From Needs Analysis to Training: Building AI Literacy Among VET Teachers in Slovakia

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Abstract

As Artificial Intelligence (AI) becomes increasingly integrated into education and the labour market, enhancing teachers' AI literacy has become crucial, particularly in vocational education and training (VET). Within the Erasmus+ project VETAssist – Artificial Intelligence as VET Teacher Assistant (No. 2024-1-HU01-KA220-VET-000253387), we conducted a national online survey to examine Slovak VET teachers' experiences with and attitudes towards AI use in teaching and learning. Using a Google Forms questionnaire, we gathered responses from 208 teachers across various VET disciplines, complemented by 38 in-depth qualitative interviews. The findings revealed significant gaps in AI literacy, digital skills, and technical readiness, both at the teacher and institutional levels. Drawing on these findings, we created customised professional development sessions that helped teachers build digital skills and gain confidence in applying AI within their classrooms. So far, 78 VET teachers have participated in these training sessions. The paper highlights key outcomes of these initiatives, including improvements in teachers' ability to integrate AI tools into lesson planning, assessment, and classroom management. The study underscores the need for systemic support and sustained professional development to prepare VET educators, and indeed all teachers, for the challenges and opportunities presented by AI driven education.

Keywords: AI Literacy, Digital Skills, Vocational Education and Training (VET), Teacher Professional Development, Artificial Intelligence in Education, AI Training

1 Introduction

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Artificial Intelligence (AI) is reshaping education worldwide, including in Slovakia, where it presents both challenges and opportunities (Pondelíková, 2025). AI has strong potential to advance Sustainable Development Goal 4, which calls for inclusive, equitable, and high-quality education (UNESCO, online). As AI becomes embedded in daily life, schools must adapt by integrating digital and 21st century skills into their curricula (Gocen and Aydemir, 2020).

This shift requires well prepared teachers who can understand, evaluate, and responsibly implement AI tools. To address these needs, four universities - the Budapest University of Technology and Economics, the University of Bremen, the University of Novi Sad, and the University of Ss. Cyril and Methodius in Trnava – developed the Erasmus+ project **VETAssIst – Artificial Intelligence as VET Teacher Assistant** (2024-1-HU01-KA220-VET-000253387). The project explores how AI can support VET teachers in lesson planning, assessment, administration, and digital innovation. A key output is a comprehensive e-learning course offering practical guidance and examples of AI integration, while also examining opportunities, risks, and pedagogical implications.

This article reports on the Slovak pilot implementation of the course. It builds on earlier qualitative interviews with 38 VET teachers and a nationwide survey of 208 respondents. In October 2025, the first part of the pilot course was delivered in Prešov, Košice, and Banská Bystrica, with the second part planned as an online delivery. The analysis focuses on teachers' feedback from the initial sessions, which covered prompting, AI based text and image generation, AI assisted presentation design, and translation tools. The evaluation examines teachers' motivation to participate, their growing confidence in using AI tools, their suggestions for the next training phase, and shifts in their overall perceptions of AI.

2 Theoretical Background and Literature Review on the Integration of Artificial Intelligence (AI) in Vocational Education and Training (VET)

Artificial intelligence in education has gained considerable scholarly interest in recent years. While its integration into teaching and learning environments has been relatively gradual, current research indicates a steady expansion of AI's role, particularly through the adoption of virtual assistants and intelligent support systems. Yet, as Bates et al. (2020) note, AI remains a "sleeping giant" within the educational sector. Buckingham Shum and McKay (2018) similarly argue that the practical use of AI still falls short of its widely discussed potential. This discrepancy is often attributed to systemic challenges, including insufficient institutional structures, a shortage of trained personnel, and inadequate technological infrastructure (Ifenthaler, 2017). Despite these constraints, continuous technological advancements and growing investment in educational innovation suggest that the gap between AI's promise and its practical implementation may gradually diminish in the coming years. Recent bibliometric analysis by Prasetya et al. (2025) highlights growing research interest in the use of AI in VET. Their study confirms AI's potential to enhance accessibility, inclusivity, and equity in

education, while also contributing to the United Nations Sustainable Development Goals (SDGs) 2030, particularly SDG 4 (quality education access), SDG 8 (decent work and economic growth), and SDG 9 (industry, innovation, and infrastructure).

Artificial intelligence is reshaping both labour markets and educational systems, placing vocational education and training (VET) at the centre of these transformations. As AI driven technologies redefine workplace expectations, VET providers must adapt the content and aims of initial and continuing training (Bükki et al., 2025). AI is therefore doubly relevant to VET, both as a core topic within vocational curricula and as a tool that can enhance teaching and learning processes (Attwell et al., 2020). Despite growing interest in AI's transformative potential, empirical research on its educational use, especially in VET, remains limited (Chiu, 2023; Deitmer et al., 2024; Seufert, 2024).

