



Resetting education and training *through* recent research

Session 1: Didactics for Digital Education

Dr. Riina Vuorikari
DG Joint Research Centre
European Commission



This talk

- ***Pandemic as a reference point:*** What could be learnt to create more conducive learning environments for the future?
- ***Today's challenge:*** Citizens interacting with AI systems in a confident, critical and responsible way
- ***Tomorrow:*** Future learning technologies (balance between human autonomy and machines, LifeComp)

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3 phases of JRC studies

JRC TECHNICAL REPORT

The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets

Di Pietro, G., Blagi, F., Costa P., Karpinski Z., Mazza, J.

JRC SCIENCE FOR POLICY REPORT

How families handled emergency remote schooling during the Covid-19 lockdown in spring 2020

Summary of key findings from families with 11 European countries

Vuorikari, R., Velicu, A., Chaudron, S., Cachia, R., Di Gioia, R.

JRC SCIENCE FOR POLICY REPORT

What did we learn from schooling practices during the COVID-19 lockdown?

Insights from five EU countries

Stephanie Carretero, Joanna Napierala, Antonis Bessios, Eve Mlgy, Agnieszka Papacowicz, Maria Ransen, Karen Triquet, Koen Lombaerts, Nicolas Robledo-Bottcher, Marco Montanari, Ignacio Gonzalez-Vazquez

JRC TECHNICAL REPORTS

How children (10-18) experienced online risks during the Covid-19 lockdown - Spring 2020

Key findings from surveying families in 11 European countries

Lobe, B., Velicu, A., Staksrud, E., Chaudron S., Di Gioia, R.

JRC TECHNICAL REPORT

Remote schooling during Covid-19 spring 2020 lockdown.

A closer look at European families

Cecelia Romina Velicu Arca, Chaudron Stephanie, Di Gioia Rosanna & Vuorikari Rina

JRC TECHNICAL REPORT

The school year 2020-2021 in Denmark during the pandemic

Country report

Lundström, T. E.

Analyses using pre-Covid data

Gathering data on emergency remote schooling

Gathering data from a more planned response (DK, EE, ES, HU, RO)



Covid-19

Summer 2020

School year 2020-2021

Remote schooling increased the screen time during spring 2020

JRC SCIENCE FOR POLICY REPORT

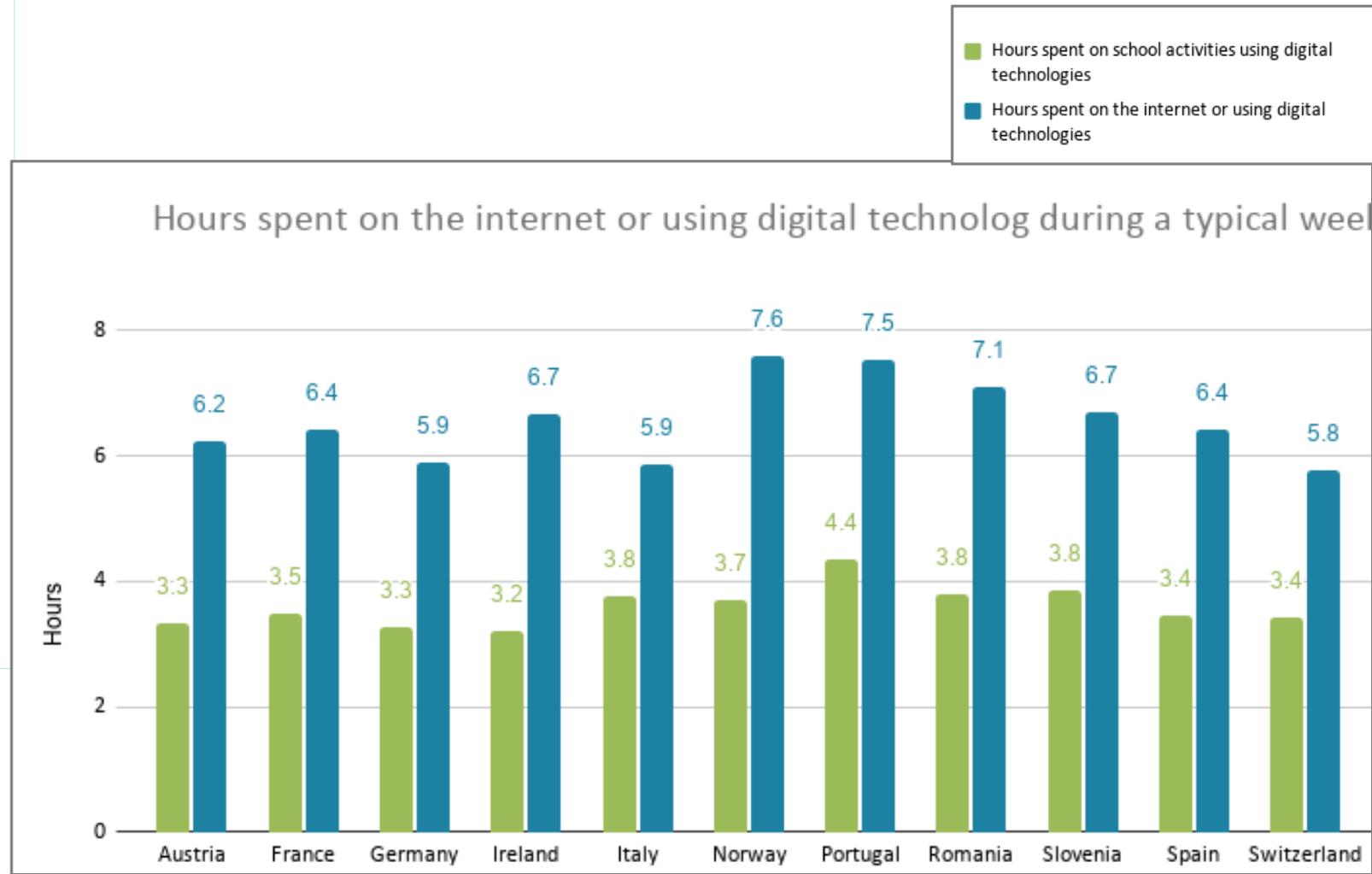
How families handled emergency remote schooling during the Covid-19 lockdown in spring 2020

