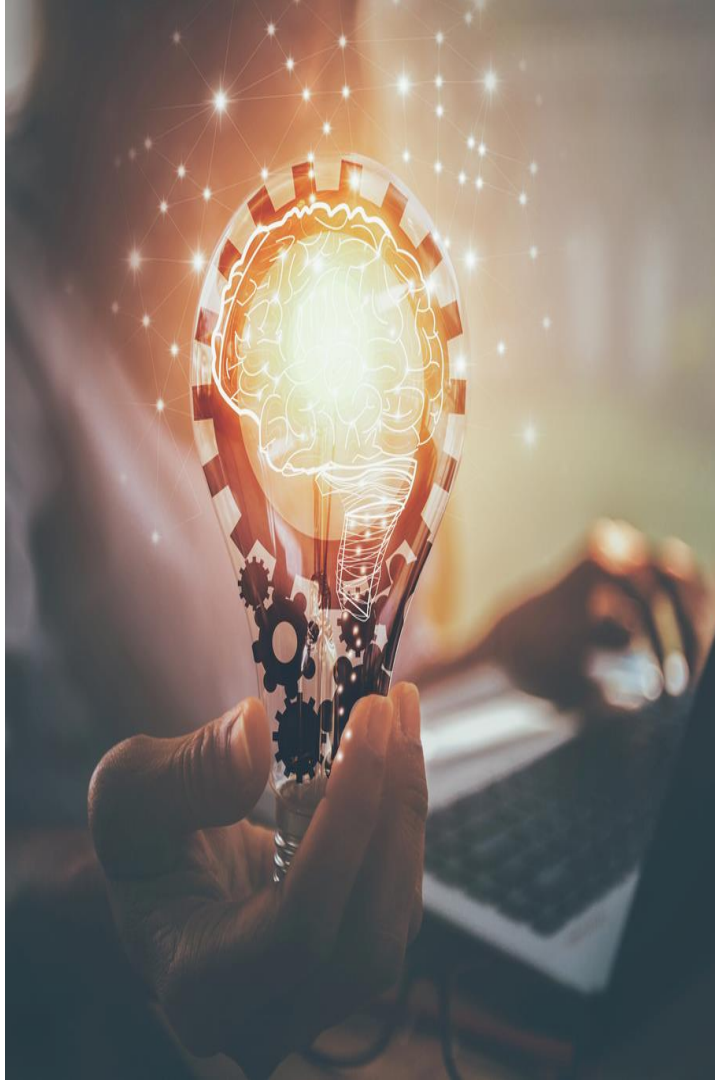
Module 5
Unit 3

Unit 3 – University governance in the field of knowledge transfer and science communication

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



Co-funded by the Erasmus+ Programme of the European Union

This project has been funded with support from the European Commission. This presentation reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Unit 3: University governance in the field of knowledge transfer and science communication

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 knowledge transfer activities as a strategic task for HEI´s in the digital age
- To illustrate the ideas of science communication in HEI´s context
- To recognise possible effects of digitalization on continuing education and adult learning
- To be aware of the importance of stakeholder communication

Contents

Introduction

The digital transformation has become a central governance task for HEI´s

Digitization

... **triggers** a comprehensive differentiation process in the higher education system.

.... **changes** common forms of scientific and administrative work, research, teaching, as well as university governance, administration, and cooperation.

...**opens** up new opportunities for collaborative research and learning at universities and in the field of continuing education.

...**changes** role and requirement profiles and demands new digital competencies.

....**requires** institutional support structures and changes requirements for IT governance, IT architecture and flexible supply concepts.

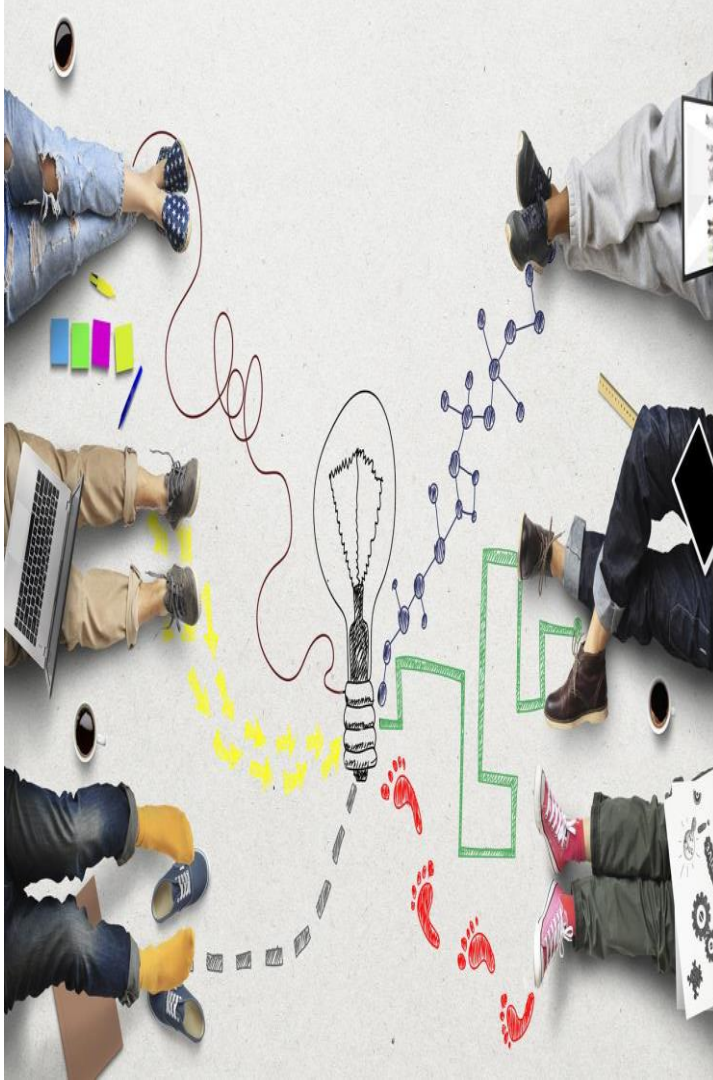
1.1. Knowledge Transfer

HEI´s are an important reflective body for society. The transfer of scientific knowledge into society must increasingly be designed as a strategic task.

The transfer of knowledge from universities to society already has a long tradition. Until the 1980s, the understanding of transfer referred primarily to the transfer of research-based, technical knowledge from universities to the application or use of knowledge in the economy.

Especially since the beginning of the 2000s, with a modern understanding of knowledge societies, knowledge economies and regions, HEI´s have been attributed an active role in societal processes. Thus, the exchange or transfer activities between universities, business and society are now also more broadly referred to as 'knowledge transfer' (KT).

The understanding of transfer has changed from a linear model of the transmission of knowledge to a recursive exchange perspective.



Source: [1], [2]

1.1. Knowledge Transfer

Digital transformation at HEI´s – Impacts and Challenges

Digital Administration

Digital Knowledge Transfer

Digitized Teaching,
Digitized Continuing Education

Digital Research

1.1. Knowledge Transfer

Digital Knowledge Transfer – A diverse field of activity

Digital Stream Activities

Developing a digitally competent workforce

Entrepreneurial University

Digital participation and policymaking

Science communication in social media

Massive Open Online Course (MOOC)

