Fachhochschule des Mittelstands

Future Classroom

Workshop University of Montenegro

4.6.26

Session 2:

14.45 – 16.00 : Future Teaching Methods and Innovative Classroom Design

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European Commission

SPHERE Support and Promotion for Higher Education Reform Experts

UCG Univerzitet Crne Gore

UDG

Future Teaching Methods and Innovative Classroom Design

1. Future Teaching Methods
2. Innovative Classroom Design
3. Changed Learning Models and Future Education

Why Teaching Must Change

65% of children will work in jobs that don't exist yet.

The World Economic Forum (2020) reports that most children entering school today will work in careers that haven't been invented yet, requiring entirely new skill sets.

Skills half-life is now only 5 years.

According to Dell Technologies (2017), the knowledge we acquire becomes outdated rapidly. Continuous learning and adaptability are now essential for career success.

Students demand flexibility, adaptability & creativity.

Education must shift from memorization to application. Students need skills for uncertainty—critical thinking, creativity, and the ability to adapt to constant change.

Traditional >

01

Content-focused & Teacher-centered approach

Memorization of facts. Passive learning. Single exam determines success. Knowledge exists in isolation.

Competence-Based >

02

Outcome-focused & Learner-centered

(portfolios, projects, peer feedback)

Authentic assessment measures real-world application and growth.

Why do Teaching Methods Matter

"Competence is the ability to meet complex demands in a particular context." — OECD Learning Framework 2030

21st Century Competencies

Critical Thinking & Problem-Solving

Analyze complex issues, evaluate evidence, and develop innovative solutions. Essential for navigating uncertainty and making informed decisions in rapidly changing environments.

Communication & Collaboration Skills

Express ideas clearly across formats and work effectively in diverse teams. Build consensus, share knowledge, and leverage collective intelligence for better outcomes.

Creativity & Digital Literacy

Generate novel ideas and use technology effectively. Navigate digital tools, evaluate online information, and create innovative solutions to complex challenges.

Active Learning Methods Overview

Method #1
Problem-Based Learning (PBL)

Method #2
Project-Based Learning

Method #3
Flipped Classroom & Case Studies

Method #4
Peer Instruction (+30% retention)

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Problem-Based Learning (PBL)

"Learning by solving open-ended problems." — Barrows, 1996

01

Real-world problems in small groups (10-12) with facilitator guidance and self-directed learning.

02

Evidence: +20% retention (Hake, 1998), improved critical thinking.

European Example: Maastricht University uses 100% PBL across all courses. Tools: Miro, Padlet, Google Docs for collaboration.

Problem-Based Learning

Problem-Based Learning

At Maastricht University, students learn by working in small groups to solve complex, real-world problems. This active approach, called Problem-Based Learning (PBL), not only increases students' motivation, but it also leads them beyond memorisation to develop a deeper understanding of the subject matter.

Our teaching staff facilitate the learning process, providing guidance, feedback and regular assessments to make sure students stay on track and develop the competencies they need to be successful in the labour market.

Learning in small groups helps students become effective communicators, collaborators, critical thinkers and problem solvers who are well-prepared to tackle complex challenges in their future careers and make meaningful contributions to society.

https://www.maastrichtuniversity.nl/over-de-um/onderwijs-aan-de-um/problem-based-learning

Problem-Based Learning

Engage with Problem-Based Learning

At Maastricht University (UM), we care not only what you learn but also how you learn. Here, you are part of an interactive and meaningful learning experience called Problem-Based Learning (PBL). Most of your education takes place in groups of 10 to 15 students, so you're not just a face in a crowded lecture hall.

Working in small teams makes it easy to connect with peers and stimulate each other's learning. Through teamwork and assignments, you actively engage with knowledge and exchange ideas. This collaborative environment allows you to see things from multiple perspectives, giving you a better understanding of the subject matter and helping you come up with creative, well-reasoned solutions.

