The Digital Competence Actions Framework

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Presentation Outline

✓ SMILE lab
✓ Digital Competence Definitions’ landscape
✓ Digital Competence Frameworks’ landscape
✓ Digital Competence Actions Framework (DiCAF)
✓ Digital Competence Definition
✓ Conclusions
Near Thessaloniki...

Chalkidiki

Agio Oros

Vergina - Phillip’s Tomb

Nature

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Some Results

Over the past years, we have been investigating the potential of Personalized Learning & Assessment (PLA) for use in the secondary and tertiary educational systems. We have been examined evidence that PLA offers an effective, efficient, and attractive mode to enhance students’ knowledge. We aim at showing the ability of PLA to foster students’ and workers’ learning, motivation, attitudes, collaboration, creativity, innovativeness, digital competence and other 21st century skills and abilities.

Our research covers all the phases of a PLA system, from sensing the context (e.g. learner's knowledge, experiences, behavior, performance, attitude, motivation) to intelligently guide him/her by providing personalized recommendations and feedback (visualizations, cognitive, affective, motivational) in order to achieve his/her goals.

<table>
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<tr>
<th>Personalized Feedback</th>
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<td>Empathetic Agents</td>
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<td>Web-based Assessments</td>
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<td>Computerized Adaptive Testing</td>
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<td>Mobile-based Assessment</td>
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<td>Learning Analytics and Recommendations</td>
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Need for Digital Skills & Competence

✓ The European authorities point out that today **90% of jobs** require some kind of digital skills, while almost half (44%) of the EU workforce has low basic digital skills, of which 22% has no digital skills at all.

✓ What does it mean ‘Digital Skills’ and ‘Digital Competence’?

✓ Various definitions.

✓ Confusion. Not a common definition.
Various Definitions

✔ **American Library Association (ALA):** “to be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.”

✔ **Chartered Institute of Library and Information Professionals (CILIP):** “information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner.”
UNESCO: “media and information literacy (MIL) is a set of competencies that empowers citizens to access, retrieve, understand, evaluate and use, create, as well as share information and media content in all formats, using various tools, in a critical, ethical and effective way, in order to participate and engage in personal, professional and societal activities”.

Educational Testing Service (ETS): “ICT literacy is using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society”.

✓ **PISA**: “ICT literacy is the interest, attitude and ability of individuals to appropriately use digital technology and communication tools to access, manage, integrate and evaluate information, construct new knowledge and communicate with others in order to participate effectively in society”.

✓ **EU Joint Research Centre (JRC)**: “Digital competence is a set of knowledge, skills, attitudes, strategies and awareness which are required when ICT and digital media are used to perform tasks, resolve problems, communicate, manage information, collaborate, create and share content, and build knowledge in an effective, efficient and adequate way, in a critical, creative, autonomous, flexible, ethical and a sensible form for work, entertainment, participation, learning, socialization, consumption and empowerment”.

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https://www.schooleducationgateway.eu/files/png4/digicomp2.png
Previous Digital Competence Frameworks

✓ *DigComp* by EU Joint Research Centre
✓ *Global framework of reference on digital literacy skills* by UNESCO
✓ *Essential Digital Skills Framework (EDSF)* by UK National Standards
✓ *International Computer and Information Literacy Study (ICILS)* by the International Association for the Evaluation of Educational Achievement (IEA)
✓ *Digital Competencies* by the European Skills, Competences, Qualifications and Occupations (ESCO)
✓ *All Aboard! National digital skills framework* by the Irish Government
1 Information and data literacy
   1.1 Browsing, searching and filtering data, information and digital content
   1.2 Evaluating data, information and digital content
   1.3 Managing data, information and digital content

2 Communication and collaboration
   2.1 Interacting through digital technologies
   2.2 Sharing through digital technologies
   2.3 Engaging in citizenship through digital technologies
   2.4 Collaborating through digital technologies
   2.5 Netiquette
   2.6 Managing digital identity

3 Digital content creation
   3.1 Developing digital content
   3.2 Integrating and re-elaborating digital content
   3.3 Copyright and licenses
   3.4 Programming

4 Safety
   4.1 Protecting devices
   4.2 Protecting personal data and privacy
   4.3 Protecting health and well-being
   4.4 Protecting the environment

5 Problem solving
   5.1 Solving technical problems
   5.2 Identifying needs and technological responses
   5.3 Creatively using digital technologies
   5.4 Identifying digital competence gaps
UK Essential Digital Skills Framework (EDSF)

1 Using devices and handling information
  1.1 Using devices
  1.2 Finding and evaluating information
  1.3 Managing and storing information
  1.4 Identifying and solving technical problems
  1.5 Developing digital skills

