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### DIGITALLY EMPOWERED TEACHERS WEBINAR 1

# Are we running to or away from Al



Education Analyst Expert in AI and data

Tuesday, 30 January 2024 17:00 CET

LINK TO JOIN:

bit.ly/DETwebinar1

### Who is in the room?



Arjana Blazic



Marianna Szűcs



Lidija Kralj







# Who is attending?



Go to menti.com and enter the code 8695 2525 or scan this QR code.









#### 2021-2024 DIGITALISATION Long-term activity (LTA)

Focus topic: Digital transformation

Target sector: School education Key Action 2 (Cooperation among organisations and institutions)

Partnership of several National Agencies (CZ01; EE01; DE03; HU01; IE01; LU01; MT01; NL01; SK01) organising and hosting 13 **Training and Cooperation**Activities (TCAs) within the cycle of the project (final event is in the Hague in March 2024).

Most TCAs have been **thematic seminars** to provide participants with up-to-date knowledge about the topic and networking opportunities with fellow project-holders.

More info about TCAs and your opportunities: **SALTO Platform** 

Main objective: improve the quality of running E+ projects in the field

Other E&T sectors and KA1 (Learning mobility of individuals) projects have been involved as well to provide good examples.

DigLTA research report (2021-2022): Supporting Digital Transformation in School Education | Erasmus+ Impact (erasmusplusresearch.eu)

2021 Boosting digital learning and blended mobility; Enhancing Digital Competences in E&T

2022 Media Literacy and Disinformation; Digital Well-Being for Educators; Digital Classroom; Media Literacy as a key skill for modern life; Enhancing Digital Competences in E&T; Creative Use of Learning Apps in Class

2023 Blended mobilities as a means of improving study programmes; Enhancing Digital Competences in E&T; Digital Inclusion in School Education

**2024** <u>Digital Edvolution - Empowering educators in the digital age</u>; Webinar sessions (3) + **eTwinning GROUP** with Topics (open not only to participants of DigLTA TCAs but also to any eTwinners interested in the topic and thinking about entering the Erasmus+ Programme)





#### DIGITALLY EMPOWERED TEACHERS

# eTwinning GROUP for the participants of Digitalisation LTA







#### About this group

Created by Arjana BLAZIC

Last updated by Arjana BLAZIC 2 sec ago

Go to discussion

Page options

Digitally Empowered Teachers is a group dedicated to a community of the participants of the Digitalisation LTA (Long-Term Activity) for school education. This online group represents a dynamic community of educators united by a shared passion for unlocking the power of technology to enrich their teaching practices. Its primary purpose is to facilitate knowledge exchange, networking, and capacity building for Erasmus+ projects holders and members.

Digitalisation LTA, led by the Tempus Public Foundation, Hungary and created with partner countries: the Czech Republic, Estonia, Germany, Hungary, Ireland, Luxembourg, Malta, the Netherlands, Slovakia, is an international initiative that brings together Erasmus+ project owners from nearly 20+ countries. Its primary purpose is to facilitate knowledge exchange, networking, and capacity building for Erasmus+ projects holders and members.



#### DIGITALLY EMPOWERED TEACHERS

Digitalisation LTA

eTwinning GROUP for participants of Digitalisation LTA



bit.ly/DET\_ETW



**Erasmus+** 

# DIGITALLY EMPOWERED TEACHERS eTwinning GROUP for participants of Digitalisation LTA













### Lidija Kralj

Education Analyst & Adviser, Expert in data & AI in education European Commission, Council of Europe, European Schoolnet, UNESCO

#### **Erasmus+**



# Are we running to or away from Al?

Lidija Kralj Education Analyst and Advisor



# Magic of Al

- Al technologies can understand and solve any new problems as the human brain can
- Intelligent machines learn on their own
- Al can be 100% objective and accurate
- Al will make the teacher role more exciting
- Unique immersion in the world of mathematics
- Students enjoy an innovative and engaging experience
- Enjoyable, quick and efficient AI-driven testing and feedback
- Teacher dashboard lets you know everything that happens in your class during activities
- It is very polite and fast

# Al can be defined as "automation based on associations."



When computers automate reasoning based on associations in data (or associations deduced from expert knowledge), two shifts fundamental to Al occur and shift computing beyond conventional edtech:

- (1) from capturing data to detecting patterns in data and
- (2) from providing access to instructional resources to *automating* decisions about instruction and other educational processes.

