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Strengthening Teaching Competences in Higher Education in Natural and Mathematical Sciences

Work Package 3:

PROFESSIONAL DEVELOPMENT OF TEACHING STAFF

Activity 3.2 – PM training of teaching staff

Strengthening Teaching Competences in Higher Education in Natural and Mathematical Sciences

MODERNISATION OF TEACHING AND LEARNING IN THE EHEA

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Basic questions

Why are changes necessary?

What are the key things that need to be changed or improved?

What is the role of higher education teachers in modernisation?

What is the role of students in modernisation?

What kind of support should be received from higher education institutions and governments?

What is the role of technology and new pedagogical tools in modernisation?

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until the 20th century, university education cared for a small number of elites

19th century university was designed to serve no more than 2% of the population attending university at that time

the context in which higher education takes place today has changed dramatically

Europe is facing significant challenges:

- the economic crisis,
- unemployment, especially for young people,
- demographic change,
- the emergence of new competitors,
- new technologies and ways of working…

Why are changes necessary?

In response

- more creative, innovative and flexible young people are needed
- young people with entrepreneurial knowledge and skills
- ready for the challenges of today's changing work environment...

European Union agreed that at least 40% of young people should have a university-level qualification

ensuring high quality teaching and learning is a central issue in the modernisation of higher education in the European Education Area

achieving this is no easy task

Why are changes necessary?

the 19th-century model of higher education teaching still prevailed and teaching had not changed much since then

still we have pedagogical models designed for small institutions serving a small elite, and they must be adapted to

- the much more diverse needs of large numbers of students

- greater diversification and specialization in higher education

- new forms of delivery, involving technology

- modern educational programs

- huge changes in science, technology, medicine, social and political sciences, the world of work …

High Level Group

in 2012 the European Commission established the **High Level Group on the Modernisation of Higher Education**

for short: **High Level Group** or **HLG**

three basic tasks:

- to launch a wider debate in the EU on the quality of teaching and learning at all universities and colleges,

- to identify a number of initiatives that could be implemented taking into account the different starting points of different countries and institutions,

- to make recommendations on how the EU can support governments and other stakeholders in implementing new, more challenging and better models of teaching and learning

HLG reports

Report to the European Commission on Improving the Quality of Teaching and Learning in European Higher Education Institutions (2013)
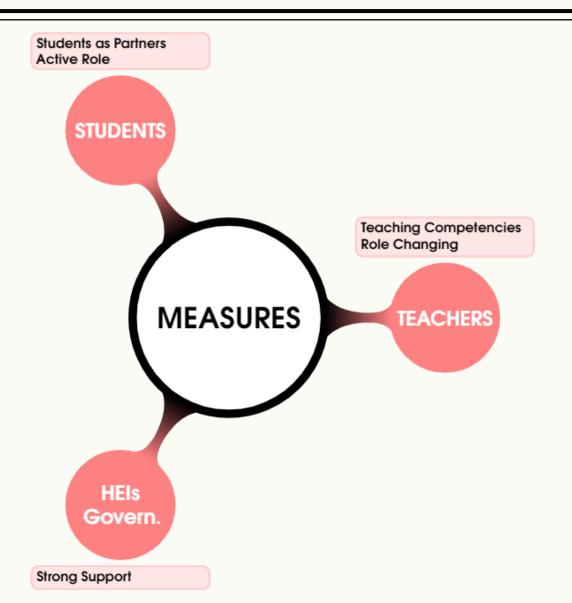
Report of the European Commission on New Modes of Learning and Teaching in Higher Education (2014)

these two reports were the basis for the preparation of the TeComp project proposal, as well as for the teaching material that accompanies this lecture

Key measures

Students as Partners
Active Role

STUDENTS

Teaching Competencies
Role Changing

MEASURES

TEACHERS

HEIs
Govern.

