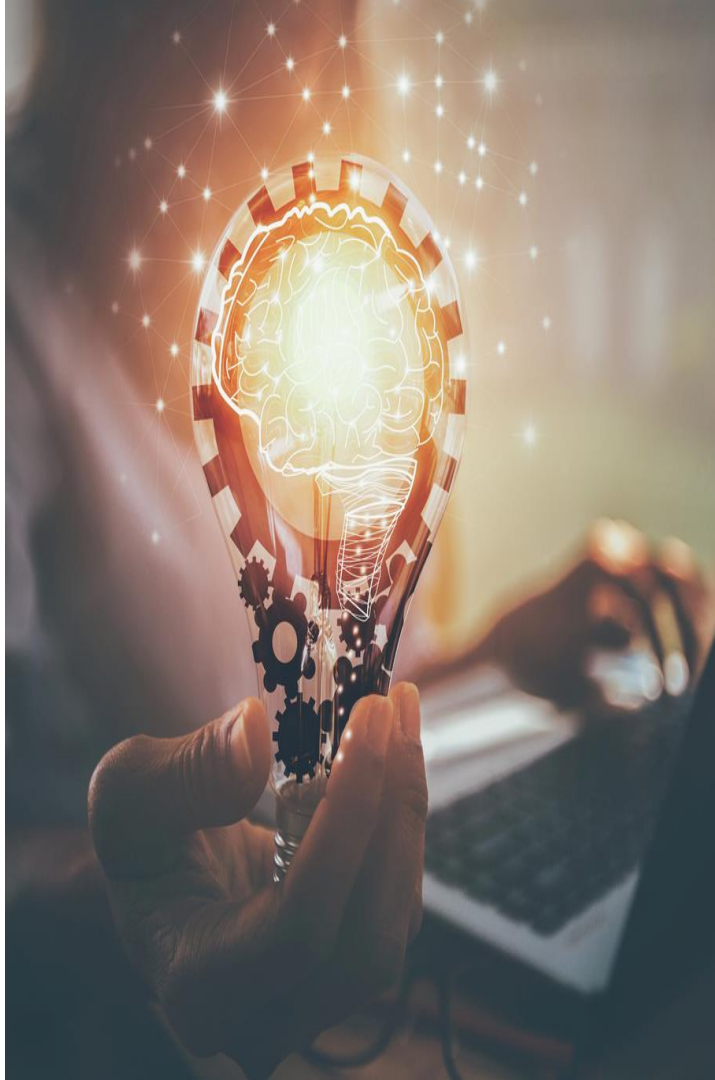
Module 5
Unit 2

Unit 2 – University governance in the field of higher education

Module 5: INNOVATIONS IN SKILLS, POLICY DESIGN AND EDUCATION SYSTEM GOVERNANCE



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Unit 2: University governance in the field of higher education

Module 5: Innovations in skills, policy design and education system governance

1. University governance in the field of research and development
2. University governance in the field of higher education
3. University governance in the field of knowledge transfer and science communication

The objectives of this Unit are:

- To provide an understanding of quality management activities in the context of digital learning formats
- To illustrate strategic issues arising from the design of digital teaching for higher education institutions.
- To recognise possible effects related to the shift to individualized and personalized learning concepts.
- To illustrate ideas of a Curriculum 4.0.

Contents

1.1. Quality management of digital learning formats

The digital transformation has long since arrived at HEIs. This opens up new possibilities for teaching and learning. In the teaching and learning innovations of recent years, it is clear that the integration of digital media is becoming the norm. Digital learning infrastructures are thus part of the “digital university ecosystem” [1].

In the foreseeable future, the question will arise as to which developments can make a lasting contribution to increasing the quality of teaching and learning at universities. The quality development of digital teaching and learning offers is a key aspect, precisely because of the potential decoupling of content offer, institutional provider and different educational participants [2].

Therefore the development of studies and teaching must also be subjected to structured quality and process management as a strategic topic. The topic of quality and digital learning at HEI´s concerns not only measures of quality assurance and development as well as certain quality criteria for teaching, but above all quality management in digital learning at the level of university management.

Source: [1], [2]

1.1. Quality management of digital learning formats

Variety of digital formats and application forms in higher education

Adaptive Learning
Blended Learning
Personalized Learning
E-Textbooks
Badging and Gamification
Microlearning Assets
Mobile Learning
Learning Analytics
Inverted Classroom
Virtual Reality
E-Learning
Open Educational Resources
Synchronus Online Learning
E-Lecture
Open Course and MOOC

1.1. Quality management of digital learning formats

Digital Learning Scenarios in international higher education practise

1. **"Enrichment“ -** simple forms of adding digital components to courses
2. **"Integration" -** focuses on conventional blended learning approaches in which attendance phases and digitalised learning phases complement each other.
3. **"Online learning" -** learning opportunities provided online that involve little or no face-to-face time.
4. **"Interaction and collaboration“ -** maps forms of use of social media and interactive and collaborative applications
5. **"Open Educational Practice“ -** the focus is on free access to study opportunities and the contribution that free learning materials can make to better learning experiences.
6. **"Game and simulation" -** includes all variants of learning based on digitalised games as well as "digitalised reality"(e.g. virtual reality)
7. **“Personalisation” -** digitalised learning formats that do not follow the "one size fits all" principle of conventional learning platforms and allow for adaptation to individual learning needs.
8. **"Self-study"** includes all forms of digital support for self-study processes.

Source: [3]

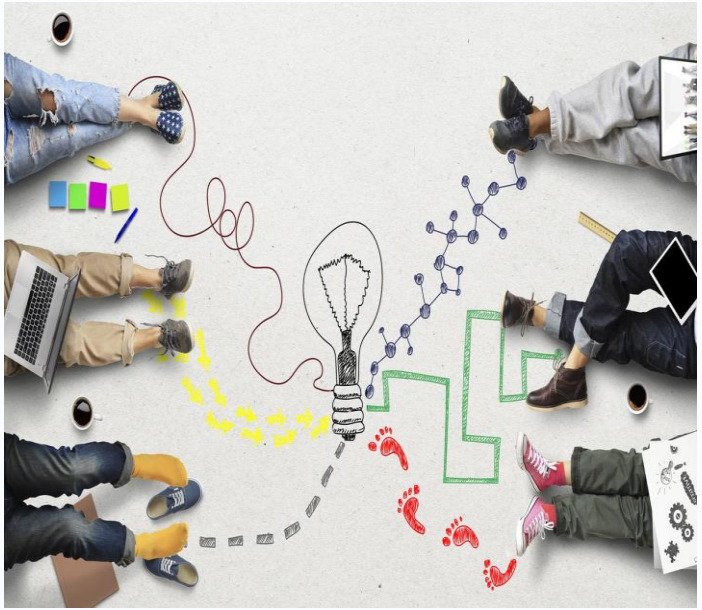
1.1. Quality management of digital learning formats

Digitised learning elements and formats offer a wide range of design and profiling options

- E-Lectures (for compact presentation of learning material in orientation to actual attention spans)
- Inverted classroom approaches (facilitate the personalisation of learning processes)
- Open learning materials (possibilities for open educational practice and for compensating for structural disadvantages)
- Applications from the field of digitalised reality (promote the understanding of complex contexts and can facilitate the acquisition of practical skills)
- Digitalised learning opportunities (suitable for supporting individual self-learning phases, e.g. mobile Apps, formative E-Assessments)
- Online study programs (partially based on MOOCs can trigger new curricular development projects and open up higher education institutions to international target groups).

Source: [3]

1.1. Quality management of digital learning formats



Challenges to define “Quality”

- Quality is an amorphous concept in higher education.
- Quality in the higher education system is associated in academic and public discourses with different concepts, e.g. performance, professionalism, transparency, development, standardisation, efficiency and accountability.
- Quality in study and teaching: not "measurable"?
- Quality as an individual perception?
- The definition of quality is therefore also derived from the social tasks of HEI´s and is reflected in their traditional, increasingly differentiated functions of teaching, research, self-administration and transfer.