Survey data from the VETAssIst Erasmus+ project, administered in February 2024 among VET teachers in Hungary, Serbia, and Slovakia (Bükki and Manojlovic, 2024; Papp et al., 2024), revealed generally positive attitudes towards AI but showed that only a minority had begun integrating AI tools into their teaching. Bükki et al. (2025) identified two teacher groups: AI pioneers, who actively experiment with generative AI tools, and non-pioneers, who show interest but lack confidence, training, and institutional support. Complementary Serbian findings using fuzzy cognitive mapping indicate that strong institutional and technical conditions significantly boost teachers' motivation to adopt AI, while students' own use of AI further supports uptake (Papp et al., 2025). Collectively, these studies show that AI integration in VET depends not only on technological availability but also on organisational culture, teacher readiness, and sustained pedagogical support.

Research further highlights both the opportunities and challenges of implementing AI in VET. Çela et al. (2024) show that technologies such as VR/AR, machine learning, intelligent tutoring systems, IoT, robotics, gamification, and big data can personalise learning, strengthen skills development, and prepare students for an AI-driven labour market, while issues of algorithmic bias, data privacy, high costs, and unequal access remain. Leong (2025) likewise emphasises the potential of adaptive learning systems, tutoring platforms, virtual simulations, and robotics to align VET with industry needs, but also warns of the digital divide, gaps in instructor preparedness, and data protection challenges.

Luprichová's (2025) evaluation of 37 AI tools confirms these findings, showing that AI can support teachers through automation, personalisation, and increased engagement, yet concerns about reliability, accuracy, and equity call for systematic training and institutional guidelines. The importance of teacher preparedness is further demonstrated in Schmitt and Brutzer's (2025) design-based training, which combined theory on AI, ethics, and data protection with hands-on prompt-engineering tasks. Their results from 52 participants showed improved prompt-design and evaluation skills, though teachers requested more practice and structured support. AI integration in VET remains complex, shaped by technological, institutional, and pedagogical conditions. While AI offers significant benefits for everyday teaching, successful adoption requires adequate infrastructure, ethical safeguards,

and sustained professional development. As VET systems respond to digital transformation, strategic investment in training, policy development, and evidence-based practice will be essential.

3   Introducing the VETAssIst AI Course Pilot for VET Teachers

A central aim of the VETAssIst project is to equip VET teachers to use artificial intelligence as a supportive digital assistant. Within this framework, AI is viewed as a tool that can aid routine and creative pedagogical tasks such as lesson planning, content creation, assessment design, student engagement, and classroom management. AI tools also enable more inclusive teaching by customising materials to diverse learner needs. The project, therefore, seeks to integrate AI into VET in a pedagogically sound, ethical, and practical way.

To achieve this, the VETAssIst Moodle e-learning course was developed as an eight-module professional development programme. Each module combines theoretical readings, demonstrations, and individual tasks, supplemented by optional materials and resources. The modules cover core areas of AI use in education: fundamentals of AI; AI-supported educational design; active learning; content creation and collaboration; tutoring support; AI-based assessment; development of students' AI literacy; teachers' professional and administrative use of AI; and ethical and policy considerations. Together, they build the knowledge, skills, and competencies needed for responsible AI integration, emphasising conceptual understanding alongside hands-on practice. Participants also receive access to AI tools, case studies, and step-by-step video tutorials. The course targets in-service VET teachers seeking to enhance their AI literacy and classroom practice, as well as pre-service teachers preparing for careers in VET. Because several modules are transferable, the course is also relevant to educators from other sectors, contributing to diverse peer learning.

In October 2025, the Slovak team launched the first in-person pilot implementation, using selected activities from modules most applicable to immediate teaching practice. The workshops introduced foundational AI concepts, demonstrated text- and image-generation tools, strengthened AI literacy, and, within one group, offered training in AI-supported video creation. Ethical issues such as responsible use, data protection, and identifying AI-generated content were integrated throughout. Across three workshops, 78 VET teachers participated, providing feedback that will guide further refinement of the course and its adaptation to Slovak educational needs.

