

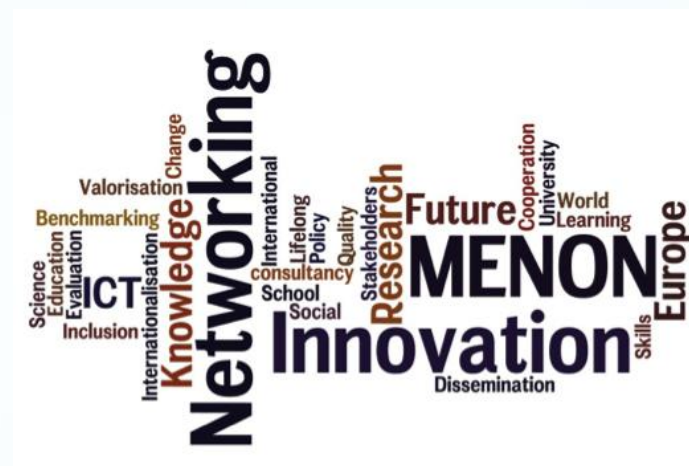
MATEL : Mapping and Analysing Prospective Technologies for Learning

Commissioned by JRC-IPTS, carried out by the MENON Network

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Available at: <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=6979>

European Commission Joint Research Centre,
Institute for Prospective Technological Studies
(IPTS)

Information Society Unit -ICT for Learning, Skills and Open Education
Research on "educational transformation in a digital world", in support of (mainly)
DG Education and Culture

Research strands:

1. Open Education and OER (OEREU; OpenEdu, Science 2.0)
2. Key Competences and 21st century skills (ICEAC; COMPASS; DIGCOMP)
3. Innovating Learning and Teaching (LEARNCOM, Learning 2.0; 1:1 Learning; TeLLNet, SCALE CCR)
4. Future of Learning (FutLearn; eLFut; **MATEL**; The Horizon Report Europe)

<http://is.jrc.ec.europa.eu/pages/EAP/eLearning.html>



The MENON Network

Legal structure

Non-profit EEIG (European nature) established in Brussels in 1999, following a successful ESPRIT project.

Mission

To facilitate the evolution of the Knowledge Society in Europe and in other parts of the world, making learning a priority issue in policy agendas around economic, social and cultural development at both national and international level.

Four Members

- CEPCEP – Universidade Catolica Portuguesa, Portugal
- Hellenic Association for Education, Greece
- Sophia R&I, Italy
- Tavistock Institute, UK

Seven Special partners (SPA)

- Budapest University for Technology and Economics, Hungary
- New Technologies for Learning (NTL), Germany
- UAM – Universidad Autonoma Metropolitana, Mexico
- UNIBE – Universidad Iberoamericana, Dominican Republic
- Universidad Internacional de la Rioja (UNIR), Spain
- University of Nicosia, Cyprus
- USP – Universidade de Sao Paulo, Brazil

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MATEL: Mapping and Analysing Prospective Technologies for Learning

Details of the study

- Involved more than 200 stakeholders in a joint reflection on the role of technologies for innovation in learning and change of learning systems
- A European perspective on technologies for learning across
 - (a) formal education and training,
 - (b) workplace and work-related learning, and
 - (c) re-skilling and up-skilling strategies for workers.
 - (d) Informal learning
- 14 months (Jan 2012 – Feb 2013)

Methodology (# of experts engaged)

Online consultation (226)

- Brainstorming
- Clustering - Validation
- Prioritisation

State-of-the-art analysis (15)

