

BrAIIn - Application of digital technologies based on artificial intelligence in education

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Agencija za
strukovno obrazovanje
i obrazovanje odraslih

Background

Project duration: **2023 – 2029**

Project value: **15 993 222 EUR (ESF+)**

Led by **Croatian Academic and Research Network**

Goals

- Develop digital competencies, practical skills, and critical thinking about AI
- Research the implications of technology on learners' wellbeing
- Allow better insight into student achievement and individualisation
- Ensure high availability of digital educational services and cybersecurity

Timeframe

2024/2025 – piloting curricula

- Curriculum for extracurricular activity in 7th and 8th grades of primary school
- Curriculum for elective subject in 2nd and 3rd grade of secondary school

2025 – teacher evaluation

2025/2026 – curriculum revision and mainstreaming

- New curriculum for 5th and 6th grades of primary school
- 110 teachers and 1555 students from 60 VET schools participate in piloting the curriculum

Key benefits

Flexibility :

- 35 hours/year
- Elective and extracurricular subject
- Integration with other subjects
- Open to all teachers and learners in all grades
- Small group instruction
- Beyond practical skills – social and ethical aspects of AI, risks & challenges, transparent and responsible use
- Students learned to use AI tools responsibly, create digital content, and identify safety threats, cyber-bullying, abuse, plagiarism, authorship crediting, and the negative effects on emotional well-being.

Key benefits

Support for teachers:

- Teacher training
- New teaching and learning materials
- Community of practice (peer training, mutual learning)
- Collaborate development – strong teacher engagement in all components: piloting curricula, evaluation, teacher training, research survey on the impact of digital technologies on student well-being and development of smart recommendations system

Learner feedback

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hands-on AI skills,
fun and relaxed learning environment

teacher engagement

ethical discussions

multimedia content

collaborative learning

contributing to future profession, digital literacy, and creativity

relevance for future profession

concerns about AI replacing human jobs

Teacher feedback

Students show strong interest in AI, and over 90% of teachers plan to continue AI-related activities

- Creative and experiential teaching & learning
- Students are more motivated when AI activities are connected to real-life contexts through inquiry-based learning
- projects involving the local community
- creating materials for students with special needs
- ethical discussions about AI
- demonstrations of how algorithms work, using examples close to student interests (e.g. NPC in games)
- interdisciplinary projects connecting multiple subjects.

Teacher feedback

Key challenges:

- lack of time
- need for more training and teaching materials
- more examples of good practice to guide planning and teaching

Research survey on the impact of digital technologies on student well-being

Use of digital technologies & AI among learners

- Learners most often use digital technologies in Computer Science, Mathematics, science subjects, and foreign languages.
- Around 26% of primary school learners and 40–50% of secondary school learners use AI tools for learning almost daily to search for information/explanations and help them with homework.
- Learners generally view digital technology in school positively and perceive adequate support for its use.

Research survey on the impact of digital technologies on student well-being

Benefits:

- Easier access to information
- Better visualization of content
- Higher student engagement

Challenges:

- Reduced concentration
- Superficial learning
- Potential negative effects on well-being

Stakeholders are **cautious** about AI due to concerns about **reliability** and possible **negative impact on health, development and critical thinking**.

Research survey on the impact of digital technologies on student well-being

Parent/Guardian Perspectives

- Believe technology **improves collaboration** on school tasks and **communication** within the school system.
- More **digitally/AI-literate parents** view digital technologies even more positively.
- Parents show greater **caution** toward AI, fearing **over-reliance and reduced critical thinking**, but still see potential for **personalized learning**.

Research survey on the impact of digital technologies on student well-being

Teacher Perspectives & Usage

- Teachers use digital technologies for presentations, reviewing material, and administrative tasks.
- AI tools are used less frequently, mostly for lesson preparation.
- They recognize AI's potential (especially for personalized and assistive learning) but emphasize the need for:
 - More training
 - Greater tool availability
 - Clear guidelines

Research survey on the impact of digital technologies on student well-being

Recommendations for the use of digital technologies in education for the well-being of children and young people

- Emphasize critical thinking, privacy protection, cyberbullying prevention, and balance between digital and offline life
- Help schools and families use digital technologies and AI in ways that maximize benefits and protect students' well-being.

Smart recommendations system

Integration of:

- teaching & learning materials based on subject curricula
- data from e-Diary
- teacher's guidance

Teacher involvement:

- Needs analysis
- Training large language models (LLMs) - iterative training process with continuous evaluation and model adaptation
- Selection, creation and adaptation of digital educational content for integration with the LLM, including OER

Virtual learning assistant

Benefits:

- personalized learning recommendations, advice and activities for learners
- learning analytics (dashboards) for teachers to monitor achievement and tailor teaching & learning
- insight into progress and early warnings for parents

Functionalities:

- chatbot interaction, using an open-source Large Language Model (LLM) customized for learning support
- text-based and voice queries and responses (speech-to-text and text-to-speech)

**Thank you for
your interest**