Strong Support

traditional higher education – process of transferring knowledge through teaching to those who want to acquire it

modern higher education – the role of the teacher is changing rapidly

today's main role of the teacher is to **teach the student to learn and think**

today's teacher must also develop the student's transversal or soft skills – **ability to think critically**, **take initiative**, **solve problems**, **work collaboratively**…

good teacher should aim to help the student to be

- ▪ confident in handling the knowledge within the subject,
- ▪ brave in openness to new ideas,
- ▪ curious enough to look for new solutions and opportunities
- ▪ insightful enough to work well with others

the new role of the teacher requires new teaching competencies

the teacher's knowledge base should not be limited to his or her subject

it must also include an **understanding of learning theories** and **how to incorporate them into practice**

teachers need to be aware that different types of teaching methods and educational settings can produce different types of learning

they should also be able to face rapidly changing demands, which imply new sets of competencies and new approaches to teaching and learning

Acquisition of teaching competencies

- **initial training** (as part of higher education) oriented towards teaching

- **continuous professional development** (CPD)

Primary and secondary school teachers – requirements for work in schools

- initial training with   30 ECTS acquired through PPM courses
                             + 6 ECTS acquired through school practice

- possibility to acquire 30+6 ECTS later – through CPD (short-cycle programs)

Later – **mandatory continuous professional development**

compulsory CPD for teachers in primary and secondary schools is understood as something quite common and normal

it is very often considered that such professional development in higher education is not necessary, **as if it is something unworthy of a university teacher**

academic careers are much more closely linked to research than to teaching

- this can be seen in job interviews and competitions,

- subsequent performance-related promotion and rewarding

many higher education teachers are much more interested in participating in research projects and regular publication of scientific papers than in teaching

High Level Group appeal

There is an urgent need to change the way of thinking in many countries and their higher education institutions regarding the priorities of academic teaching and learning compared to research.

Recommendation 2

Every institution should develop and implement a strategy for the support and on-going **improvement of the quality of teaching and learning**, devoting the necessary level of human and financial resources to the task, and integrating this priority in its overall mission, **giving teaching due parity with research**.

Recommendation 4

All staff teaching in higher education institutions should have received certified pedagogical training.

Continuous professional education as teachers should become a requirement for teachers in the higher education sector.

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Recommendation 5

Academic staff entrance, progression and promotion decisions should take account of an **assessment of teaching performance** alongside other factors.

Recommendation 15

Researchers who are intending a career in academia should be given the opportunity to gain **professional teaching qualifications** and be supported in teaching activities alongside their research.

modern higher education should put the **student at the center**

- defining clear learning outcomes for different programs
- attaching particular importance to counselling, monitoring and interactive teaching methods

assessment formats should take into account not only factual knowledge, but also further reaching competencies such as

- analytical capacity
- critical thinking
- communication and teamwork
- intercultural skills …

the notion of **student-centered learning** has existed for many years, but **many teachers and students still do not understand its implications**

as far as students are concerned, not everyone is still ready for this challenge, nor are they all driven by the desire to understand and apply knowledge

very often they aspire only to go through the course, learn only procedurally to achieve the highest possible grades and move on to the next subject

not everyone understands that they need to deal with new issues that are more important than the course itself, that are relevant to their lives

student-centered learning means that the role of the teacher should shift from **knowledge transfer** to **guiding the student in his or her own learning**

students are still widely seen
as **passive recipients of knowledge**
that professors choose to share with them
under conditions set by individual professors,
without much internal discussion by the faculty team
outside of class schedules and exams.

It is still an exception that students are **intentionally and explicitly authorized** by their teachers and HEIs to **manage their own learning**

But new methods in teaching and learning are being developed at more and more higher education institutions.

Examples that have proven successful are **cooperative teaching and learning** methods, as well as **problem-based learning**, exposing teachers and students to real-life situations, challenges and cases.

Students as partners in T&L

A still underdeveloped area of higher education in Europe is the **monitoring of students** during their studies and after graduation.