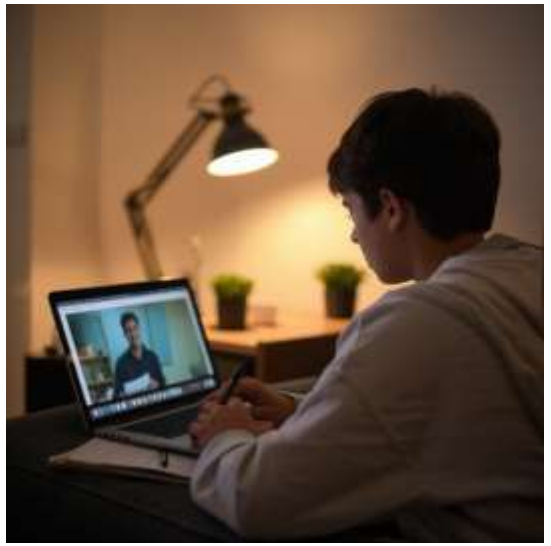
Our dedicated teaching staff serve as facilitators, providing guidance when needed, but your curiosity and imagination lead the way.

Problem-Based Learning (PBL) teaches you to be proactive and open-minded. You develop the critical thinking, effective communication, time management, teamwork and problem-solving skills that employers are looking for.

https://www.maastrichtuniversity.nl/study/get-to-know-us/engage-problem-based-learning

How It Works

Flipped Classroom Model



Pre-Class: Students watch videos and read materials at their own pace. In-Class: Time dedicated to active learning, discussions, and problem-solving exercises. Post-Class: Reflection and real-world application of concepts learned.

- In-Class: Active learning through discussion, exercises, and collaboration.
- Post-Class: Reflection and application for deeper understanding.

Peer Instruction

Interactive voting and discussion method that transforms passive lectures into active learning experiences.

01

Pose question → Individual vote → Peer discussion → Re-vote → Teacher explains

02

+30% retention, active engagement, immediate feedback

Tools: Mentimeter, Kahoot!, TurningPoint.
European Example: University of Helsinki uses peer instruction in computer science courses.

Active Learning Method

Case Studies

Case studies involve analyzing real-world scenarios to apply theoretical knowledge. Students examine authentic business or academic situations, identify problems, and develop solutions. Tools include Harvard Business Cases and custom industry cases tailored to specific disciplines.

- Develops critical thinking and theory-practice connection through collaboration.
- European Example: IESE Business School uses case studies extensively in MBA programs.

Hybrid Learning

Hybrid learning combines face-to-face and online instruction, offering flexibility, accessibility, and scalability. It enables personalized learning paths while presenting challenges around engagement, digital fatigue, and equity concerns.

The best of both worlds: in-person connection meets digital flexibility.

Flexibility meets accessibility

Synchronous >

01

Live online + in-person simultaneously.

Real-time interaction with flexibility. Tools: Zoom, Teams, Google Meet. Best for lectures needing immediate feedback.

Asynchronous >

02

Self-paced online + in-person sessions

(HyFlex, Blended Learning models).

Tools: Moodle, Canvas. Student choice of mode. Best for accessibility.

Why do Hybrid Models Matter

Each model offers unique advantages for different teaching contexts and student needs (Beatty, 2019).

Synchronous Hybrid Learning

Live sessions combining online and in-person students for flexible, accessible education.

