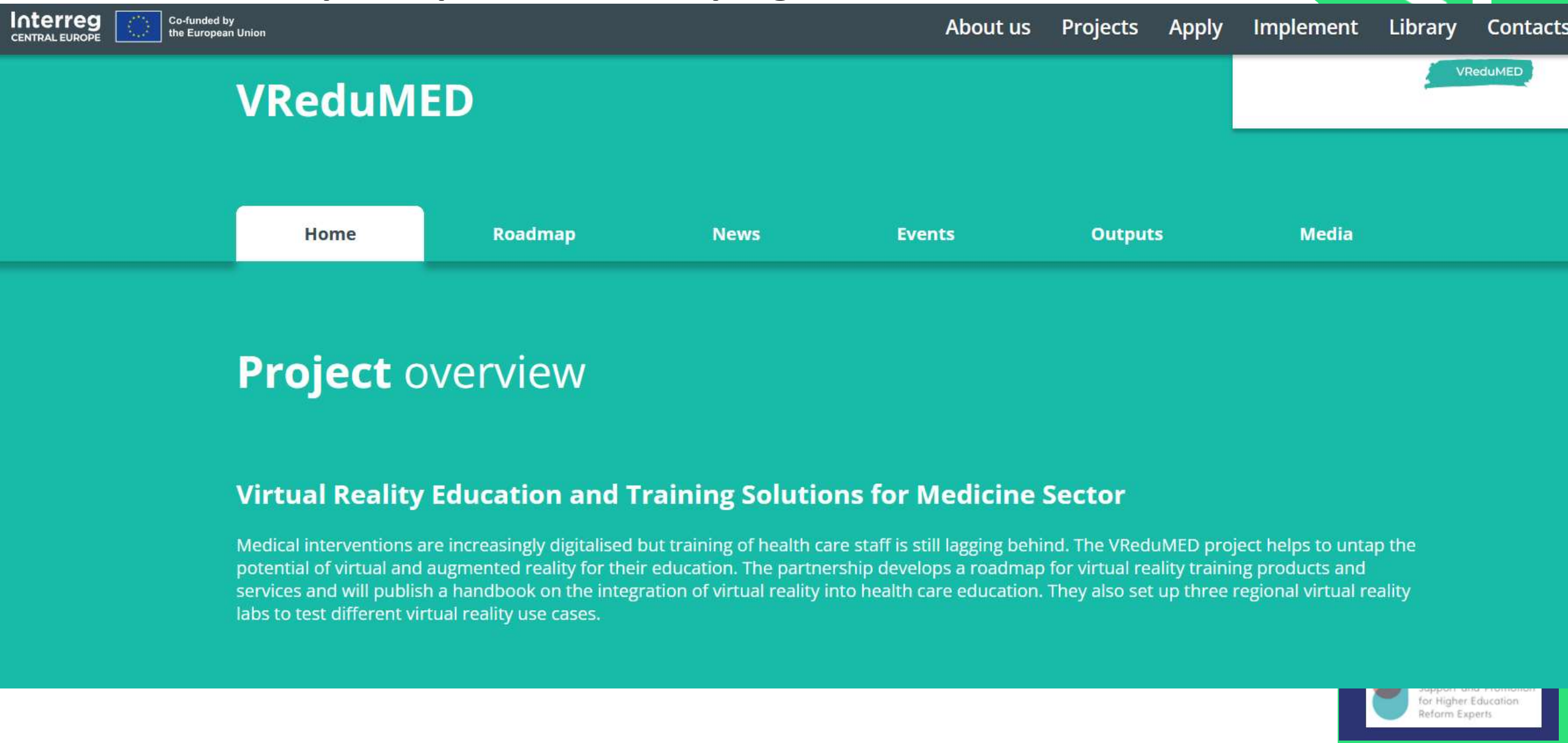
5. Trends and prerequisites for shaping the future classroom:



5. Trends and prerequisites for shaping the future classroom: Ulysseus: The Entrepreneurial University of the Future

Future-proof Skills Ulysseus European University is an entrepreneurial, open, and multilingual alliance of 8 universities dedicated to shaping the future of Europe through education, research, and innovation.

- **8 Innovation Hubs:** Thematically focused centers for research and teaching
- **Digital Platform:** A central learning and collaboration environment
- **AI & Data Analytics:** Identifying skills gaps and future skills requirements
- **Blended Learning**: Combining online and in-person instruction
- **Challenge-based Learning:** Hands-on projects with industry partners
- **Joint Study Programs**: Joint and Double Degrees
- **Research Integration**: Connecting teaching with applied research
- **Regional Development**: Contributing to social cohesion and economic competitiveness
- **Inclusion:** Promoting women in STEAM fields
- https://ulysseus.eu/

European Universities

Meet Ulysseus, the European University for the citizens of the Future

An international, open-to-the-world, person-centered, and entrepreneurial University that will shape Europe's future. Come meet our goals, community and partners.