1.1. Quality management of digital learning formats

Institutions should have a policy for quality assurance and development that is made public and forms part of their strategic management. Internal stakeholders should develop and implement this policy through appropriate structures and processes, while involving external stakeholders (ESG standards and guidelines). [4]

Quality in the context of higher education can be defined as a following combination of organization activities:

- Improving core activities (teaching, research and institution services)
- Alignment of activities, budget and resources with the strategic plan
- Demonstration of leadership and innovation in all activities
- Exploration of the needs of students, other customers, stakeholders and the market
- Investing in human resource development
- Use of data, information and knowledge for decision making
- Improving outcomes [5]

Source: [4], [5]

1.1. Quality management of digital learning formats

General trends in HEI´s QM systems in use

- Comprehensive quality management (all organizational areas)
- Interlocking of various quality assurance procedures
- Linking quality assurance and quality development with strategic planning
- Initiation and active support by the governing bodies/ university management
- Interaction between central and decentralised university level
- Result control and strategic feedback for derivation/ adjustment of previous strategic goals, tapping the quality circle

1.1. Quality management of digital learning formats

QM includes, in particular, ensuring the same or equivalent quality standards for digital and traditional teaching and learning formats.

QM as an overall organisational task also includes monitoring the development status with regard to strategic goals and the continuous further development of framework conditions (e.g. infrastructure, services).

In the digitisation of teaching, a major challenge is to integrate digital formats into the study program. Therefore, standards for quality assurance, certification and creditability in particular must be taken into account and, if necessary, developed.

QM at HEIs takes place in an area of tension between self-reflection and external assessment, but also between control and self-organisation as well as between the individual and the organisation. These six poles not only complement each other, they are also partly in conflict with each other. [6]

Source: [6]

1.1. Quality management of digital learning formats

Quality in e-learning

Quality development is an important factor in e-learning activities at universities. The technical tools, the teaching scenarios, the didactics as well as the organisation and administration must be subjected to a quality check.

Quality in the context of digital learning formats can be considered process-oriented or product-oriented. On the one hand, it is about the process and the implementation, and on the other hand, it is about the teaching-learning products used in the educational process.

Quality in education can be considered on different levels:

- At the level of study programs, accreditation procedures ensure quality;
- Evaluation and quality assurance of learning products;
- Technical standards of tools used;
- Competence development of the teaching staff;
- Student feedback.

Source: [7]

1.1. Quality management of digital learning formats

Levels of quality assurance and development for digital teaching and learning

Makro level (University management/administration)
- Definition or orientation towards a strategy/ a mission statement
- Framework conditions of quality management and quality development

Meso level (concrete actions)
- Consulting, Service
- Evaluation
- Further training

Micro level (Teaching)
- Adherence to media-didactic principles in the creation of media
  products, e-learning content & course design (quality criteria)

Good practice

Quality assurance and development of e-learning at MLU

Martin Luther University of Halle-Wittenberg:

Professionalisation of teachers - training offers of the @LLZ (Centre for Multimedia Teaching and Learning), certificate program "Multimedia teaching“; **Qualification for students**, e. g. E-learning-Pass, Media-Pass

Counselling services of the @LLZ: 5 subject-related working groups for elearning advice for teachers, 11 thematic working groups with staff responsibility (E-didactics, e-platform / support, legal issues in e-learning, lecture recording, e-assessment, e-portfolio, mobile learning, quality development)

Multiple evaluation formats

Honouring activities: "@ward - Award for Multimedia Teaching and Learning"

Source: [8]

Example

Seal "Excellent in digital teaching"

What standards are necessary to continue the new teaching and learning formats in a quality-assured manner? This is where FIBAA comes in and has developed a new certification for "**Excellence in Digital Teaching**". FIBAA is a quality assurance agency. With its procedures at institutional level (system accreditation, institutional accreditation), FIBAA addresses all higher education institutions and other education providers across disciplines. The new Seal is based on the "Occasional Paper 26" of the European Association for Quality Assurance in Higher Education (ENQA) on the subject of "Considerations for quality assurance of e-learning provision". The main points of the certification are the following: Standard 1: Strategy for the digitisation of the teaching and learning offer, Standard 2: HR, Standard 3: Technology, Standard 4: Didactic Design, Standard 5: Quality control
The seal can serve as an extension to institutional procedures (institutional audit, system accreditation, institutional accreditations). Likewise, a study area/faculty can also be institutionally certified here for excellent digital teaching or apply with an individual study program/further education course. In spring 2021, three higher education institutions from the DACH region (Germany, Austria, Switzerland) will undergo the new FIBAA certification in a pilot process.

Source: [9]

Good practice

HFDnet: the network for university teaching, Germany

In the HFDnet network, the Higher Education Forum on Digitisation (HFD) brings together university lecturers, support staff and students to facilitate a nationwide exchange across disciplines and HEI´s and thus jointly advance digital teaching. Exchange opportunities for the HFD community: **HFDcert** - online platform on which teachers, staff of didactic and support institutions as well as students active in teaching can have all their activities in the field of digital teaching certified by a peer review process and documented in the form of an online portfolio. **Digital Learning Map** presents selected teaching-learning scenarios in the form of a database in which digital media are integrated at German universities. It offers an overview of innovative projects and best practice examples from various disciplines and teaching institutions. **HFD Hangouts** – Online meetings for regular exchange. **HFD Community Working Groups**, **HFD Summer Schools**.

Source: [10]

Good practice

Foundation Innovation in Higher Education, Germany

With the establishment of the “Foundation for Innovation in Higher Education Teaching” in 2021, the Federal Government and the Federal States (Länder) have established an institution to promote the ability of higher education teaching to innovate in the long term. Universities are supported in adapting faster and better to new societal challenges and needs. The Foundation addresses the German higher education landscape in its breadth. With this goal in mind, the Foundation promotes suitable projects that are anchored at individual universities or are implemented in a network. In addition, it creates networking opportunities for designers of higher education teaching, strengthens the transfer of knowledge between universities and promotes the exchange of project results, successes and challenges.

Source: [11]

1.1. Quality management of digital learning formats

Quality assurance and quality development of digital learning formats can be considered and designed on different levels. As an area of organisational quality management, it thus also becomes a task of the university management. The necessary activities are the creation of a common understanding of quality, the integration into a QM system but also the necessary cultural change.

- QM of digital and analogue teaching cannot be considered separately.
- Digital learning can effectively support HEIs in fulfilling new teaching tasks.
- Digital learning supports the development of a new teaching culture.
- Digital learning needs effective support through "strategic appreciation".

- Perception of university didactic offers
- Implementation of innovative forms of teaching and their systematic reflection
- Sensitisation to questions of didactics and student-centredness
- Strengthen and establish higher education didactic institutions
- Systematic knowledge transfer and networking

Reflection

Think about your own university…

- What do you think of the current system of institutional accreditation and internal quality assurance processes? Do these current processes guarantee quality in teaching and learning? If not, why not?
- To what extent is the use of digital teaching and learning formats evaluated?
- How can the quality of digital teaching and learning be assured and certified?
- What are criteria for good digital learning formats?
- What are the (strategic) goals of the university in implementing digital learning formats?
- Are teachers and students regularly consulted and involved in the development process of digital learning formats?

1.2. eTeaching: Tasks for university management

Higher education institutions face major challenges at various institutional levels, of administration, teaching, learning as well as testing. In the area of teaching, digitisation can help to make it more attractive, individualised, effective and flexible. It can be observed that more and more existing teaching and learning concepts are being enriched with digital concepts in order to improve their quality.

eTeaching or digital teaching can be understood as the activity of teaching or the support of learning with the help of computer-supported networked technologies. In essence, this is about the didactically justified use of digital media in specific teaching processes (often associated with the terms smart learning and smart teaching).