2 Creating and editing
  2.1 Creating and editing documents
  2.2 Creating and editing digital media
  2.3 Processing numerical data

3 Communicating
  3.1 Communicating and sharing
  3.2 Managing traceable online activities

4 Transacting
  4.1 Using online services
  4.2 Buying securely online

5 Being safe and responsible online
  5.1 Protecting privacy
  5.2 Protecting data
  5.3 Being responsible online
  5.4 Digital wellbeing
ICILS

1 Understanding computer use
1.1 Foundations of computer use
1.2 Computer use conventions
2 Gathering information
2.1 Accessing and evaluating information
2.2 Managing information
3 Producing information
3.1 Transforming information
3.2 Creating information
4 Digital communication
4.1 Sharing information
4.2 Using information responsibly and safely

ALL ABOARD!

1 Find and Use
2 Create & Innovate
3 Identity & Well-Being
4 Communicate & Collaborate
5 Teach & Learn
6 Tools & Technology

ESCO

1 ICT safety
2 problem-solving with digital tools
3 digital communication and collaborative
4 digital content creation
5 digital data processing
Digital Competence Actions Framework (DiCAF)

1 Access
1.1 Search (also, Seek, Navigate, Browse) using digital technologies;
1.2 Find (also, Locate, Identify, Detect, Discover, Retrieve) using digital technologies;
1.3 Access (also, View, Watch, Monitor, Sense, Read, Listen, Hear) using digital technologies.

2 Use
2.1 Store (also, Save, Curate, Archive, Retain, Bookmark, Download, Install, Copy, Duplicate, Backup, Print) using digital technologies;
2.2 Analyse (also, Examine, Investigate) using digital technologies;
2.3 Use (also, Operate, Manipulate, Handle) using digital technologies;
2.4 Evaluate (also, Assess, Review, Critique, Rank, Compare) using digital technologies;
2.5 Manage (also, Control, Organize, Select, Choose, Decide) using digital technologies;
2.6 Delete (also, Quit, Terminate, Drop Out, Leave, Depart, Abandon) using digital technologies.

3 Communicate
3.1 Interact & Communicate (also, Participate, Discuss, Question-Answer, Argue, Debate, Negotiate) using digital technologies;
3.2 Collaborate & Cooperate using digital technologies;
3.3 Share (also, Disseminate, Distribute, Teach, Publish, Upload, Display, Present, Demonstrate, Show, Describe, Explain) using digital technologies.

4 Create
4.1 Develop (also, Produce, Write, Edit, Code -Program, Construct, Build, Generate, Implement, Design, Process, Calculate) using digital technologies;
4.2 Apply (also, Process, Execute) using digital technologies;
4.3 Modify (also, Transform, Convert, Alter, Change, Adapt, Revise, Translate) using digital technologies;
4.4 Integrate (also, Combine, Synthesize, Compose, Assemble) using digital technologies;
4.5 Solve Problems using digital technologies;
4.6 Protect (also, Secure) using digital technologies.
“Digital competence is the person’s knowledge, skills and attitudes to ‘efficiently’ access, use, create and share digital resources, as well as communicate and collaborate with others using digital technologies in order to achieve specific goals”

✔ **Digital resources** = Content, SW (e.g. software applications and tools, media); HW (e.g. devices); and Networks (e.g. WiFi, Cellular)

✔ **Content** = data, information, knowledge, news, message, article, picture, photo, audio, song, video, movie, map, infographic, presentation, spreadsheet, database, blog, website, OER, course, practices, methods, procedures etc.

✔ **Others** = persons, groups of persons, avatars (digital agents), organizations

✔ **Efficiently** = effectively, appropriately, responsibly (e.g. legally, ethically), securely (e.g. safely, healthy), critically, reflectively, creatively
Examples of digital competence

✓ the ability to find an OER legally in order to study and learn coding in Python,
✓ the ability to collaborate creatively with colleagues in order to solve a mathematical problem,
✓ the ability to abandon a social network safely in order not to be addicted,
✓ the ability to install an application on her smartphone in order to arrange her scheduling,
✓ the ability to use and control a 3D-printer effectively in order to develop an artifact for homework.
Conclusions

This paper:

✔ presented an overview of Digital Competence Frameworks
✔ proposed the Digital Competence Actions Frameworks
✔ Proposed a Digital Competence definition: “the person’s knowledge, skills and attitudes to ‘efficiently’ access, use, create and share digital resources, as well as communicate and collaborate with others using digital technologies in order to achieve specific goals.”
Thank you!

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