CHALLENGES AND PERSPECTIVES OF E-LEARNING ENVIRONMENT DEVELOPMENT AT STATE BORDER GUARD COLLEGE IN THE ERA OF DIGITALISATION

Mārtiņš Spridzāns[1], Jans Pavlovičs[2]
[1]PhD, docent of General Subjects Department of the State Border Guard College, e-mail: martins.spridzans@rs.gov.lv, Rezekne, Latvia
[2]Mg.sc.comp., docent of General Subjects Department of the State Border Guard College, e-mail: Jans.pavlovics@rs.gov.lv, Rezekne, Latvia

Abstract. *The purpose of this article is to explore the challenges and perspectives associated with the development of e-learning environment at the State Border Guard College in the context of increasing digitalization and advance of AI in education contexts. The tasks of the research include identification of key advantages and obstacles faced by educational institutions, including technological limitations and risks, and the need for effective training in digital tools efficient use. Furthermore, the research highlights the potential of e-learning to enhance accessibility, flexibility, and engagement in the academic process. By using scientific research method and examining best practices and innovative strategies, the article provides insights into the successful integration of e-learning systems that are efficient and appropriate to the needs, specific requirements of border guard training as well as current education innovation trends. The findings underscore the importance of a collaborative approach involving stakeholders at all levels to effectively leverage digital technologies for enhanced learning outcomes.*
According to scientific literature research results authors put forward suggestions on further improving border guards e-learning processes.
Keywords: *artificial intelligence, digital competence development, e-learning,*

Introduction

The State Border Guard College (hereinafter – SBGC) is continuously taking proactive steps to efficiently integrate up-to-date digital training solutions, both with investments in digital training infrastructure and in continuous development of teacher digital competence.

Despite the fact that above mentioned investments take place there are many unknowns of possible AI solutions integration in specific border guard training environment with service related peculiarities as specialised training, sensitive and limited access information.

The main task of this research is to identify the opportunities for further improvement border guards e-learning possibilities, hence the authors of this research have used the monographic and scientific document analysis method to gather, analyse and summarize the latest research results on the topic concerned. Authors suggest more emphasis to be put on SBGC trainer's

https://doi.org/10.17770/bsm.v5i10.8303

digital competence development in context of AI as the core task to further develop border guards' e-learning processes.

This research also summarizes analytical judgments based on previously conducted researches, including conclusions based on authors' personal pedagogical experience in border guard e-training. The key research methods include the selection of data, processing, and analysis of the data and interpretation of the data in research context. Main results of research findings are summarized in research conclusions and suggestions, hence defining specific proposals in order to further develop e-learning system at SBGC.

E-learning development challenges at State Border Guard College

SBGC has been using e-learning already since 2008, however it was decentralised from other law enforcement agencies in Latvia. In 2017, the development of a new unified electronic training platform (VEAP) for the Ministry of the Interior (MoI) began. This initiative aimed to address the fragmented use of multiple isolated Moodle e-learning platforms within MoI institutions, such as the SBGC, the State Police College (SPC), and the Fire Safety and Civil Protection College (FSCP). These platforms were not interconnected, leading to a lack of uniformity and increasing administrative burdens. As a result, a unified, efficient, and tailored e-learning platform was required to better serve the educational and technical needs of these institutions. The contractual framework for the project was formalized on December 5, 2022, when the Ministry of the Interior's Information Center signed an agreement with SIA "Datorzinību centrs" for the modernization of the MoI e-learning platform, contract number Nr. 14 1 12/162/22 (Information Centre of MoI, 2022). The platform, VEAP, integrates both the organization and administration of the teaching/study process, along with the management of the e-learning environment. VEAP is designed to serve the MoI's colleges and institutions, enhancing both administrative and technical processes, while also ensuring compliance with contemporary trends in professional education and training. It should be noted that the creation of VEAP is included in the Ministry of the Interior's sectoral strategy for 2023-2027 (Sectoral strategy's priority horizontal objectives - Action direction: Improving systems for professional education, professional development, or further education in line with the latest trends. Key task no. 4: Development of a unified electronic learning platform and education management system for colleges and institutions within the Ministry of the Interior sector. (MoI IC, MoI, State Police, SPC, State Border Guard, SBC, State

Fire and Rescue Service, FSCP, Internal Security Bureau, Office of Citizenship and Migration Affairs, State Provision Agency, MoI Health and Sports Center)) (MoI, 2022).