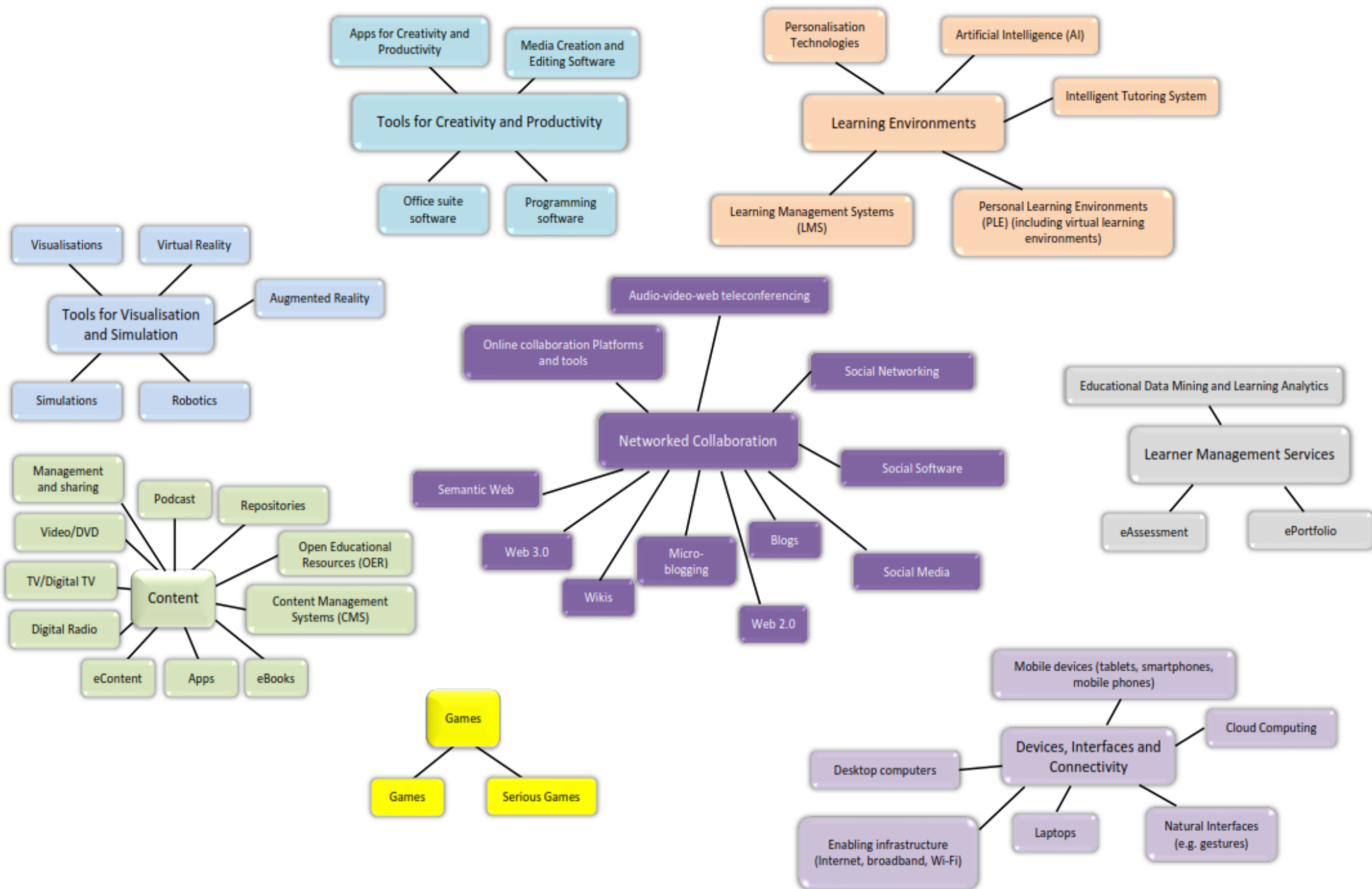
- Impact of technologies on learning
- Analysis of the underlying economic sector


Roadmapping (18)

- Gap analysis
- Measures needed
- Risk, barriers, limiting factors

Technologies that are expected to play a decisive role in shaping future learning strategies

The MATEL Cluster map



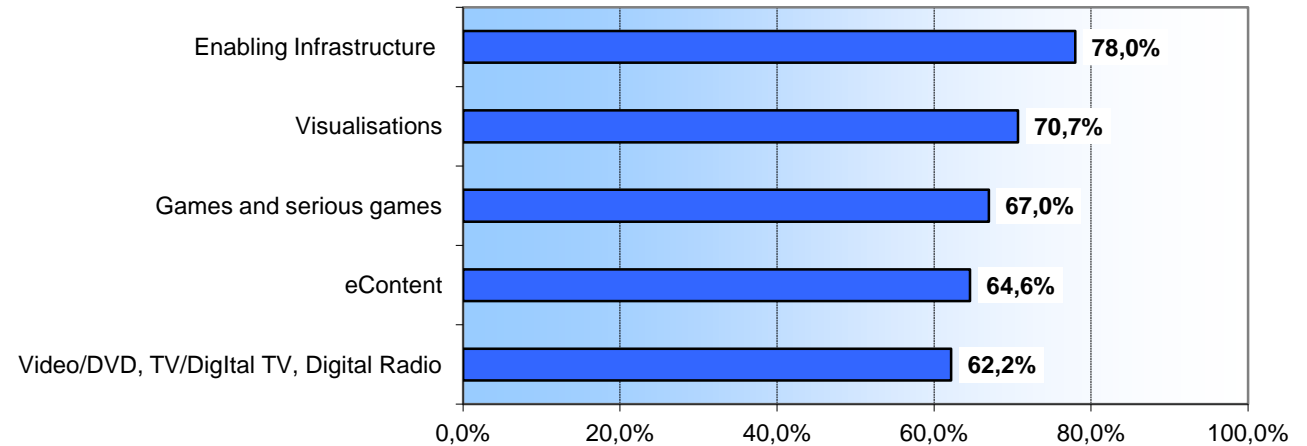
Cluster	Top Technologies	Learning Sectors /domains
Devices, interfaces and connectivity	<ul style="list-style-type: none"> Enabling Infrastructure Mobile devices Cloud Computing 	<ul style="list-style-type: none"> Primary Education, Secondary Education, Vocational Education and Training , Higher Education Workplace learning Re-skilling and up-skilling strategies Informal learning
Tools for visualization and simulation	<ul style="list-style-type: none"> Visualisations Simulations Virtual Reality 	<ul style="list-style-type: none"> Primary Education, Secondary Education, Vocational Education and Training , Higher Education Workplace learning Re-skilling and up-skilling strategies
Content	<ul style="list-style-type: none"> eContent OER Content Management Systems Video/DVD, D- Radio, TV/D- TV 	<ul style="list-style-type: none"> Primary Education, Higher Education Workplace Learning
Learning environments	<ul style="list-style-type: none"> Personal learning environments Learning Management Systems Intelligent tutoring systems 	<ul style="list-style-type: none"> Vocational Education and Training Re-skilling and up-skilling strategies
Learner management services	<ul style="list-style-type: none"> ePortfolio eAssessment 	<ul style="list-style-type: none"> Vocational Education and Training Re-skilling and up-skilling strategies
Networked collaboration	<ul style="list-style-type: none"> Online Collaboration platforms and tools Web 2.0 Social networking / sw / media Blogs and micro-blogging 	<ul style="list-style-type: none"> Higher Education Workplace learning Informal learning
Games and serious games	<ul style="list-style-type: none"> Games and Serious Games 	<ul style="list-style-type: none"> Primary Education, Secondary Education Informal learning
Tools for creativity and productivity		