The use of digital forms of teaching and learning has necessitated a variety of adjustments to organisational structures within universities. Nevertheless, the digitisation must, beside the individual teaching skills, fundamentally be seen as a subject of strategic higher education development.

1.2. eTeaching: Tasks for university management

What educational paths will a comprehensively digitally supported university open up in the future ?

In a comparison of various international foresight studies and trend reports, Wannmacher identifies similarities in expectations:

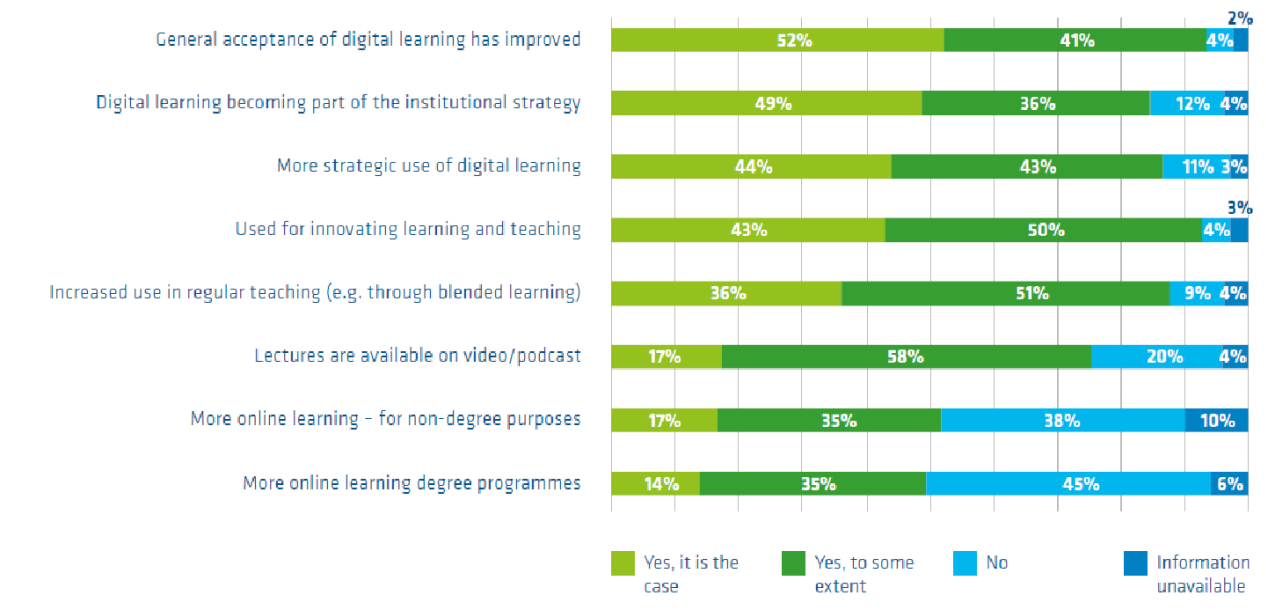
- Expectation that study programs will make much more extensive use of digital forms of knowledge transfer, discourse and collaboration in the future.
- It is expected that forms of study, learning and graduation will become more flexible, that cooperation between HEIs will become more intensive and that the use of learning opportunities offered by other HEIs and institutions (with corresponding challenges for the recognition of study achievements) will increase.
- A stronger individualisation of studies and the use of self-active forms of learning.
- These developments are accompanied by far-reaching challenges for the digital learning infrastructures of higher education institutions, for (automated) support services as well as improved access possibilities. In this context, it is often expected that access to higher education will become easier in general.

Source: [12]

1.2. eTeaching: Tasks for university management

Main trends at HEIs institutions regarding digital learning in the last three years.

Responses from higher education institutions from 48 countries, representing the entire EHEA in 2020



Source: [13]

Did you know...

“Digital lecture hall” - study examines acceptance

Researchers from the Weizenbaum Institute have investigated how digital learning opportunities were accepted by students in the Covid 19 semester, whether there are differences between study subjects and how the acceptance of virtual forms of teaching changes over the course of the semester.

- The results show that acceptance depends on the subject studied and decreases over the duration of the semester.

- For example, it was found that students of business informatics generally have a greater affinity for technological applications than fellow students of music and art.

Derived demands: The differences in the subjects of study must be included in the elaboration of digital learning and teaching offers. On the other hand, teachers should also acquire didactic and methodological skills for virtual teaching that go beyond the competences for using digital tools.

Source: [14]

1.2. eTeaching: Tasks for university management

Smart learning – Learning model of the future?

The term smart refers to the use of advanced equipment and technology in different contexts.

Smart Learning, that is the change from rigid, frontal forms of teaching with a person-bound teacher to an open teaching concept with interactive forms of teaching.

Smart learning is concerned with context-aware ubiquitous learning. Contexts include the interactions between learners and environments. Therefore, smart learning environments can be deemed technology-supported learning environments that implement adaptations and provide appropriate support in the right places and at the right time on the basis of individual learners' needs.

Learning anytime and anywhere based on individual cognitive ability. It takes place by using an advanced electronic device. Smart learning environments are IoT-based learning solutions, which are seamlessly integrated into our working and learning environment.

Source: [15]

1.2. eTeaching: Tasks for university management

Smart learning – Learning model of the future?

Learning in the Smart Learning Environment (SLE)

SLEs are physical environments enriched with digital and context-sensitive components to enable faster and better learning. [16]

- provides personalised feedback or assistance
- interacts with the user through multiple channels (e.g. via smartphones or other ubiquitous computing devices)
- offers customised learning content for individual learning needs
- takes into account personal factors as well as external environmental influences (e.g. personal learning needs, preferences, etc.)
- refers to learning strategies and tools
- supports formal and informal learning
- understands and takes into account the real (learning) context [17]

Establishment and use of SLEs opens up new opportunities for collaborative and practice-based learning, especially for universities that are increasingly linking the digital and analogue approaches.

Source: [16], [17]

Example

Smart Learning Platform 4.0

Due to the changed requirements of a digitalised working world, the Stuttgart University of Applied Sciences has set itself the goal of offering students realistic industrial environments and has set up an Industry 4.0 laboratory with mobile, stationary and virtual components . The aim is to enable students to work more collaboratively in interdisciplinary, interprofessional, intersectoral and international contexts. For this purpose, a learning parkour is created, which the students go through within seven semesters. Topics from Industry 4.0 and the Internet of Things (IoT) are included both in terms of content and practice in order to achieve creative opportunities for experimentation, active participation and joint learning through real experiences with technical systems at the university as well as in the private environment.
The model developed should be transferable to other study programs. In the future, personalised support for the individual learner is also to be implemented by reflecting back the results of the assessment of learning successes and thus enabling the students themselves to learn more about their own learning behaviour.