- https://ulysseus.eu/

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Ulysseus
EUROPEAN UNIVERSITY

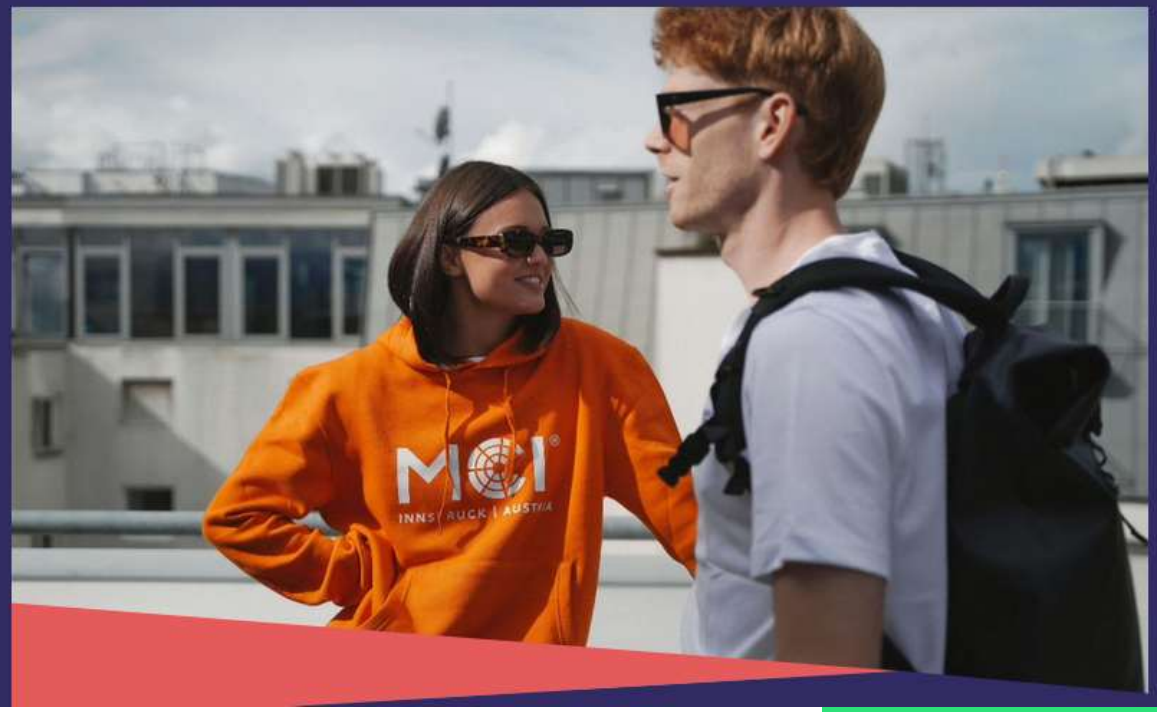
ecosystem

Registration is now open until April 30. Secure your spot!

Background

The Innovation Hub Days are designed as an interactive exchange format rather than a traditional conference. The focus is on sharing ongoing projects, discussing new ideas, and creating opportunities for collaboration in the field of sustainable entrepreneurship and innovation.

The central theme of this year's event is **Exploring the Futures of Entrepreneurship**. Through futures thinking and foresight approaches, participants will explore how entrepreneurship is evolving and what this means for universities, innovation hubs, and regional innovation ecosystems.



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5. Trends and prerequisites for shaping the future classroom: Ulysseus - The Entrepreneurial University of the Future

Ulysseus
EUROPEAN UNIVERSITY

Aims and Programme

The programme combines short inputs, interactive sessions, and project presentations. A central element of the event is the ***Futures Lab,*** where participants will work with future scenarios, exchange perspectives, and develop ideas together.

Research and project presentations will provide insight into ongoing initiatives across the alliance, while the Entrepreneurial Journey session will present practical examples from start-ups, entrepreneurship support services, and regional ecosystem partners.

Overall, the aim of the Innovation Hub Days is to showcase current activities, encourage exchange between partners, and identify

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5. Trends and prerequisites for shaping the future classroom: EIT Manufacturing Academy

https://eitmanufacturingacademy.eu/

5. Trends and prerequisites for shaping the future classroom: EIT Manufacturing Academy

European Institute of Innovation & Technology (EIT)

- Focus: Advanced Manufacturing, Digital Twins, Industry 4.0
- Target Audience: Academic Learners and Industry Professionals
- Key Feature: Interactive training platform featuring practical industrial applications

Technology & Innovation

- Digital Twin Integration: Learning paths for implementing Digital Twins within corporate structures, including best-practice examples
- Interactive Training Platform: Game-based, immersive industrial training utilizing digital learning technologies

https://eitmanufacturingacademy.eu/

5. Trends and prerequisites for shaping the future classroom: EIT Manufacturing Academy

- Modular Production Systems: Training on designing machinery for modular production environments
- AI in Manufacturing: Integration of AI for process optimization and quality control
- Partnerships with leading technical universities: University of Porto, Aalto University, Czech Technical University, Grenoble INP
- **Focus on practical, action-oriented learning featuring real-world industrial applications**
- Flexible online learning with certification options
- Connection to the EIT Manufacturing innovation ecosystem

https://eitmanufacturingacademy.eu/

5. Trends and prerequisites for shaping the future classroom: EIT Manufacturing Academy

ABOUT US CONTACT U

eit Manufacturing ACADEMY

Co-funded by the European Union

FILTER

TRAINING PROGRAMMES

CART LOG

BEGINNER

Introduction into Digital Twins

By Lukasiewicz ITEE

This learning path presents selected basic topics for digital twins such as origins, dimensions, future development possibilities, etc. It envelops part of the... nuggets created in VR PLC project. Together with the rest of them developes comprehensive description of digital tools. techno-educational stands and PLC