Formal Education and Training – Primary Education Technologies

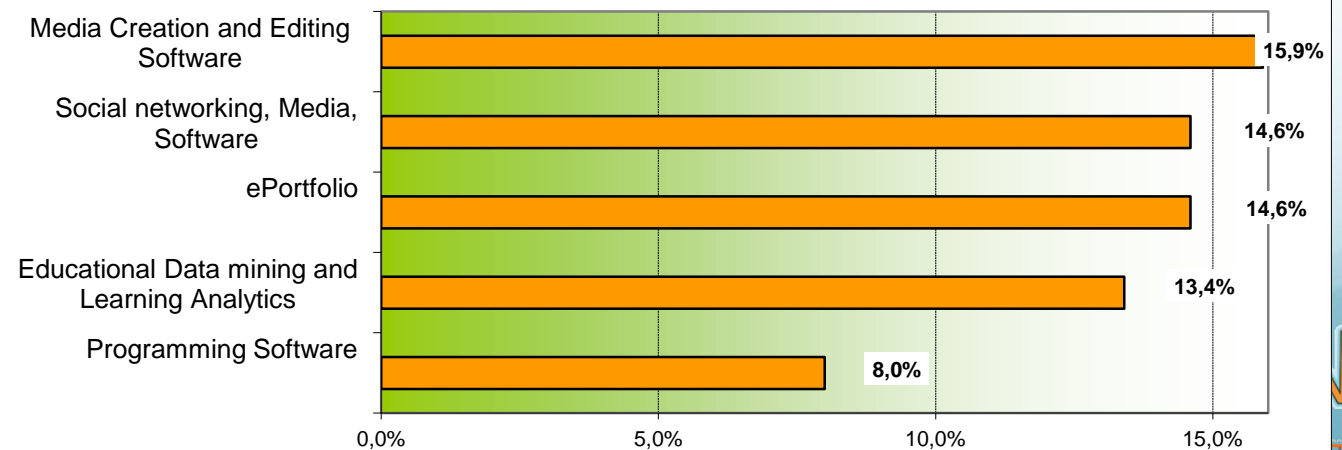
Primary Education

- Enabling infrastructure
- Visualisations
- Games and serious games
- e-Content
- Video/DVD, TV/Digital TV, Digital radio