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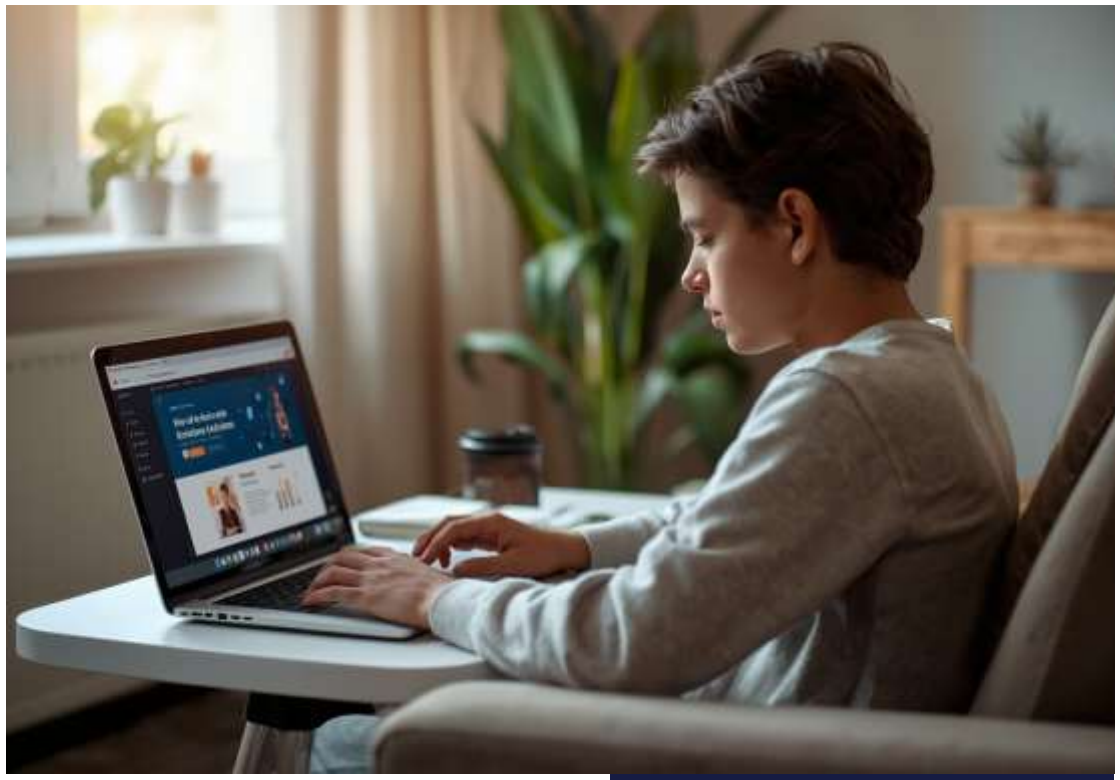
Real-time interaction with immediate feedback and flexibility.

02

Tools: Zoom, Teams, Google Meet.

European Example: University of Amsterdam uses synchronous hybrid for large lectures, enabling students to participate remotely while maintaining engagement.



Asynchronous Hybrid Learning

Self-paced online modules combined with periodic in-person sessions. Requires self-discipline but offers maximum flexibility.

01

Flexible schedules allow students to learn at their own pace.

02

Tools: Moodle, Canvas, Blackboard.

European Example: Open University UK is a pioneer in asynchronous learning, enabling students worldwide to study flexibly without real-time attendance requirements.

Benefits

Features

Tools

Flexible Learning Design

HyFlex Model

HyFlex combines face-to-face, synchronous online, and asynchronous online learning. Students choose their attendance mode while achieving equivalent learning outcomes. Tools include Zoom and Panopto for seamless delivery across all modalities.

- Accessibility and resilience to disruptions for all learners.
- European Example: ETH Zürich piloted HyFlex in STEM courses.

Hybrid Model #4

BlendedLearning

Blended learning combines online and face-to-face activities in structured ways. Three main models exist: Face-to-face driver (flipped classroom), Online driver (hybrid courses), and Balanced (project-based learning). Each model offers different ratios of digital and in-person engagement.

- Face-to-face driver: Flipped classroom with in-person focus.
- European Example: University of Edinburgh uses blended learning in medical education.

Traditional Role

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Examiner → Coach providing feedback & mentorship.

Lecturer → Facilitator: Guides discussions and supports student-led exploration of topics.

New Role

17

Content Deliverer → Designer of learning experiences

(Designer, Coach, Facilitator, Curator)

Authority → Curator: Selects and organizes quality resources for learners.

