Funded by the European Union

DIG-ED: Center for Innovation and Digital Education

FIND OUT MORE INFORMATION:

SHIELD

SIMULATION GAME-BASED HANDS-ON INSTRUCTION FOR ENHANCING CYBERSECURITY LEARNING AND DEVELOPMENT

Project implemented within the Cybersecurity Capacity Building in the Western Balkans project, funded by the European Commission.

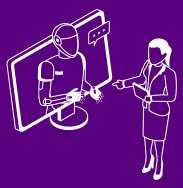
November 2024 – September 2025

PROJECT SUMMARY:

SHIELD (Simulation game-based Hands-on Instruction for Enhancing Cybersecurity Learning and Development) is an educational initiative that combines AI-driven storytelling, gamification, and blended learning to enhance cybersecurity awareness and digital literacy among primary and secondary school students and teachers in North Macedonia.

PROJECT AIMS:

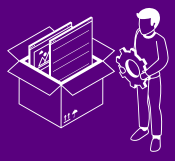
Enhance cybersecurity awareness among students and teachers.



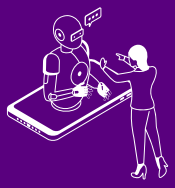
Introduce innovative teaching methods using AI, digital storytelling, and gamification.

Train teachers to effectively deliver cybersecurity content in schools.

Engage students through interactive, game-based learning experiences.



Develop open educational resources for wider use and reuse.



Promote digital and AI literacy in the educational system.

Support safe online behavior and responsible digital citizenship.

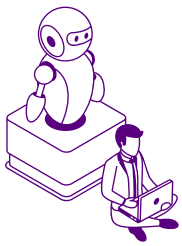
ACTIVITIES:

- Develop SHIELD workshop concepts using AI and gamification (November 2024 – January 2025)
- Train teachers to deliver cybersecurity content (January 2025 – February 2025)
- Implement SHIELD workshops in schools (February 2025 – May 2025)
- Organize a national competition for educational materials (May 2025 – August 2025)
- Publish digital resources and open educational content (December 2024 – September 2025)
- Monitor implementation and collect feedback from teachers and students (February 2025 – May 2025)
- Disseminate results through publications, conferences, events and online platforms (February 2025 – September 2025)

ACTIVITY LINKS:

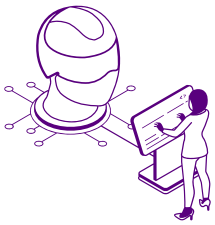
- **Workshop on gamifying cybersecurity education with teachers from primary and secondary schools in North Macedonia:** https://dig-ed.org/workshop-within-the-project-shield-simulation-game-based-hands-on-instruction-for-enhancing-cybersecurity-learning-and-development/
- **Created educational materials concerning cybersecurity:** https://dig-ed.org/created-educational-materials-concerning-cybersecurity-within-the-project-shield-simulation-game-based-hands-on-instruction-for-enhancing-cybersecurity-learning-and-development/
- **Implementation in schools:** https://dig-ed.org/safer-internet-day-educational-resorces-created-within-the-project-shield-practical-learning-through-game-simulation-to-improve-cybersecurity-skills/
- **Reflection visits on the implemented SHIELD workshops in schools:** https://dig-ed.org/reflection-visits-on-the-implemented-shield-workshops-in-schools/
- **Project presentation as part of the MRT's "Our Podium":** https://dig-ed.org/maja-videnovik-guest-appearance-on-mrts-our-podium-discussing-digital-literacy-and-cybersecurity-education/
- **Participation in panel discussion during eGOV2025 Conference in Tallinn, Estonia** https://dig-ed.org/building-digital-bridges-empowering-cybersecurity-through-education-at-egov2025/
- **Dig-Ed's participation at eGOV2025 featured on national television MRT** https://dig-ed.org/dig-eds-participation-at-egov2025-featured-on-national-television-mrt/
- **Presenting SHIELD results at conferences in Bratislava, Slovakia - EAI CSECS 2025** https://dig-ed.org/presenting-shield-results-at-eai-csecs-2025/

OUTPUTS:



A SHIELD workshop model integrating storytelling, AI, and games (November 2024 – January 2025)

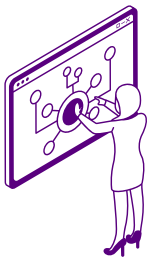
40+ trained teachers equipped to teach cybersecurity (February 2025)



Over **30** gamified activities created and shared (February 2025 – May 2025)

More than **1000** students participated in SHIELD workshops (February 2025 – May 2025)

A collection of digital educational resources published online (January 2025 – September 2025)



3 Keynote presentations, panel discussion and presentations at International Conferences on ICT & Education (Jun 2025 – September 2025)

RESULTS:

- ✓ Increased teacher capacity for digital and cybersecurity education.
- ✓ Improved student understanding of cyber safety and responsible online behavior.
- ✓ Enhanced student engagement through interactive and gamified learning.
- ✓ Sustained knowledge gains confirmed by testing and feedback.
- ✓ Strengthened digital and AI literacy in schools.

IMPACT

Beneficiaries:

Primary and secondary school students who enhanced their understanding of cybersecurity and responsible online behavior through engaging, game-based learning. Teachers also benefited by gaining new digital skills and practical experience in applying AI tools and gamification in their classrooms.

Stakeholders:

School principals supported the project's integration into the school system and recognized its alignment with educational priorities. Parents appreciated the project's contribution to their children's digital safety.

Organizational Benefits:

DIG-ED obtained increased visibility and credibility in the field of digital education. The project strengthened DIG-ED institutional capacity, expanded DIG-ED teacher networks, and established a proven, scalable methodology that can be used for future educational innovations.

Insights:

AI-powered storytelling and gamified learning significantly improved student engagement and knowledge retention. Teachers, even those unfamiliar with AI tools, were able to confidently adopt the approach.

Legacy:

A scalable and research-backed educational framework, open educational resources, and a community of trained educators ready to apply and expand the methodology.

TESTEMONIALS FROM THE PARTICIPANTS:

> The storytelling and gamified lessons made a huge difference. Students were excited, motivated, and actually discussed real-life cyberbullying experiences during class.

> This project gave me confidence to try new digital methods. The training was practical, the tools were accessible, and the impact on students was immediate.

> The story made it easier to understand what cyberbullying really looks like. It helped me know what to do when I see it happening.

FIND OUT MORE INFORMATION:

https://dig-ed.org/category/shield/