DIGITAL LEARNING, PATH

INTERMEDIATE

Advanced Manufacturing (Lean Manufacturing, Maintenance, Industry 4.0 & Automation)

By University of Bologna

This learning path provides basic training in Supply Chain Management, Advanced Maintenance of production systems from Corrective to Predictive...

DIGITAL LEARNING, PATH

INTERMEDIATE

Topology Optimization for Additive Manufacturing

By University of Bologna

This learning path provides the fundamentals of topology optimization, including definitions, process description, case studies analysis.

DIGITAL LEARNING, PATH

BEGINNER

Creating a Hybrid Connection Between TLFs Using APIs to a Common Value Chain

By Pannon Business Network

This learning path explores the integration of Teach Learning Factories (Portugal, Czech Republic, Hunga as an example of connected industrial processes in

DIGITAL LEARNING, PATH

5. Trends and prerequisites for shaping the future classroom: Conclusion & Outlook

The examples analyzed demonstrate that European higher education institutions are pioneering innovative approaches to establish different concepts of the Future Classroom.

Success Factors:

1. **Technology Integration as a Driver**: AI, VR/AR, data science, and digital platforms enable new teaching and learning formats. All examples utilize modern technologies to make education more accessible, flexible, and practice-oriented.
2. **Future Skills at the Core:** Digital competence, entrepreneurial thinking, sustainability awareness, and intercultural skills serve as central learning objectives across all projects.
3. **Flexible Learning Formats:** Micro-credentials, blended learning, and lifelong learning facilitate individualized educational pathways that adapt to the needs of diverse learners.

5. Trends and prerequisites for shaping the future classroom: Conclusion & Outlook

4. Transnational Cooperation: European University Alliances create synergies through the exchange of best practices, shared resources, and joint study programs.
5. Practice-Oriented Focus: Collaboration with businesses and societal stakeholders ensures that the competencies imparted align with the demands of the labor market.
6. Innovative Pedagogy: Challenge-based learning, co-creation, and research-based approaches are increasingly replacing traditional forms of frontal instruction

5. Trends and prerequisites for shaping the future classroom: Conclusion & Outlook

The following developments are to be expected for the future of higher education in Europe:

- **Expansion of Alliances**: The number of European university alliances will continue to grow, and existing alliances will deepen their cooperation.
- **AI as a Game-Changer:** Artificial intelligence will further personalize education and enhance the efficiency of teaching and learning processes.
- **Green Skills as a Priority:** Sustainability and climate protection will become central themes across all degree programs.
- **Digital Sovereignty**: Europe will continue to develop its own digital education platforms and standards.
- **Lifelong Learning as the Norm:** The boundary between formal education and continuing education will continue to blur.
- **Stronger Industry Cooperation:** Collaboration between higher education institutions and businesses will intensify in order to address the shortage of skilled workers.

5. Trends and prerequisites for shaping the future classroom: Conclusion & Outlook

Recommendations for Action for Higher Education Institutions:

1. **Technological Openness:** Invest in digital infrastructure and training for teaching staff.
2. **Integrate Future Skills into All Degree Programs:** Incorporate digital literacy, sustainability, and entrepreneurial thinking as cross-cutting themes.
3. **Create Flexible Educational Offerings:** Expand micro-credentials and blended learning formats.
4. **Leverage Networks**: Participate in European alliances and exchange best practices.
5. **Strengthen Practical Partnerships:** Expand collaborations with businesses and societal stakeholders. Give feedback

6. Assessment and the Future Classroom

WHAT IS ASSESSMENT?

- Skills assessment in higher education refers to the systematic evaluation of student competencies beyond traditional knowledge testing.
- It measures practical abilities, critical thinking, problem-solving, and real-world application of learning—providing a comprehensive view of student readiness for professional environments.

6. Assessment and the Future Classroom

Traditional

- Standardized testing focuses on memorization and recall, using multiple-choice formats that measure narrow skill sets. Results provide limited insight into actual competencies and real-world application abilities.

Modern

- Holistic assessment evaluates critical thinking, collaboration, and practical skills through portfolios, projects, and peer reviews. This approach captures authentic learning and prepares students for workplace demands.

Overview

Methods

Focus

Assessment in Future Education

- Competence-based assessment measures real-world application.
- Portfolios, peer feedback, and reflective journals track growth.
- Authentic assessment aligns with industry.

Competence-Based

Assessment

Measuring the ability to apply knowledge in real-world contexts through authentic methods.

19

Portfolios showcase skills and achievements over time.