Why do Teaching Roles Change

"The teacher's role is no longer to transmit knowledge, but to facilitate learning." — Siemens, 2005

Netherlands

Maastricht University

Maastricht University pioneered Problem-Based Learning (PBL) across all programs. Students work in small groups of 10-12, tackling real-world problems with facilitator guidance. Portfolio assessment replaces traditional exams, measuring authentic competencies.

- 90% report improved critical thinking skills.
- 85% of graduates feel prepared for the job market.

Denmark

Aalborg University

Aalborg University pioneered Project-Based Learning with 50% of curriculum dedicated to interdisciplinary projects. Students work in teams on real-world challenges, developing practical skills through peer assessment and continuous feedback mechanisms.

- Top 3 in Europe for student satisfaction ratings.
- 95% of graduates employed within 6 months of graduation.

Finland

University of Helsinki

University of Helsinki pioneers hybrid learning innovation with AI tutors, gamification in MOOCs, and adaptive learning paths. Their approach combines cutting-edge technology with pedagogical excellence to create personalized student experiences.

- 40% higher completion rates in courses using hybrid innovation.
- 90% of students rate courses as very useful for their careers.

Case Study

ETH Zürich (Switzerland)

ETH Zürich, one of Europe's leading technical universities, has pioneered the HyFlex model in STEM education. Their innovative approach combines flexible attendance options with AI-assisted grading systems that provide real-time feedback to students, enabling personalized learning at scale.

- 30% reduction in grading time through AI-assisted assessment tools.
- 20% higher exam pass rates with real-time feedback systems.

Challenge >

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Faculty resistance, time constraints, student adaptation

Maastricht started with 1 faculty pilot. Aalborg transforms 1 course per semester. Helsinki offers orientation workshops.

Solution >

✓

Pilot programs, start small, clear guidance

> Low-complexity tools, showcase success stories

ETH Zürich uses Moodle + Zoom. Maastricht achieved 90% student satisfaction.

Why do Challenges & Solutions

Every challenge has a proven solution from European universities that have successfully transformed their teaching methods.

Summary

Key Takeaways (Part 1)

- Competencies matter more than memorization (OECD, 2018).
- Active learning improves student engagement and retention (Freeman et al., 2014).
- Skills over content delivery.

Key Takeaways (Part 2)

- 1. Hybrid learning increases flexibility and accessibility.
- 1. Teachers become facilitators, coaches, and learning designers.
- 1. Transformation requires institutional support.

2. Innovative Classroom Design

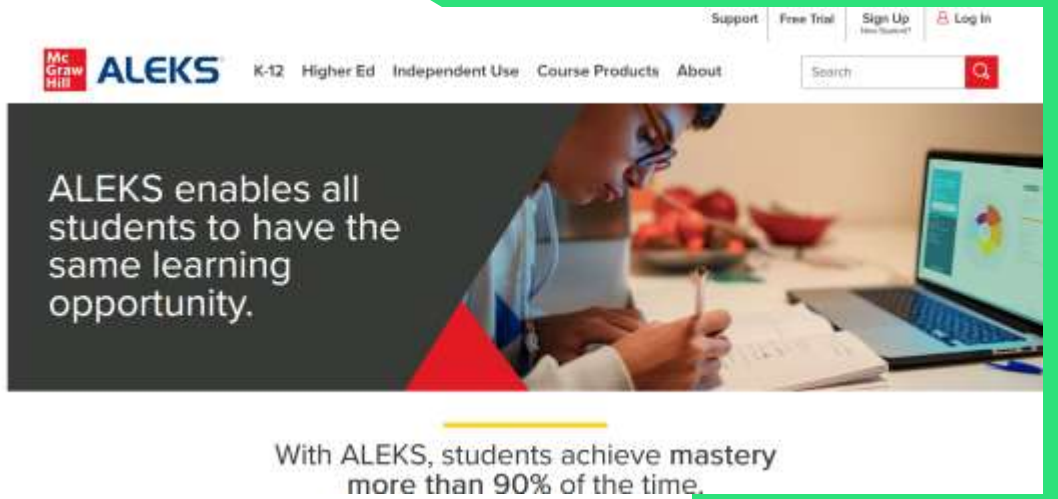
There is a relevant relation between the needs why education must change and technology's role:

Leading questions:

1. Which global trends shape the future of education?
2. What prerequisites must we create locally and globally?
3. How can these trends improve learning experiences?