Technologies with high potential for Primary Education



Technologies with low potential for Primary Education

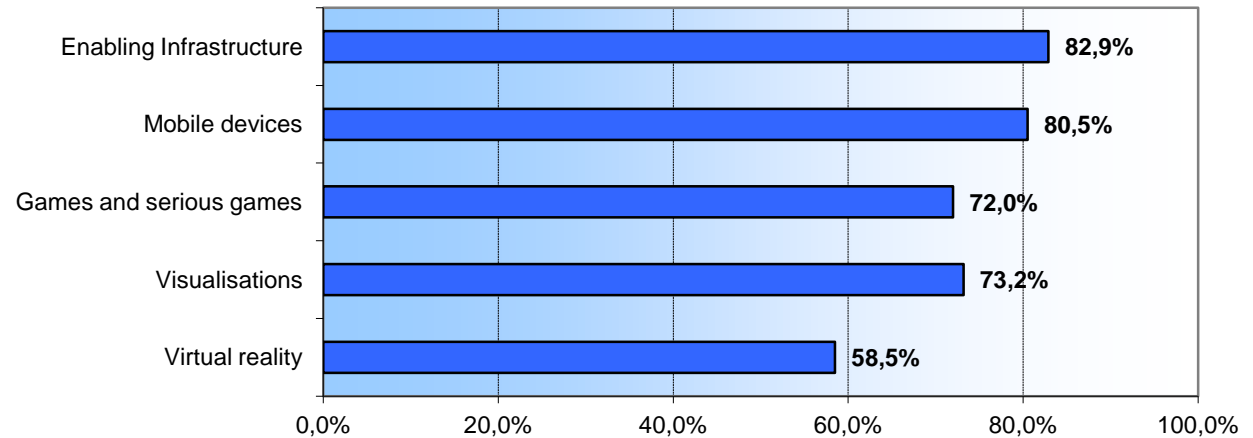


Formal Education and Training – Secondary Education Technologies

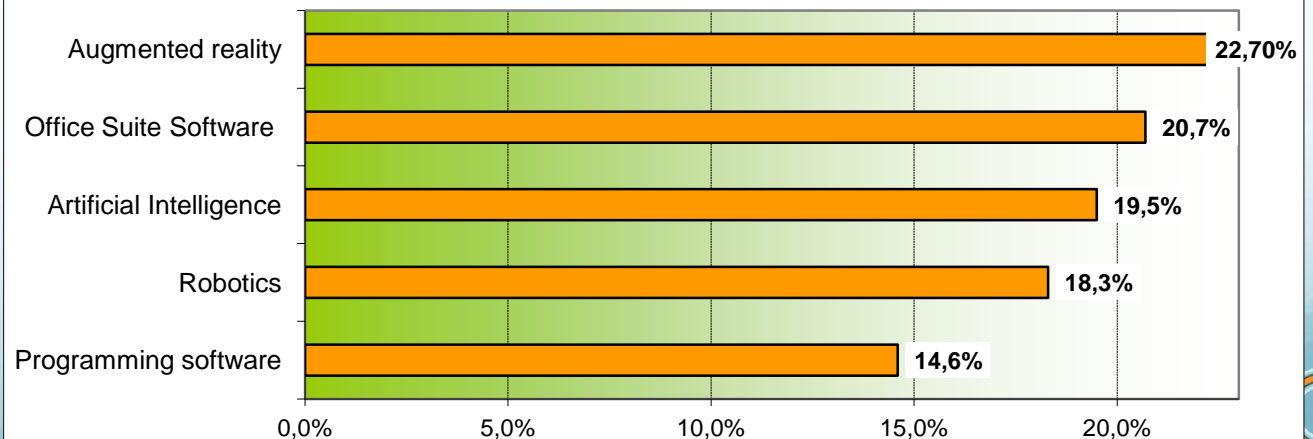
Secondary Education

- Enabling infrastructure
- Mobile devices
- Games and serious games
- Visualisations
- Virtual reality