02

Peer feedback develops metacognition and collaboration.

European Example: Aalborg University uses project-based assessment with peer review, achieving 95% graduate employment within 6 months.

Competence-Based Assessment

PortfolioAssessment

A portfolio is a curated collection of student work demonstrating growth, competencies, and learning journey. It provides holistic, student-centered, and authentic assessment that captures real development over time rather than single-point testing.

- Showcases skills and achievements over time (Boud, 2000).
- Maastricht University uses portfolios in PBL programs with clear rubrics.

Peer Feedback Assessment

Students evaluate each other's work using predefined criteria (Topping, 1998). Requires training for reliability.

21

Enhances metacognition and collaboration while reducing instructor workload.

22

PeerGrade, Turnitin PeerMark, Moodle Workshop.

European Example: Aalborg University integrates peer feedback in project-based learning, improving student reflection and teamwork skills.

Reflective Journals

Reflective journals document the learning process and personal insights over time. They promote self-awareness, develop critical thinking skills, and provide teachers with valuable insight into student progress. Challenges include maintaining consistent effort and establishing clear guidelines.

- Recommended tools: Google Docs, Notion, OneNote for easy documentation.
- European Example: University of Helsinki uses reflective journals in teacher training programs.

Authentic Assessment

Tasks that replicate real-world challenges, measuring ability to apply knowledge in professional contexts.

01

Case studies, simulations, projects, and presentations.

02

Practical skills and professional alignment.

European Example: ETH Zürich uses authentic assessment in engineering programs to measure real-world competencies.

6. Assessment and the Future Classroom: Implementation Framework

Successfully implementing new skills assessments requires careful planning and coordination across all institutional levels.

Stakeholder Engagement

- Leads curriculum mapping and assessment alignment. Coordinates with academic departments to integrate competency frameworks into existing course structures

Technology Integration

- Oversees learning management system upgrades and assessment platform deployment. Ensures seamless data integration between assessment tools and student information systems.

6. Assessment and the Future Classroom

Traditional	Modern	Why the Change?
Multiple-Choice Tests	Portfolios	Measures **application**, not memorization
Standardized Exams	Peer & Self-Assessment	Encourages **reflection & collaboration**
Essay Writing	Gamification	Boosts **engagement & motivation**
Manual Grading	AI-Assisted Grading	Saves **time**, enables **scalability**

Source: Boud, D., & Associates. (2018). *The Impact of Assessment on Learning*

6. Assessment and the Future Classroom: Assessing New Skills

Category	Key Skills	Example	Assessment Method
Cognitive	Critical thinking, creativity	Harvard Case Method (90% of MBA)	Case studies, debates
Interpersonal	Collaboration, communication	Minerva (100% employment in 6 months)	Real-time peer feedback
Digital	AI literacy, cybersecurity	ASU (+25% retention)	Digital portfolios, coding challenges
Intrapersonal	Adaptability, resilience	Maastricht (90% improved critical thinking)	Self-assessment journals

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6. Assessment and the Future Classroom

Assessing cognitive skills:

Definition: *The ability to analyze, evaluate, and synthesize information to solve problems or make decisions.*

Assessment Methods:

- **Case Studies** (Harvard Business School: 90% of MBA program)
- **Debates**
- **Simulations Example:** Harvard Business School – Students analyze **real-world business problems**.

Source: Boud, D., & Associates. (2018). *The Impact of Assessment on Learning*

6. Assessment and the Future Classroom

Assessing interpersonal skills:

Definition: *The ability to work effectively with others, communicate clearly, and lead teams toward shared goals. Assessment Methods*:

- **Group Projects with peer evaluations**
- **Role-Playing Exercises (e.g., mock negotiations)**
- **360-Degree Feedback Example: Minerva University – 100% active learning with real-time peer feedback → 100% employment within 6 months.**