Big Data, Educational Data Mining

Online training

Online services for the industry

Free teaching and learning materials

Digital regional development

Non-profit online services

Online knowledge and technology transfer

Create understanding for science in society

1.1. Knowledge Transfer

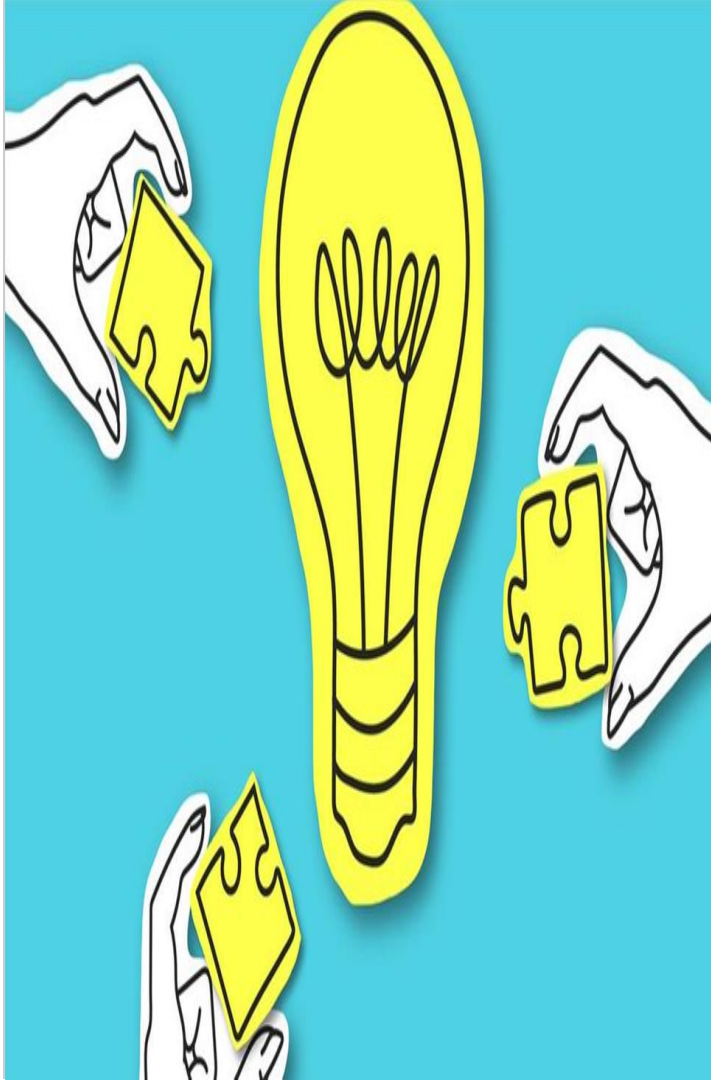
Digitization opens up new challenges and ways to shape KT.

Driven by a different information and communication behavior of society, new technological opportunities, more competition and higher public expectations for accountability.

Conditions of communication, such as time, media, formats, speaker positions, places and spaces are suspended, rearranged and connected.

These developments are changing the opportunities for HEI´s to engage in dialog with society and partners in the transfer of knowledge and technology (opening of traditional transfer formats to **digital interaction**).

Not only science communication must be located as a task in KT, but **communication** as a cross-sectional task in transfer is given an expanded **strategic role** by the digital communication possibilities.



1.1. Knowledge Transfer

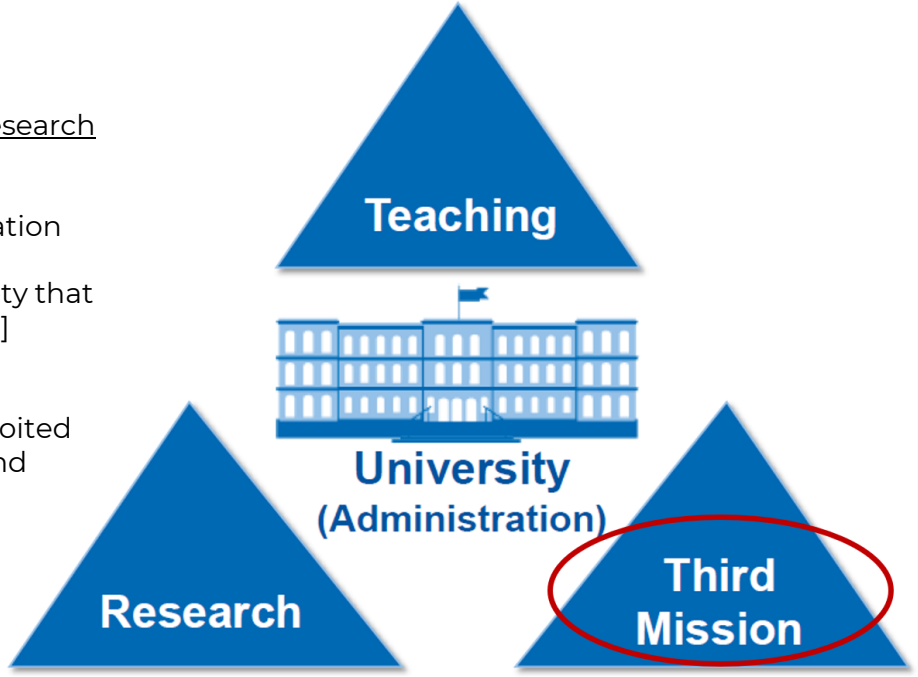
What does KT mean?

Beside the traditional university's goals of teaching and research KT is the Third mission.

Third mission are (...) services (...) provided by higher education institutions that have a direct impact on society and the economy, as well as currents from the economy and society that in turn have an impact on higher education institutions [3]

KT refers to the multiple ways in which **knowledge** from **universities** and **public research institutions** can be exploited by firms and other organizations to generate economic and social value and industry development [4].

(KT) „...*this process happens through* ***communication and interaction*** *with explicit information - verbal or visual*" [5].



Source: [3], [4], [5]

1.1. Knowledge Transfer

Challenges (Problems) in designing KT and Third mission

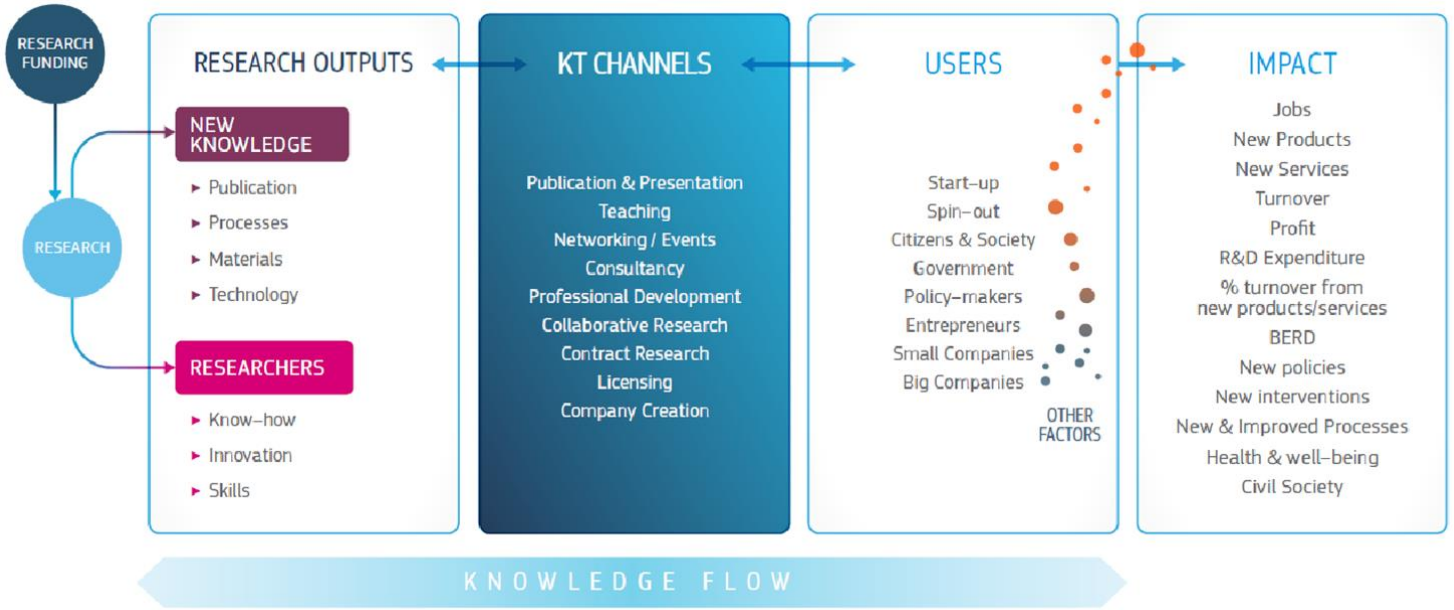
- There is still **no uniform understanding and conception** („one size fits all“) of transfer. Unclear understanding of terms between science communication, science PR and knowledge transfer.
- Even though transfer is considered to be of great importance from a societal perspective, it receives (often) **little recognition** within the science system - especially in comparison to the performance dimension of research (f.e. no incentive structures).
- Transfer activities **vary from university to university**. This can depend on the type of university, on the disciplines (natural sciences, social sciences, humanities, engineering) and the associated subject combinations, as well as on the commitment of the actors (university management, university staff) [6].
- Universities may address **various objectives** through KT activities, such as providing services to faculty, enhancing innovation and the practical use of research results, generating additional incomes treams, fostering local economic development, complying with national and institutional policies, and promoting public value [7].
- KT encompasses a **broad range of activities** to support the collaborations between universities, industry and the public sector, and it involves a variety of goals, modes and channels.

Source: [6], [7]

1.1. Knowledge Transfer

An idea of transfer

Knowledge Transfer:
from research to impact



Source:[8]

1.1. Knowledge Transfer

Requirements for KT

HEI´s are at the crossroads of science and administration with their structural and cultural peculiarities.