Summary of key findings from families with children in 11 European countries

Vuorikari, R.,
Velicu, A.,
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Di Gioia, R.

2020

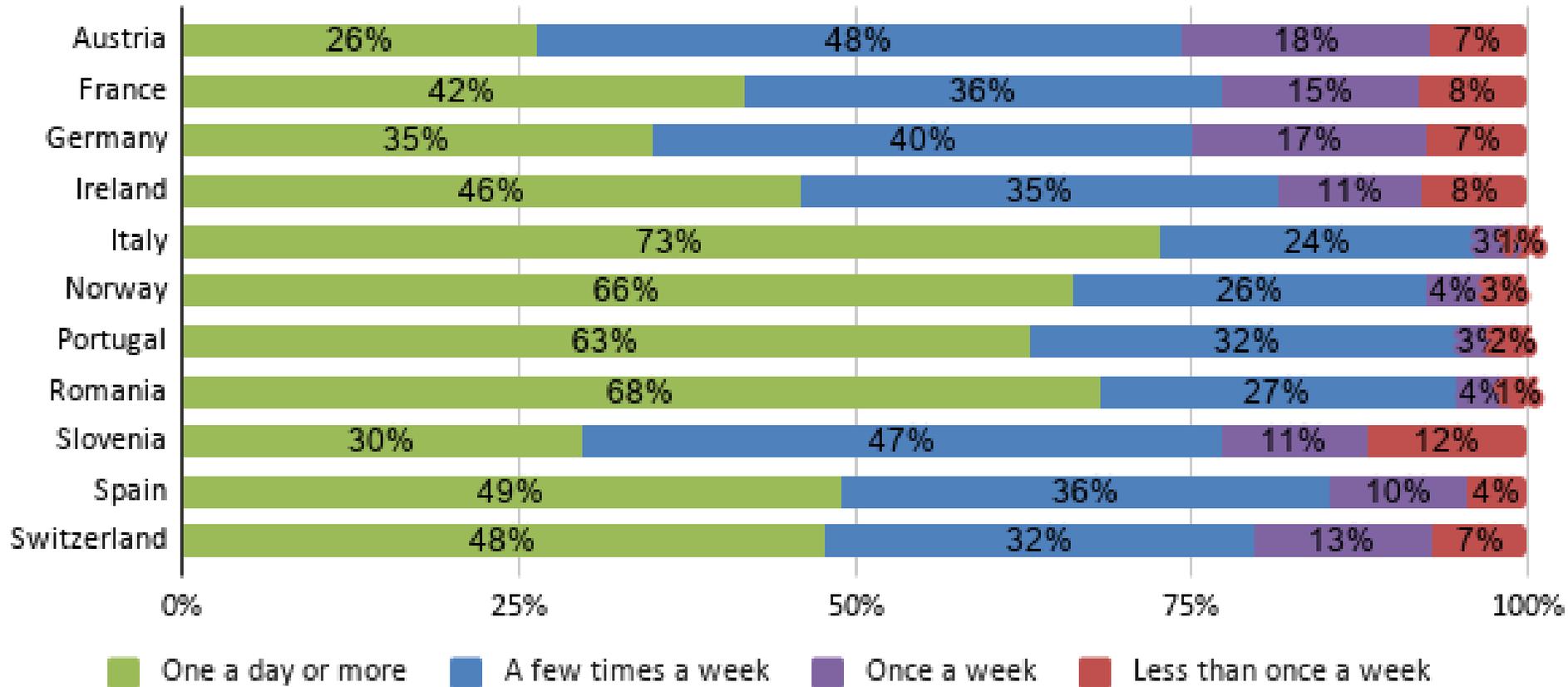
<https://publications.jrc.ec.europa.eu/repository/handle/JRC122303>