Detecting patterns and automating decisions are leaps in the level of responsibilities that can be delegated to a computer system. The process of developing an AI system may lead to bias in how patterns are detected and unfairness in how decisions are automated.



## Ethics – UN Rights of the child

- The use of digital devices should not be harmful, nor should it be a substitute for in-person interactions among children or between children and parents or caregivers.
- Precautions may be required, depending on the design, purpose and uses of technologies.
- Training and advice on the appropriate use of digital devices should be given to parents, caregivers, educators and other relevant actors, taking into account the research on the effects of digital technologies on children's development.



#### Ethics - EU Al act

- Transparency obligations will apply for **high-risk AI systems** (i) interact with humans, (ii) are used to detect emotions or determine association with (social) categories based on biometric data, or (iii) generate or manipulate content ('deep fakes').
- Right to non-discrimination, data protection and privacy, and the child's rights.
- Training, validation and testing data sets shall be relevant, representative, free of errors and complete. They shall have the appropriate statistical properties, including, where applicable, as regards the persons or groups of persons on which the high-risk AI system is intended to be used.

# Hight-risk AI systems in education and vocational training are:



- (a)Al systems intended to be used for the purpose of determining access or materially influence decisions on admission or assigning natural persons to educational and vocational training institutions;
- (b)Al systems intended to be used for the purpose of assessing students in educational and vocational training institutions and for assessing participants in tests commonly required for admission to those institutions;
  - o ba) systems intended to be used for the purpose of assessing the appropriate level of education for an individual and materially influencing the level of education and vocational training that individual will receive or will be able to access.
  - o bb) Al systems intended to be used for monitoring and detecting prohibited behaviour of students during tests in the context of/within education and vocational training institutions. (Al Act proposal, May, 2023 p 113).







# The ethical use of artificial intelligence (AI) and data in teaching and learning for Educators

Helping teachers and educational staff to better understand and engage in the ethical use of AI and data





#### THE ETHICAL GUIDELINES **ON THE USE OF AI AND DATA IN TEACHING AND LEARNING** FOR EDUCATORS



#### What do they include?



#### Examples of AI and data use in education

- to teach students
- to support their learning
- to support teachers
- to support diagnostic or system-wide planning



#### Ethical considerations and requirements

to refer when starting or processing a project based on Al and data



#### Guiding questions

and approach to raise the awareness and community engagement and plan for effective use of Al and data in school



#### **Emerging competences**

for ethical use of AI and data



Glossary terms applied to education



#### EU policy overview on Al

and the regulatory framework as well as further information

#### **ETHICAL CONSIDERATIONS AND REQUIREMENTS**TO FORMULATE GUIDING QUESTIONS FOR EDUCATORS





#### 4 key considerations...

Key considerations that underpin the ethical use of AI and data in teaching, learning, and assessment:

- Human agency
- Humanity

Fairness

Justified choice

#### 7 key requirements...

Based on the AI HLEG Ethics Guidelines for Trustworthy AI (ALTAI):

- Human agency and oversight
- Transparency
- Diversity
- Non-discrimination and fairness

- Societal and environmental well-being
- Privacy and data governance
- Technical robustness and safety
- Accountability

School case scenarios...





- Is the teacher role clearly defined so as to ensure that there is a teacher in the loop while the AI system is being used?
   How does the AI system affect the didactical role of the teacher?
- Are the decisions that impact students conducted with teacher agency and is the teacher able to notice anomalies or possible discrimination?
- Are procedures in place for teachers to monitor and intervene, for example in situations where empathy is required when dealing with learners or parents?
- Is there a mechanism for learners to opt-out if concerns have not been adequately addressed?
- Are there monitoring systems in place to prevent overconfidence in or overreliance on the AI system?
- Do teachers and school leaders have all the training and information needed to effectively use the system and ensure it is safe and does not cause harms or violate rights of students?

### Transparency

- Are teachers and school leaders aware of the Al methods and features being utilised by the system?
- Is it clear what aspects AI can take over and what not within the system?
- Do teachers and school leaders understand how specific assessment or personalisation algorithms work within the Al system?
- Are the system processes and outcomes focussed on the expected learning outcomes for the learners? How reliable are
  the predictions, assessments and classifications of the AI system in explaining and evaluating the relevance of its use?
- Are the instructions and information accessible and presented in a way that is clear both for teachers and learners?