Knowledge transfer at HEI´s takes place

- at different **levels** (within the university (micro level), between different universities (meso level) as well as outside (macro level))
- through different **channels**,
- in different **directions** and
- in different **intensities.**

Technical and structural requirements (digital tools, scope for action, organizational support, cooperations, structural units for transfer)

Cultural requirements (different organizational cultures of disciplines, among the students, scientists of the individual subjects and the administration)

Personal requirements (motivation, digital skills, communication skills)

Source [9]

1.1. Knowledge Transfer

University governance and support structure

Transfer offers HEI´s great potential for profile development

Transfer activities do not proceed diffusely and aimlessly, but are associated with one or more **(concrete) recipients** and a **specific use**

KT is anchored as a **core task** of HEI´s. This requires the **holistic institutional integration** of transfer into the strategy, structure, culture, processes and lived practice.

The implementation of the transfer strategy must be considered as an integral part of university management procedures and instruments.

Central **levels of action** in transfer are steering, support and the dialogue-based exchange of knowledge.

Source [10]

1.1. Knowledge Transfer

Development of KT strategy – a participative process

The formulation and implementation of a transfer strategy is an institutional task of HEI ´s management and requires specific governance structures. **Strategy development** requires explicit model conceptions of transfer, for example with regard to the interlacing with research phases, the need for coordination, coordination as well as cooperation, the requirements for planning and management or quality assurance..

The transfer strategy should be designed as a comprehensive, **two-way process** in exchange with the cooperation partners and as an integral part of an overall strategy with the classic elements of a planning/management process:

- analysis of potential,
- development of a mission statement,
- medium- and long-term strategic goals,
- measures for implementing and
- monitoring the achievement of goals.

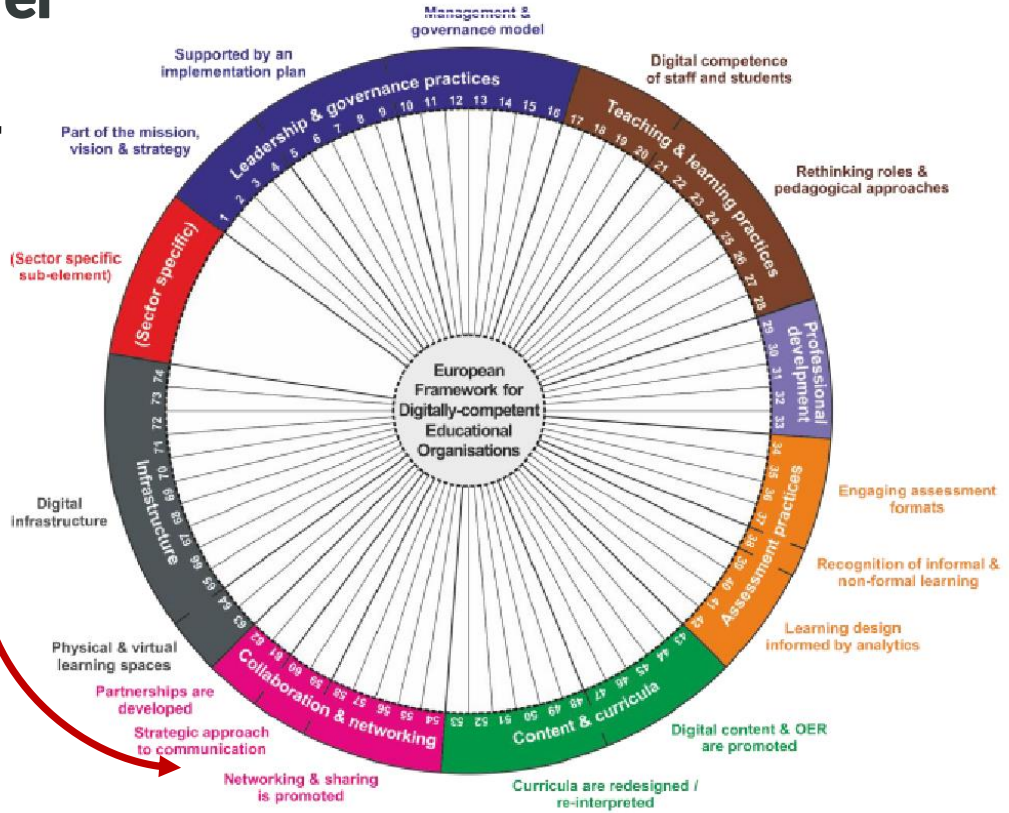
Source: [11]

1.1. Knowledge Transfer

Digitally-Competent Educational Organizations" (DigCompOrg) as a conceptual framework.

Understand KT as an integral part of the overall institutional digital strategy

You can use the framework for guiding a process of self-reflection on your progress towards comprehensive integration and effective deployment of digitally competent organization.



Source: [12]

1.1. Knowledge Transfer

University governance and support structure – elements for KT-development

1. Developing a participatory understanding of transfer for one's own university.
1. Formulate an independent transfer strategy with quantitative and qualitative goals.
1. Anchoring transfer visibly in the university management.
1. Aligning structures, processes and services with the needs of transfer-active university members and partners.
1. Develop monetary and non-monetary incentives together with transfer activists to strengthen the culture of transfer and cooperation.
1. Identify indicators for measuring success in line with the understanding of transfer and the strategic goals.
1. Make transfer activities and actors visible internally and externally through appropriate communication formats
1. Expand formats for internal networking between science and administration

Source: [13]

1.1. Knowledge Transfer

Development of digital skills for KT - What digital skills do university staff need?

HEI´s face the challenge of integrating knowledge, experiences and needs of stakeholders into their practice and communicating them in a variety of media and formats in a target group-oriented way.

Digital knowledge transfer involves using new technologies for communication and taking into account the requirements, competences as well as ways of thinking and acting of those involved in practice.

For staff in knowledge transfer, more than just communication skills are needed.

Transfer staff must therefore be (digital) scouts of innovation topics and innovative partners, active networkers, communication and social media experts, mentors and enablers for transfer-affine researchers, and data and knowledge managers.

Source: [14]

1.1. Knowledge Transfer

Development of digital skills for KT - What digital skills do university staff need?

digital competence fields for knowledge and technology transfer (based on DigComp, EU Commission):

Data literacy, information creation & critical classification
Competences in the collection, management and analysis of sensitive and sometimes extensive data; critical use of social media; Social media analysis and monitoring tools; the regional analysis of trends on topics in social networks, forums and blogs offers potential for regional technology and innovation scouting.

Digital communication, collaboration and responsible action
Collaborative transfer formats such as booksprints, hackathons or barcamps require the use of digital tools to a not insignificant extent, which must be mastered by the organisers and visitors. Today, KT- staff are responsible for both internal communication and at events, as well as communication with practice partners and the interested public. Especially the fast live communication of scientific content, for example via Twitter or Facebook, requires a responsible approach.

Data protection, technical competences and copyright law
Data protection regulations imply the reflective handling of personal data; Content and media are subject to regulations and copyright restrictions, which must be documented and checked before publication. Live streaming, drone footage or videos sometimes have high legal hurdles when it comes to taking and using and publishing them.

Source: [15]

Example

Transfer model – Leuphana University Lueneburg

Core fields of action

Science communication: External communication, Internal communication, Transfer events, Knowledge management **Consulting:** Application advice for transfer projects, Transfer consulting, Start-up consultancy, Scientific consulting
Cooperation: Networking, Collaboration spaces, Development of offers, Personnel exchange
Projects: R&D-Transfer projects, Practical teaching projects, Contract negotiation
Exploitation: Patents and licences, Spin-offs, Strategic partners, Impact measurement

The project "**Digital Knowledge Transfer Model**" tests new formats for knowledge and technology transfer - especially using digital solutions - in order to make research and development results of the university accessible to a broad interested public.

Source: [16]

Good practice

Digital Catapult, UK

Digital Catapult is a digital technology innovation centre, accelerating the adoption of new and emerging technologies to drive regional, national and international growth for UK businesses. Digital Catapult works with a range of organisations - including startups and scaleups, established businesses, investors, government and public sector, research and academia.

Example for university collaboration and knowledge transfer:

PETRAS stands for privacy, ethics, trust, reliability, acceptability, and security. They work with Digital Catapult's IoTUK program, sharing new and relevant knowledge with businesses and Government. The PETRAS IoT Hub is led by UCL and includes Imperial College London, and the universities of Lancaster, Oxford, Warwick, Cardiff, Edinburgh, Southampton, and Surrey.