Reflection: What comes to mind when you think of the classroom of the future?

2. Innovative Classroom Design: Trends



Trend 1 – Digitalization & Artificial Intelligence

- AI personalizes learning pathways through platforms like Aleks and Duolingo, adapting to each student's pace. https://www.aleks.com/?_s=5363749238905999
- Automation handles repetitive tasks such as multiple-choice grading. Georgia Tech's AI assistant "Jill Watson" seamlessly answers student queries.

Question: Who has used AI tools like ChatGPT or DeepL in teaching?

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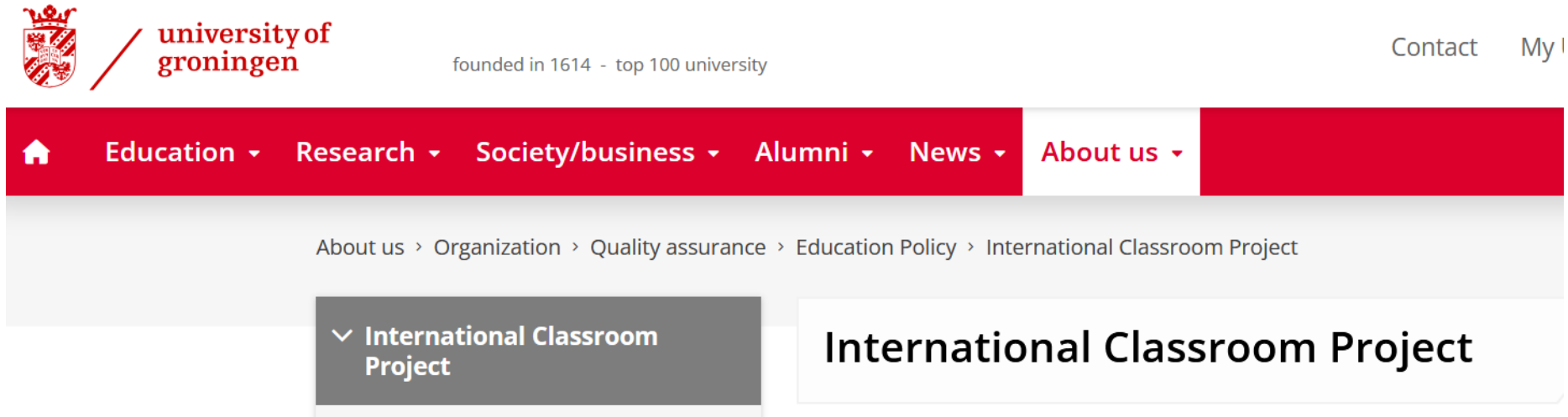
2. Innovative Classroom Design

Trend 2 – Globalization & International Collaboration

- Virtual exchange programs are becoming standard through initiatives like Global Classroom. Multicultural student teams now collaborate online without travel costs.