Source: [18]

1.2. eTeaching: Tasks for university management

Strategic thematic fields for the design of digital university teaching

- Digitisation of teaching is part the overall strategic development of the university
- Provision of service offers and measures for further qualification and networking of teaching staff
- University didactics develops research-based and practice-oriented offers for the digital design of teaching and concepts for their implementation
- The accreditation of study programs ensures that digital competence curricula are appropriately anchored in the study programs

1.2. eTeaching: Tasks for university management

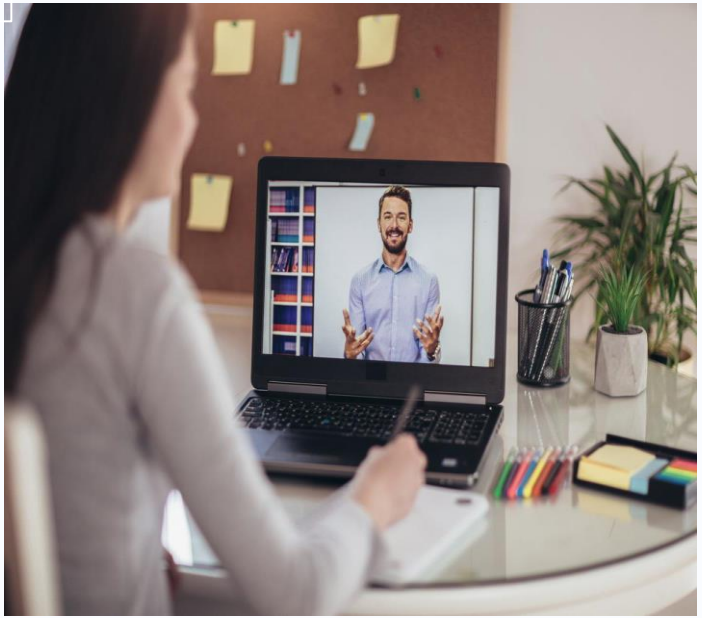
Advancing digital teaching through supporting measures

In order to realise the potential of digital learning formats, politics and HEI ´s have to create appropriate framework conditions and make resources available (personnel, infrastructure, services, time). For example:

- Strengthen the appreciation of teaching,
- Emphasise the strategic importance of digital teaching,
- Appreciation and visibility of good digital teaching (Best Practices); making digital teaching visible in the context of public relations work
- Provide resources for the development and implementation of innovative strategies, projects and scenarios (initiatives such as the "Quality Pact for Teaching" in Germany have forced a certain part of the funds to be used for digital teaching),
- Establishment of specific management positions for the implementation of digitisation in teaching

Source: [19]

1.2. eTeaching: Tasks for university management



Advancing digital teaching through supporting measures

- Establish support structures and promote their use (e.g. e-learning) service facilities in computing, media or higher education didactic centres or decentralised service facilities at faculty level),
- In order for digital teaching to succeed, it is important for scientists and lecturers to gain knowledge about the diverse application possibilities of synchronous and asynchronous online teaching and to expand their media, didactic and methodological skills; Establishment of national or international certificates in higher education didactics.
- Inter-university cooperation (exchange of experience and expertise, joint creation of digital teaching and learning materials)
- Ensuring structural durability of digital teaching and support

Source: [19]

Good practice

E-Teaching Training, FU Berlin

"E-Teaching" is a practice-oriented further training course on the use of digital technologies and media in university teaching. E-teaching is designed as an in-service modularised training and is implemented as a blended learning event. In training courses, workshops and supervised online phases, students can get to know the possibilities offered by digital media and technologies for university teaching and try them out in practice. Within the framework of the course, students work on problems in their own everyday teaching. [20]

FAVILLE – facilitators of virtual learning

Faville is a Erasmus+ project and aims to enhance the quality standards of facilitation in virtual learning environments and to provide skills and competences that facilitators of virtual learning need to develop or improve their activity**.** The aim of the project will be achieved by creating 3 main project outputs: e-learning course for virtual learning facilitators, Digital App on facilitation techniques, and Framework for validation of skills and competences of virtual learning facilitators acquired through non-formal and informal learning. [21]

Source: [20], [21]

Good practice

TELucation, TU Graz

TELucation is an amalgamation of the words TEL (technology enhanced learning) and education. One result of this approach is the TELucation folder. The TELucation folder aims to support teachers by addressing topics around technology-enhanced teaching and learning. TELucation is an overall concept to enable teachers to competently and creatively develop and implement (media) didactic designs with technology support. The TELucation concept includes the following offerings:

- media-didactic training and further training for teachers
- individual TEL-coaching with the focused goal of developing or expanding a blended learning course concept
- exchange on the university's internal TELucation platform for lecturers.

All TELucation content is made available publicly and as free educational resources (Open Educational Resources).

Source: [22]

Good practice

Competence Centre for Digital Teaching and Learning, University of Wuerzburg

The Competence Centre for Digital Teaching and Learning (DigiLLabs) at the Professional School of Education addresses teaching and learning with and via digital media in teacher education as well as in schools and classrooms. With the participation of seven faculties, cooperation in research and teaching takes place in five subject group networks as well as in an interdisciplinary think tank. Six rooms for digital teaching and learning have been set up in the Competence Centre for Digital Teaching and Learning. These rooms provide the professional and infrastructural prerequisites for a comprehensive anchoring of digitalisation in the studies of (teacher training) students and serve to promote competences in teaching and learning with and via digital media.

Source: [23]

Reflection

- Please think of 3 criteria that you think characterise good digital teaching?
- What are the central challenges in the area of digitised teaching at your university?
- What is the status of digital teaching quantitatively (positions) and qualitatively (department, academic institution, etc.)? Where are digitisation units located (staff, central institution, decentralised)?
- To what extent does your university cooperate with cross-university associations and consortia in the field of digital teaching?
- In your opinion, what are the central and most effective levers for the further development of digital teaching?

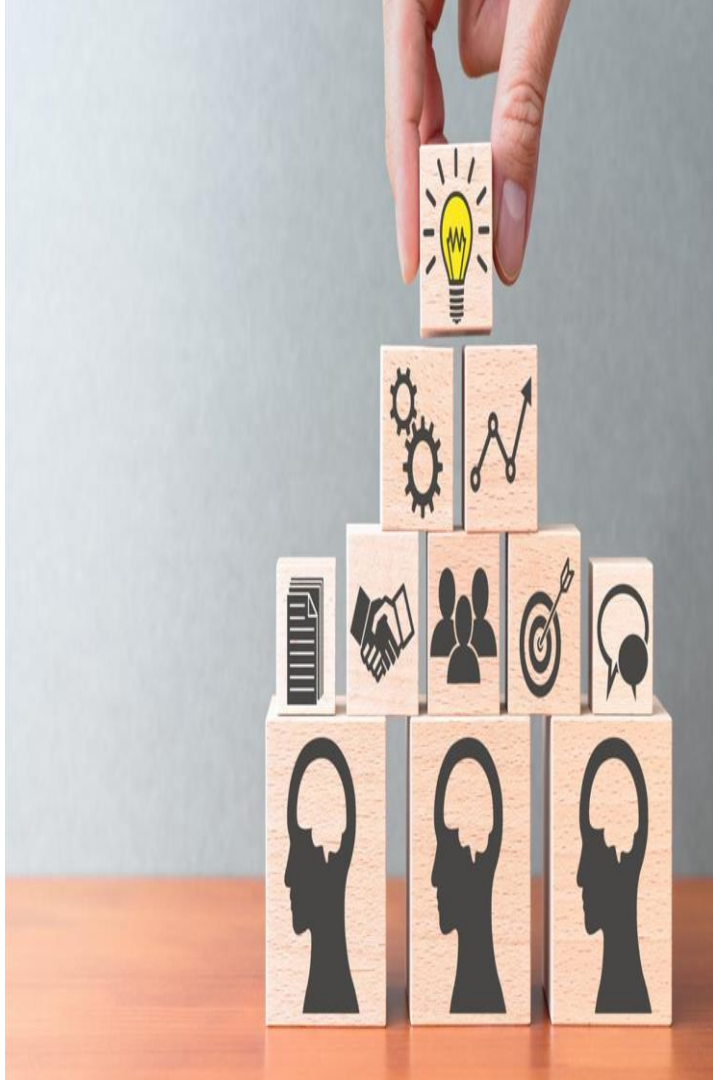
1.3. Paradigm shifts: Individualised and personalised learning

Learning in a digital, networked world is associated with a paradigm shift. Digitalisation is drastically and permanently changing media usage behaviour. Digital media open up versatile possibilities in the development of new approaches to learning arrangements with corresponding didactic consequences. Digital learning is increasingly chararcterised by

- Self-determination User-centredness
- Community - learning also increasingly takes place in a community, the exchange among equals becomes a central element of knowledge transfer. [24]

The personalisation and individualisation of higher education has become a much-discussed trend in recent years. This is accompanied by the prospect of a reorientation of teaching that is more responsive to individual needs, learning habits and ways of using media. Individualisation and personalisation are closely related to self-directed or self-regulated learning, which has been extensively researched in educational psychology for many years. [25]

In this context, the concept of Learning Analytics should also be mentioned, which has developed into a professional discipline with increasing influence on educational policy decisions in recent years.