Source: Minerva University

Source: Boud, D., & Associates. (2018). *The Impact of Assessment on Learning*

6. Assessment and the Future Classroom: Digital Skills

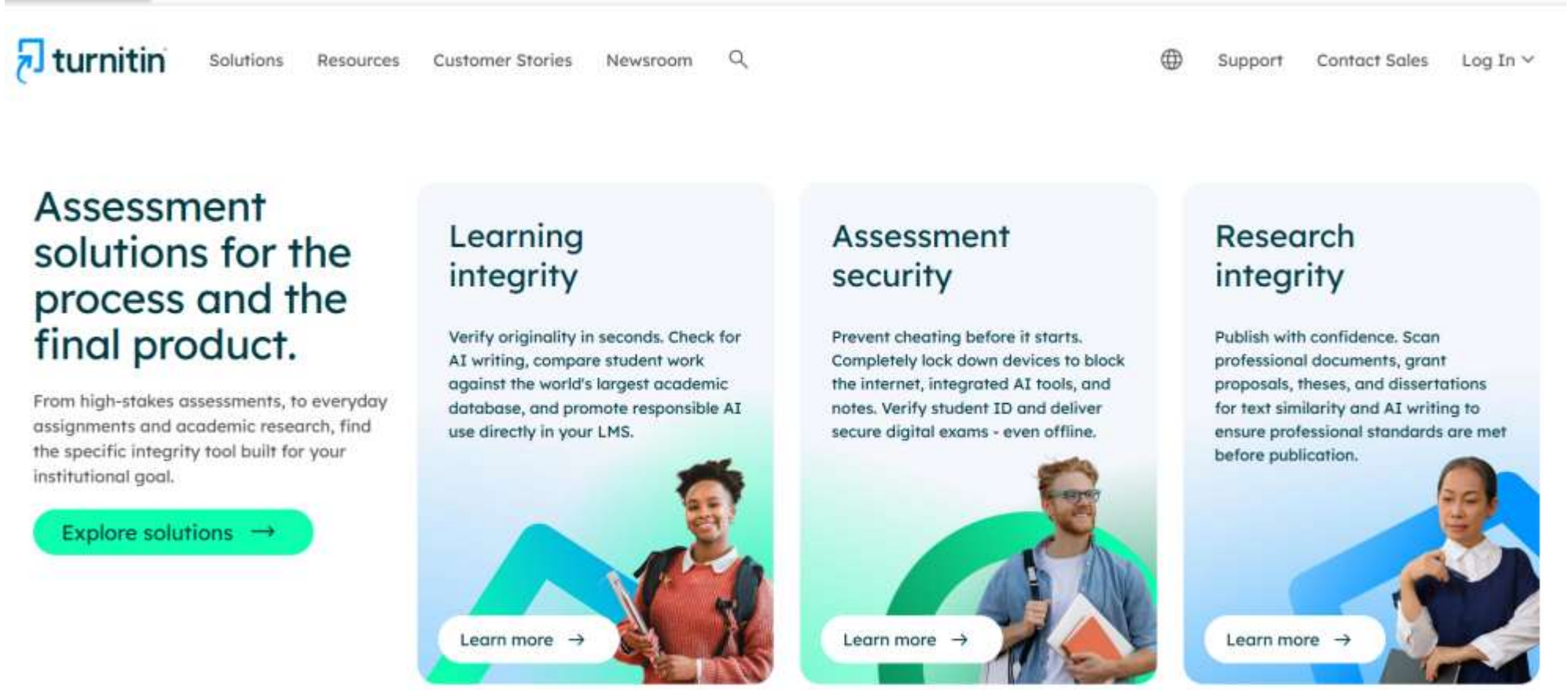
Assessing Digital Skills:

Definition: *The ability to use, evaluate, and create digital tools ethically and effectively.*

Assessment Methods:
- **Digital Portfolios** (GitHub, personal websites)
- **Coding Challenges** (HackerRank, LeetCode)
- **AI Tool Evaluations** (e.g., critiquing AI-generated content)

Example: Arizona State University (ASU) – **Adaptive learning platforms + AI-driven feedback → +25% retention rates**.
Tools: Gradescope, Turnitin, Coursera's Auto-Grader
Source: ASU Digital Innovation

6. Assessment and the Future Classroom: Digital Skills



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6. Assessment and the Future Classroom: Assessing Intrapersonal Skills

Definition: *The ability to regulate emotions, adapt to change, and manage one's own learning.*

Assessment Methods:

- **Self-Assessment Journals** (reflective writing)
- **Goal-Setting & Progress Tracking** (e.g., OKRs)
- **Resilience Scenarios** (e.g., handling failure in projects)

Example: Maastricht University – **Problem-Based Learning (PBL) with self-directed portfolios → 90% of students report improved critical thinking**.
Source: Maastricht University PBL

6. Assessment and the Future Classroom: Portfolio-Based Assessment

Portfolio-Based Assessment

Definition: *A collection of student work that demonstrates skills and progress over time.*

Advantages:

- **Holistic** (shows growth, not just final output)
- **Authentic** (real-world applications)
- **Student-Centered** (encourages ownership)

Challenges:

- Time-consuming to grade
- Requires **clear rubrics**
- **Subjectivity** in evaluation

Example: Maastricht University – Portfolios for **Problem-Based Learning**
Source: Maastricht PBL

6. Assessment and the Future Classroom: Peer & Self-Assessment

Peer & Self-Assessment
Definition: *Students evaluate their own work or their peers' work using predefined criteria.*

Advantages:
- **Metacognition** (students learn by assessing)
- **Collaboration** (peer learning)
- **Reduces Grading Load** for instructors

- **Challenges:**
- **Bias** (friends may overrate)
- **Training Required** (students need guidance)
- **Fairness Concerns** (subjective judgments)

Tools: PeerGrade, Turnitin PeerMark, Canvas Peer Review
Example: University of Michigan – Peer assessment in **MOOCs with 10,000+ students**.
Source: Topping, K. (1998). *Peer Assessment Between Students in Colleges and Universities.*