Technologies with high potential for Secondary Education



Technologies with low potential for Secondary Education

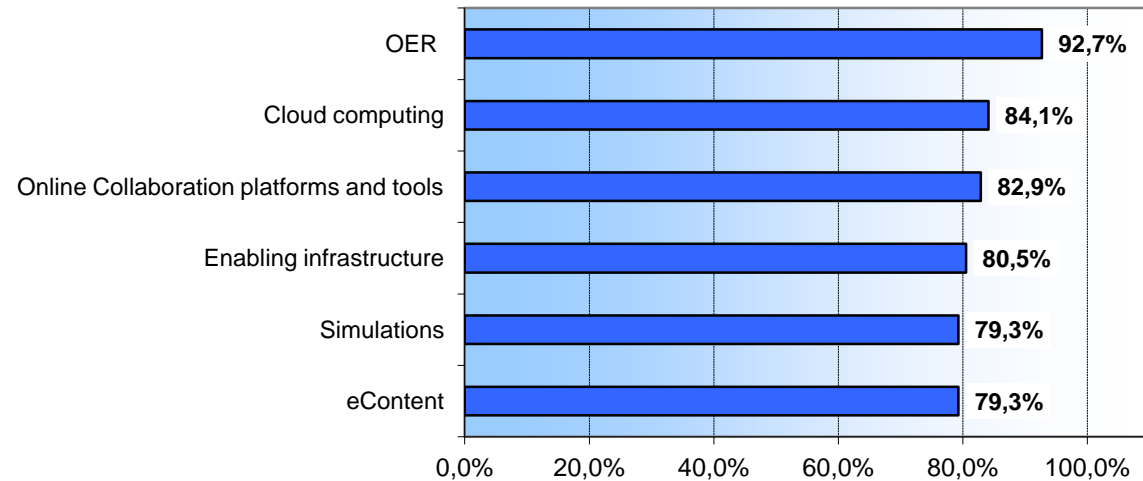


Formal Education and Training – Higher Education Technologies

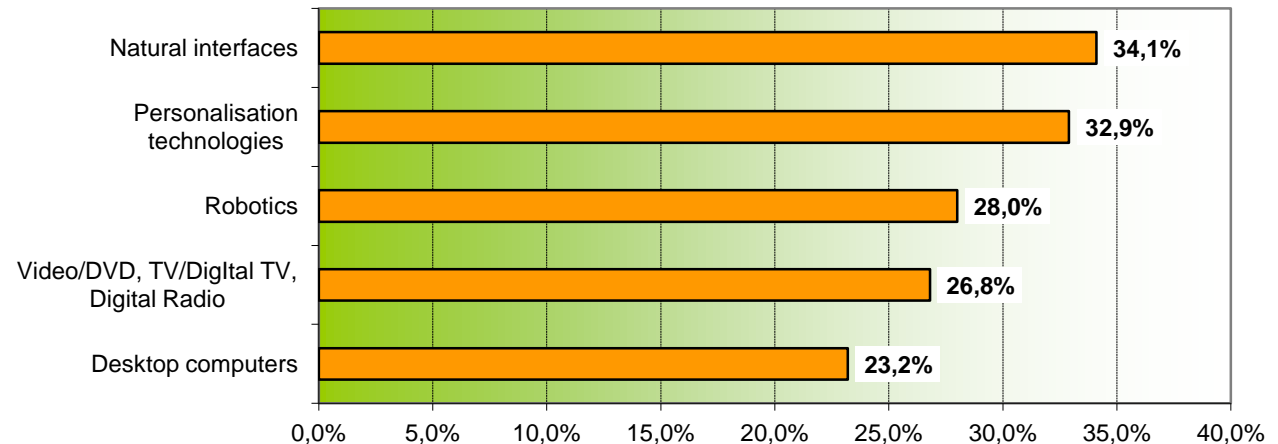
Higher Education

- OER
- Cloud computing
- Online collaboration platforms and tools
- Enabling infrastructure
- Simulations
- e-Content