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#### Diversity, non-Discrimination and Fairness

- Is the system accessible by everyone in the same way without any barriers?
- Does the system provide appropriate interaction modes for learners with disabilities or special education needs? Is the Al system designed to treat learners respectfully adapting to their individual needs?
- Is the user interface appropriate and accessible for the age level of the learners? Has the usability and user-experience been tested for the target age group?
- Are there procedures in place to ensure that Al use will not lead to discrimination or unfair behaviour for all users?
- Does the AI system documentation or its training process provide insight into potential bias in the data?
- Are procedures in place to detect and deal with bias or perceived inequalities that may arise?







#### Societal and Environmental Wellbeing

- How does the AI system affect the social and emotional wellbeing of learners and teachers?
- Does the AI system clearly signal that its social interaction is simulated and that it has no capacities of feeling or empathy?
- Are students or their parents involved in the decision to use the AI system and support it?
- Is data used to support teachers and school leaders to evaluate student wellbeing and if so, how is this being monitored?
- Does use of the system create any harm or fear for individuals or for society?



- Are there mechanisms to ensure that sensitive data is kept anonymous? Are there procedures in place to limit access to the data only to those who need it?
- Is access to learner data protected and stored in a secure location and used only for the purposes for which the data was collected?
- Is there a mechanism to allow teachers and school leaders to flag issues related to privacy or data protection?
- Are learners and teachers informed about what happens with their data, how it is used and for what purposes?
- Is it possible to customise the privacy and data settings?
- Does the AI system comply with General Data Protection Regulation?





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#### **Technical Robustness and Safety**

- Is there sufficient security in place to protect against data breaches?
- Is there a strategy to monitor and test if the AI system is meeting the goals, purposes and intended applications?
- Are the appropriate oversight mechanisms in place for data collection, storage, processing, minimisation and use?
- Is information available to assure learners and parents of the system's technical robustness and safety?



# 7 Accountability

- Who is responsible for the ongoing monitoring of results produced by the AI system and how the results are being used to
  enhance teaching, learning and assessment?
- How is the effectiveness and impact of the AI system being evaluated and how does this evaluation consider key values
  of education?
- Who is responsible and accountable for final decisions made regarding the procurement and implementation of the Al system?
- Is there a Service Level Agreement in place, clearly outlining the support and maintenance services and steps to be taken to address reported problems?



### Using chatbots to guide learners and parents through administrative tasks

A school uses a chatbot virtual assistant on its website to guide learners and parents through administrative tasks such as enrolment for courses, paying course fees or logging technical support issues. The system is also used to help students to find learning opportunities, provide feedback on pronunciation or comprehension. The virtual assistant is also used to support students with special educational needs through administrative tasks.

#### The following guiding questions highlight areas that require attention:

- Does the AI system clearly signal that its social interaction is simulated and that it has no capacities of feeling or empathy?
  - Societal and environmental wellbeing
- Is there a strategy to monitor and test if the AI system is meeting the goals, purposes and intended applications?
  - Technical robustness and safety-
- Is there a mechanism to allow teachers and school leaders to flag issues related to privacy or data protection?
  - Privacy and data governance





A.Environmental Data Exchange Hub

B.European Disaster Evaluation Hurdles

C.European Digital Education Hub

D.Empowering Diverse Entrepreneurs Holistically





- 1. Teachers' competences
- 2. How to support teachers to use AI in teaching
- 3. Use scenarios & practical examples of AI use in education
- 4. Education about Al
- 5. Influence of AI on governance in education
- 6. Al and Ethics, human rights, law, education data
- 7. Teaching with AI assessment, feedback and personalisation



#### 1. Teachers' competences

- Different competences are needed for teachers, school leaders,
  IT support personnel and other professionals in education.
  This can mean varying levels of knowledge, skills and attitudes related to teaching for, with and about AI.
- There are significant differences in competences for those who will teach about AI (the techniques and the technologies) and those who will just use AI as support for teaching and learning processes, but all teachers need to know what impact
- Al has on people and have competences to teach for and with Al.
- All competences need to be described contextually and with existing subject-specific examples.