It is of interest for the higher education sector to know

- how students made their way through their academic careers
- where graduates managed to enter the labor market
- how they passed in employment and in broader aspects of rounded human life

often students are the first to notice whether the teaching is good or not.

the question arises as to

- how much the institution is willing to routinely listen to students' observations in an atmosphere that sincerely welcomes such feedback or comments?
- in how many institutions are students more likely to feel like undesirable complainants whose point of view may be questionable?

asking students for **feedback** on their experience at the end of the semester has become common practice in many countries

it is not always obvious that their attitudes have any real impact or lead to desirable changes

Students as partners in T&L

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Recommendation 3

Higher education institutions should encourage, welcome, and take account of **student feedback** which could detect problems in the teaching and learning environment early on and lead to faster, more effective improvements.

Recommendation 7

Curricula should be developed and monitored through dialogue and partnerships among **teaching staff**, **students**, **graduates** and **labour market actors**, drawing on new methods of teaching and learning, so that students acquire relevant skills that enhance their employability.

Students as partners in T&L

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Recommendation 8

Student performance in learning activities should be assessed against clear and agreed learning outcomes, developed in partnership by **all faculty members involved in their delivery**.

Recommendation 9

Higher education institutions and national policy makers in partnership with students should establish **counselling**, **guidance**, **mentoring** and **tracking systems** to support students into higher education, and on their way to graduation and beyond.

Institutional and government support

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higher education institution needs to support its teaching staff through various measures, such as

- continuing education and training offers
- support for individual mentoring and coaching
- measures that strengthen the cooperation among the team of teachers, especially
    - in the design, development and delivery of curricula
    - in the assessment of student performance

the senior management should spread the message that **effective, learning-oriented teaching is expected from all staff** (not just enthusiasts)

they should **promote this message** systematically, clearly linking it to institutional priorities

good teaching, unlike good research, does not lead to easily verifiable and measurable results, but consists rather in a processes

making it visible, and thus improving its reputation and providing incentives to its protagonists, requires additional effort on behalf of governments and higher education institutions

system of incentives and rewards is needed that takes into account the diversity of teacher types and teaching styles

Recommendation 10

Higher education institutions should introduce and promote **cross-, trans- and interdisciplinary approaches to teaching and learning**, helping students develop their breadth of understanding and entrepreneurial and innovative mind-sets.

Institutional and government support

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Recommendation 1

Public authorities responsible for higher education should ensure the existence of a sustainable, well-funded framework to support higher education institutions' efforts **to improve the quality of teaching and learning**.

Recommendation 6

Heads of institutions and institutional leaders should **recognise and reward** (e.g. through fellowships or awards) higher education teachers who make a significant contribution to improving the quality of teaching and learning, whether through their practice, or through their research into teaching and learning.

Recommendation 14

The European Union should support the establishment of a **European Academy for Teaching and Learning** led by stakeholders, and inspired by the good practices reflected in the HLG report.

Recommendation 16

Member States, in partnership with the regions, are encouraged to prioritise, in their Partnership Agreements under the Structural Funds, initiatives to support the development of pedagogical skills, the design and implementation of programmes relevant to social and labour market needs, and the strengthening of partnerships between higher education, business and the research sector.

Institutional and government support

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Recommendation 13

The European Union should support the implementation of these recommendations, in particular through promoting:

- **innovative teaching and learning methodologies and pedagogical approaches**;
- **guidance, counselling and coaching methods**;
- **improved programme design, taking account of the latest research on human learning**;
- **the professionalization and development of teachers, trainers and staff**;
- **mobility and exchanges of academic staff for long term teaching assignments**;
- **systematic and regular data collection on issues affecting the quality of teaching and learning**

New modes of T&L

Worldwide demand for higher education is expected to grow exponentially from 100 million students to over 250 million by 2051

even in the EU, where many countries are experiencing declining populations, higher education enrolments continue to increase

significant portion of this growth will come from adults and returning learners – complex groups most of whom will study while working at the same time

these projections require well-planned action and ask a few questions

- will higher education institutions be able to maintain and improve the quality of learning by facing the continuous growth and diversity of the student population?
- How will institutions adapt to meet a wider range of needs?
- Will there be enough financial resources for this expansion of higher education?