Source: [24], [25]

1.3. Paradigm shifts: Individualised and personalised learning

What is meant by individualization and personalization?

Individualisation as a concept has a sociological background and describes a progressive process of increasing autonomy of the individual. Individualized learning mean to place the individual learners and their respective individual learning process at the centre of instructional action (e.g., how to tailor teaching to the individual's needs).

Personalisation describes the process of adapting content as closely as possible to the preferences and interests of the addressee. Personalized learning refers to a didactic concept in which learning situations and materials are designed in such a way that they best take into account the individual and heterogeneous learning requirements and needs of learners.

1.3. Paradigm shifts: Individualised and personalised learning

Paradigm shifts and discourses on the personalisation and individualisation of higher education

- The notion of "teaching" as didactically prepared transmission of knowledge is more questioned.
- Teaching as a process of authentic accompaniment and support/Learning as a process of experience
- Moving away from the one size fits all approach/ more individual support
- Differentiating teaching: Students are given different aids/instructions to achieve the learning objectives
- HEI´s must provide logical learning paths also by means of digitalisation (e.g. learning management systems); Universities see themselves as service providers.
- Change in education policy governance models (e.g. New Public Management(NPM); The consequence is an enormous differentiation and modularisation of the offers, which will increase even further through the use of adaptive software in the near future.

(1) Individualisation as a process of social change that relies on a flexible, autonomous individual.

(2) Positivism as the dominant model of thought in pedagogy, which assumes the exact measurability and predictability of human learning processes.

(3) Learnification as a consequent pushing back of the person of the teacher in favour of accompanying support formats

Source: [26]

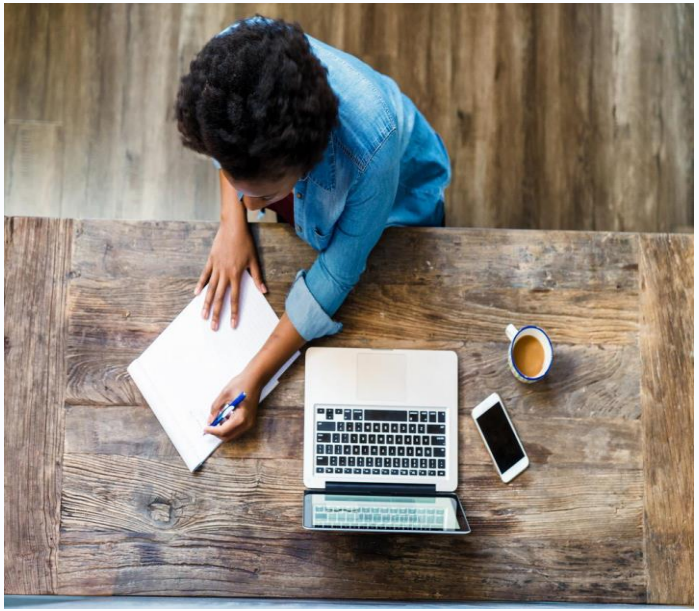
1.3. Paradigm shifts: Individualised and personalised learning

What is meant by individualization and personalization in higher education?

Technical perspective: Hardware and software offerings that allow settings to be customised to personal preferences and needs (concept of Personal Learning Environments, methods of Big Data and Learning Analytics and Recommender systems).

Pedagogical didactical perspective: Models and methods with which personal needs can be addressed. To do this, the learner must first be analysed so that learning objectives, content, delivery methods, media and examinations (as formative assessment) can be aligned on this basis.

Marketing perspective: Personalisation promises new solutions and revenue for providers. Companies like Knewton, for example, offer automated digital tutoring that adapts to learners' personal needs.



Source: [26]

1.3. Paradigm shifts: Individualised and personalised learning

The great trend of individualization: Learning analytics

The technical possibilities and the enormous increase in data are leading to a new challenge for educational institutions: How can the data stream be managed to improve administrative and pedagogical decisions? For HEI´s, the question arises as to how students can be better supported in the course of their studies. The generation of data on learning processes and the course of studies and their evaluation and the reflection of the results back to the students represents a new approach here.

“Learning analytics is the term used to describe the interpretation of a wide variety of data "produced by or collected for students to measure learning progress, predict future performance and uncover potential problem areas“ [27].

Some of the most popular goal of learning analytics include:

1. Supporting student development of lifelong learning skills and strategies
2. Provision of personalised and timely feedback to students regarding their learning
3. Supporting development of important skills such as collaboration, critical thinking, communication and creativity
4. Develop student awareness by supporting self-reflection
5. Support quality learning and teaching by providing empirical evidence on the success of pedagogical innovations [28].

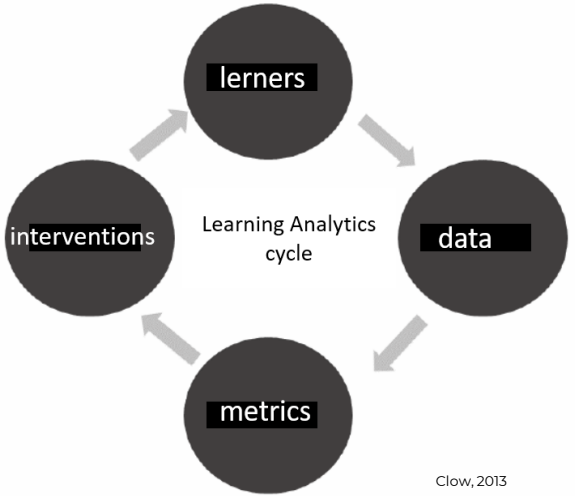
Source: [27], [28]

1.3. Paradigm shifts: Individualised and personalised learning

Learning analytics

Areas where learning analytics could make a significant contribution

- As a tool for quality assurance and quality development: Learning analytics could be used proactively as a diagnostic tool at individual or institutional level to improve one's own teaching.
- As a tool to reduce drop-out: Institutions could identify at-risk students earlier in order to intervene (e.g. with counselling) already in the study entry phase.
- As an instrument for assessing different learning outcomes: Data collected can provide information on the learning behaviour of heterogeneous learning groups in order to be able to act didactically on their needs.
- As a prerequisite for the development and implementation of adaptive learning: This is personalised learning, whereby students receive learning materials based on their previous interactions in the learning process.



Clow, 2013

Source: [29], [30]

1.3. Paradigm shifts: Individualised and personalised learning

Social Learning analytics

- increasing importance of networked, participative learning in open digital environments (use of MOOCs or OER)
- .should support learners in finding appropriate learning opportunities and learning partners (for example, through visualisations of relevant social indicators).
- SLA aims to analyse learning processes (individual and collective), course design and outcomes from collaborative practices

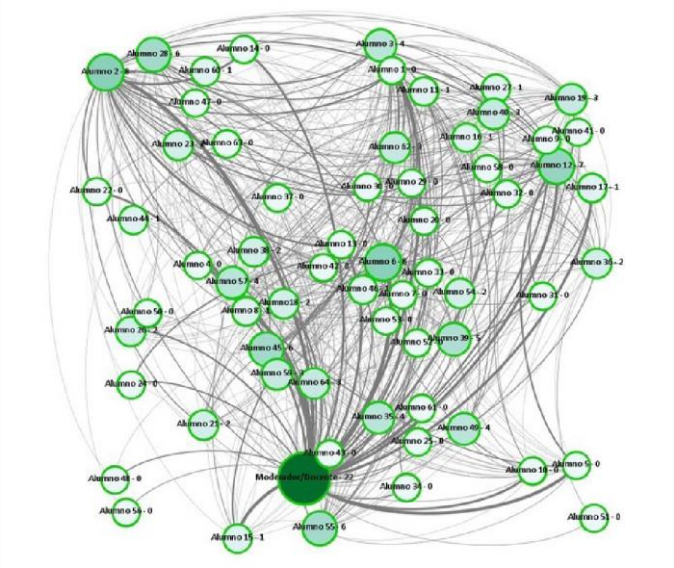


Figure: Interaction in collaborative learning (Diaz et al 2017)

Source: [31]

1.3. Paradigm shifts: Individualised and personalised learning

With learning analytics to more quality in university teaching?