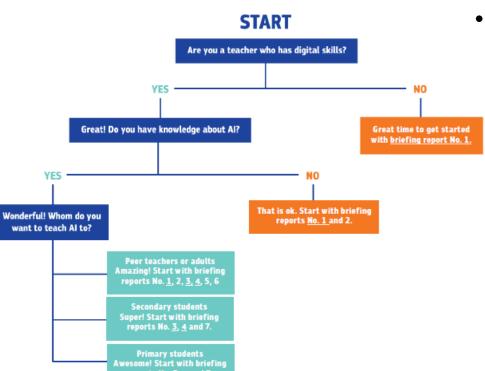




# 2. How to Support Teachers to Use Al in Teaching

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All in Traching
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- Create an online course for school management on integrating AI at the school level to support education.
- Define "human-AI interface interaction skill".
- Make recommendations for including "teaching with AI" in initial teacher education.



 Propose several professional development pathways for teachers to get acquainted with AI. Teachers who are wondering how to get started with AI could access this flowchart and find guidance depending on the choices they make.



# 3. Use Scenarios & Practical Examples of AI Use in Education

Use Scenarios & Practical
Exemples of Al Use in Education

Services of the Control of the Contro

Focused on the impact of AI

Teaching with Al

Personalisation

Generative tools
 A critic view id require

Teaching about Al

Programming & maths

- Focus first on teaching for AI by means of practical projects and learning scenarios that provide activities for teachers to engage students in activities that improve knowledge, skills, and attitudes towards how AI systems are used in today's society and focus on everyday application that are driven by AI.
- Take advantage of existing resources for teaching with AI to enhance teaching and learning. It
  is essential to know how to select tools that align with the curriculum, pedagogical goals, and
  students' requirements, while considering the efficacy, ease of use, and privacy issues
  associated with these tools.
- Apply a developer approach when teaching about AI to train more specialised students in the fundamental areas of real-world AI, like perception, reasoning, representation or learning. They must face different AI challenges through hands-on and programming projects, so they attain the AI basics from a more technical perspective.



#### 4. Education about AI

- To ensure a comprehensive and unbiased approach to learning, it is essential that AI curricula are not tied to specific technologies or brands.
- With the aim of facilitating the development of the European Education Area, it would be beneficial if Member States shared good practice examples, thereby ensuring that students entering tertiary education possess comparable levels of competence about Al.
- Integrating Al into curricula requires both resource development and teacher training.
- The evidence-based approach would enhance the content and effectiveness of Al curriculum.
- Education about AI is needed, but freely embracing education with AI needs to be done with some caution.





# 5. Influence of AI on governance in education

- Influence of Al on Governance in Education

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  w the foreigness light describe that I appeal or artifluta intelligence in reference in the control of the
- It is difficult now to have a clear picture of what this virtual AI-based ecosystem will look like, what governance it will have, what actors will be involved, but from the national and regional policies four common areas of concern emerge: importance of governance for data and privacy, importance of openness to ensure equal universal access and promote transparency, curriculum innovation that can address the potential and implications of AI and financial support for the effective implementation of AI.
- The primary purpose of applying AI in education should be to enhance learning, enabling every learner to develop their individual potential, and policies should reflect and support it. A comprehensive AI strategy is recommended covering: interdisciplinarity, humanity, ethics, scalability and sustainability, responsibility, equity and lifelong learning for all.



# 6. Al and Ethics, human rights, law, education data



- Caution should be a keyword at every level in using AI in education.
- Students need to be taught their rights and how to protect themselves,
- teachers need to be cognizant of the range of information collected in the AI tools they use,
- Developers need to guard against undue influence and be aware of potential bias, and finally
- Government bodies need to take a firm position with robust legislations to protect their citizens while excising a rigorous approach to their own use of AI in data collection.



# 7. Teaching with AI – assessment, feedback and personalisation

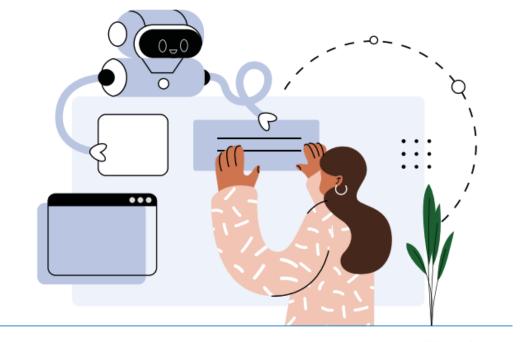
- Proper checks and balances, transparency, and human oversight are key to mitigating the potential risks associated with AI in education.
- Al should be used to complement and enhance existing pedagogical practices rather than replace them. Al algorithms, especially in education, should be designed to produce understandable and interpretable outcomes.
- Despite the use of AI for automating various processes, human oversight should still be a significant part of the system.
- Educators should have the final say in grading or making decisions that significantly affect students' academic standing.
- Al systems must respect and protect the privacy of the students.
- Biases can influence the fairness of the system and have serious implications for all stakeholders in education, so efforts should be made to identify and mitigate biases in AI algorithms.
- If the system fails or produces erroneous results, there should be mechanisms in place to identify the cause of the issue and rectify it.
- To ensure the accuracy of the performance of AI systems, they should be regularly monitored and evaluated to identify and address any emerging issues promptly and to help to ensure fairness and effectiveness.







