An Instrument for the Digital Competence Actions Framework

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Presentation Outline

✓ SMILE lab
✓ Digital Competence definitions
✓ Digital Competence Instruments’ landscape
✓ A new Instrument for the Digital Competence Actions Framework
✓ 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>Learning Analytics and Recommendations</td>
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Need for Digital Skills & Competence

Digital Economy and Society Index Report (DESI):
✔ 65% of EU individuals have basic or above basic digital skills
✔ 51% of EU persons employed using computers at work skills

What does it mean ‘Digital Skills’ and ‘Digital Competence’?
✔ Various definitions
✔ Confusion. Not a common definition
Definitions of Digital Competence

✓ **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”.

✓ **European Training Foundation (ETF):** “Digital competence encompasses a set of basic digital skills, covering information and data literacy, online communication and collaboration, digital content creation, safety and problem solving”
Definitions of Digital Competence

- **European Council**: “Digital competence includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), intellectual property related questions, problem solving and critical thinking”.

- **Perifanou & Economides**: “Digital competence is the person’s knowledge, skills and attitude to ‘efficiently’ access, use, create and share digital resources, communicate and collaborate with others using digital technologies in order to achieve specific goals.”
DIGCOMP item examples

✓ I can use different search engines to find information.
✓ I can produce complex digital content in different formats (e.g. text, tables, images, audio files).
✓ I can use advanced features of several communication tools (e.g. using Voice over IP and sharing files).
✓ I can solve most of the more frequent problems that arise when using digital technologies.
✓ I have installed security programs on the smart device(s) that I use to access the Internet (e.g. antivirus, firewall).
UK Essential digital skills framework item examples

✓ I can turn on the smart device and enter any account information as required.
✓ I can set up a group on messaging platforms, such as WhatsApp or Messenger, to talk to friends or family members.
✓ I can understand that not all entries in online encyclopedia, such as Wikipedia, are true or reliable.
✓ I can set up online accounts for public services such as with your local council or a government department.
✓ I can use the internet to find specific information related to life tasks that need to be carried out, for example finding a recipe, or finding information that helps plan travel.
✓ I can make sure that online login information is not shared with anyone.
EUROSTAT item examples

✓ Did you use the internet several times during the day?
✓ Did you use storage space on the internet (cloud computing) to save documents, pictures, music, video or other files for private purposes in the last 3 months (e.g. Google Drive, Dropbox, Microsoft OneDrive, iCloud, Amazon Drive)?
A new Instrument

based on the Digital Competence Actions Frameworks (DiCAF)

✓ 1 Access, Search and Find
✓ 2 Use, Store, Manage, Evaluate and Delete
✓ 3 Communicate, Collaborate and Share
✓ 4 Create, Apply, Modify, Combine, Solve and Protect

To what extent do you agree with the following statements:

Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
1 Access, Search and Find

✓ I can search and find a specific object or similar objects using various search engines and databases, using appropriate keywords and advanced criteria and filters.
✓ I can search and find a specific object or similar objects in various social media using various smart devices.
✓ I can search and find a specific open/free resource or similar open/free resources in various open repositories.
✓ I can search and find possible partnerships and collaborators on various social media.
✓ I can search and find a specific person on various social networks using various techniques.
✓ I can search and find groups on a specific topic on various social media.
✓ I can search and find information in an object using appropriate keywords and advanced criteria and filters.
✓ I can navigate in the real-world using the advanced features of a navigator.
✓ I can watch (read, listen, view) content in various formats on various smart devices.
✓ I can monitor the usage of various smart devices.
✓ I can monitor the usage and speed of an Internet and/or a WiFi connection.
✓ I can monitor the Internet presence and activity of a person or a company/organization.

