

Artificial intelligence and education – a teacher-centred approach to safety and health

Summary

Author: Dr Ulrike Bollmann, German Social Accident Insurance – European Network Education and Training in Occupational Safety and Health (ENETOSH).

Project management: Maurizio Curtarelli, Emmanuelle Brun – European Agency for Safety and Health at Work (EU-OSHA).

This report was commissioned by the European Agency for Safety and Health at Work (EU-OSHA). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect the views of EU-OSHA.

Neither the European Agency for Safety and Health at Work nor any person acting on behalf of the Agency is responsible for the use that might be made of the following information.

© European Agency for Safety and Health at Work, 2024

Reproduction is authorised provided the source is acknowledged.

For any use or reproduction of photos or other material that is not under the copyright of the European Agency for Safety and Health at Work, permission must be sought directly from the copyright holders.

Introduction

This report ¹ examines the opportunities and risks associated with the integration of new digital technologies for the health, safety and wellbeing of teachers in schools. This is viewed both from the perspective of occupational safety and health (OSH) and a pedagogical perspective.

A comprehensive overview of the possible risks and opportunities for teachers from the integration of technologies, in particular based on artificial intelligence (AI), is provided based on a systematic analysis. Suggestions are also given of potential measures for improving the health, safety and wellbeing of teachers in the digital age.

Background

The European Agency for Safety and Health at Work (EU-OSHA) has already submitted important findings for the education sector with the publication of 'Education - evidence from the European Survey of Enterprises on New and Emerging Risks (ESENER) (2022)', 'OSH Pulse - Occupational safety and health in post- pandemic workplaces (2022)' and the report 'Mental health at work after the COVID-19 pandemic (2024)'. Publications are also available from EU-OSHA specifically on the impact of artificial intelligence on OSH (2021; 2022 AIWM; 2022 AIWM Regulations). And, finally, the EU-OSHA campaign 'Safe and healthy work in the digital age 2023-2025', which is Europe-wide, provides the opportunity to further explore the topic of health, safety and wellbeing of teachers in the digital age.

A focus on teachers

So far, learners have been the primary focus when it comes to the integration of digital technologies in the education sector. Teachers have been viewed, if at all, first and foremost in their role as mediators and primarily as users of digital tools. With AI-based technologies making their way into schools, greater attention is now also being paid to teachers — now in their role as those responsible for deploying these technologies and for coping with their challenges.

The COVID-19 pandemic

The COVID-19 pandemic was the trigger for a global disruption in the education system and an ad hoc surge in digitalisation, bringing an increased mental load and stress for teachers. For teachers in particular, the pandemic also brought great uncertainty, increased workload and digital stress, with both cognitive and emotional elements. Schools were also tested as organisations. The 'digital maturity' of a school, that is, having a good digital infrastructure but above all technical and pedagogical support for teachers, and school processes focused on digital teaching and learning, contributed to lower loads and stresses being experienced by teachers.

Evidence of the following strains on the digital well-being of teachers during the COVID-19 pandemic has been provided by initial longitudinal studies: uncertainty; a high workload, in particular at the end of the pandemic; and the feeling of being undervalued as an occupational group. Resources emerged in the form of the availability of social support, the ability to determine one's own work (work autonomy) and the use of functional coping strategies. New and younger teachers and those with prior illnesses were identified as being particularly at risk. Institutional decisions at school level have a key role to play in the perceived wellbeing of teachers during the COVID-19 pandemic.

New challenges for teachers resulting from the use of AI-based digital technologies in schools

Both traditional digital technologies and AI-based technologies contribute to greater flexibility for teachers. Use of these technologies, however, also increases the demands placed on the technical competencies of teachers, on their media skills in terms of didactics and their social competencies. The use of learning analytics for teaching and learning also imposes new demands on teachers' competence. These are demands extending beyond technological knowledge, and concern their pedagogical and technological judgement. The development of generative AI (GenAI) and in particular the arrival of ChatGPT in schools means teachers are now also faced with a new uncertainty: GenAI independently generates new content that then has to be interpreted and its origin explained.

¹ The full report is available at: <https://osha.europa.eu/en/publications/artificial-intelligence-and-education-teacher-centred-approach-safety-and-health>

New risks and opportunities from the use of AI-based digital technologies for teachers

The six factors of workload, autonomy, professional development, ethics, regulative framework and costs are used as the basis for specifying the following main risks and potential for the use of AI-based digital technologies for the health, safety and wellbeing of teachers.

Risks

- Lack of transparency (and explainability) of AI systems increases the cognitive load.
- Digital control and surveillance using real-time data can affect mental health.
- Human–robot collaboration may result in interaction being removed from the work of teachers.
- A tendency towards acting in machine-readable form ('prompt engineering').
- An excessive trust in AI technology.

There are also general challenges inherent in technology, such as:

- bias problems inherent in AI;
- problems of 'hallucination';
- lack of technical reliability and accuracy of AI systems; and
- risk of misuse of AI.

Additionally, challenges for the teaching profession include:

- loss of specific skills;
- risk of deprofessionalisation;
- a lack of validation of AI-based systems for use in the education sector; and
- non-compliance with data protection when using AI-based technologies in the education sector.

Opportunities

To reduce teacher workload there is need for:

- reduction in workload for routine tasks, such as marking;
- support with lesson planning, e.g. course development;
- reduced amount of work and greater precision when grading;
- support with the development and implementation of alternative integrated learning scenarios, e.g. transdisciplinary approaches, vertical teaching, mixed classes;
- simplification of resource planning (task and time schedule) and optimisation of work organisation in the school; and
- involvement of AI-based systems in the school's risk assessment.

To expand the scope of action available to teachers, recognise that:

- autonomy is maximised when teachers maintain control in a transparent manner over their entire work process ('human-in-command' approach); and
- more time is needed for pedagogical tasks and own professional development as well as being creative or developing creativity.

To support teachers' professional development, aim at:

- easier access to professional development for teachers;
- greater flexibility in the use of further training and consultation services;
- enabling new forms of exchange between colleagues, e.g. via platforms and eCommunities; and
- enhancing of the teaching profession as a result of AI expertise.

Strategies and measures for minimising the risks and exploiting the opportunities for teachers

In order to use AI in the education sector, which is an area defined as a high-risk one (EU AI Act), a proactive strategy must be developed where the health, safety and wellbeing of teachers and learners are given the highest priority.

AI-based technologies must be introduced gradually into the education system. In doing so, the risks and opportunities of AI-based technologies in relation to the health, safety and wellbeing of teachers must be considered.

The development of an AI school strategy is a necessary prerequisite for the safe and healthy integration of AI-based technologies into teaching and school administration.

The concept of AI literacy must be expanded to include the aspects of health, safety and wellbeing of teachers and learners.

Measures must be offered to support teachers, for example, the self-management of wellbeing, socio-emotional support programmes, but also measures supporting role reward and to increase the attractiveness of the teaching profession.

The European Agency for Safety and Health at Work (EU-OSHA) contributes to making Europe a safer, healthier and more productive place to work. The Agency researches, develops, and distributes reliable, balanced, and impartial safety and health information and organises pan-European awareness raising campaigns. Set up by the European Union in 1994 and based in Bilbao, Spain, the Agency brings together representatives from the European Commission, Member State governments, employers' and workers' organisations, as well as leading experts in each of the EU Member States and beyond.

**European Agency
for Safety and Health at Work**

Santiago de Compostela 12
48003 Bilbao, Spain

[E-mail: information@osha.europa.eu](mailto:information@osha.europa.eu)

<https://osha.europa.eu>