Source: [17]

Good practice

“Campus to World” – The Project

Hochschule Bonn-Rhein-Sieg, University of Applied Sciences (H-BRS)

Campus to World is part of the federal-state initiative Innovative University. Central elements are the network and innovation managers of the transfer network as well as the Innovation Mall - an online portal for networking and exchange that is intended to enable the transfer of ideas out of and into the university and to support cooperations. Further sub-projects of Campus to World:

- Corporate cooperation for visualisation: new technologies for SMEs
- Municipal partnerships: cooperation with a rural pilot municipality
- Citizen science: eye-to-eye with citizen researchers
- Responsibility Forum: Open exchange about ethical questions in research
- Exchanges in security research: cooperation with security agencies

Source: [18]

Good practice

Digitalisation policy TU Graz (Graz University of Technology)

In spring 2018, Graz University of Technology became the first Austrian university to adopt a digitalisation policy. TU Graz is meeting the challenges posed by digitalisation with a structured transformation process. Since 2019 bundling of diverse digitisation activities in the "House of Digitisation". An interdisciplinary environment is created for cooperation and implementation of the various transformation processes, involving all stakeholders - from students to staff. The digital agenda of TU Graz is accompanied by a program coordination and an overarching transformation management from the Vice Rectorate Digitalisation and Change Management and comprises four fields of action: **Teaching**, **Research**, **3rd Mission**, **Administration.**

KT at the TU Graz aims above all to increase the transfer function and reach of the educational offers. Examples are the Qualification Program for Electronic Based Systems for industry professionals or the qualification strategy „METIS – MicroElectronics Training, Industry and Skills" .

Source: [19]

Reflection

Think about your own university…

- How important is transfer at your university?
- Are the transfer activities integrated into an overall strategic concept?
- How is the transfer concept profiled?
- Are there structural responsibilities for KT activities?
- How does digitalization changes/influences KT?
- Which digital tools are used for KT?
- Does an essential evaluation concept of the transfer activities exist?

1.2. Digital science communication

The **Corona Crisis** is a live laboratory in **science communication**. It demonstrates the importance of visible and reciprocal exchange between science and society to provide a fact-based foundation for political and personal decisions.

Digital developments in technologies have suspended, rearranged and connected plannable factors such as time, media, formats, speaker positions, places and spaces. Against the background of advancing digitalisation, the relationship and communication between science, the public and the media are facing new challenges:

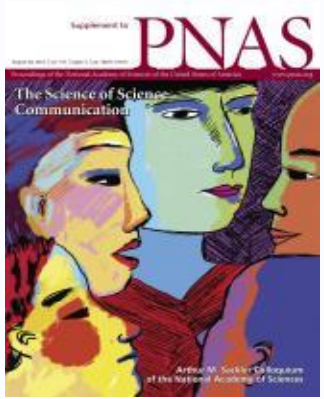
- necessary exchange between science, business and society,
- changed working conditions of classical media actors and a change in public spheres,
- increasing competition between scientific institutions,
- the increased expectation that science gives public account of its work [22].

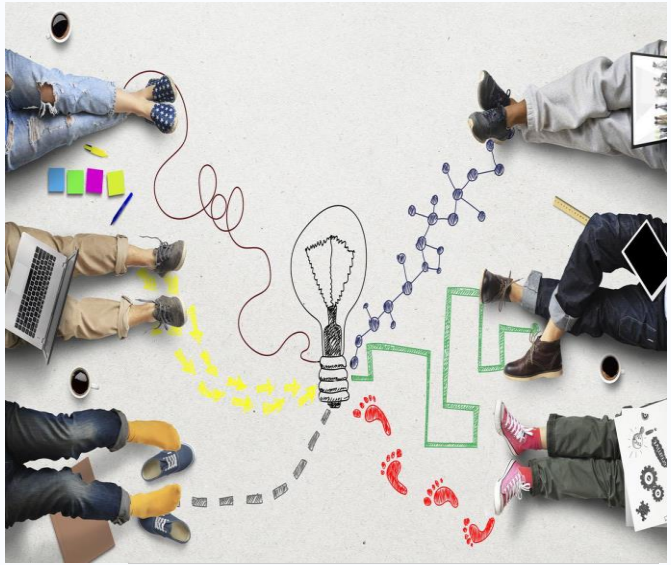
For HEI´s there is a growing need for innovative further development of communicative opportunities to strengthen dialogue and intensify the exchange between higher education and society.

Source: [20]

1.2. Digital science communication

“Ineffective communication can be costly to science as well as to society”



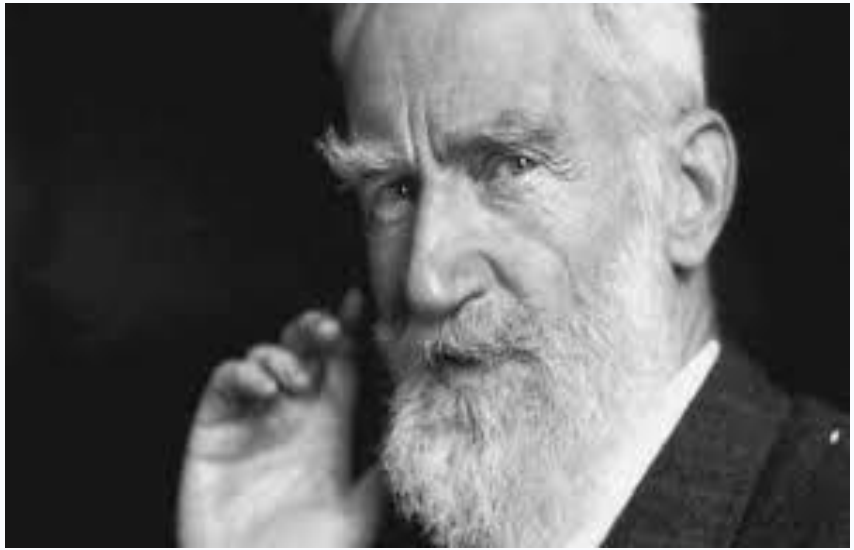


Source: [21]

1.2. Digital science communication

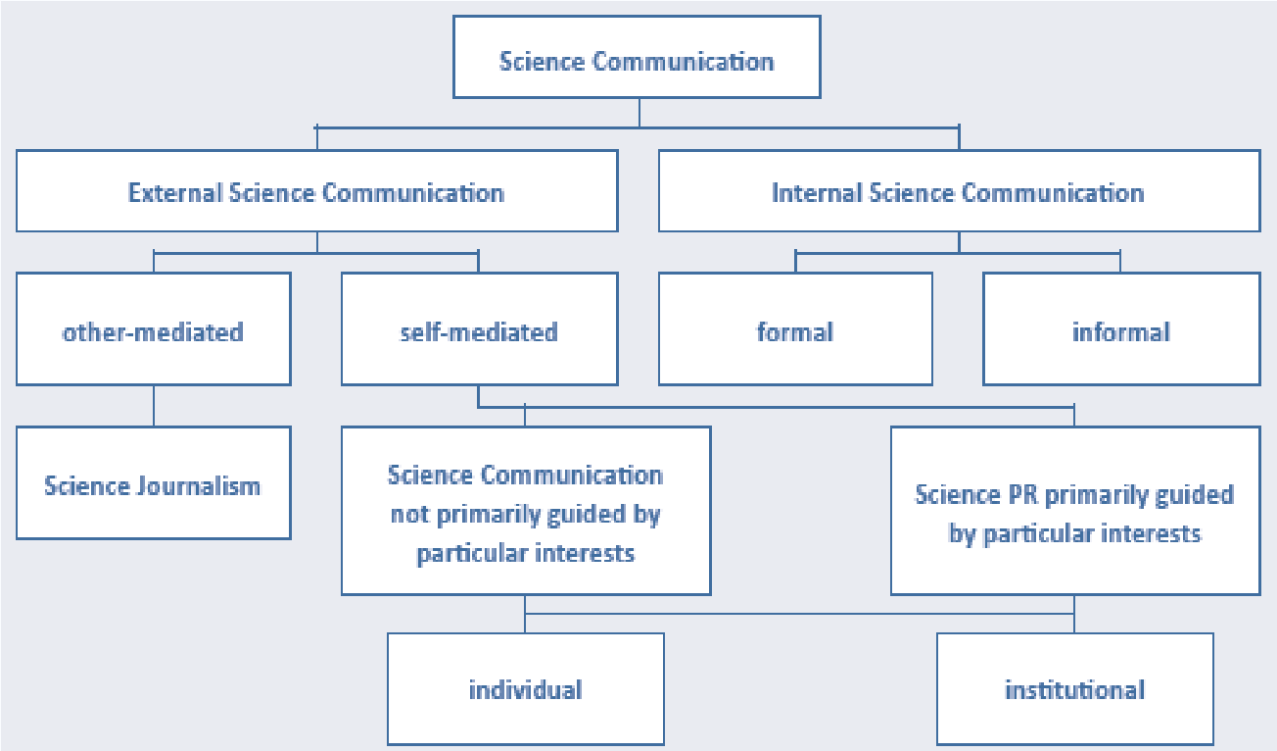
"The single biggest problem with communication is the illusion that it has taken place."