there is a growing understanding that the **development and integration of innovative ways of learning and teaching** must be a key part of the answer to these questions

the advent of **digital technology** in the last two decades has **dramatically changed the world** and will continue to do so

technology is driving major changes in the professional and personal lives of people across Europe and the world, affecting all aspects of society

it is now an integral part of the way most people communicate, work, learn and access knowledge and information

new and emerging technologies are already beginning to have a **transformative effect on the provision of higher education**.

we are witnessing **changes in the way we teach in higher education** and **in the way students learn**

New modes of T&L

conventional classroom setting will continue to form the basis of the higher education system

it will be **improved** by the **integration of new tools and pedagogies**

will be **complemented** by many **new online learning opportunities** and more **diverse higher education service providers**

new technologies and approaches to education already have a **clear and positive impact** on the provision of higher education services and enable

- **better learning and teaching both in the classroom and online**
- teaching methods can be better **adapted to the needs of individual students**
- quicker feedback on student performance, due to advances in learning analytics

New modes of T&L

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there is huge potential for **expanding access to higher education** and increasing the diversity of the student population

internet technologies provide **opportunities to learn anywhere, anytime and from anyone**

this flexibility is essential for **non-traditional students**

it will enable a change in the engagement of higher education institutions in **lifelong learning** and **continuous professional development**

new technologies can facilitate **greater collaboration**, both with global partners and at the local level

achieving these ambitions **is not an easy task**

this will require significant **changes in the way higher education institutions work**, as well as a **change in the culture and way of thinking**

although a wide range of good practices is already emerging across Europe, this is largely happening in an **uncoordinated bottom-up approach**

governments and institutions need to develop **comprehensive strategies** at the national and institutional levels **to adopt new ways of learning and teaching** within higher education

Recommendation 3

The integration of digital technologies and pedagogies should form an integral element of higher education institutions' strategies for teaching and learning.

Clear goals and objectives should be defined and necessary organisational support structures (such as the European Academy of Teaching and Learning) established to drive implementation.

Recommendation 4

National authorities should facilitate the development of a **national competency framework for digital skills**. This should be integrated into national professional development frameworks for higher education teachers.

Recommendation 5

All staff teaching in higher education institutions should receive training in relevant digital technologies and pedagogies as part of initial training and continuous professional development.

Recommendation 7

National authorities should introduce **dedicated funding** to support efforts to integrate new modes of learning and teaching across higher education provision. Funding should encourage collaborative responses to infrastructural needs, pedagogical training and programme delivery.

Recommendation 9

Public authorities should develop **guidelines for ensuring quality** in open and online learning, and to promote excellence in the use of ICT in higher education provision.

Recommendation 11

Higher education institutions should ensure that **quality assurance** arrangements apply to all forms of credit-awarding provision in the institution. Institutions should use the quality assurance system to monitor retention rates and inform the development of appropriate supports.

Teaching under a pandemic

the **coronavirus pandemic** has shown

- **how much we need online learning**
- **how unprepared we are for it**

what we currently use in educational practice as online learning **is not real online learning**, it is actually just what it is now called **emergency remote teaching**

Emergency Remote Teaching Vs. Online Learning: A Comparison
https://www.uopeople.edu/blog/emergency-remote-teaching-vs-online-learning/

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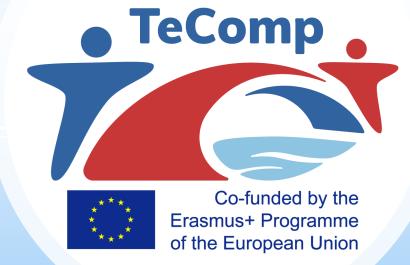
Teaching under a pandemic

Online Learning

- designed purposely to be remote and distant
- regarded as a main mode of education (not an exception)
- accessible and voluntary
- meant to be a long-term solution
- not urgent
- all resources are accessible
- has full faculty support
- students are voluntarily enlisting

Emergency Remote Teaching

- activated in response to a crisis or something beyond human control
- meant to be temporary
- may lack resources
- may not have full faculty support
- students may not have a choice