Technologies with high potential for Higher Education



Technologies with low potential for Higher Education

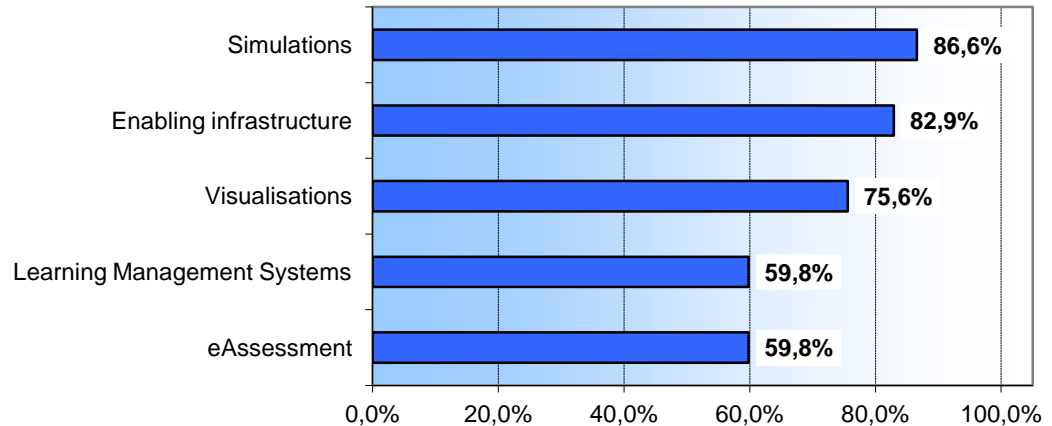


Formal Education and Training – VET Technologies

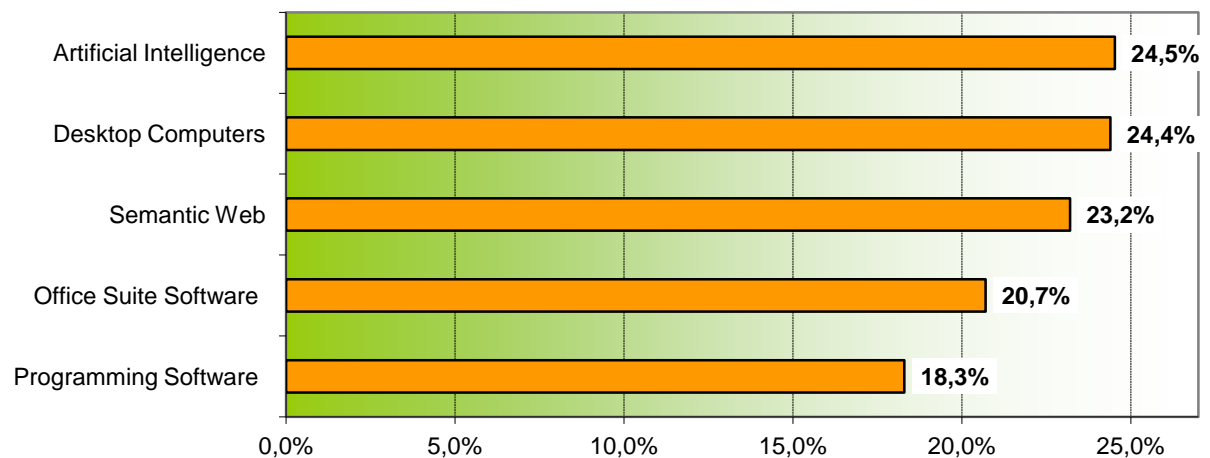
Vocational Education & Training

- Simulations
- Enabling infrastructure
- Visualisations
- Learner Management Systems
- e-Assessment

Technologies with high potential for VET



Technologies with low potential for VET



Formal Education and Training

Key technologies identified ...

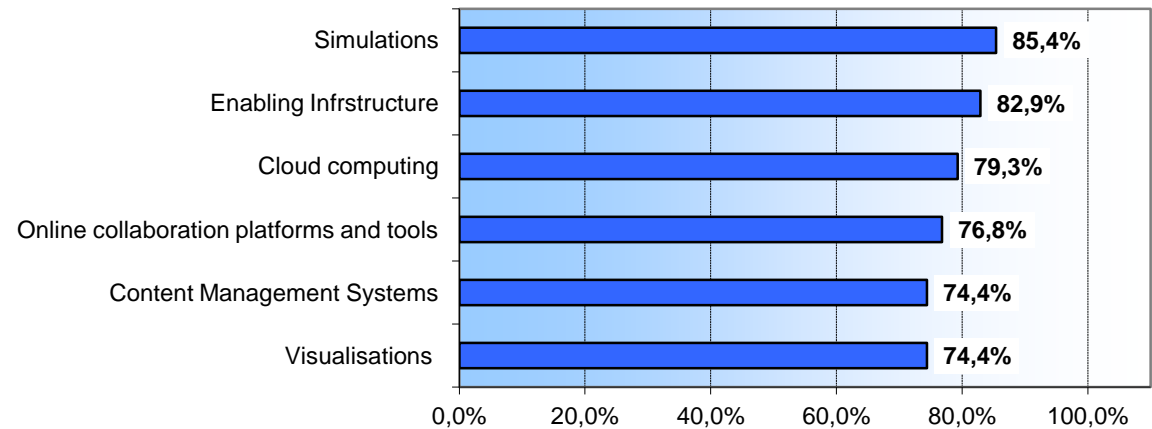
Primary Education	Secondary Education	Higher Education	Vocational Education & Training
<ul style="list-style-type: none">• Enabling infrastructure• Visualisations• Games and serious games• e-Content• Video/DVD, TV/Digital TV, Digital radio	<ul style="list-style-type: none">• Enabling infrastructure• Mobile devices• Games and serious games• Visualisations• Virtual reality	<ul style="list-style-type: none">• OER• Cloud computing• Online collaboration platforms and tools• Enabling infrastructure• Simulations• e-Content	<ul style="list-style-type: none">• Simulations• Enabling infrastructure• Visualisations• Learner Management Systems• e-Assessment