George Bernard Shaw



1.2. Digital Science Communication

Traditional Taxonomy
of Science Communication



Source: [22]

1.2. Digital science communication

Science communication - a task field of KT

This includes both internal communication with the various stakeholders within the university and external communication with regional and supra-regional practitioners.

As a strategic and operational cross-sectional task, communication in the KT

- ...provide information,
- ...connect stakeholders,
- ...build and organize trust and reputation,
- ...promote the production and exchange of knowledge inside and outside

Communication in transfer has the task of initiating and **organizing cooperation** and **collaboration**.

Source: [23]

1.2. Digital science communication

How science communication can look like

@realscientist

@3mKa1

@CERN (European Organization for Nuclear Research)

The secret life of scientists

thebumblingbiochemist

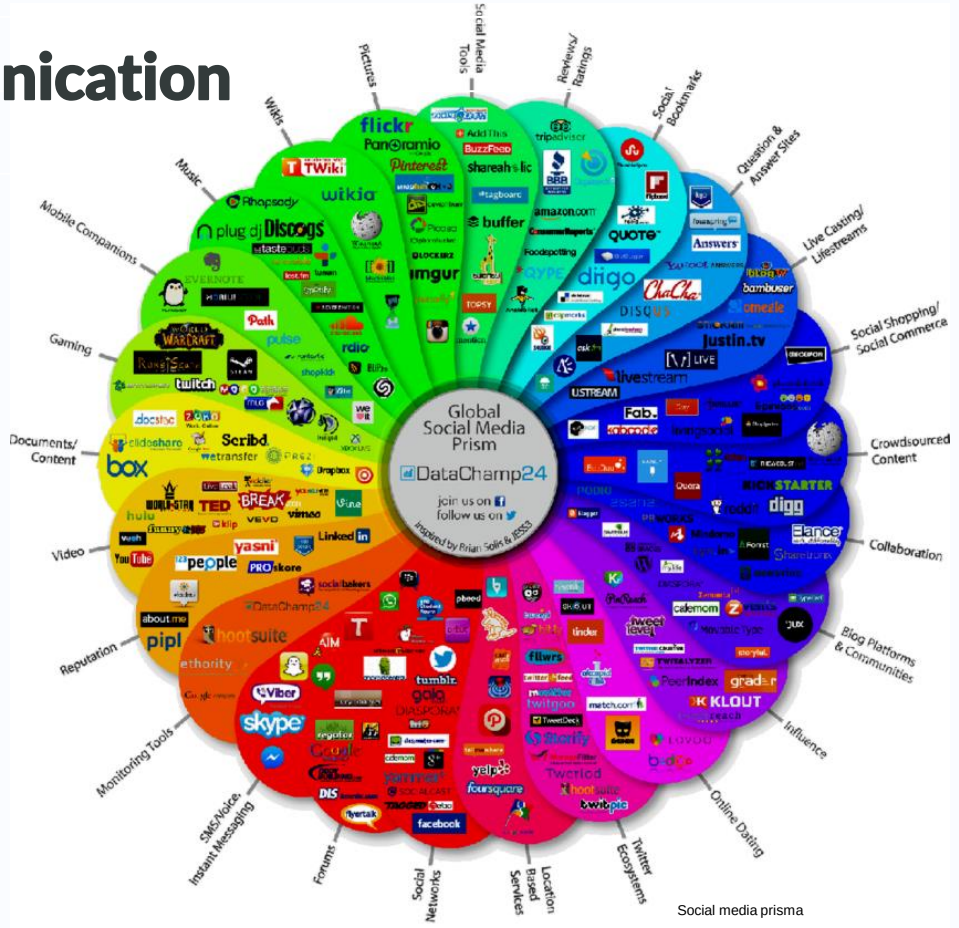
Imperial College London students blog

1.2. Digital Science Communication

Diversity and structure of social media

Social media is a potentially wide-reaching instrument for universities in the areas of teaching, research, external presentation, internal communication and third mission.

- Blogs and microblogging services such as Twitter,
- topic-based networks, e.g. those geared towards scientific exchange, Researchgate.net or Academia.edu,
- thematically open networks such as Facebook,
- collaborative projects such as Wikipedia,
- networks specialising in individual types of media, e.g. Youtube for videos or Instagram



Social media prisma

Source: [24]

1.2. Digital Science Communication

What is science communication?

A fundamental distinction must be made between scientific communication or scholarly communication (intern), and science communication (extern).

- **Science communication** is the use of appropriate skills, media, activities, and dialogue to produce one or more of the following personal responses to science (the AEIOU vowel analogy): Awareness, Enjoyment, Interest, Opinion-forming, and Understanding.
- Science communication is a constant and active information of the public, which includes all forms of communication from and about science. In doing so, it acts bidirectionally, i.e. it takes up needs, ideas and moods from its environment and integrates them meaningfully into the institution.
- Science communication promotes the transfer of knowledge and technology between HEI´s and their partners and makes the achievements and potential of science visible.
- Science communication is much more than public relations, and in the age of digitalisation, it is also more than social media-linked communication of science.

Source: [25], [26]

1.2. Digital Science Communication

Basic forms of science communication

Primarily problem-solving-oriented science communication

knowledge transfer (in business and society) and scientific advice (policy advice and organisational advice)

Primarily public-oriented science communication

Science in the media public sphere (public relations, crisis communication, science journalism); science popularisation and scitainment (science-linked education through entertainment)

Problem-solving and public-oriented science communication

Practices of Public Science (e.g. Citizen Science or Public Sociology); knowledge communication for local and regional developments; crisis aid communication in the public interest and science-policy communication of science (aimed at improving its own action)

Source: [27]

1.2. Digital Science Communication

What is Science Communication? - The EU Guide to Science Communication

https://www.youtube.com/watch?v=4E8rXg3Nv7U

Engage with your audience - social media - The EU Guide to Science Communication

https://www.youtube.com/watch?v=zN1BviidYcc&t=78s

Example

NaWik - National Institute for Science Communication, Germany

The NaWik teaches scientists, students and professional public relations workers the basics of good science communication. The stakeholders are the Klaus Tschira Foundation and the Karlsruhe Institute of Technology (KIT). NaWik offers wide range practice-proven training and further education formats that provide participants with a high utility value for their everyday professional life. Seminars are on **scientific writing** and **communicating science online**, also **presentation skills training** and **media training**, as well as workshops where participants develop their own **communication strategy**.

Projects: WissKon - conference for communicating scientists; Science In Presentations; WISSKOM - Practical study module "Science Communication for Master students, Risk communication on artificial intelligence

Source: [28]

1.2. Digital Science Communication

What should be considered in the strategic orientation of science communication?

- Where are the **competences in science communication** (e.g. which scientists or working groups have experience and are particularly suitable as communicators)?
- Which human, financial and technical **resources** are available?
- What long-term **cooperations**, such as media partnerships, exist or in which **networks** is the institution involved or would like to strengthen its activities?
- For which **target groups** do communication and dialogue formats already exist or could be developed?

1.2. Digital Science Communication

New ways improving science communication

New forms of information provision (curation of content and information or the introduction of newsrooms by complementing them with social media) f.e. Storytelling, Best Practises

Social media is an integral part of KT and communication. Facebook, Twitter or LinkedIn enable the maintenance and development of networks in the sense of social relationship management.

Classic conferences, lectures and workshops can, for example, be designed with live streaming or audience response systems, cross-media and interactive.

The expansion of real space through visual, virtual overlays, augmented reality (AR), offers exciting possibilities for use in knowledge transfer (f.e. “AR-Studio”, “ARKit2”).

SEO (Google search engine optimization) as a communication tool between science and practice. Improve the communication strategy for knowledge transfer with more visibility among stakeholders (Push strategy, the impulse comes from the transfer area or cooperation service. In the pull strategy, the initiative comes from the actor interested in cooperation).

Use of the instrument of “influencer communication” for the transfer (Science-to-Business S2B).