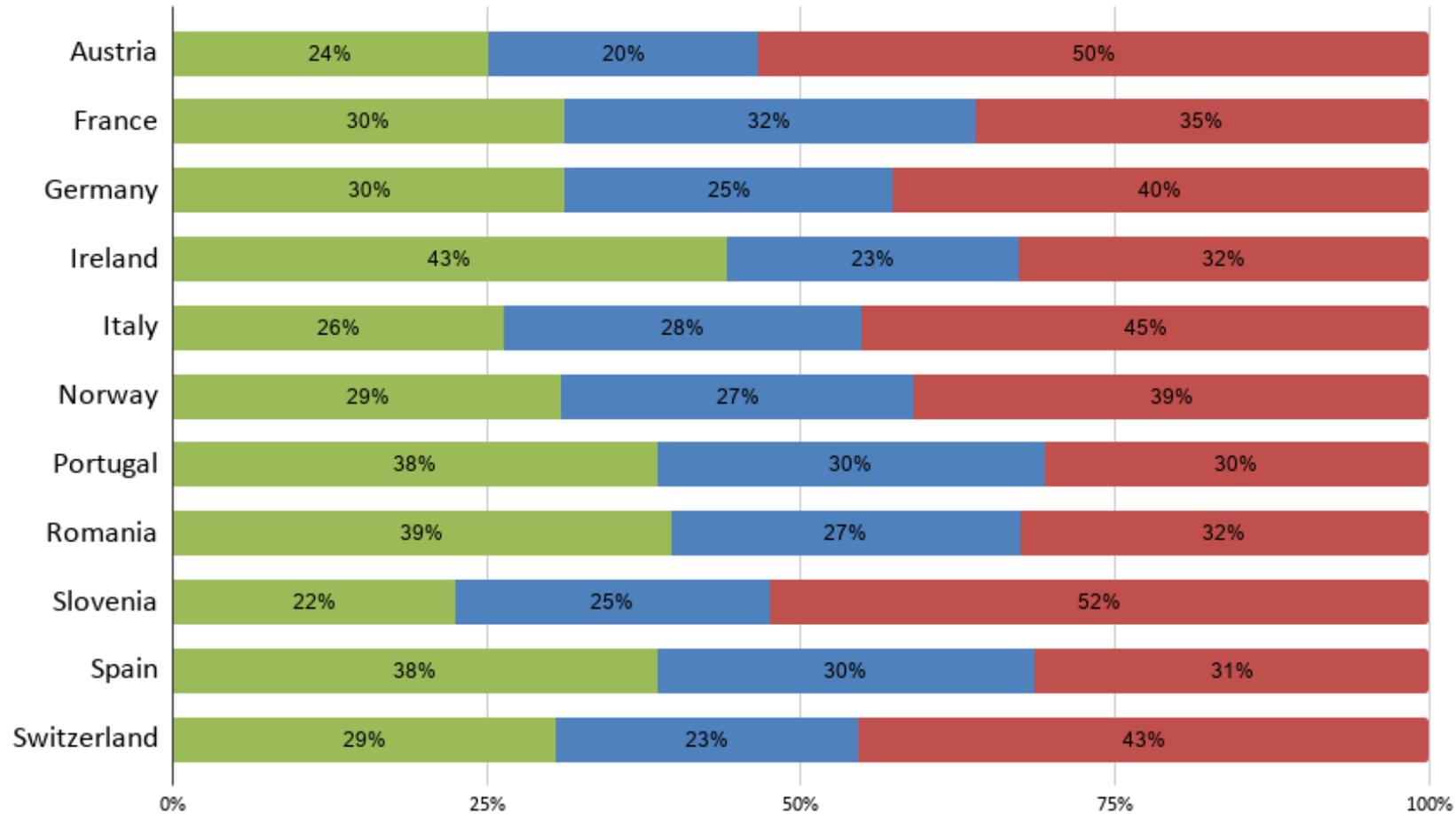
Frequency of students' online activities with teachers during lockdown in spring 2020

(e.g. online class, video conference)