6. Assessment and the Future Classroom: Gamification

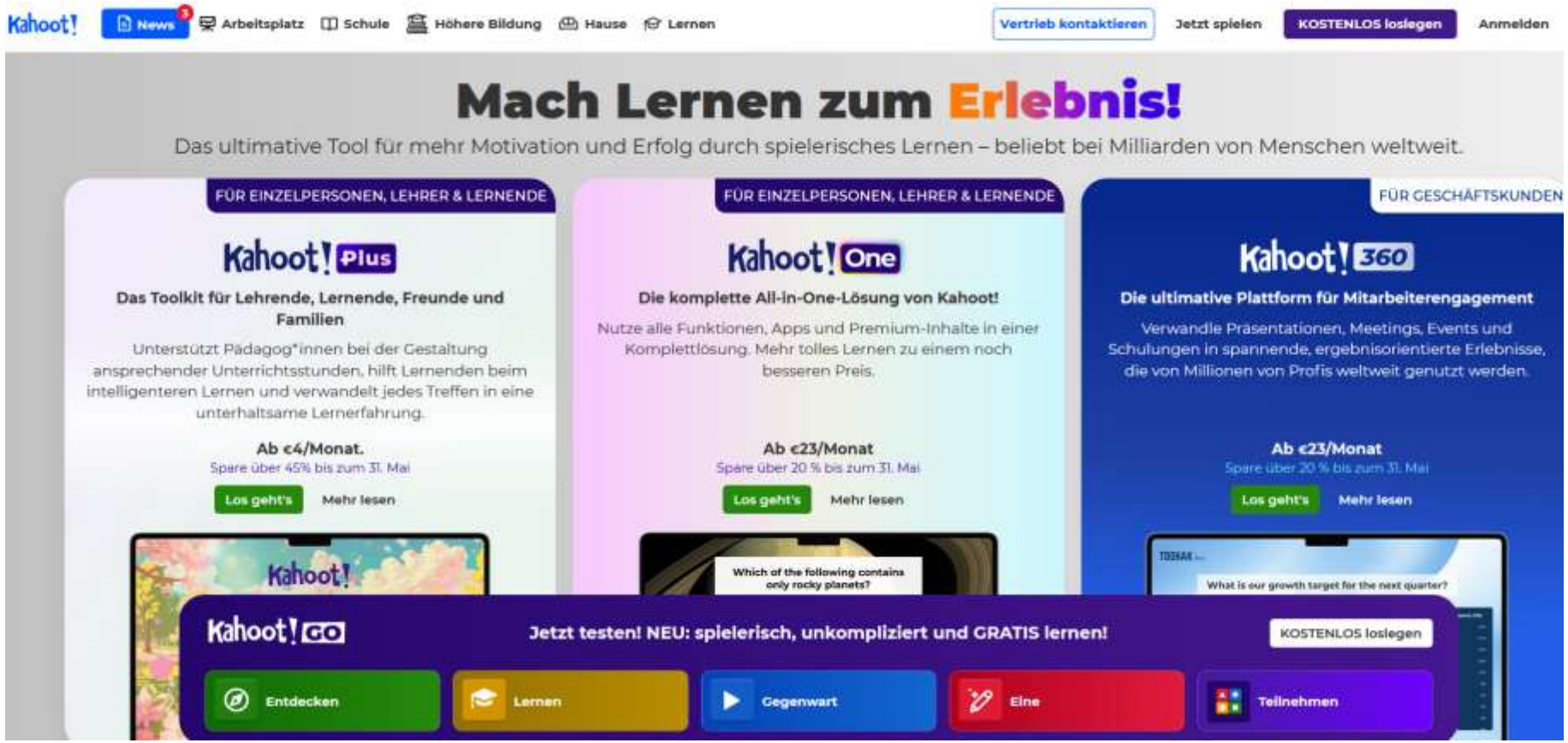
Gamification in Assessment
Definition: *Applying game-design elements (e.g., points, badges, leaderboards) to motivate learners.*

Advantages:
- **Increases Engagement** (fun, competitive)
- **Instant Feedback** (badges, progress bars)
- **Encourages Persistence** (e.g., streaks, rewards)

- **Challenges:**
- **Extrinsic vs. Intrinsic Motivation** (risk of undermining love of learning)
- **Design Complexity** (requires careful planning)
- **Not for All Subjects** (best for skills-based learning)

Tools: Kahoot!, Classcraft, Badgr
Example: Duolingo – **Streaks, XP, and leaderboards → 300M+ users worldwide**.
Source: Deterding, 201

6. Assessment and the Future Classroom: Gamification



https://kahoot.com/de/

6. Assessment and the Future Classroom: Assessment with AI

Definition: *Using AI to automate grading for tasks like multiple-choice tests, essays, or coding assignments.*

Advantages:
•**Time-Saving** (grades 100s of assignments in minutes)
•**Consistency** (reduces human bias)
•**Scalability** (works for MOOCs with 10,000+ students)