Source: [29] [30]

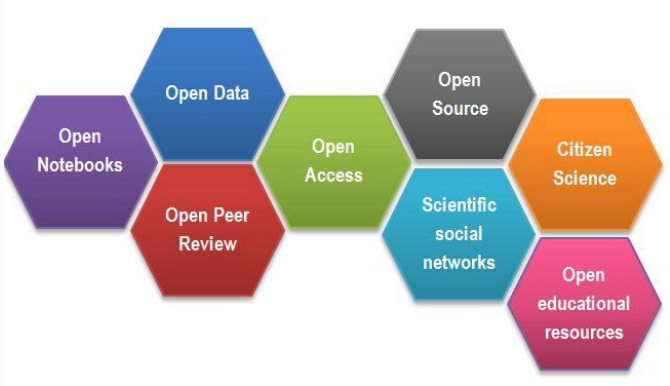
1.2. Digital Science Communication

New ways in science communication

Digital scientific formats – Open Everything Strategy

Open Strategy refers to a cultural change in scientific working methods and communication. It represents a **new approach** to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative tools.

- Open Source / Open Methods, i.e. the accessibility of source code and research methods
- Open Infrastructures, the accessibility of research infrastructures
- Open Evaluation, the accessibility of evaluations
- Citizen Science, i.e. the participation of citizens in scientific research
- Open Education (e.g. the use of Open Educational Resources (OER) in the context of digitisation of studies and teaching). This refers to making teaching and learning materials available under free licences



Good practice

New Project: A toolbox for virtual university communication

Virtual exchange between science and society
New ideas for virtual communication channels

Under the umbrella of the International Association of Lake Constance Universities (IBH), a **transnational network** of experts from the universities of Basel, Constance and Zurich is currently being formed to develop and optimise contemporary virtual formats for science communication. As part of the project "Virtual science communication as a bridge between universities and society", the three universities are developing new strategies for virtual science communication and innovative communication channels that offer the public barrier-free access to knowledge and current research results.

Aim of the expert network: Creation of a "toolbox" and recommendations for action for higher education institutions for the planning, use and reception of virtual formats.

Source: [31]

Good practice

Kolaborategia – University of Mondragon (MU) (Spain)

Laboratory on education in the digital society and it is a space that brings together discussion, collaboration, teaching and knowledge transfer around digitalization. It is based on the identification of future trends, on the acceleration of novel processes (research), and on the joint work of international groups. KT is addressed by: Internal training in digital topics for teachers, students and other types of workers. External training for other schools: they offer advice from the innovation center also joint projects. Research projects Besides with IT companies. Online-communication formats and webinars.

Source: [32]

Good practice

Model of Science Communication – Technische Universitaet Berlin (TU Berlin)

The model of science communication. It consists of six interconnected modules: **1. Public relations work** (f.e. the University newspaper, central website, different social media channels, and events), **2. Science communication** (broad communication of researchers), **3. Researching with society** (f.e. transdisciplinary projects, internal funding lines, complementary conferences, and cooperation with the universities in the Berlin University Alliance), **4. Places of science communication** (multiple venues for sharing science with the public), **5. Strategic continuing education** (a unique portfolio of continuing education offers f.e. Scientists can select from among three offers: certificate courses on science communication, certificate courses on science marketing, and the extra-occupational master's program in Science Management/ Science Marketing), **6. Research projects for transfer** (transfer as a science, courses for students).

Source: [33]

1.2. Digital Science Communication

Knowing and addressing the information needs of stakeholders and audiences

Science communication and also research itself are becoming increasingly participatory (moving away from the top-down principle), open and interactive. Against this background, stakeholder engagement plays an increasingly important role.

HEI´s are active in a large number of sub-markets and thus interact with many different players (stakeholder) who also pursue very different goals. Stakeholder is a person or group that has a vested interest in the course or outcome of a process. In view of the complexity of the expectations placed on HEI´s and the heterogeneity of the stakeholders, HEI´s are in particular need of a functioning communication culture and structure.
The identification of different stakeholders and the ability to meet their needs has become an essential requirement for organizational performance also in the education context.

Source: [34]

Example

Communicating effectively with stakeholders

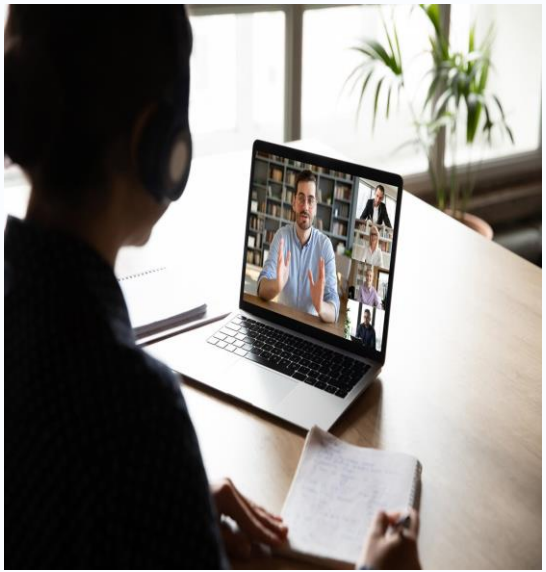
Facebook: 10 Ways Universities Can Use Facebook to Market to and Connect With Students

https://buffer.com/library/facebook-for-universities/

1.2. Digital Science Communication

Communicating effectively with stakeholders

- Dialogue oriented digital communication
- Topic-oriented transfer events, workshops or newer formats such as bar camps or hackathons and the resulting networking of participants
- Cooperation between science and practice, whether in the form of collaborative research or in the sense of co-production in collaboration spaces, such as innovation labs, hubs, labs or "Industry on Campus" arrangements.
- Establishment of transfer staff who link researchers and network partners in the sense of a stakeholder-centred approach
- Use of social media in the sense of social relationship management
- Employees as multipliers in social media in the sense of "employee advocacy" , communities of science



Source: [35]

Good practice

Department for Science Communication
Karlsruhe Institute of Technology

The Department of Science Communication is part of the Institute for Technology Futures (ITZ). The ITZ is dedicated to humanities and social science reflection on the relationship between humans, technology and the environment. A variety of approaches to innovative forms of science communication are researched and implemented.

“Science in presentations”: What forms of presentation do scientists prefer when they appear in public?

"Science for all: How can science communication succeed with previously unreached target groups?“

“MEDIANEURO”: Medialising brain diseases: interactions between research and mass media

Source: [36]

Reflection

Think about your own university…

- Please think of 3 examples of interesting and successful science communication. What makes a virtual format attractive?
- What factors would you draw from this for the design of a university's science communication activities?
- What measures does your university use for internal and external communication?
- How does your university manage science communication using digital tools?
- How does your university promote the development of skills in science communication (f.e. courses, programs, projects)?

Reflection

Think about your own university…

- Is there any structured stakeholder communication?
- Which organisational structures or staff units are responsible for the stakeholder communication?
- How do you get information about the needs and requirements of your stakeholders?
- What are the specific challenges in establishing relationship with your stakeholders? How can digital tools support this process?

1.3. Further and adult education in a digital age

Across all industries, the digital transformation will fundamentally change the business processes of companies and institutions. The development of digital success potentials requires the expansion and reorientation of the **qualification profiles** of Europe´s working population. This involves both the right content of qualification in times of change and the use of efficient forms of mediation in education and training.

HEIs, as places of expert knowledge and know-how are more and more involved in the increasingly important field of **quaternary education**. They are called upon to respond to changing learning and educational biographies through measures in the field of continuing education, thus enabling opportunities for lifelong learning. In this context, the transfer of knowledge between universities, scientists, companies and students or participants in continuing education programs is of particular importance.

Therefore HEIs become active partners in meeting the economic and social demand for digital skills. At the same time, they even become actors in shaping the digital transformation.

Did you know...

“The world’s leading distance-learning provider”

The **Open University (OU)** is the UK’s largest academic institution with more than 170.000 students worldwide. OU offers flexible part-time study, supported distance and open learning for undergraduate and postgraduate courses and qualifications. The OU was a pioneer in the development of the concept of distance learning and later the implementation of e-learning formats at universities, also of more flexible qualification formats. Open qualification allows to design a personalized qualification by flexible combining different subjects. It also counts previous university study.

In 2013, the OU began a Massive open online course (MOOC) platform called FutureLearn, which is the UK's largest provider of free online courses. OpenLearn is a platform which includes over 1,000 free courses derived from the OU's curriculum and dozens of specially commissioned Badged Open Courses.

Source: [37]

1.3. Further and adult education in a digital age

Challenges for HEI´s on continuing education

- Universities encounter much more heterogeneous target groups, which, for example, have different needs. For example, they have different needs in terms of the time sequence of the learning units,
- Event and examination formats must be designed differently,
- Further education courses have to be paid for, which means changed requirements for marketing and sales,
- In addition, customer orientation and thus the quality of service and advice are becoming much more important.