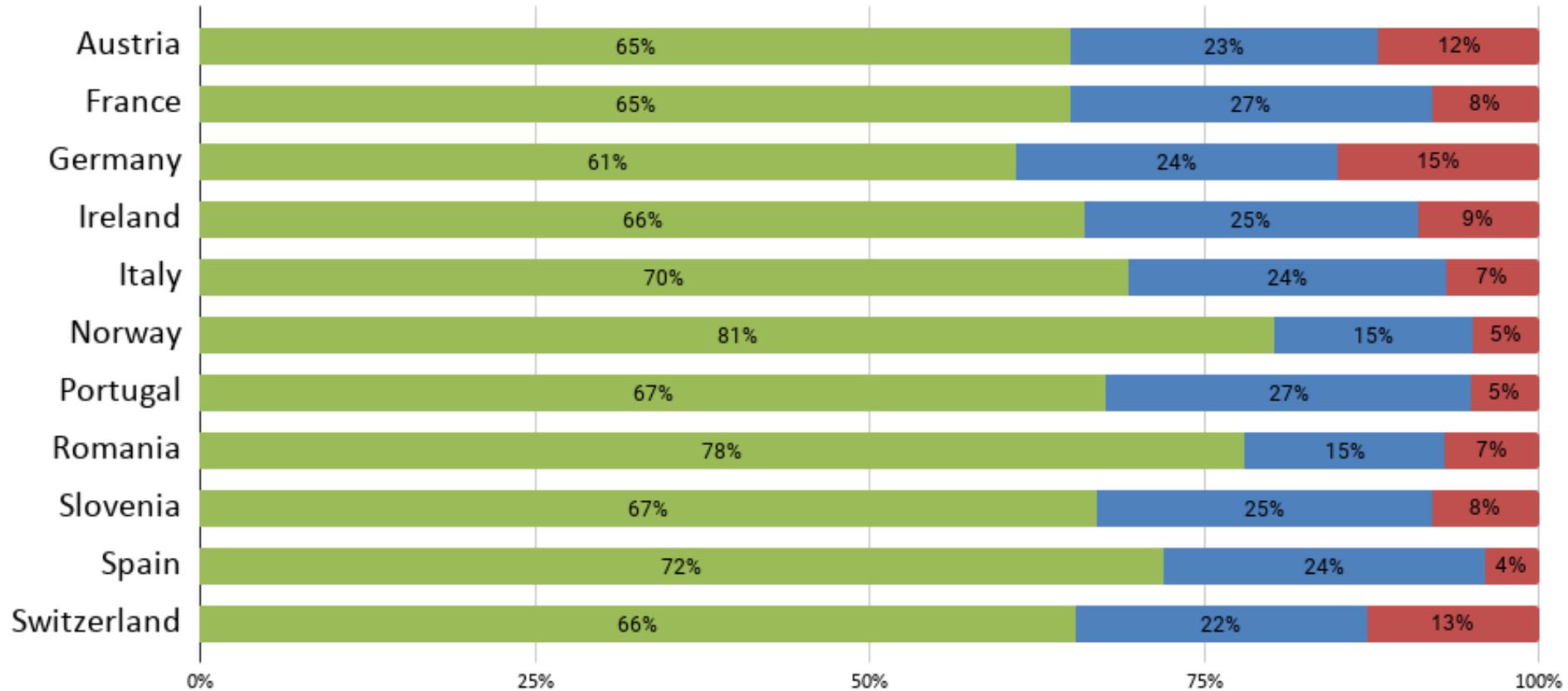
n=4692



”I worry I will get poor grades because of online activities”



”I learn quickly how to participate in online activities”