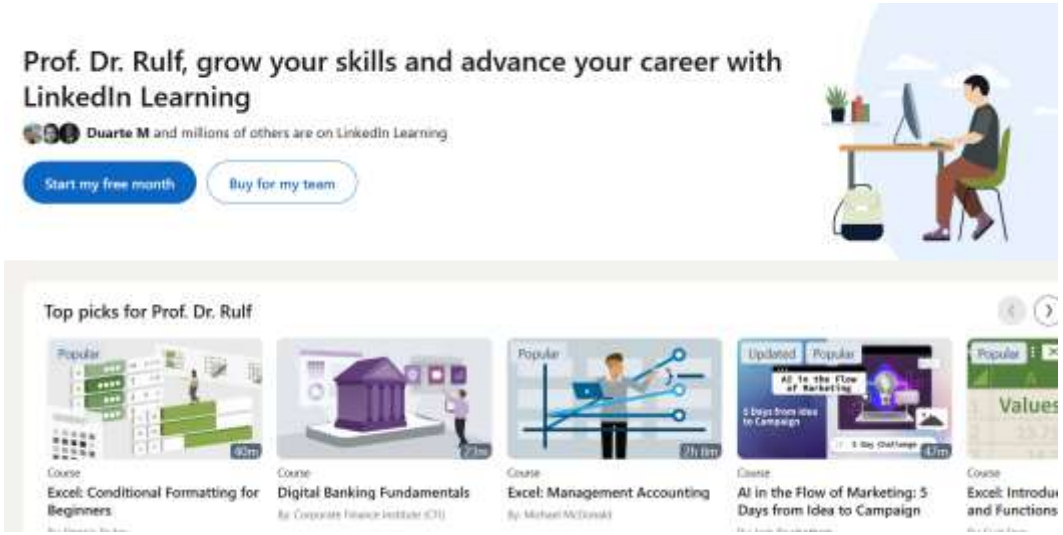
Example: University of Groningen's Global Classroom connects students with African and Asian partners at no extra cost https://www.rug.nl/about-ug/organization/quality-assurance/in-practice/international-classroom-project/



2. Innovative Classroom Design

- **Trend 3:**
- Shift from knowledge acquisition to competencies: problem-solving, creativity, teamwork.
- Growing importance of micro-credentials and skill badges for career advancement.

Example: LinkedIn Learning's micro-certificates recognized by employers worldwide. https://www.linkedin.com/learning/



2. Innovative Classroom Design

Trend 4 – Flexibility & Hybrid Learning

- Modern learners expect location and time independence through asynchronous learning options. Hybrid models combining in-person and online instruction are becoming the standard.
- Example: University of Edinburgh offers all courses in hybrid format, ensuring equal quality for on-campus and remote students.
- Reference: ed.ac.uk/education/learning-teaching/online-learning

2. Innovative Classroom Design

Trend 5 – Sustainability & Social Responsibility

- Education increasingly promotes sustainable development through Green Campuses and climate education initiatives. Digital education plays a dual role in social equity—it can either bridge or widen the gap.
- Example: University of Copenhagen requires a sustainability certificate for all students.

Question: "Which of these trends is most relevant for your institution?"

2. Innovative Classroom Design

Prerequisites for Shaping the Future Classroom

Now that we've explored the global trends shaping education, let's examine the essential prerequisites needed to create effective future learning environments.

2. Innovative Classroom Design

Prerequisite 1 – Infrastructure

- The foundation of the future classroom requires reliable high-speed internet and digital devices for all students and staff.
- Modern classrooms must be equipped with flexible furniture and integrated technology.
- Access to adaptive learning platforms and AI tools is essential for personalized learning experiences.

2. Innovative Classroom Design

Prerequisite 2 – Policy and Institutional Support: Clear institutional strategies supporting digital and pedagogical innovation are essential.

Key policy areas include:

- Data privacy regulations and ethical AI use guidelines
- Equitable access policies ensuring no student is left behind
- Frameworks for international collaboration
- Recognition systems for micro-credentials and skill badges

2. Innovative Classroom Design

Prerequisite 3

- Teacher training programs for digital literacy and hybrid teaching methodologies.
- Curriculum redesign emphasizing competencies, personalized learning, and 21st-century skills.
- Active learning approaches that integrate technology meaningfully into instruction.

2. Innovative Classroom Design

Prerequisite 4 – Technology Integration

- Seamless integration of AI, virtual exchange platforms, and micro-credential systems is essential.
- Tools must support both asynchronous and synchronous learning modes. Continuous evaluation ensures tech tools remain effective and equitable.