Work place and work-related technologies

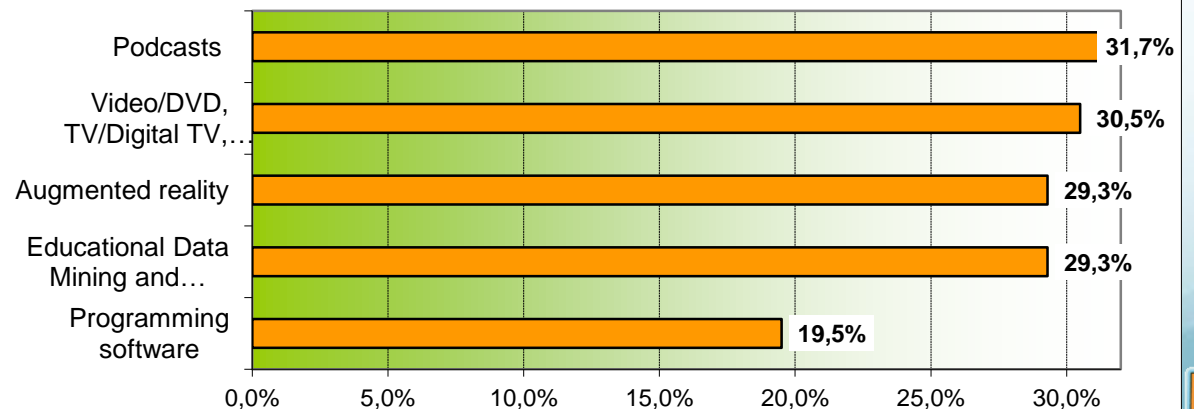
Workplace & work-related learning

- Simulations
- Enabling Infrastructure
- Cloud computing
- Online collaboration platform and tools
- Content management systems
- Visualisations

Technologies with high potential for Workplace Learning



Technologies with low potential for Workplace Learning

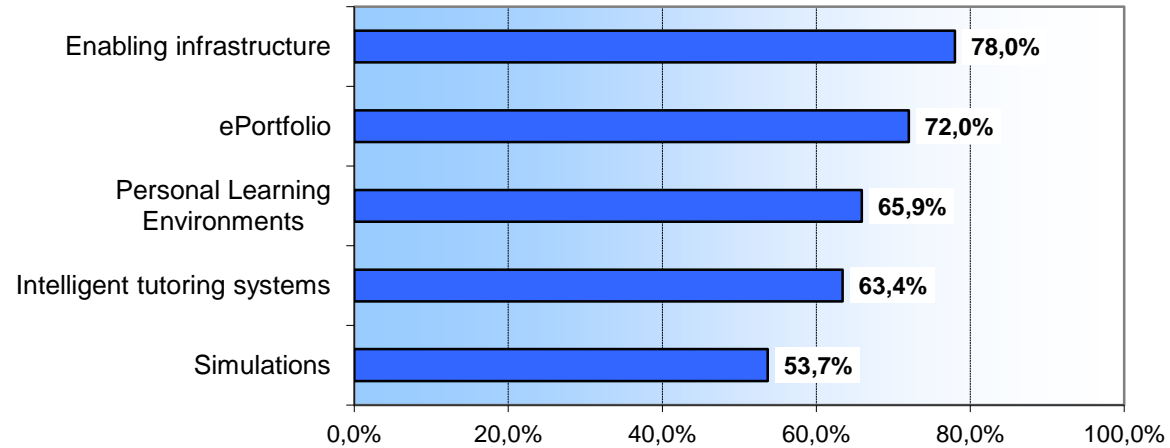


Re/up-skilling technologies

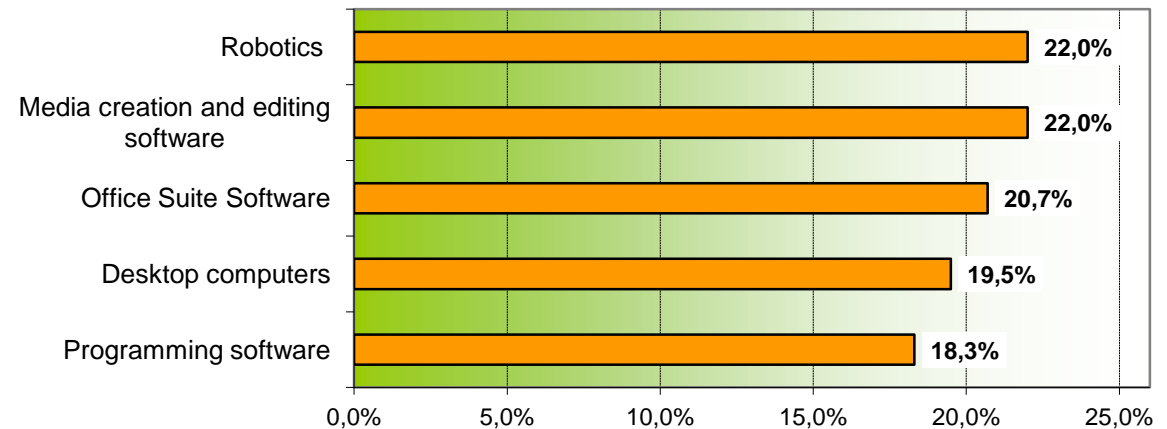
Re-skilling & Up-skilling

- Enabling infrastructure
- e-Portfolio
- Personal Learning Environments
- Intelligent tutoring systems
- Simulations