Replies by the child: ■ True ■ Partly not true, partly true ■ Not true

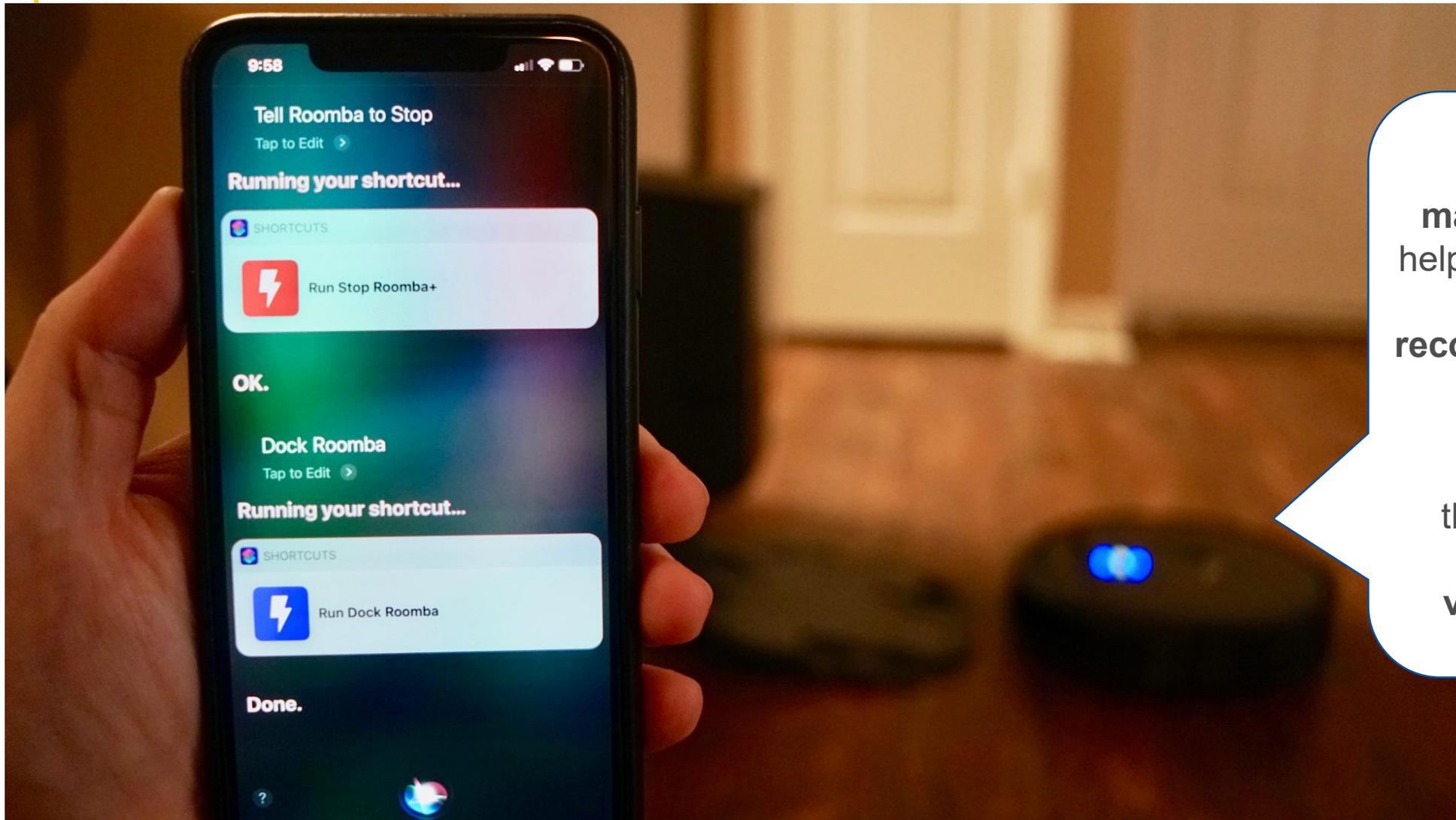
Take away messages for the future

- Think about the **balance between** screen time and off-screen activities in education, it is important also from the **equity perspective**
 - How to **design inspirational educational** on-screen and off-screen activities that involve social aspects of learning?
 - **Not all families** have skills and resources to support children's digital learning activities, e.g. 28% of EU adults with children have low digital skills + 8% no digital skills at all.
- Developing **positive attitudes towards learning** can help in **supporting learners to overcome** some of the potential challenges, e.g. those posed by online learning during remote/hybrid education. Both **parents and teachers** play a fundamental role (OECD, 2020).



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Robot vacuums often use **machine learning** to help **map and navigate** a room, and to **recommended** cleaning schedules.

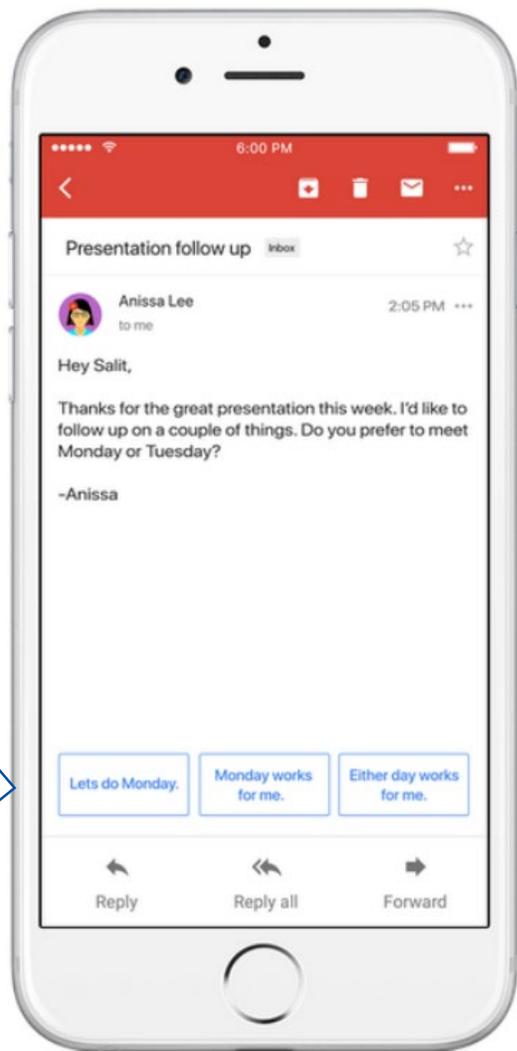
Operating the robot vacuums **through voice commands** uses AI too.