•**Challenges:**
•**Ethical Concerns** (fairness, transparency)
•**Limited to Structured Tasks** (struggles with creativity)
•**Over-Reliance Risk** (human oversight still needed)
Tools: Gradescope, Turnitin, Coursera's Auto-Grader
Example: Georgia Tech – **80% reduction in grading time** in MOOCs.
Source: Luckin et al., 2016

gradescope by Turnitin

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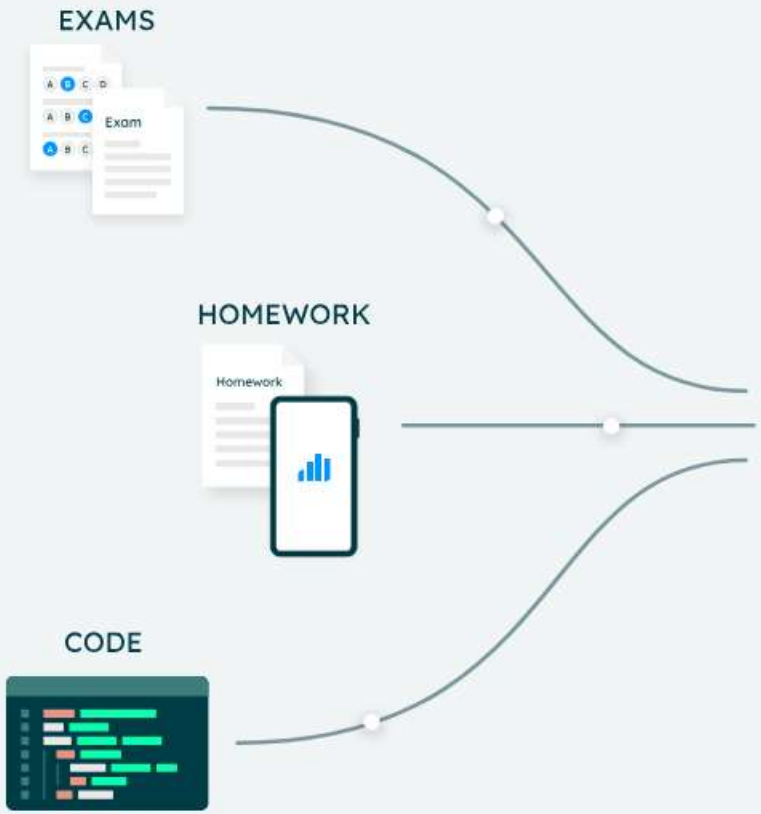

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6. Assessment and the Future Classroom:

Case Studies: Universities Leading the Way

University	Method	Impact	Tools	Source
Maastricht (NL)	Portfolio-Based Assessment (PBL)	**90% improved critical thinking**	Mahara, LMS	Link
Minerva (USA)	100% Active Learning + Peer Feedback	**100% employment in 6 months**	Proprietary platform	Link
ASU (USA)	Adaptive Learning + AI Assessment	**+25% retention rates**	Gradescope, Turnitin	Link

European Case Studies

- **Maastricht University (NL):** PBL + Portfolio. 90% report improved critical thinking. 85% feel better prepared for the job market. Small groups (10-12 students), real-world problems from industry & science
- **Aalborg University (DK)**: Project-based learning + peer assessment. 50% of curriculum is project work. Top 3 in Europe for student satisfaction (QS 2023). 95% of graduates employed within 6
- **Helsinki (FI)**: Gamification in MOOCs - 40% higher completion rate. ETH Zurich (CH): AI-supported assessment - 30% less workload for educators.

6. Assessment and the Future Classroom:

Category	Tools	Links
Portfolios	Mahara, Google Sites, Seesaw	Mahara, Google Sites, Seesaw
Peer-Assessment	PeerGrade, Turnitin PeerMark, Canvas Peer Review	PeerGrade, Turnitin
Gamification	Kahoot!, Classcraft, Badgr	Kahoot!, Classcraft, Badgr
AI Grading	Gradescope, Turnitin, Coursera Auto-Grader	Gradescope, Turnitin, Coursera