# Guidance for generative Al in education and research





# Al-generated content polluting the Internet



- Researchers, teachers and learners need to be aware that GenAl systems are capable of outputting offensive and unethical materials.
- They also need to know about the long-term issues that will potentially arise for the reliability of knowledge when future GPT models are based on text that previous GPT models have generated.
- A worry is that young learners, because they are by definition less expert than teachers, might unknowingly and without critical engagement accept GenAl output that is superficial, inaccurate or even harmful.
- Learners, teachers and researchers should never accept the information provided by the GenAI at face value and should always critically assess it.

# Prompt-engineering to generate desired outputs



- Use simple, clear and straightforward language that can be easily understood, avoiding complex or ambiguous wording.
- Include examples to illustrate the desired response or format of generated completions.
- Include context, which is crucial for generating relevant and meaningful completions.
- Refine and iterate as necessary, experimenting with different variations.
- Be ethical, avoiding prompts that may generate inappropriate, biased or harmful content.





- Step 1: Endorse international or regional General Data Protection Regulations
- Step 2: Adopt/revise and fund whole-of-government strategies on Al
- Step 3: Solidify and implement specific regulations on the ethics of AI
- Step 4: Adjust or enforce existing copyright laws to regulate Algenerated content
- Step 5: Elaborate regulatory frameworks on generative Al
- Step 6: Build capacity for proper use of GenAI in education and research
- Step 7: Reflect on the long-term implications of GenAl for education and research

# Regulations on GenAl - Institutional users



- Institutional auditing of GenAI algorithms, data and outputs
- Validating proportionality and protecting users' well-being
- Review and address the long-term impacts
- Age appropriateness

## Regulations on GenAl - Individual users

- Awareness of terms of reference on the use of GenAl
- Ethical use of GenAI applications
  - Exercise strict ethical validation of GenAl applications before they are officially adopted in educational
- Monitoring and reporting unlawful GenAl applications
- Build validation mechanism Pedagogical validation & Meaningful use
  - do no predictable harm to students, are educationally effective and valid for the ages and abilities of the target learners, and are aligned with sound pedagogical principles
- Inform learners, Address the complex issue of informed consent
- Use the feedback to decide whether and how specific GenAI tools should be deployed

## Examples of Co-designing uses of GenAl LTA

- For research
  - Al advisor for research outlines
  - Generative data explorer and literature reviewer
- To support teachers and teaching
  - Curriculum or course co-designer
  - Generative chatbot as teaching assistant
- As a 1:1 coach for the self-paced acquisition of foundational skills
  - language skills coach; art coach; coach for coding or arithmetic
- To facilitate inquiry or project-based learning
  - Socratic challenger
  - Advisor for project-based learning
- To support learners with special needs
  - Conversational diagnosis of learning difficulties
  - Al-powered accessibility tools
  - Generative amplifier for marginalized learners

Table 4. Co-designing uses of GenAI to support teachers and teaching

Potential but unproven uses	Appropriate domains of knowledge or problems	Expected outcomes	Appropriate GenAl tools and comparative advantages	Requirements for the users	human pedagogical methods and example prompts	Possible risks
Generative chatbot as teaching assistant	Conceptual knowledge across multiple domains in well-structured problems.	Providing individualiz ed support, answering questions and identifying resources.  Potential transformation: Generative twins of teachers' assistants	Assess whether the GenAl tools are locally accessible, open source, rigorously tested or validated by authorities.  Further consider the advantages and challenges of any particular GenAl tool, and ensure that it properly addresses specific human needs.	It supports teachers but targets learners directly, so this requires learners to have sufficient prior knowledge, abilities and metacognitive skills to the verify the outputs of GenAl and notice the misinformation. Thus it might be more appropriate for learners in higher education.	Requires the teachers to understand the problems clearly, to monitor the conversation and help learners to verify dubious answers provided by GenAl.	Based on the current capabilities of GenAl models, educational institutions need to guarantee human supervision of the responses provided by GenAl tools, being alert to the risk of misinformation.  It may also limit learners' access to human guidance and support, hindering the development of a strong teacher-student relationship, which is especially concerning for children.