4   Research Methodology

To evaluate the relevance, usefulness, and perceived impact of the pilot implementation of the VETAssIst course, a qualitative research design was adopted. Qualitative methodology was selected because it allows for an in-depth exploration of participants' experiences, perceptions, and motivations, which are essential for understanding how VET teachers

interact with and reflect upon AI. According to McLeod (2023), qualitative research aims to explain how and why a particular phenomenon operates as it does within a specific context. This approach is therefore well suited to examining teachers' responses to AI supported professional development, their evolving attitudes, and the nuanced factors that influence their readiness to integrate AI into their teaching practice.

Qualitative inquiry is rooted in social sciences such as psychology, sociology, and anthropology. Methods commonly used within this paradigm, such as interviews, focus groups, observations, and content analysis, are designed to generate rich, detailed data that reveal complex social processes. Although qualitative findings may be more subjective and less generalisable, they offer an insider's perspective and can illuminate subtle dynamics often overlooked within more positivist, quantitatively oriented research (Denscombe, 2010). Qualitative descriptions also help identify potential relationships, causes, effects, and developmental trajectories, providing a deeper understanding of lived experiences and emergent educational practices (Pondelíková, 2023).

In alignment with these methodological assumptions, data for the presented study were collected through a set of open-ended questions administered to participants immediately after each workshop. These questions were structured into four thematic categories. The first category, **Motivation and Initial Expectations**, explored participants' reasons for attending the workshop and their hoped-for outcomes. The second category, **Perceived Benefits, Learning Outcomes, and Changes in Perception of AI**, focused on the most useful components of the workshop, the new knowledge or skills acquired, participants' plans to implement selected activities in their teaching practice, and any shifts in their perception of AI in education. The third category, **Content, Structure, and Practical Applicability**, examined the relevance and practicality of workshop activities, the adequacy of time allocation, and suggestions for additions, removals, or structural adjustments in future sessions. Finally, the fourth category, **Overall Evaluation of Quality and Organisation**, examined participants' assessments of strengths and weaknesses related to organisation, materials, interactivity, and lecturers' performance, and asked whether they would recommend the workshop to colleagues and how they would describe it concisely.

In total, 18 feedback responses were collected. Some were submitted by individual teachers, while others represented group responses, prepared by teachers working together based on their subject specialisation and the collaborative teams formed during the workshop activities. This combination of individual and collective feedback enriched the dataset and provided a multifaceted perspective on the workshop's perceived value and areas for improvement.

The collected responses were subsequently analysed using thematic content analysis, enabling the identification of key themes and actionable insights that can inform further refinement of the VETAssIst course.

5 Interpretation of the Research Results

Drawing on feedback from the pilot workshops, this interpretation examines how VET teachers perceived the relevance, usefulness, and practical applicability of the introduced AI tools. The findings reveal clear patterns in teachers' motivations, learning outcomes, and shifts in their attitudes towards AI integration in education. Together, these insights provide a deeper understanding of the factors that shape VET teachers' readiness to adopt AI in their everyday practice. Prior to the workshops, 38 interviews were conducted with secondary VET teachers, who indicated that they perceive artificial intelligence in VET as a useful supportive tool capable of enhancing teachers' preparation, enriching instruction, and facilitating students' access to information. They expect AI to simplify the creation of worksheets, tests, presentations, multimedia materials, translations, and supplementary learning resources, while also contributing to faster feedback, personalised learning, and increased student motivation.

Teachers believe that AI has the potential to enhance learning, support the visualization of complex content, and foster the development of digital competences. They also noted that AI may partially reduce administrative workload, particularly in test assessment and report generation, but only once its use is supported at the systemic level. At the same time, teachers are acutely aware of the associated risks. The most frequently mentioned concerns include the weakening of students' critical and logical thinking, reduced autonomy, increased dependence on technology, diminished personal interaction between teachers and students, as well as the risks of plagiarism and misuse of AI tools. They also warned of potential ethical issues, such as violations of copyright, insufficient verification of information, and threats to privacy. For these reasons, they consider it essential to establish clear rules for the use of AI, to ensure data protection, and to systematically cultivate responsible digital behaviour.

In terms of professional development, teachers expect long term, practice-oriented training during which they can experiment with a variety of AI tools, ranging from lesson planning and material generation to intelligent learning systems, text- and speech-processing tools, and testing platforms. The key competencies they consider necessary to acquire include critical evaluation of AI outputs, proficient use of digital tools, the ability to creatively integrate technology into instruction, and literacy in ethical, safety, and privacy-related issues. All respondents emphasised that AI should not replace the teacher. They expect technology to remain a supportive component, while the core role of the teacher, such as guidance, motivation, pedagogical decision making, and addressing diverse learner needs, remains inevitable. AI should complement teaching, not control it, and its use should be balanced, intentional, and meaningful.