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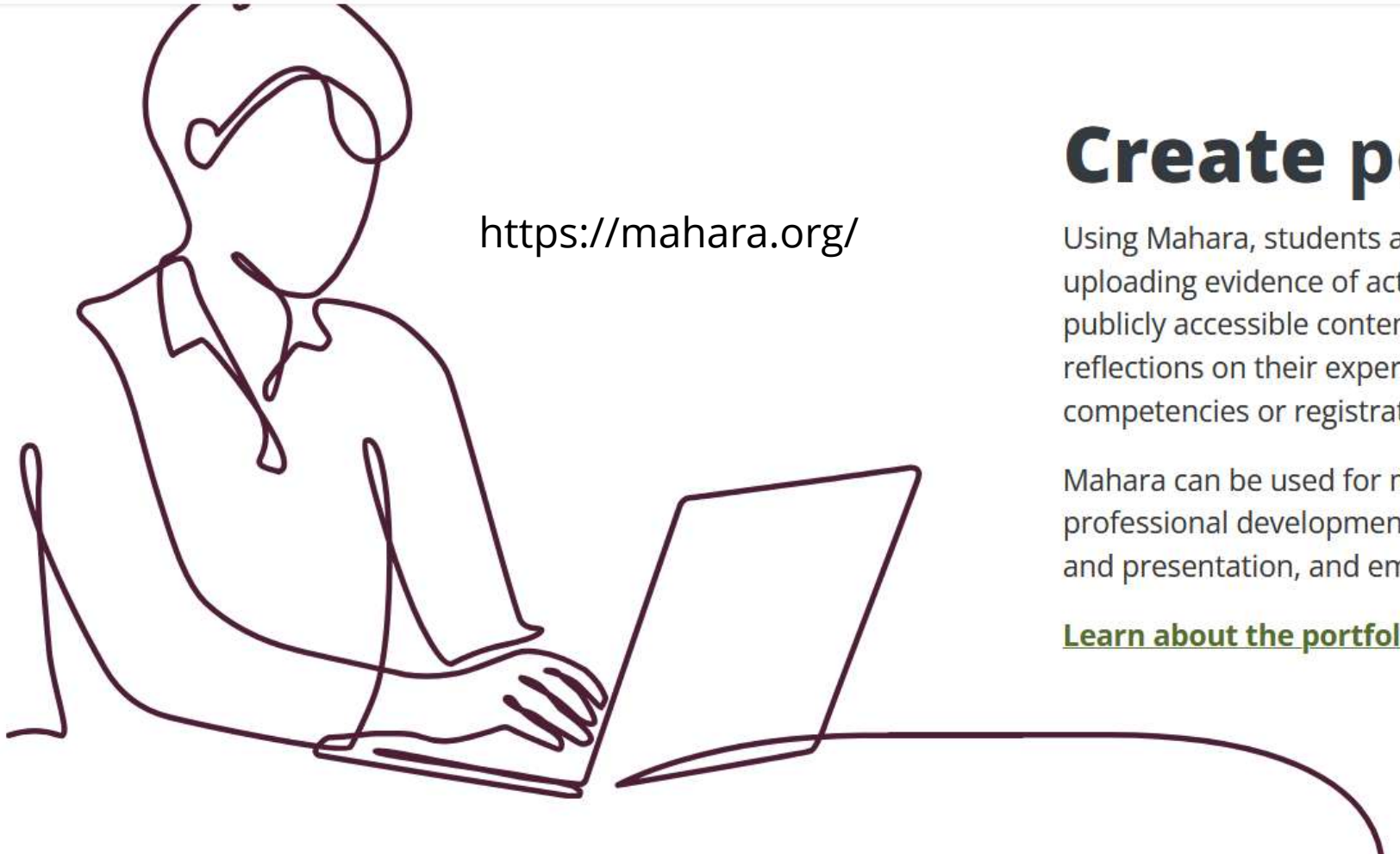
6. Assessment and the Future Classroom:



https://mahara.org/

6. Assessment and the Future Classroom: Assessing Cognitive Skills

Implementation Checklist

1. Identify Skills – Define **2–3 key competencies** for your course.
2.Redesign Assessment – Replace **1 traditional assessment** with a modern method.
3.Pilot Test – Try it with a **small group** (e.g., 1 class).
4.Train Students – Teach them **how to self/peer-assess** (provide rubrics + examples).
5.Evaluate & Iterate – Collect **feedback** and refine.

Discussion Questions:
•Which **new skill** is most critical for your students?
•What is **one assessment method** you could pilot in your next course?
Closing:
"The future of education isn't just about technology—it's about pedagogy. By focusing on new skills and innovative assessment, we can prepare students for a world that's constantly changing." **Thank You!**

6. Assessment Summaray

1. Assessment must measure competencies, not just knowledge (OECD, 2019)
2. Portfolios & peer assessment promote deep learning (Boud, 2000)
3. Gamification & AI can increase motivation and efficiency (Deterding et al., 2011)
4. European universities show: It works! (Maastricht, Aalborg, Helsinki, ETH Zurich)
5. Institutional support is critical for success

"

- *The future of education is not about technology - it is about pedagogy.“ Sir Ken Robinson*
- *These principles form the foundation for transforming assessment in higher education and preparing students for an uncertain future.*

Assesment referenceces

Academic Sources

- Arizona State University: Digital Innovation
- Boud, D. (2000): Sustainable Assessment
- Boud, D. (2018): *The Impact of Assessment on Learning*
- Deterding, S. (2011): Gamification: Toward a Definition
- EU Skills Panorama (2023): Skills for the Future
- Georgia Tech: AI-Assisted Grading in MOOC
- Harvard Business School: Case Method
- Maastricht University: Problem-Based Learning (PBL)
- Minerva University: Active Learning Approach
- OECD (2019): The Future of Education and Skills 2030
- OECD (2030): Learning Framework 2030
- Topping, K. (1998): Peer Assessment Between Students
- University of Michigan: MOOCs with Peer-Assessment
- World Economic Forum (2020): The Future of Jobs Report 2020

Cases / Materials

- Aalborg University: aau.dk/en
- ETH Zurich Digital Learning: ethz.ch/digital-education
- Luckin, R. et al. (2016): Intelligence Unleashed
- Maastricht University PBL: maastrichtuniversity.nl/pbl
- Tools: Gradescope, Kahoot!, Mahara, PeerGrade, Turnitin
- University of Helsinki MOOCs: helsinki.fi/en