Technologies with high potential for Re-skilling and Up-skilling



Technologies with low potential for Re-skilling & Up-skilling

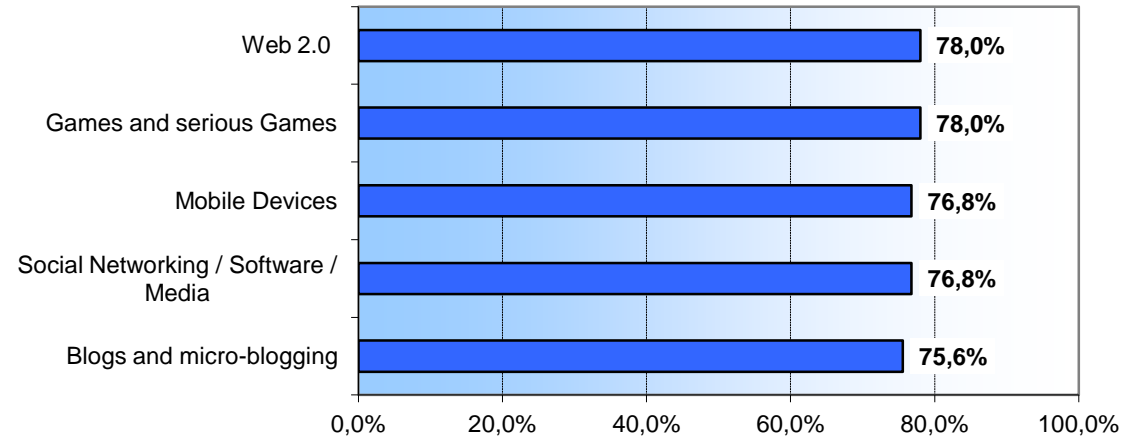


Informal learning technologies

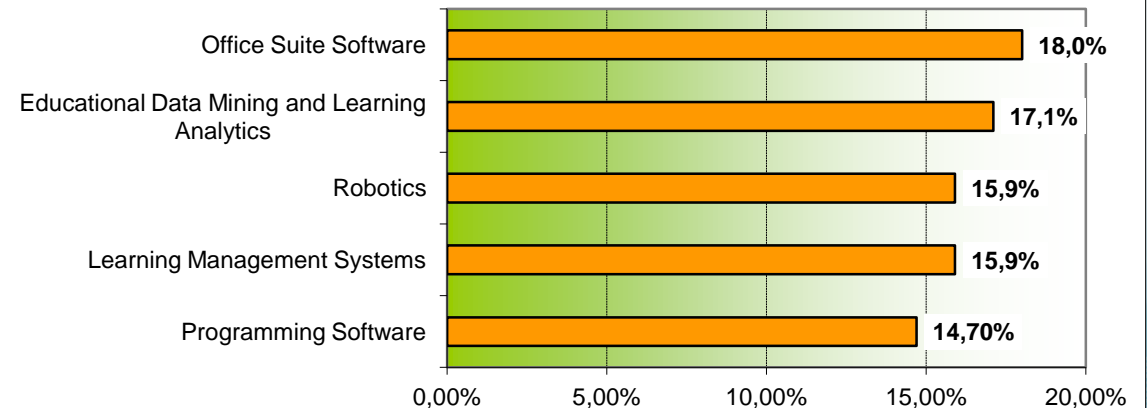
Informal learning

- Web 2.0
- Games and serious games
- Mobile devices
- Social networking / software / media
- Blogs and micro-blogging

Technologies with high potential for Informal Learning



Technologies with low potential for Informal Learning



Strategies suggested through the MATEL Roadmaps

OBJECTIVE: Identify bottlenecks and barriers to the deployment and implementation of the identified key technologies for educational change and suggest actions and strategies to ensure that the potential of technologies in facilitating effective, efficient, inclusive and high-quality lifelong learning opportunities is optimally developed.

Primary and Secondary Education

- Increase awareness of the individual behaviour patterns in learning and in the use of technologies in everyday life.
- Connect with the health sector to assess the risks associated to the intensive use of technologies in learning.
- Invest heavily on reinforcing enabling infrastructure.
- Increase piloting in the use of mobile devices in the classroom.
- Focus on equity of access to the above mentioned technologies.
- Establish rules of conduct for the responsible use of technologies in schools.

Workplace and work-related learning

- Update policy strategies at a European level: Adult learning needs to serve new objectives.
- Promote the "Learning Identity card/passport" for individuals and companies (to show competencies and skills and to enhance motivation to learn).
- Set reward schemes and benchmarking criteria for the valorisation of outcomes developed through Communities of Practice across companies.
- Fund competence development.

Re-skilling and Up-skilling strategies

- Keep on investing in new Europass CV incorporating skills acquired informally and non-formally.
- Assess the feasibility for the establishment of a *European Skills' Bank*.
- Establish local learning centres for the enhancement of critical skills and make sure their offer takes into account local (for instance local labour market needs) as well as individual needs (for instance their age).

These sectors were assessed by experts as those with the highest need for policy focus

Contacts



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