These requirements are given an additional quality by digitalization.

Source: [38]

1.3. Further and adult education in a digital age

In the field of continuing education and lifelong learning, four basic **tendencies** of content and formal merging processes can be identified:

- The merging of academic and professional content and target groups,
- a merging of the content production of companies and educational institutions,
- a coupling of digital and physical training environments
- an interlocking of informal and formal learning

There is a great need for customised modules that can be flexibly integrated into everyday working life in terms of time and location. Accordingly, continuing education is already offered in many cases in the form of digital teaching and learning.

Complete online formats of continuing education even enable HEI´s to scale their offerings worldwide and thus open up new markets, especially on international learning platforms.

Source: [39] [40]

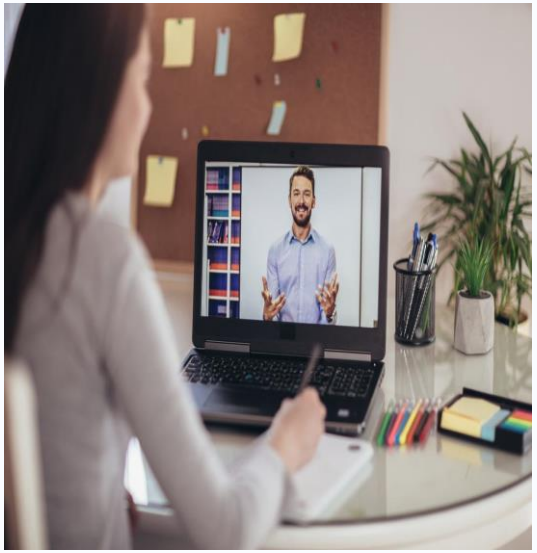
1.3. Further and adult education in a digital age

The impact of digititalization on continuing education

Digitisation influences the activities of HEI´s as providers of continuing education in terms of needs and content, terms of channels and tools for delivery as well as new pedagogical and didactical concepts. Digital media offer new degrees of freedom in the design and individualisation of qualification offers because they can be used independently of time and place. They also allow content to be adapted particularly quickly to current topics and requirements.

Digitisation is changing continuing education in the following areas:

- Digitisation of analogue knowledge and information,
- The use of new, digital media, new forms of learning and appropriate didactics,
- New competence requirements and competence development as content and goal of continuing education and training.



Source: [41]

1.3. Further and adult education in a digital age

The impact of digititalization on continuing education

Idea of Continuing Academic Education 4.0

Due to the need of those interested in continuing education to pursue an academic qualification on a part-time basis or alongside their professional activities HEI´s have to deal with digital educational concepts that make it possible to study independently of time and place. Continuing education at HEIs with digital components, such as digital forms of learning and teaching and digital processes and subject-related topics.

Digital forms of teaching and learning are, for example, blended learning, Massive Open Online Courses (MOOCs), Open Educational Resources, applications on mobile devices and virtual laboratories. Examples of digital methods are learning platforms/online platforms for study/learning offers, online examinations, online self-assessments and learning analytics.

Source: [42]

1.3. Further and adult education in a digital age

The impact of digititalization on continuing education

Exemplary scenarios of digital continuing education at HEI ´s

"Showcase approach" digital tools mainly serve as tools for marketing existing presence-based CET offers.

"E-services" digital systems are used to simplify, speed up or improve the quality of the organisational process of continuing education.

"Flexibility" aims to provide digital continuing education for target groups who place particular value on the flexibility of the offerings in terms of time and space (e.g. Blended Learning Approach).

The "Quality/Didactics" strategy focuses on the use of digital components to improve teaching (e.g. Virtual learning spaces, blogs, wikis and social networks, but also elements of game-based learning).

„Up- und Cross-Selling“ aims to combine existing (further) education offers with further supplementary or building-up offers. These include, for example, certificate courses or postgraduate master's degree programmes. Due to their flexibility, digital offers are particularly suitable, as they can be adapted exactly to the needs of alumni.

Source: [43]

1.3. Further and adult education in a digital age

HEI´s have to play a central role in meeting the demand for lifelong learning

HEIs will have to change their educational strategies, open up new fields of action and fill gaps in order to anchor the topic of digital competences and skills more firmly in the future and to meet the needs of the market.

HEIs have to orient themselves more strongly to the changed professional biographies and the demand from companies and other parties interested in continuing training.

Therefore, HEIs have to broaden the range and format of courses and offer flexible academic continuing education opportunities and the possibility of studying while working should be further strongly expanded.

Alliances between universities, between educational institutions and companies and between public and private platform providers can be helpful, to build flexible customised programs through which competences can be acquired.

A fundamental condition is to further promote the permeability of the higher education system in order to open up educational opportunities to new target groups.

Source: [44], [45], [46]

1.3. Further and adult education in a digital age

Fields of action - Improving continuing education in the digital age

Strategy: Integration of continuing education into the organisational digitisation strategy and profile building

Positioning on the further education market: One of the core demands is the realization of necessary new academic education offers and formats that meet the requirements of the concept of lifelong learning and the need of the labour market. The growing demand for skilled workers with technological and IT skills is opening up opportunities to develop appropriate courses (f.e. transformative technologies).

Opportunities of cooperation: A great potential lies in the interlinking of physical and virtual further education offers. With regard to the societal role of promoting digital skills and competences, the relationship between universities and their regional environment needs to be examined in more detail in the future.

New study formats: In future, it will therefore be more important to achieve openness in the structure of study formats. New degree programs are being implemented, focusing on specific competences and skills, such as Data Science, Digital Transformation, Business Analytics or Cyber Security. Need for mutual recognition of academic achievements between different institutions and the use of individual competence portfolios.

New forms of Certification: continuing education and training in the field of digital competences is increasingly informal and non-formal. Need, for development and promotion of codified additional qualifications for the acquisition of digital skills and crediting of digital teaching formats.

Source: [44], [45], [46]

Good practice

Digital Business University (DBU)

The DBU is a business school for the digital age. Teaching and research activities are consistently geared towards a digital economy & society. On offer are for example programs like Data Science & Business Analytics, Digital Responsible Leadership, Digital Marketing & Communication Management (B.Sc.), Data Science & Management (M.Sc.).

One main focus is on training opportunities that prepare employees and companies for the digital transformation. Courses are organised on the basis of agile learning sprints. These are short, flexible learning units with a maximum learning time of 15 hours that teach a wide range of digital skills. They can be completed anywhere and at any time via a multimedia online course. A badge according to the OpenBadge standard is awarded for successful participation in a LearningSprint. Several LearningSprints can also be combined into individual courses that conclude with an academic certificate.

Source: [47]

Good practice

OnCampus

OnCampus is a subsidiary of the University of Applied Sciences Luebeck. It pursues the strategy of the Digital Unique Selling Point, which focuses on the individual profile of the university. through its extensive digital offerings, it has been able to develop a unique market position in Germany . OnCampus is an Full-service provider for over 13 universities and operator of the largest MOOC platform in Germany

Source: [48]

Good practice

Flexible and practice-oriented study

The University of Birmingham offers a Master's program in Public Management & Leadership in cooperation with Solace, the Association of Municipal Leaders. The aim is to provide employees in the public sector with the necessary theoretical knowledge as well as the professional competences of managers. The didactic design is based on a blended learning concept in order to enable flexibility in terms of time and space as well as integration into the students' everyday working lives. The course takes place primarily online on a learning platform, with face-to-face teaching taking place in blocks on four days a year. The students are taught by teachers from the university, visited by experienced practical representatives in the company and instructed by their direct supervisors at the workplace.

Source: [49]

Reflection

Think about your own university…

- Who are your current and who are your future students? Do you primarily address your alumnae and alumni or new/other target groups?
- Which digital formats are used by your university for further education and how do you assess the future development of existing and new offer formats?
- Are there further education programs for adults that are explicitly geared towards the development and promotion of digital skills?
- What experience does your university have with cooperation for the development of in-company continuing education formats?
- Where do you see problems and challenges of further and adult education in a digital age , especially at the organisational level?

Key takeaways

- Digitisation creates new tools and ways and changes existing communication and transfer of knowledge
- Digital Knowledge Transfer is a diverse field of activity
- HEI´s have to develop an individual understanding of transfer.
- KT is a core task of HEI´s and this requires the holistic institutional integration of transfer into the strategy, structure, culture, processes and lived practice.
- KT has to considered more closely interlinked and not in the form of isolated solutions.
- Science communication is an integral part of KT activities.
- Science communication and also research itself are becoming increasingly participatory, open and interactive.
- Science communication can be reshaped with the help of digital support.
- A higher education institution must be able to state why and to what extent it pursues the topic of continuing scientific education.
- Continuing academic education and lifelong learning must be embedded in the university's operational and strategic steering processes.