Source: <https://9to5mac.com/2019/01/18/irobot-roomba-siri-control/>;

* <https://foundation.mozilla.org/en/privacynotincluded/irobot-roomba-s-series/>

Suggestions for smart replies generated by AI.

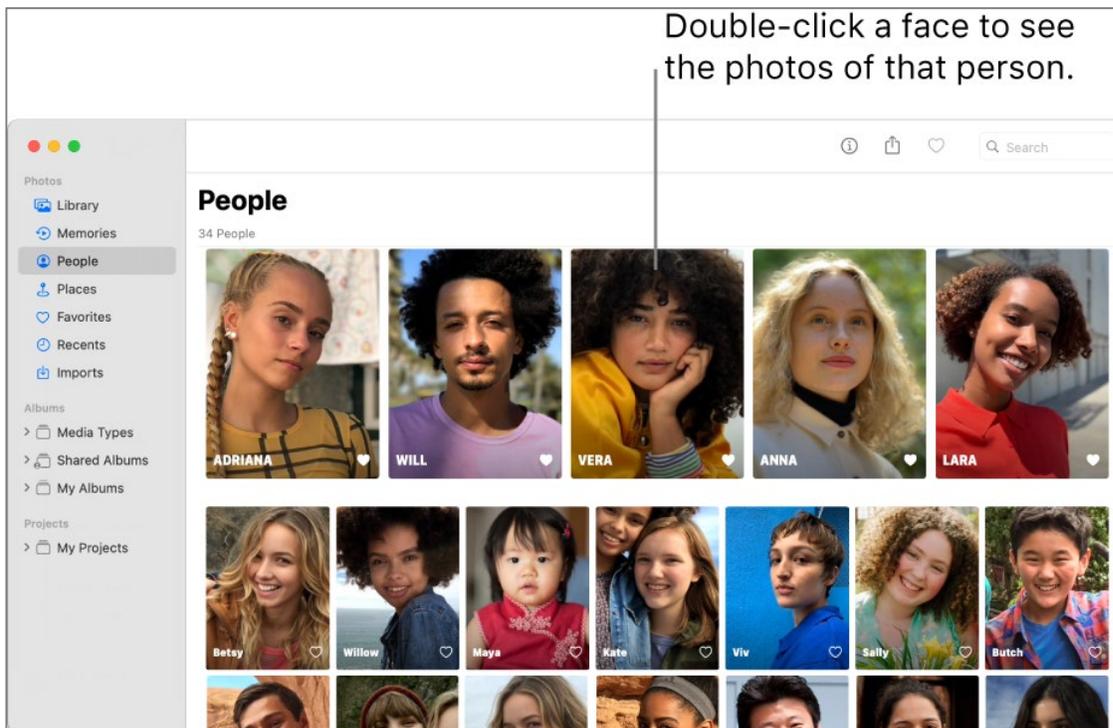
In 2017, 12% of replies on mobiles driven by this



AI empowers face recognition software, the more data you give to the system (e.g. insert name, confirm that the face belongs to a given group), the better it works.

View people in your library

1. In the Photos app on your Mac, click People in the sidebar.



Digital Education Action Plan: *Enhancing digital skills and competences for the digital transformation*

ACTION 8

Update the European Digital Competence

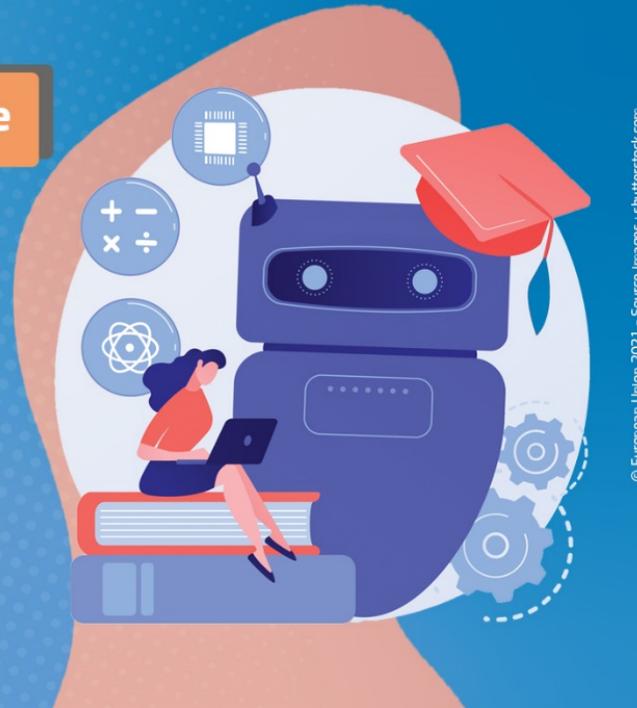
Framework to include AI and

data-related skills

An initiative of the Digital Education Action Plan

#DEAP

#EUDigitalEducation



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https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan/action-8_en



What *knowledge, skills and attitudes* do citizens need to engage with AI systems in a **confident, critical and responsible** way for learning, at work, and for participation in society?