Students use various digital offerings of their universities, such as learning management systems, the online catalogue of the university library or even information on the university website. If the data is measured and analysed, it can provide insight into teaching and learning processes and thus contribute to improving the quality of higher education teaching.

Challenges on 3 levels: Didactics (Teachers must be able to react to the results of the data analysis within the framework of their teaching; The implementation of learning analytics must therefore be accompanied by a corresponding qualification of teachers). Technological level (need for a powerful system). Ethics (e.g. data protection and transparency).

Potentials for HEI´s:

- Possibility to gain insight into user behaviour and thus into (online) learning processes
- Learning environments and teaching materials can be evaluated and improved
- Learning can be made more individual

Source: [32]

Learning analytics in a nutshell

https://www.youtube.com/watch?v=XscUZ8dIa-8

Example

Examples – Analytics for student success

Personalized Electronic Coaching (University of Michigan) - **ECoach** a tailored communication system, is using personalization backed by well-researched behavioral science, smart user experience design, and ongoing software development, to help students succeed in large courses. **The Berkeley Online Advising project** at the University of California at Berkeley and COM PASS, a project at the University of California, Irvine, are examples of learning analytics tools designed for academic advisors. These tools provide advisors with information that allows for proactive outreach and intervention when critical student outcomes are not met. University of Iowa has deployed a student-facing analytics dashboard, **Elements of Success**. The capacity to access summary data and curated visualizations allows students to better measure their progress and motivates them to take action when critical outcomes are not achieved. Arizona State University uses a commercial adaptive learning tool (**ALEKS**) for many of its college algebra classes. Using data from ALEKS, ASU created a daily predictive model, identifying students at risk of not passing college algebra. Instructors are given access to a dashboard showing the current prediction, allowing them to better support students

Source: [33], [34]

Example

Digital4Humanities, Friedrich Schiller University Jena

The project focuses on the development of modular self-learning offers for teaching digital research methods in existing courses in the humanities. In the project, video tutorials for teaching are developed that show how digital research methods are applied. The video tutorials are self-learning offers. They are aimed at students and interested parties and will later be freely available as Open Educational Resources. The long-term goal is to promote the digital competences of students and to strengthen teachers in digital methods, thus advancing hybrid teaching-learning settings. In addition, a specialist concept is being developed which provides answers to the following questions

- How should digital competences be taught?
- How can video tutorials be used?
- How can the self-learning offers be integrated into already existing curricula?
- How can a commitment be created that students take up and understand the self-learning offers?

Source: [35]

Good practice

Capellas´s competency map

Capella University is a private distance learning university in Minneapolis, USA, that offers online education only. In Capella's competency-based curriculum, students gain valuable skills that are needed to succeed in the chosen field. These include university outcomes that reflect general employability skills, program learning outcomes and course competencies. Rather than cramming for a test, students will be asked to demonstrate specific skills and abilities. **The elements of competency-based education at Capella**: An assignment that measures knowledge through practical application. **Competencies**: Knowledge and skills that students are expected to gain from a course. To move on, students must demonstrate mastery of a those skills. **Criteria**: The elements in an assessment that students will be evaluated on. These are outlined in the assessment rubric. **Grading**: Students are graded/evaluated based on how well they demonstrate each of the criteria. **Competency map**: A personalized dashboard that shows students their academic progress on each competency. This helps to identify strengths and areas that needs more focus.

Source: [36]

Good practice

SIDDATA - Study individualisation through digital, data-driven assistants

SIDDATA has the overarching goal of supporting students to determine and pursue individual educational goals. For this purpose, previously unrelated data and information are brought together in a digital study assistant and prepared for independent use. Students can use the assistant flexibly and individually determine which factors and data sources should be taken into account. The data that can be used includes data from learning management systems, offers and resources from other universities and institutions and data on individual learning and work behaviour. Since November 2020, students at the three universities (University of Osnabrueck, University of Bremen, Leibniz University Hanover) have been able to test the digital, data-supported study assistant in an individual, multifaceted and interactive way. With the use of the assistant, students should be encouraged to define their own educational goals and pursue them consistently. In the future, the data-supported environment should be able to provide situation-appropriate hints, reminders and recommendations, taking into account local as well as externally offered courses and Open Educational Resources (OER).

Source: [37]

1.3. Paradigm shifts: Individualised and personalised learning

Fields of action for HEI´s management

- Top down or bottom up approach
- interactive process (involve teachers and students)
- Development and facilitation of higher education didactic qualification programs for lecturers
- Organise learning arrangements in a binding way
- Organise the production and organisation of digital teaching in a division of labour with teachers, media didactics experts, programmers.
- Integration of the concepts of individualisation/personalisation in certification options (e.g. E-Portfolio, Badges, E-Assessment)
- Expansion of didactic options (e.g. Open Curriculum - high degree of freedom in the selection of courses to be taken)
- Creation of the framework conditions for necessary data protection, copyrights, transparence of data collection
- Designation of a supervisory authority

Source: [19]

Reflection

- What do you understand by individualised and personalized learning?
- What are the conditions for a successful implementation to support individualised and personalised learning digitally?
- What structural conditions do universities have to create for this?
- Are learning analytics tools used at your university? If so, what lessons learned can you pass on to other universities?
- Do certification options exist that represent and promote principles of personalisation?
- How can users be successfully sensitised to the informed handling of their own data?

1.4. Curriculum design in a digital age

Digital media, electronic platforms and teaching-learning arrangements are more or less part of university teaching and accompany teachers and students in their everyday studies. In doing so, HEI´s must take into account both the current requirements of the employment system and the developments of the digital transformation as an occasion for the redesign of educational processes. [38]

HEIs are therefore responsible for enabling their students to develop competences that not only include the competent use of digital technologies, but also the ability to assess the potential and effects of digitisation in society and the world of work, to actively and reflexively shape digitisation processes and to keep pace with the rapid dynamics of change.

In this respect, LEBLANC describes three challenges that HEIs will have to deal with: 1. development of a coherent learning eco-system in which learners move in and out over a lifetime; 2. HEÍs need to move away from the idea of a "one size fits all model of education" ; 3. Previous educational content must be reconsidered due to changed occupational profiles. [39]

Source: [38], [39]

1.4. Curriculum design in a digital age

“Curriculum 4.0” - How curricula must be changed in the digital transformation to prepare students for the demands of the digital knowledge society?

- Curriculum work is becoming more relevant, as it is necessary to react more and more quickly to processes of change in the working environment
- Starting points are reflection and formulation of teaching and learning objectives, selection of content, questions about suitable teaching and learning methods, suitable examination formats [40]

Today: What competences do students need in order to successfully complete their studies?

Tomorrow: What competences do students need in order to be successful in the current living and working environment?

The day after tomorrow: What competences do students need in order to be successful in the living and working environment of the future?

Curriculum work goes beyond the mere listing of contents to address why concrete goals and contents were included in a curriculum and thus establishes the context of justification [41].

Curriculum 4.0 - a curriculum that addresses the process of digital transformation in a targeted manner.