In addition to the in-depth interviews, a nationwide survey was conducted in secondary VET schools, gathering responses from 208 teachers. The results indicate that nearly 70% of respondents are interested in AI related training, as their current use of AI is largely limited to chatbots. Specifically, 40% reported regular use, 33.7% use them only minimally, and 26.4%

do not use them at all (Figure 1). Moreover, almost 60% of teachers stated that they are unable to work with AI-based content-generation tools, 17.8% reported partial use, and fewer than 10% indicated proficient use (Figure 2).
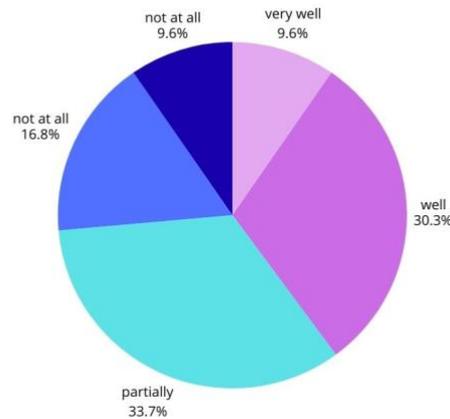

Figure 1: Teachers' ability to use chatbots.
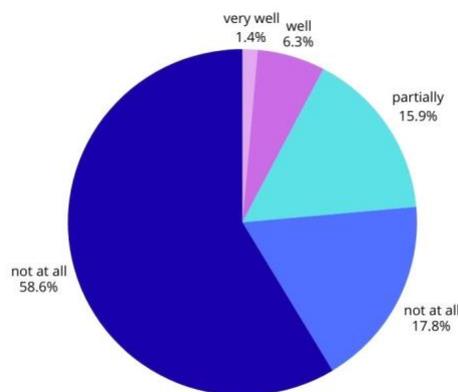Source: *own processing based on the obtained data*

Figure 2: Teachers' proficiency in using AI tools designed for content generation.
Source: *own processing based on the obtained data*

At the beginning, we were interested in participants' personal **motivation** to attend such a workshop. Their motivations for attending the AI workshop were diverse, yet united by a strong interest in better understanding artificial intelligence and its potential in education. Several respondents highlighted the practical value of the training for their teaching practice, as illustrated by R6, who noted that the workshop "can be added not only to our professional portfolio but also used in our pedagogical practice." Many participants expressed the desire to acquire new knowledge about AI (R7, R13), with R11 explicitly stating the need "to find out how AI can be beneficial for me." Teachers also emphasised that AI has become a common part of students' daily lives; as R12 explained, "A huge number of students use AI, and we –

teachers need to know how to work with it so that we can guide them properly." Some motivations were professional or personal in nature, for example, R9 appreciated the opportunity to attend his "first in-person training" in a new job, while R17 stressed the wish "to keep up with young people in using modern technologies," and to make teaching more engaging. For several participants, the relevance and timeliness of the topic were important (R14), as was the rapidly evolving nature of AI, which, according to R15, requires continuous training. Overall, the findings show that participants were driven by professional development, the enhancement of digital competence, the need to adapt to a changing educational environment, and the desire to better respond to students' needs.

We were further interested in the **perceived benefits, learning outcomes, and changes in participants' perceptions of AI**. Participants identified a wide range of workshop components as particularly beneficial, with the majority highlighting the creation of presentations, especially through tools such as Gamma, as the most valuable aspect. For example, R1 stated that "the creation of presentations was the most beneficial, as it takes the most time in teachers' preparation," while R7 appreciated "the creation of presentations in Gamma." The possibility of generating and modifying images was emphasised by respondents such as R4, who noted that "the most beneficial part was generating images and creating presentations," and R10, who highlighted "image generation through precise instructions." Some participants, such as R15 and R16, stressed that all components were beneficial, with R16 describing the workshop as "highly relevant and applicable to every part of the educational process." Additional insights included enthusiasm for speaking avatars, with R18 noting that "the talking avatar was the biggest surprise and will make teaching easier." At the same time, R18 also reflected critically on AI's limitations, warning that "our creativity may disappear completely" and expressing concerns about how students' knowledge might evolve "when they no longer need to create, search, or explore."