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https://www.maxpixel.net/To-Find-Search-Increase-To-Watch-Magnifying-Glass-1020142
2 Use, Store, Manage, Evaluate and Delete

✓ I can record and save content in various formats using various smart devices and digital tools.
✓ I can download content and save it directly to the relevant folder.
✓ I can store and synchronize content on the Cloud.
✓ I can bookmark content using a bookmarking service.
✓ I can save and keep on content in multiple storage devices.
✓ I can install and keep on updated software and apps on various smart devices.
✓ I can backup content and software using various digital tools.
✓ I can use the advanced features of various smart devices, software and e-services.
✓ I can organize content in a hierarchical folder structure.
✓ I can classify content using tags to build a folksonomy.
✓ I can organize a meeting using various digital tools.
✓ I can manage projects using the advanced features of various digital tools.
✓ I can manage my personal finance using the advanced features of various digital tools.
✓ I can manage the settings of software.
✓ I can manage my digital identity and/or group on various social media.
✓ I can evaluate an object and/or a smart device using appropriate quality criteria.
✓ I can critique an object and/or a smart device on relevant social media.
✓ I can evaluate whether some information is hoax, fake, scam, or fraud.
✓ I can identify the intellectual property rights (IPRs) of content that I have found on Internet.
✓ I can evaluate whether an email is spam, adware, phishing, or fraud.
✓ I can critically evaluate information on Internet regarding people and businesses/organizations.
✓ I can evaluate whether a website is secure and trusted.
✓ I can measure the speed of an Internet connection, and/or the strength of a WiFi or cellular network connection.
✓ I can delete my account on various social networks and/or e-services.
✓ I can delete some of my connections/ friends in various social networks.
✓ I can uninstall software from various smart devices.

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I can communicate with people and/or organizations using various synchronous and asynchronous communication tools and smart devices.

I can responsibly participate in activities in various social media using their advanced features.

I can ask questions and give answers in various social networks and/or e-communities.

I can collaborate with people using various smart devices, platforms and digital tools.

I can critically share content on various media.

I can buy and/or sell a product and/or service using various smart devices, platforms and digital tools.

I can teach an e-course or an e-seminar, give a lecture or make a presentation using various digital tools.

I can connect a smart device to a WiFi network.

I can share smart devices, software, Internet connection, and WiFi.

I can upload and share software or app that I have developed on various media.

I can responsibly disseminate on various social networks my location, activity, accomplishments and emotions.
4 Create, Apply, Modify, Combine, Solve and Protect

✓ I can create complex content in various formats using various digital tools.
✓ I can creatively create a virtual object using various devices and digital tools.
✓ I can create a summary of a large content.
✓ I can responsibly create a digital identity and/or a group in various social media.
✓ I can write a program (code) in a programming language.
✓ I can creatively design and/or develop a website using various digital tools.
✓ I can create a product and/or service using various digital tools.
✓ I can apply Creative Commons licenses to content or software that I have created.
✓ I can apply simulation software in order to understand the behaviour of a system.
✓ I can apply statistical techniques using appropriate software in order to make forecasting or predictions.
✓ I can apply business analytics software in order to drive business planning.
✓ I can modify multimedia content using various digital tools and smart devices.
✓ I can translate content into another language using translation tools.
✓ I can convert content from one format to another format.

https://pixabay.com/illustrations/idea-creativity-innovation-hand-4244248/
✓ I can creatively combine content from various sources using various digital tools.
✓ I can creatively combine digital tools to solve a problem
✓ I can solve technical problems that arise when I use a smart device or software.
✓ I can regularly change my passwords and settings of my smart devices and Internet accounts
✓ I can solve a problem by finding information and tools on the Web.
✓ I can solve real-life problems using appropriate digital tools.
✓ I can protect the intellectual property rights (IPRs) of content that I have created.
✓ I can protect various smart devices and critical content using security software.
✓ I can protect various smart devices and e-accounts using different passwords and frequently changing them.
✓ I can protect myself and others from fake information, fake persons, fake businesses/organizations.
✓ I can protect myself and others against identity theft, harassment, bulling, or slander.
✓ I can protect myself and others against spam and phishing messages.
✓ I can protect my privacy in the digital society.
✓ I can protect my health using various digital tools.

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Conclusions and Future Research

This paper:

✓ presented item examples of Digital Competence Instruments
✓ proposed a new Instrument for the Digital Competence Actions Framework

**Future study:**

1. Students will answer the questions of the Instrument.
2. The proposed new Instrument will be further investigated and analyzed using statistical techniques.
Thank you!

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