Source: [40], [41]

1.4. Curriculum design in a digital age

Digital Curriculum Development in Higher Education

A well-planned and carefully designed implementation strategy is critical to sustaining a successful and personalized digital curriculum-based learning program. It can

- help faculty and educational institutions create a clear vision for successful implementation
- assist in getting systematic support from various community stakeholders
- ensure that critical decisions impacting teaching and learning are clearly defined with academic goals in mind
- establish a proper timeline for executing diverse learning program(s)
- ensure that various factors are taken into consideration that requires advance planning such as funding, staffing needs, technology requirements, and ongoing professional development

Source: [42]

1.4. Curriculum design in a digital age

Components of curriculum development

Digital teaching methods: There are many approaches to using digital teaching methods across the range of disciplines and universities. However, the field of digital teaching methods is extremely broad - it ranges, for example, from the simple use of PDFs or online teaching platforms for seminar organisation to preparation-intensive blended learning approaches. In addition, the field of digital teaching methods is also highly dependent on the individual teacher.

Digital teaching content: Since teaching content is oriented towards the subject matter, the individual subject areas map digitalisation - to the extent that it affects the respective subject matter.

Curricularly anchored digital competences: The teaching of digital competences is mostly demand-oriented and based on subject-specific requirements. Accordingly, digital competences are taught without necessarily being formalised in curricula.

Source: [43]

1.4. Curriculum design in a digital age

Data Literacy - central competence in the digital knowledge society

The ability to deal with data in a planned manner and to be able to consciously use and question it in the respective context is becoming increasingly important in the course of digital transformations and represents a key competence in all sectors and disciplines.

In this context, HEI´s are increasingly called upon to orient curriculum development in the subjects and disciplines towards the promotion of these competences. Currently and in the future, new offers are therefore emerging for the demand-oriented, cross-disciplinary imparting of knowledge on data-based work and decision-making.

The interdisciplinary working group Curriculum 4.0 of the “Higher Education Forum on Digitisation” (Germany) has identified recommendations for action to promote data literacy at universities:

- Structures and collaboration
- Competences and integration
- Competence mediation

Source: [44]

1.4. Curriculum design in a digital age

“Curriculum 4.0” - Imparting data literacy skills

Structures and collaboration

- Building appropriate infrastructures and space in the curricula, access to best practices and data
- Further training of the heads of department, convincing the university leadership and launching measures
- Building collaborations across departments, disciplines and industry, creating a community of practice and a shared space with access to resources.

Competences and integration

- Establish "data education" labs to better support self-study.
- Start early at school level by training prospective teachers.
- Build a standardised competency framework for data literacy.

Competence mediation

- Data literacy should become a basic requirement for accredited programs.
- Data literacy education should be standardised.
- The teaching of data literacy skills should be done with a domain expert and a data scientist.

Source: [44]

1.4. Curriculum design in a digital age

Theses for a "Curriculum 4.0"

Basis: Creation of an agile process that involves all stakeholders and transfers the dynamics of digital transformation into curriculum development.

- A culture of appreciation of high commitment to teaching is a central prerequisite for contemporary, continuous curriculum development (e.g. creating incentives).
- The analogue and virtual networking of teaching-learning designers forms the basis of bottom-up innovation processes within universities (networking about Best Practices).
- With increasing student heterogeneity, the complexity of teaching-learning environments increases. This requires new forms of continuing education for teachers.

Source: [43]

1.4. Curriculum design in a digital age

Theses for a "Curriculum 4.0"

- In addition to general, broad-based degrees, higher education institutions should also develop small-scale credentials (micro-credentials).
- In future, curricula will no longer be developed on the basis of learning times (ECTS), but on the basis of competences. Curricula should be consistently oriented towards 21st Century Skills.
- HEIs will in future increasingly implement validation processes for the crediting and recognition of competences for non-traditional students (Practical experience at individual universities (such as the Université de Bretagne Occidentale (UBO) in France, the Work Based and Integrative Studies (WBIS) program at the University of Chester in the UK or at Western Governors University in the USA).
- The comprehensive and timely development of teaching-learning concepts, structures and competence frameworks for the teaching of future skills in all subjects and higher education institutions requires expertise, cooperation and peer counselling that is bundled and deployed across higher education institutions.

Source: [43]

Example

Tableau for Data Literacy curriculum

Tableau is a visual analytics platform (www.tableau.com). Tableau offers a Data Literacy Curriculum to help teachers and academics furthering students data skills in the classroom.

These two data literacy courses aim to provide foundational knowledge to students so they can understand, explore, and effectively visualize and communicate with data. These courses can serve as prerequisites for a variety of analytics, research methods, or data science curricula.

Tableau for Teaching (TfT) offers complimentary software, learning resources, and curricula to help instructors teach data skills

Source: [45]

Good practice

Curriculum 4.0.NRW

With the Curriculum 4.0. nrw funding line, the federal state of North Rhine-Westphalia is promoting innovative approaches to designing higher education curricula for the digital world. The focus is on the inclusion of new or modified study content as well as comprehensive curricular development and redesign of the study programs. All digital teaching/learning materials, applications and tools developed within the framework of the funded projects must be posted as Open Educational Resources on the future state-wide online portal for studying and teaching in NRW (heureka.nrw). Examples:
RWTH Aachen: Teachers for the digital society - Media competence development in the teaching profession using the example of English as a subject of study; **Niederrhein University of Applied Sciences**: Textile Electronics; **Cologne University of Applied Sciences**:
Digital Engineering - Competence Acquisition for Mechanical Engineers in the Digital Age; **University of Cologne**: Curricular development in the life sciences; **Heinrich Heine University Duesseldorf**: Digital Art History; **RWTH Aachen**: Hybrid Thinking Tools - Research-based Learning at the Interface of Material Experience and Digital Abstraction

Source: [46]

Good practice

Programme DIGKOM - Nuremberg Institute of Technology

DigKom stands for a university certificate for digital competences and is a networked and structured qualification programme for students with a focus on teaching current topics and trends from fields of digital competences, promoting self-learning competences in the digital age as well as reflection and self-assessment of students' competence levels. The programme is interdisciplinary, open to all fields of study and integrated into the curricula of the degree programmes. Through a modular concept, students attend courses and workshops according to their interests and individual needs.

DigKom is built on a network of internal and external partners as well as on an international partnership. A large part of DigKom's services are provided by external experts.

Source: [47]

Good practice

Campus-IL, Israel's National Online Digital Learning Platform

At the level of the education system (macro level), the national initiative 'Digital Israel' is currently an outstanding case study. The project contributes to the further development of the education system by creating an ecosystem in the education sector. The higher education institutions act as a driving force to develop educational offers for the open learning ecosystem. CampusIL is the only digital learning platform in the world that addresses a broad audience including academia, civil servants, underserved populations side by side with general public life long learners. Within the other similar national platforms around the world, CampusIL is the only platform which is both not audience-specific and initiated and operated by the government. Equal opportunities for education are thus the declared goal of the digitalisation initiative. Campus.il acts as the national MOOC platform (based on Open edX). Teachers at lower secondary level are obliged to work on at least one MOOC per semester in class with the learners in order to prepare them for lifelong learning in the digital ecosystem. The courses are based on the P21 21st century skills framework.

Source: [48]

Campus-IL: Public Sector Innovation

https://youtu.be/PDgGmcivz0w

Reflection

Think about your own university…

- How must digital teaching and learning formats be didactically structured so that they offer added value for studies offer?
- How can digitalisation be used to open up higher education institutions more to non-traditional students and make curricula more flexible to new societal demands?
- How should curricula and higher education programs be designed so that relevant innovations from digitalisation can be continuously taken into account?
- How are teachers prepared to successfully use digital formats to impart knowledge and skills?

