DIGITALISATION OF HIGHER EDUCATION AS PART OF THE IMPLEMENTATION OF INDUSTRY 4.0 IN THE WOOD SECTOR IN SLOVENIA

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Goals of the presentation

• to show the development of digital era and its’ drivers
• to examine some responses to digital revolution and best practices for digitalization of education
• to analyze the use of e-learning approaches and technologies in terms of wood science higher education in Slovenia.
Industry 4.0 / digital revolution

- It started on industry level
  - Industry 4.0 was initially introduced in 2011 in Germany
  - symbolises the beginning of the so-called Fourth Industrial Revolution
- It’s not just about “industry”, it’s an integral concept of digitalization of any aspect of life

Increasing the Use of Wood in the Global Bio-Economy, Belgrade, Serbia, September 26th – 28th, 2018

Photo: https://www.clustercolabration.eu/news/strategists-guide-industry-40
Issue: digital competence gap

- The biggest problems arise in digital literacy
- Around half of all Europeans still do not have the digital skills

90% of future jobs will require digital skills.

44% of Europeans lack basic digital skills.

Digitalisation of education

- Main guidelines and standards:
  - **ICT competency standards for teachers** to help educational policy-makers and curriculum designers (Unesco, 2008)
  - **Digital Competence Framework for Educators** – to define professional and pedagogical digital competences of pedagogical workers (DigCompEdu, 2017)

Best practices for digitalisation of education

- **use of ICT tools** to increase the efficiency and quality of the learning process

- **LMS** = Learning Management System
  - Is the technology behind online courses
  - huge number of LMS

  - **moodle**
    - 90.000.000 users

  - **Edmodo**
    - 58.000.000 users

  - **Blackboard**
    - 24.000.000 users

Best practices for digitalisation of education

- the development of **freely accessible learning resources** – E-LEARNING
  **MOOC** = massive open online courses
- the **total number** of MOOC learners worldwide is **81 million**
- over **800 universities** around the world have launched at least one MOOC
**MATERIAL AND METHODS**

**Survey / Online questionary:**
May 2018

<table>
<thead>
<tr>
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<th>respond 2011</th>
<th>respond 2018</th>
<th>no. of questions</th>
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<td>for pedagogical workers</td>
<td>20</td>
<td>27/41</td>
<td>10</td>
</tr>
<tr>
<td>for students</td>
<td>106</td>
<td>116/156</td>
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**Log analysis in the e-classroom (Moodle)**
- between June 11 2017 and June 11 2018
- 260 students and 24 pedagogical workers
The use and attitudes towards ICT in the educational process

- I use ICT for final examinations
- I use ICT for partial examinations
- The use of ICT makes students become less attentive during lectures
- ICT makes the study process more efficient
- ICT enables students to follow lectures easier
- ICT makes the study process more interesting/varied
- I consider myself a good example of integrating ICT in the study process
- ICT can be integrated in any kind of study content
- Always, when I use ICT, I am afraid that something will go wrong
- I am able to use ICT in study process
- I can organise the study process with appropriate integration of ICT
- ICT helps me to encourage cooperation among students
- I encourage students to use ICT in the study process
- I integrate ICT into the study process
- I can use ICT to carry out the study process

CASE - RESULTS

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Case - Results

E-classroom

- since 2010
- the general satisfaction increased significantly compared to 2011
- use of individual e-learning modules has increased considerably, while their structure has remained similar.
- The most common uses of e-classroom are:
  - publish study materials and grades,
  - work on assignments/workshops and
  - communicate with students (via forums and direct messages).
- 80% of the students are satisfied with the pedagogical workers regarding their response time.
CONCLUSION

» Digital era is developing very fast due to ICT development
» The biggest problems: digital literacy
» On EU level: many strategies and learning framework initiatives
» Growth rate in MOOCs and/or E-learning

Global E-Learning Market is accounted for $165.21 billion in 2015
• is likely to grow by over 5% from 2016 to 2023, exceeding $240 billion - FORBES, 2017
• is expected to reach $275.10 billion by 2022 growing at a CAGR (= Compound Annual Growth Rate) of 7.5% - REUTERS, 2017
CONCLUSION

- at the **Department of Wood Science and Technology** the available ICT and digital literacy are satisfactory

- gap(s):
  - video lectures and interactive materials
  - online grading tools
  - quizzes for self-assessment
  - online examinations
  - social media and cloud tools;
  - the development of MOOCs is still in the initial phase
CONCLUSION

- **Digitalisation of the study process** is not only a technological challenge, but also an organisational project with new didactical approaches using ICT.

- **Digitalisation of education in wood sector** for:
  - formal education of young professionals,
  - informal education of employees in companies,
  - transferring the results of the research into practice,
  - internationalisation of study programs.
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THANK YOU FOR YOUR ATTENTION