Required

#### Time



- Cut time
- Waste time
- Decide how we are spending our time
- Return on investment
- Amount of time for prompting and fixing errors
- Decide on which task you will use AI and don't waste time searching for AI solutions for the rest of tasks.



### Are we intentionally deskilling ourselves

- Outsourcing to Al
- Deskilling of teachers
- Are teachers enfeebling their impact by using AI
- Who and what deserves your time and effort
- Who decides what will AI do instead of teachers



#### Issues



- Al in education exist in bubbles
- Small implementation sample, not evidence-based
- Lacks in-depth analysis of impact and could raise ethical considerations
- Interfaces, contents and use policies are not adapted for children
- Data and Algorithms biases
- Embedding poor pedagogical practices
- Unlawful use of content and data
- Datafication
- Fear

## Ethical questions



- Collecting large amounts of data academic and personal
  - Who has access, how long, for what purposes, right to be forgotten?
  - Are you sharing students' data with AI systems?
- Personalization of learning
  - Are we guiding or limiting learning?
- Automatic assessment
  - Can we foresee all correct answers; can we automatically grade everything?
  - Is there difference between computer's feedback and teacher's feedback
- Predictions of failure
  - Self-fulfilling prophecy, limited by past results?



## Are we running to or away from Al in Education?



- That is a very interesting question. Al in education is a complex and evolving topic, and different stakeholders may have different views and attitudes towards it. Some may see Al as a threat to human teachers, students, and values, while others may see it as an opportunity to enhance learning, teaching, and equity. There is no simple answer to whether we are running to or away from Al in education, but rather a need for dialogue, reflection, and collaboration among educators, researchers, policy-makers, and learners.
- According to some sources, AI has led to a generation of technologies in education that have considerable potential to bring education forward <sup>1</sup> AI can help foster the skills students will need to navigate and shape the future, such as critical thinking, creativity, and problem-solving<sup>2</sup>. AI can also help personalize learning, provide feedback, and support teachers in various tasks <sup>3</sup>. However, AI also poses some challenges and risks, such as ethical, social, and pedagogical issues, that need to be addressed carefully and responsibly. For example, AI may raise questions about data privacy, bias, accountability, and human agency <sup>3</sup> <sup>2</sup> <sup>1</sup>
- Therefore, it is important that we do not run blindly to or away from AI in education, but rather engage with it critically and constructively, with the aim of enhancing human learning and well-being. As one expert says, "The trick about AI is that to get it, we need to change what we're educating people for because if you educate people for what AI does well, you're just preparing them to lose to AI. But if you educate them for what AI can't do, then you've got IA [Intelligence Augmentation]"<sup>2</sup>

1. oecd-ilibrary.org 2. gse.harvard.edu 3. weforum.org

Bing Chat





- An AI era teacher must understand how such systems work, and what are the caveats of the algorithms. And make sure she/he makes the decisions. This is easier to say than to do. A teacher can use an AI system because -as is the case of the navigation tool this tool can give benefits to all.
- But a teacher can, and should, contrast the decision proposed by the AI with their own experience. Wasting 15 minutes on a road isn't a big deal. But making the wrong call for your pupils is.





#### FOR AGAINST

-Improved student

engagement and motivation

-Enhancing student

performance

-Time saving

-Cost effective learning

-Virtual Assistant

-Continuous evaluation and

data

-Threat to teachers job security

-Dehumanized learning

experience

-Costly to implement for

teachers

-Dependence on

technology

What do you think?

What reasons
(arguments,
evidence, answers)
do you have
for or against?

Phoebe Reynolds

FB group Teaching & Learning with ChatGPT (and AI)



Lidija Kralj lidija.kralj@ucitelji.hr Education Analyst and Adviser, EduConLK Who will be teaching next generations?

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# DIGITALLY EMPOWERED TEACHERS eTwinning GROUP for participants of Digitalisation LTA









# Thank you for your attention and see you on 19 March!