2. Innovative Classroom Design

Prerequisite 5 – Culture and Mindset

- Openness to change and innovation among educators and students is essential.
- Emphasis on lifelong learning and adaptability prepares everyone for evolving challenges.
- A collaborative culture embracing diversity and global perspectives creates richer learning environments.

2. Innovative Classroom Design

Conclusion

- Global trends transform education through personalized AI pathways, collaborative projects with international peers, skill recognition beyond traditional degrees, flexible anytime-anywhere access, and commitment to sustainability in all initiatives.
- The future classroom is shaped by global trends—digitalization, globalization, competency-based learning, flexibility, and sustainability—and requires deliberate prerequisites in infrastructure, policy, pedagogy, technology, and culture.
- Through collaboration and innovation, we can design learning environments that empower all learners for the challenges ahead. Let's shape this future together.

3. Changed Learning Models and Future Education

- UNESCO Futures of Education: universities as laboratories for new social contracts
- Shift from knowledge transmission to knowledge co-creation with students and society
- Need for agile governance, experimentation and partnerships with ecosystems

3. Changed Learning Models and Future Education

Curriculum Redesign

- Embed interdisciplinarity – combine technical, social science and humanities perspectives
- Integrate future-of-work themes across curricula (automation, ethics, sustainability)
- Develop projects with other organisations to build work-ready capabilities

3. Changed Learning Models and Future Education

Competency-Based Education

- Progress based on demonstrated competencies, not seat time or credits alone
- Clear learning outcomes aligned with labour market and societal needs
- Assessment emphasising performance tasks, portfolios and real-world projects

3. Changed Learning Models and Future Education

Blended & Online Education

- Blended models combine the strengths of online and face-to-face modalities
- Online learning expands access, especially in remote or rural regions
- Quality requires instructional design, student support and robust digital infrastructure

Personalized Learning

- Use of data and AI to tailor learning pathways, pacing and feedback
- Balance between personalisation and collective, social learning experiences
- Risks: privacy, bias, over-optimisation; need for human-centred learning design

3. Changed Learning Models and Future Education

EdTech Ecosystems

- Growing ecosystem of platforms, tools and content providers in education
- Universities should act as orchestrators – selecting, integrating and evaluating tools
- Importance of interoperability standards, open educational resources and public values

3. Changed Learning Models and Future Education

Micro-Credentials

- Short, targeted learning offerings recognised with digital badges or certificates
- Support modular upskilling and reskilling throughout the life course
- Universities can partner with industry to co-design and co-brand Micro-Credentials

3. Changed Learning Models and Future Education

- Strategic alignment: clear vision of the university’s role in the future of work
- Institutional agility: ability to redesign programmes and partnerships quickly
- Data-informed decision-making and continuous improvement culture

3. Changed Learning Models and Future Education Paradigm Shift in Teaching

Aspect	Traditional	Modern
Role of the Teacher	Knowledge Provider	Learning Facilitator
Learning Method	Lecture-Based Teaching	Active Learning (PBL, Flipped Classroom)
Assessment	Standardized Tests	Competency-Based Assessment

Discussion:

What is your opinion:

- Question: “What first step could you implement next week?”
- Quote: “Education is not the learning of facts, but the training of the mind to think.” – Albert Einstein
- Note: “In the next presentation: How technology can support these approaches
- Are Future Skills relevant for your Universities?
- Do you already consider Future Skill for your course development?
- Are ther difficulties in changing for the future?
- How far are new learning methods developed in your Universtities?
- Are there certain needs not already addressed?
- Are there hinderances to develop new learning methods?
- What is about Cooperation between Universities and the Industry?

Implications for Universities

To implement competency-based and modular systems, universities need to:

- Redesign curricula around **competence frameworks**, not content lists
- Use **learning outcomes** aligned with UNESCO, OECD, and EU standards
- Create **flexible pathways**: modular programs, micro-credentials, blended formats
- Partner with employers: co-developed modules, internships, real-world projects
- Train academic staff in competency-based pedagogy
- Develop digital infrastructures for micro-credential management
- Prepare students for future labour markets and sustainable societies

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