See more at: <https://ec.europa.eu/jrc/digcomp>

Requirements for citizens' use of AI systems



KNOWLEDGE

- *To be aware of the benefits, limitations and challenges of AI systems*
- *To understand what AI systems do and what they do not do*



SKILLS

- *To use, interact and give feedback to AI systems as an end-user*
- *To configure, supervise and adapt AI systems (e.g. overwrite, tweak)*



ATTITUDES

- *Human agency and control*
- *Critical yet open attitude*
- *Ethical considerations of usage*

Example (work-in-progress):

1.1 Browsing, searching and filtering data, information and digital content

To articulate information needs; to create and update personal search strategies; to search for data, information and content in digital environments; to access and navigate between data, information and content.

KNOWLEDGE

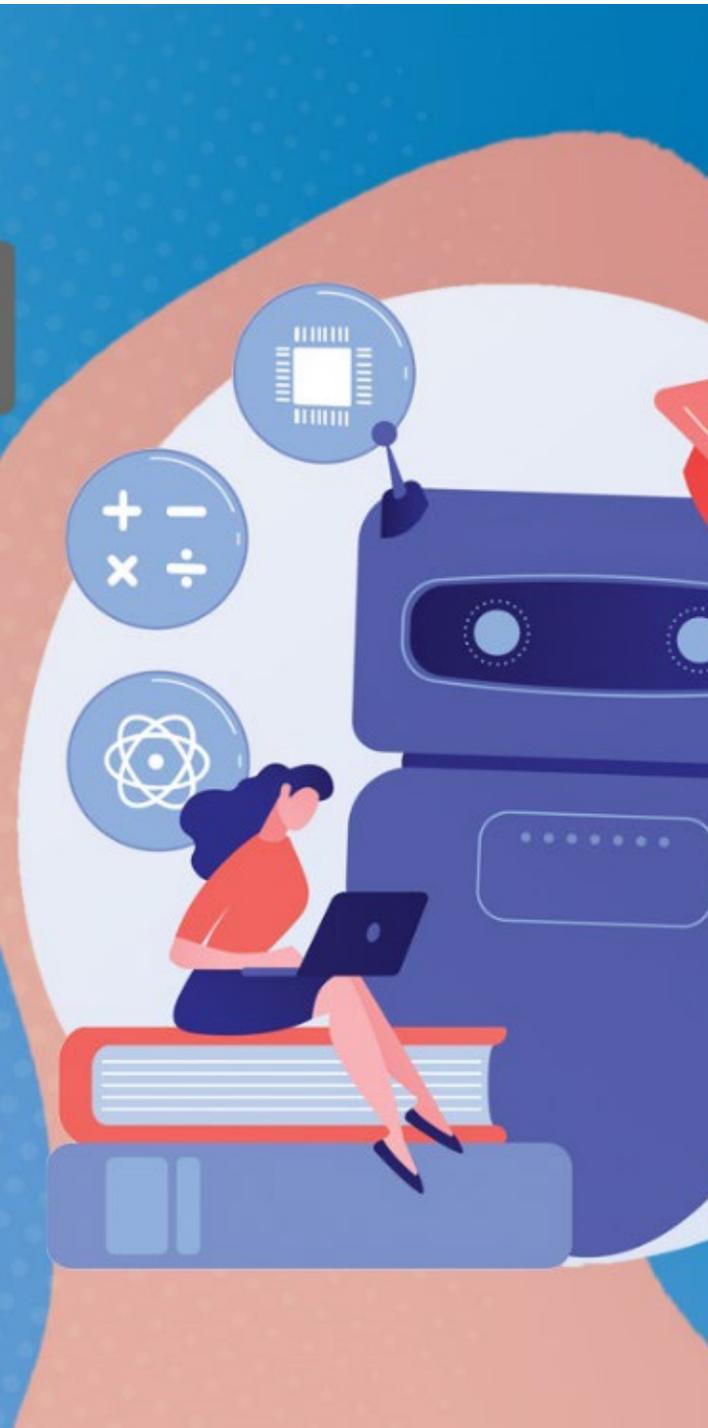
1. **Aware that AI algorithms** are used in search engines (e.g. Bing), social media (e.g. Instagram) and content platforms (e.g. Netflix) **to generate responses** that satisfy the user (an approach often called “personalisation”). The algorithms then **adapt to what the user subsequently chooses/clicks**.

SKILLS

2. Can formulate an effective **search query appropriate for a virtual assistant** or smart speaker (e.g. Siri, Alexa, Cortana, Google assistant) to maximise the chance of being shown the user's desired information or content.