The primary objective of VEAP is to develop a centralized Moodle-based platform for MoI institutions that promotes uniformity, efficiency, and better administration. The platform is tailored to meet the specific needs of institutions like the State Border Guard, State Police, and the Fire Safety and Civil Protection departments, allowing for improved functionality and easier course management. Furthermore, it will integrate features such as a plagiarism detection tool (CAPS), preparing MoI institutions for seamless e-learning usage by the start of the 2024/2025 academic year. During VEAP development several tasks were accomplished, including:

- Assessment if the current usage of Moodle platforms in MoI institutions, including both technical and administrative aspects.
- Defining and prioritizing the new platform's technical requirements in collaboration with MoI stakeholders.
- Establishing a robust technical infrastructure for both development/testing and production environments.
- Developing the platform’s functionality based on client requirements, followed by rigorous testing and debugging.
- Migrating existing courses and materials from isolated platforms to the unified VEAP in both testing and production environments.
- Preparing and finalizing all necessary project documentation, alongside creating user training materials and conducting training sessions to ensure effective platform usage.

During all above-mentioned activities governance structure with steering and working groups was in place to manage, supervise, implement and evaluate efficient steps and risks of VEAP launching (Datorzinibu Centrs, 2023).

Authors conclude that by centralizing and modernizing the e-learning system, VEAP will enhance the overall functionality and educational effectiveness of the MoI institutions. The integration of tools like the CAPS plagiarism detection system, along with an improved Moodle infrastructure, ensures that the platform will support a cohesive and efficient learning environment for both students and administrators across MoI institutions. VEAP’s launch, expected by the 2024/2025 academic year, marks a significant milestone in the MoI's strategy for advancing professional education.

E-learning development perspectives at State Border Guard College

In order to identify and put forward further e-learning development at SBGC the authors analyse latest EU digital education development legal documents and research findings.

The topicality of e-learning further development endeavours arises for all border guard training institutions since according to Frontex regulation (REGULATION (EU) 2019/1896 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 November 2019 on the European Border and Coast Guard and repealing Regulations (EU) No 1052/2013 and (EU) 2016/1624) where it is stated that fundamental rights, education and training, as well as research and innovation are overarching components in the implementation of European integrated border management.

More specific legal context derives from the AI Act, which is the first-ever legal framework in this field, the integration of AI systems in education is essential to promote high-quality digital education and training as well as to allow learners and teachers to obtain and share the essential digital competences, including media literacy and critical thinking.

The Act on AI notes that rapidly evolving technologies can provide beneficial advantages to undertakings and support, including in education and training, security and justice. In the context of SBGC and other law enforcement authorities particularly important is to note that this Act also indicates possible risks -i.e. depending on specific conditions, specific application, usage, level of technological development, AI might also generate risks and cause harm to public interests and fundamental rights that are protected by Union law, including physical, psychological and societal harm (European Commission, 2024).

Furthermore, those risks arise also in the context of AI possible application for SBGC according to ANNEX III High-risk AI systems referred to in Article 6(2) of the AI act categorisation of AI systems as the ones to:

- be used to determine access or admission or to assign natural persons to educational institutions at all levels;
- to assess learning results, including when those outcomes are used to guide the learning process of students in educational institutions at all levels;
- for the purpose of assessing the appropriate level of education that an individual will obtain or will be able to access, in the context of or within educational institutions at all levels;
- for detecting and monitoring prohibited students' behaviour during testing.

The authors believe that his categorisation of risks is serving as the target area (milestones, trends) of e-learning development for law enforcement training, with more specific elaboration for specific contexts, needs and restrictions. When developing an AI related learning tools it is especially important to keep in mind the core principles defined by The Innovation Centre of the International Criminal Police Organization (INTERPOL) which has defined responsible AI innovation in law enforcement as a process where the AI systems are developed, procured, and used in a way that is lawful, minimizes harm, respects human autonomy, it is fair, and is supported by good governance (The Innovation Centre of the INTERPOL and UNICRI, 2024). According to police practitioners Brandon Epstein, James Emerson the rapid evolution of AI technologies requires ongoing training for law enforcement personnel need to be established to ensure they are well-versed in the operation, limitations, and ethical considerations of AI tools (Epstein B., Emerson J., 2024). The importance of maintaining human oversight and judgment in conjunction with AI technologies must be emphasized. When exploring historical evolution of AI in law enforcement one can conclude that already in 1995 high expectations were set for AI advance. According to Jeffrey S. Hormann virtual reality holds great potential for accurate review and analysis of real-world situations, which would be difficult to accomplish by any other method (Hormann,1995). Virtual reality clearly offers law enforcement benefits in a number of areas, including pursuit driving, firearms training, high-risk incident management, incident re-creation, and crime scene processing. A more recent study by Larry Smith (2022) reveals that with the simulator, officers are able to encounter scenarios that convey differences in body language and non-verbal cues that are imperative in increasing officer's abilities to make rational decisions and progress through a disturbance without using deadly forces against suspects and civilians. The simulation offers a 360 degree with peripheral vision to ensure that the training reflects real-life as much as possible without putting anyone in harm's way (Smith, 2022).