Key takeaways

- Quality is an amorphous concept in higher education
- HEIs should have a policy for quality assurance and development
- Quality in e-learning can be considered on different levels
- Think about the cultural necessities for setting up a QM system for digital teaching.
- The establishment of a smart learning environment requires a set of specific framework conditions.
- Individualized and personalized learning have a wide range of effects on HEIs management activities.
- The concept of Curriculum 4.0 can be a role model for imparting data literacy skills within degree programs.

References

[1] Hechler, D./Pasternack, P. (2017). Das elektronische Hochschuloekosystem, in: Pasternack, P. (e.d.) Einszweivierpunktnull-Digitalisierung von Hochschule als Organisationsproblem, „die hochschule. journal für wissenschaft und bildung, Institut für Hochschulforschung Halle-Wittenberg.
[2] Themengruppe Curriculum Design & Qualitätsentwicklung (2016). Anerkennung, Anrechnung und Zertifizierung von digitalen Lehr- und Lernangeboten. Arbeitspapier Nr. 8. Berlin: Hochschulforum Digitalisierung
[3]Wannemacher, K., Jungermann, I. Scholz, J., Tercanli, H. & Villiez, A. (2016). Digitale Lernszenarien im Hochschulbereich. Arbeitspapier Nr. 15. Berlin: Hochschulforum Digitalisierung.
[4] Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). (2015). Brussels, Belgium.
[5] Thair, A./Garnett, P./King, S. (2006). Quality assurance and change in higher education, In: L. Hunt, A. Bromage & B. Tomkinson (Eds.), The Realities of Change in Higher Education: Interventions to Promote Learning and Teaching (pp. 52–63). London: Routledge.
[6] Nickl, S. (2007). Institutionelle QM-Systeme in Universitäten und Fachhochschulen, Arbeitspapier Nr. 94, CHE Zentrum für Hochschulentwicklung gGmbH, Gütersloh.
[7] https://www.e-teaching.org/projekt/nachhaltigkeit/qualitaet
[8] https://www.uni-halle.de/
[9] https://www.fibaa.org/digital-education/

References

[10] https://hochschulforumdigitalisierung.de/de/netzwerk
[11] https://stiftung-hochschullehre.de/ueber-uns/aufgaben-und-ziele/
[12] Wannmacher, K. (2020). Digital unterstützte Hochschullehre, in: Henke, J./Pasternack, P. (ed.), Wie die Hochschulen durch das Zeitalter des Frühdigitalismus kommen, Wiesbaden
[13] Gaebel, M., Zhang, T., Stoeber, H. & Morrisroe, A. (2021). Digitally enhanced learning and teaching in European higher education institutions. European University Association absl.
[14] Vladova G, Ullrich A, Bender B, Gronau N. (2021). Students' Acceptance of Technology-Mediated Teaching - How It Was Influenced During the COVID-19 Pandemic in 2020: A Study From Germany. Front Psychol. 2021 Jan 28
[15] Keengwe, J./Onchwari, G. (ed.) (2016). Handbook of research on active learning and the flipped classroom model in the digital age, Hershey, Pennsylvania.
[16] Koper, R. (2014). Conditions for effective smart learning environments. Smart Learn. Environ. https://doi.org/10.1186/s40561-014-0005-4
[17] https://erlkoenig.io/smart-learning-das-steckt-hinter-dem-lernmodell-der-zukunft/
[18] https://hochschulforumdigitalisierung.de/de/blog/smart-learning-platform-40
[19] Hochschulforum Digitalisierung (2016). The Digital Turn – Hochschulbildung im digitalen Zeitalter. Arbeitspapier Nr. 27. Berlin: Hochschulforum Digitalisierung.
[20] https://www.cedis.fu-berlin.de/services/fortbildung/lehrgaenge/e-teaching/index.html
[21] http://faville-project.eu/index.html

References

[22] https://telucation.tugraz.at/
[23] https://www.uni-wuerzburg.de/pse/kompetenzzentrum-fuer-digitales-lehren-und-lernen/
[24] https://www.enterra.de/artikel/digitales-lernen-erfordert-einen-paradigmenwechsel.html
[25] Wirth, J. (2004). Selbstregulation von Lernprozessen. Münster: Waxmann.
[26] Deimann, M. (2016). Stärkere Individualisierung der Lehre durch Neue Medien. Arbeitspapier Nr. 26. Berlin: Hochschulforum Digitalisierung.
[27] Romero, Ch./Ventura, S. (2012). Data mining in education, In: WIREs Data Mining and Knowledge Discovery, Volume 3, Issue 1.
[28] https://www.solaresearch.org/about/what-is-learning-analytics/
[29] Sclater, N./Peasgood, A./Mullan, J. (2016). Learning Analytics in Higher Education: A review of UK and international practice, Jisc. https://www.jisc.ac.uk/sites/default/files/learning-analytics-in-he-v2_0.pdf
[30] Clow, D. (2013). An overview of learning analytics. Teaching in Higher Education, 18(6) pp. 683–695.
[31] Díaz, J. J., Solano, I. M., & Sánchez, M. M. (2017). Social Learning Analytics in Higher Education. An experience at the Primary Education stage. Journal of New Approaches in Educational Research, 6(2), 119-126. doi: 10.7821/naer.2017.7.232
[32] van Trigt, M. (2016). How data can improve the quality of higher education, SurfNet, https://hochschulforumdigitalisierung.de/sites/default/files/downloads/whitepaper-learning-analytics_en-def.pdf
[33] https://ai.umich.edu/blog/infographic-growth-and-adoption-of-ecoach-across-the-university-of-michigan/
[34] Brown, M./McCormack, M./Reeves, J./D.C. Brooks,/Grajek, S. (2020). 2020 EDUCAUSE Horizon Report, Teaching and Learning Edition (Louisville).

References

[35] https://www.gw.uni-jena.de/fakult%C3%A4t/juniorprofessur+f%C3%BCr+digital+humanities+(bild_objekt)/projekt+digital4humanities
[36] https://www.capella.edu/capella-experience/competency-based-education/
[37] https://www.siddata.de/
[38] Gerholz, K.-H. (2018). Digitale Transformation und Hochschullehre. In Harris-Hümmert, S./ Pohlenz, P./Mitterauer, L. (Hrsg.), Digitalisierung und Hochschullehre. Neue Anforderungen an die Evaluation? (S. 41-56). Münster: Waxmann.
[39] LeBlanc, P. J. (2018). Higher Education in a VUCA World. The Magazine of Higher learning, 50(3-4), 23-26.
[40] Arbeitsgruppe Curriculum 4.0 (2018). Curriculumentwicklung und Kompetenzen für das digitale Zeitalter –Thesen und Empfehlungen der AG Curriculum 4.0 des Hochschulforum Digitalisierung. Arbeitspapier Nr. 39. Berlin: Hochschulforum Digitalisierung. DOI: 10.5281/zenodo.2602541
[41] Wildt, J., & Wildt, B. (2015). Organisationsberatung intern – zur partizipatorischen curricularen Entwicklung von Studiengängen an deutschen Hochschulen. Gruppendynamik und Organisationsberatung, 46(1), 77–91.
[42] https://www.hurix.com/digital-curriculum-development-higher-education/
[43] Grünewald, S. (2020). Studiengänge in der Digitalisierung – Baustelle Curriculumentwicklung. Arbeitspapier Nr. 52. Berlin: Hochschulforum Digitalisierung. DOI: 10.5281/zenodo.3614896
[44] Heidrich, J., Bauer, P., Krupka, D. (2018). Future Skills: Ansätze zur Vermittlung von Data Literacy in der Hochschulbildung. Arbeitspapier Nr. 37. Berlin: Hochschulforum Digitalisierung. DOI: 10.5281/zenodo.1413119
[45] https://www.tableau.com/academic/teaching

References

[46] https://www.dh.nrw/kooperationen/Curriculum%204.0.nrw-51
[47] www.th-nuernberg.de/digkom
[48] https://oecd-opsi.org/innovations/campus-il-israels-national-on-line-digital-learning-platform

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