ATTITUDE

3. Develops **a responsible attitude as part of one's personal search strategies** in order to **take advantage** of how AI algorithms work (e.g. helping users find the desired information) and **to avoid negative outcomes** (e.g. compromising privacy and personal data, or the impact of commercial interests)





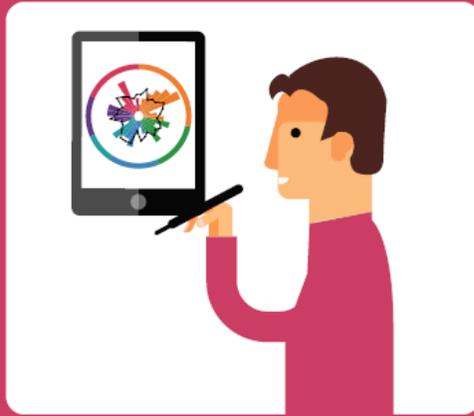
Public online validation starts today!

Find out more at:

<https://ec.europa.eu/eusurvey/runner/DigComp>



SELFIEforTEACHERS



Reflect on digital competence in six different areas



Exchange ideas and practices with colleagues



Plan professional development pathways



#SELFIEforTEACHERS_EU

<https://ec.europa.eu/educators-go-digital>



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European
Commission

JRC SCIENCE FOR POLICY REPORT

Emerging technologies and the teaching profession

Ethical and pedagogical considerations based
on near-future scenarios

Vuorikari Riina
Punie Yves
Marcelino Cabrera

2020

<https://publications.jrc.ec.europa.eu/repository/handle/JRC120183>

***Anticipatory
thinking
and
strategic
reflection
are
foresight
methods
to
help to see
the future as
something
to
shape.***

Key challenges of emerging educational technologies

- Should machines or algorithms take decisions which **teaching professionals with adequate pedagogical and subject-specific content knowledge** would otherwise take?
 - Under which conditions should a software application *autonomously* make a pedagogical judgement?
- **Underlying pedagogical models** and their aims?
 - **How are the data models constructed** and how traceable are the decisions made by the software (e.g. explicability)?
 - **What are their aims?** To support **learner agency** and help develop a variety of competences (e.g. in the **cognitive** domain, **social** and **emotional** learning) or to make **these core competences redundant**?



JRC SCIENCE FOR POLICY REPORT

LifeComp

The European Framework for
**Personal, Social and Learning
to Learn** Key Competence

Arianna Sala
Yves Punie
Vladimir Garkov
Marcelino Cabrera



Joint
Research
Centre

EUR 30241

When emotional, social and metacognitive competences are intentionally promoted through education*

- Increase in **academic success**, and decrease of early school leaving
- **Improvement in student wellbeing and mental health**
- Improvement in student behavior and decrease in interpersonal violence and bullying
- Improvement in **student–teacher relationship** quality, and in teachers' confidence and satisfaction
- Improvement in **school climate**

*e.g. Cefai, Bartolo et al. 2018; OECD, 2021; Sorrenti, G., Zölitz, U., Ribeaud, D., & Eisner, M. 2020. LifeComp builds on such advanced research on Socio-Emotional learning

https://www.schooleducationgateway.eu/en/pub/teacher_academy/catalogue/detail.cfm?id=232029&cbmid=45723873

- November 22 . December 6
- Workload approx.. 10 hours

Fostering Life Competences through Education



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This course has been developed by **[Kornelia Lohynova](#)**, in close collaboration with the School Education Gateway.

In the course, you will explore the “Personal, Social and Learning to Learn” competence. You will learn how to embed this key competence in your teaching practice through activities in your classroom.

All participants will have the opportunity to:

- Explore the nine competences of the [LifeComp European Framework for Personal, Social and Learning to Learn Key Competence](#)
- Learn about the importance of this key competence
- Discover ideas and learning activities to foster self-regulation, wellbeing, empathy, collaboration, growth mindset, critical thinking, and other important competences that makeup LifeComp
- Create strategies to implement LifeComp in the classroom

Open online course to promote LifeComp

1. The current COVID-19 pandemic has forced the adoption of distance and blended learning to ensure educational continuity.
2. Physical school closure and the lack of in-person contact may make students less externally motivated to engage in learning activities.
3. **Social and Emotional education** is key to building **emotional resiliency** in individuals; **mainstreaming the development of Personal, Social and Learning to Learn Key competence** in educational institutions all over Europe makes sense!
4. One of the **barriers** to adopting teaching strategies that promote the socio-emotional and learning to learn competences of the learners is the **lack of teacher formation**.

Thank you!

EUROPEAN EDUCATION AREA

A common vision for education & training in the EU

Supporting the EU's recovery & building a green, digital and truly inclusive Europe

DIGITAL EDUCATION ACTION PLAN
2021 - 2027

DIGITAL EDUCATION ACTION PLAN
2021 - 2027
Resetting education and training for the digital age

#EuropeanEducationArea #EUDigitalEducation

European Commission

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Riina.Vuorikari@ec.europa.eu