References

[1] Arbo, P.; Benneworth, P. (2007): Understanding the Regional Contribution of Higher Education Institutions: A Literature Review", OECD Education Working Papers, No. 9, OECD Publishing, Paris.
[2] Fritsch, M. (2009): Wissenstransfer und Innovation im regionalen Kontext. In: Kujath, H. J., Krupa, J. (Hrsg.): Fachhochschulen als regionales Potenzial – zur Kooperation von Wissenschaft und Wirtschaft in der Metropolregion Berlin-Brandenburg, Erkner = REGIO Transfer 7, 23-36.
[3] Carot, J.M. et al. (2012): A NEW METHODOLOGY FOR MEASURING THIRD MISSION ACTIVITIES OF UNIVERSITIES, INTED2012 Proceedings, pp. 1218-1223.
[4] OECD (2013): Commercialising public research. New trends and strategies, Paris.
[5] Burkhard, R. (2005): Knowledge Visualization - The Use of Complementary Visual Representations for the Transfer of Knowledge. A Model, a Framework, and Four New Approaches. Zürich.
[6] [11] Wissenschaftsrat (2016): Wissens- und Technologietransfer als Gegenstand institutioneller Strategien, Positionspapier (Drs. 5665-16), Oktober 2016, Berlin.
[7] Bozeman, B., Rimes, H., Youtie, J. (2015). The evolving state-of-the-art in technology transfer research: Revisiting the contingent effectiveness model. Research Policy, 44, 34-49.

References

[8] Campbell, A., Cavalade, C., Haunold, C., Karanikic, P., Piccaluga, A.: Knowledge Transfer Metrics. Towards a European-wide set of harmonised indicators, Karlsson Dinnetz, M. (Ed.), EUR 30218 EN, Publications Office of the European Union, Luxembourg, 2020.
[9] [10] Wilkesmann, U. (2007): Wissenstransfer (s) in der Organisationsform Universität, Discussion papers des Zentrums für weiterbildung Universität Dortmund, 05/2007.
[12] Kampylis, P., Punie, Y. & Devine, J. (2015): Promoting Effective Digital-Age Learning - A European Framework for Digitally-Competent Educational Organisations; EUR 27599 EN
[13] Krempkow, R. et al. :Wissenschaftsmanagement als Grundlage für strategisches Planen, Handeln und Führen in wissenschaftlichen Einrichtungen, Positionspapier des Netzwerks Wissenschaftsmanagement e.V., in: DUZ Wissenschaft & Management 03/2020.
[14] [15] MEZZANIN: Welche digitalen Kompetenzen benötigen Mitarbeiter:innen an Hochschulen? https://mezzanin.web.leuphana.de/digitale-kompetenzen-an-hochschulen/381/
[16] Leuphana University Lueneburg, Digital Knowledge Transfer Project, www.leuphana.de/digital-knowledge-transfer-project
[17] Digital Catapult, https://www.digicatapult.org.uk/about-digital-catapult

References

[18] Campus to World, https://www.h-brs.de/en/campus-to-world-the-project
[19] TU Graz, Digitalisierung, https://www.tugraz.at/tu-graz/universitaet/leitziele-und-schwerpunkte/digitalisierung/digitalisierung/
[20] acatech – National Academy of Science and Engineering, German National Academy of Sciences Leopoldina, Union of the German Academies of Sciences and Humanities (Eds.) (2017): Social Media and Digital Science Communication. Analysis and Recommendations for Dealing with Chances and Risks in a Democracy. Munich
[21] Fischhoff, B., Scheufele, D. (2013): The Science of Science Communication, PNAS. S. 14031
[22] Dogruel, L./Beck, K.: Social Media als Alternative der Wissenschaftskommunikation? Eine medienökonomische Analyse. In: Weingart, P./Wormer, H./Wenninger, A./Hüttl, R.F. (Hg.): Perspektiven der Wissenschafts-kommunikation im digitalen Zeitalter.Weilerswist 2017, S.123–187.
[23] [30] [35] MEZZANIN, Digitalisierung verändert die Kommunikation von Wissen, https://mezzanin.web.leuphana.de/digitalisierung-verandert-die-kommunikation-von-wissen/746/
[24] ethority, https://ethority.de/social-media-prisma/
[25] Burns, T.W., O´Connor, D.J., Stocklmayer, S.M. (2003): Science communication: a contemporary definition, Public Understand. Sci. 12(2003) 183–202

References

[26] [27] Taubert, N. et al. (2020): Digitalisierung in der und für die Forschung, in: J. Henke, P., Pasternack (Hrsg.), Wie die Hochschulen durch das Zeitalter des Frühdigitalismus kommen, Wiesbaden
[28] NaWik, www.nawik.de
[29] Wannemacher, K., et al. (2016): Digitale Lernszenarien im Hochschulbereich. Berlin: Hochschulforum Digitalisierung, https:// hochschulforumdigitalisierung.de/de/studie-digitale-lernszenarien-hochschulbereich
[31] https://www.uni-konstanz.de/en/university/news-and-media/current-announcements/news-in-detail/virtueller-austausch-zwischen-wissenschaft-und-gesellschaft/
[32] Kolaborategia, https://www.mondragon.edu/en/-/kolaborategia-buletina
[33] TU Berlin, Science Communication, https://www.tu.berlin/en/forschen/technologietransfer/science-communication/
[34] Ferrero-Ferrero, I., Fernandez-Izquierdo, M.Á., Muñoz-Torres, M.J., Bellés-Colomer, L. (2018): Stakeholder engagement in sustainability reporting in higher education: an analysis of key internal stakeholders' expectations,International Journal of Sustainability in Higher Education,Vol. 19 No. 2, pp. 313-336
[36] KIT Karlsruhe, https://wmk.itz.kit.edu/3413.php
[37] Open University, www.open.ac.uk
[38] [43]Hochschulforum Digitalisierung (2016). The Digital Turn – Hochschulbildung im digitalen Zeitalter. Arbeitspapier Nr. 27. Berlin: Hochschulforum Digitalisierung.

References

[39] Blank, J. et al. (2015): Öffnung der Hochschulen durch wechselseitigen Wissenstransfer im Kontext wissenschaftlicher Weiterbildung, https://www.die-bonn.de/zfw/32015/blank_wiest_saelzle_bail.pdf
[40] [46] Stifterverband für die Deutsche Wissenschaft e.V. (ed.) (2019). Für Morgen befähigen – Jahresbericht 2019. Hochschulbildungsreport 2020, Essen, file:///C:/Users/msteckel/AppData/Local/Temp/hochschul-bildungs-report_2019-1.pdf
[41] Fischer, E.; Keiser, S.; Sparschuh, S. (2018). Berufliche Weiterbildung und Digitalisierung: Ergebnisse aus der Praxis für die Praxis. Eine qualitative Studie im Rahmen des Förderschwerpunkts Innovative Ansätze zukunftsorientierter beruflicher Weiterbildung (Innovat WB) des Bundesministeriums für Bildung und Forschung (BMBF) (2015 –2018), Neubrandenburg.
[42] Mah, D. K.; Büching, C.; Brzoska, S. (2019). Wissenschaftliche Weiterbildung 4.0. Digitale Lehr- und Lernformen, Verfahren und Fachthemen, Institut für Innovation und Technik (iit), Berlin
[44] Dräger, J. et al. (2017): Hochschulen brauchen Strategien für das digitale Zeitalter, in: Rat für Forschung und Technologieentwicklung (ed.) Zukunft und Aufgaben der Hochschulen Digitalisierung-Internationalisierung-Differenzierung, Wien, p. 263-278
[45] Hochberg, J.; Wild, R.; Bastiaens, T. (2019). Hochschulen der Zukunft - Anforderungen der Digitalisierung an Hochschulen, hochschulstrategische Prozesse und Hochschulbildungspolitik, Fernuniversität Hagen (ed.), Münster
[47] DBU, https://dbuas.de
[49] University of Birmingham, https://www.birmingham.ac.uk/schools/government/departments/local-government-studies/courses/pml-apprenticeship.aspx

Authors

Mirko Steckel
Otto-von-Guericke University Magdeburg, Germany

Co-funded by the Erasmus+ Programme of the European Union

This project has been funded with support from the European Commission. This presentation reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

www.escalate.projects.uvt.ro
@DigitalEscalate