In further analysis of latest scholar research findings, it can be concluded that via analysing data through artificial intelligence (AI) techniques, such as machine learning, computer vision, and natural language processing, can answer instructional and administrative questions, discover new and non-obvious relationships and patterns, predict learning outcomes, and automate low-level decisions (Dieterle et al., 2024.) however there is no research available of more specific or detailed AI application in law enforcement. Research indicates that the future of police and law enforcement lies in the ability to adapt and adjust to new technologies with the continued support of the community. This requires a mutual

understanding that technology promotes objectivity and efficiency that allows the police to do a better job (Butler, 2023).

With regard to determination of particular best practices of AI integration in law enforcement environment currently there are no specific research results available. Most of research articles focus on general benefits.

According to research (Lynch, 2017) AI systems easily adapt to each student's individual learning needs and can target instruction based on their strengths and weaknesses, can "gauge a student's learning style and pre-existing knowledge to deliver customized support and instruction. Lynch (2017) further notes that AI can help grade exams using an answer key and can also "compile data about how students performed and even grade more abstract assessments such as essays. AI can zero in on the specific information or concepts that students are missing, so educators can deliver targeted improvements in materials and methods

Conclusions and suggestions

On the basis of research results the authors conclude that AI will continue advance on law enforcement training efficiency development. Having considered the research results the following key areas and trends have been proposed for further evaluation, implementation and improvement to meet challenges and expectations of digitalisation in law enforcement:

1. Develop personalized learning opportunities – use AI generated interactive training content (photos, videos, script writing, task writing, language processing tools) development possibilities
2. Develop tailored learning experiences based to individual students' learning styles, preferences, and pace, since AI-driven platforms can analyze student performance data to provide customized content and recommendations.
3. Implement AI tutoring systems that can provide real-time feedback and support to students in various subjects, helping them understand difficult concepts and providing additional resources as needed.
4. Use AI to automate administrative (bureaucratic) duties and tasks, e.g. grading, scheduling, or managing student information, thus allowing educators to focus more on teaching.
5. Integragte AI analytics possibilities to identify at-risk students by analyzing engagement and performance data, enabling early warning and intervention strategies to improve retention and success rates.
6. Combine AI with virtual reality to create immersive learning experiences that can simulate real-world scenarios.

7. Utilize AI to gather and analyze student feedback on courses and teacher performance, which can inform continuous improvement processes for educators and program developers.
8. Provide educators with AI training and resources to help them efficiently apply AI tools in their teaching processes, thus ensuring they feel comfortable and competent in using modern technology.

References

1. Butler, R. (2023). *The future of law enforcement rests in its technology investment*. Retrieved from https://www.thomsonreuters.com/en-us/posts/government/future-of-law-enforcement-technology/
2. Datorzinību centrs. (2023). *Presentation of the project initiation (Kick-off) meeting* [Non-published materials].
3. Dieterle, E., Dede, C., & Walker, M. (2024). The cyclical ethical effects of using artificial intelligence in education. *AI & Society, 39*(4), 633–643. https://doi.org/10.1007/s00146-022-01497-w
4. Epstein, B., & Emerson, J. (2024). Navigating the future of policing: Artificial intelligence (AI) use, pitfalls, and considerations for executives. *Police Chief Online*. Retrieved from https://www.policechiefmagazine.org/navigating-future-ai-chatgpt/
5. European Commission. (2024). *AI act*. Retrieved from https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai
6. Hormann, J. S. (1995). Virtual reality: The future of law enforcement training. *FBI Law Enforcement Bulletin, 64*(7), 1–8.
7. Information Centre of MoI. (2022). IeM IC, in cooperation with IeM colleges, is modernizing e-learning platform of Internal Affairs institutions. Retrieved from https://www.ic.iem.gov.lv/lv/jaunums/iem-ic-sadarbiba-ar-iem-koledzam-modernize-e-macibu-iekslietu-iestazu-e-macibu-platformu
8. Lynch, M. (2017). The benefits of artificial intelligence in education. Retrieved from https://www.theedadvocate.org/benefits-artificial-intelligence-education/
9. Ministry of the Interior (MoI). (2022). *Interior sector strategy 2023-2027*. [Non-published materials].
10. Regulation (EU) 2019/1896 of the European Parliament and of the Council of 13 November 2019 on the European Border and Coast Guard and repealing Regulations (EU) No 1052/2013 and (EU) 2016/1624. Retrieved from https://eur-lex.europa.eu/eli/reg/2019/1896/oj
11. Smith, L. (2022). New police training methods for 2023. Retrieved from https://www.policetechnews.com/post/new-police-training-methods
12. The Innovation Centre of INTERPOL and UNICRI. (2024). *Principles for responsible AI innovation*. Retrieved from https://www.ai-lawenforcement.org/guidance/principles