These reported benefits aligned closely with the concrete learning outcomes described by participants, who indicated that they had gained practical skills in working with AI tools for teaching. Many respondents reported learning to create or improve presentations and generate visual materials, with several noting that they were using tools such as Gamma for the first time (e.g., R7). Others acquired new competencies in image generation, note creation, and advanced prompt formulation, as illustrated by R12 and R17, who planned to implement interactive activities such as *Say what you see* and *Which face is real* to enhance student motivation. Some participants were inspired to experiment further with creative tools, with R17 reporting the creation of talking avatars of authors using Vidnoz, which "received applause" from students. Several teachers also emphasised that the workshop deepened their understanding of how AI operates, broadened their awareness of available applications, and provided strong inspiration for integrating AI-supported tasks into future lessons.

Overall, teachers expressed clear intentions to incorporate these activities into their teaching practice, recognising their potential to enrich instruction and strengthen student engagement.

Participants reported increased confidence when working with AI tools. Most participants indicated feeling more secure or even "certain" in using AI (e.g., R2, R4, R6, R12, R15), while a few noted only slight improvement or felt they were still beginners (R1, R5). Only one participant stated that their confidence remained unchanged due to already having a strong foundation (R3).

One aim of the workshop was to influence teachers' perceptions of AI in educational practice positively, and the responses indicate meaningful shifts in this direction. Respondents reported notable changes, most commonly viewing AI more positively as a supportive tool that can simplify teachers' work and save time. Several teachers emphasised AI's role as an assistant rather than a threat; for instance, R3 noted that they now "see it as a helper, not an enemy," while R2 remarked that AI "does not have to be a bogeyman." In addition, R1 stated that the workshop "confirmed my view that AI can be helpful and save time." At the same time, some participants expressed a balanced or cautious stance. R12 explained that they no longer see AI as "avoiding responsibilities, but as a way to simplify work," whereas R18 voiced concerns that AI may foster superficial learning: "If students receive information on a plate without effort, they won't remember it." Participants acknowledged AI's potential benefits but also recognised the need for critical, guided, and responsible use.

The third area of our interest focused on participants' **satisfaction** with the workshop's content, structure, and practical applicability. Respondents expressed relatively few reservations regarding the workshop's content, though several participants identified specific elements they considered less necessary. A few teachers felt that certain segments were allocated more time than needed. For example, R1 noted that "too much time was devoted to prompt engineering," while R3 mentioned that the activity on distinguishing AI-generated and real images was less essential. Others pointed to the section on translation tools, which some viewed as redundant given their prior experience (R17). However, participants also acknowledged that these components were valuable for colleagues with different levels of expertise, with R12 emphasising that "some teachers explicitly needed this part." Several respondents, such as R13 and R15, stated that they found all components useful, praising the workshop's overall balance, pacing, and responsiveness to participants' needs. Critical comments were minor and related primarily to time management rather than the relevance of the content. While most participants considered the time allocation appropriate, often describing it as "adequate" or "well planned", a few noted small challenges. For instance, R4 suggested allowing more time to log in to tools to prevent confusion, and R15 mentioned experiencing reduced concentration in the afternoon due to the volume of new information.

Participants also suggested several ways to enhance future workshops, most commonly requesting more examples, new tools, and deeper practical training. A key theme was the desire for guidance on evaluating AI outputs, with R1 emphasising the need to learn "how to verify the information provided by AI." Others expressed interest in expanding the range of

demonstrated applications; for instance, R3 proposed including the AI tool NotebookLM, while R15 called for "more new applications" and even suggested creating a mini project for participants to submit for feedback. Several teachers highlighted the value of additional prompt-engineering practice for generating exercises, worksheets, and reading texts (R12). Regarding new topics, respondents most frequently mentioned test and quiz creation (R5, R17) and strategies for checking students' independent work in the age of AI (R11). Some also expressed interest in real-time interactive applications, as R18 described tools that allow students to generate content that appears instantly on a shared screen collaboratively. A few participants, such as R16, felt that the current scope was sufficient but trusted that future workshops would "always offer something new and relevant." In addition, respondents showed strong enthusiasm for broadening both the thematic focus and the practical depth of upcoming sessions.

The final part of the investigation focused on the overall evaluation of the **workshop's quality and organisation**, including participants' perceptions of its strengths and weaknesses, as well as whether they would recommend it to their colleagues. Respondents highlighted numerous **strengths** of the workshop, most frequently emphasising its interactivity, high-quality demonstrations, professional lecturing, and well-prepared materials. Many praised the instructors' expertise and supportive approach; for example, R5 noted the "human and professional approach, structure, and interactive demonstrations," while R12 described the lecturers as "excellent, with a highly enriching selection of activities and topics." The positive atmosphere and quality of communication were also repeatedly mentioned, with R4 valuing the "very pleasant manner of the lecturers and practical tasks," and R17 emphasising the "excellent atmosphere." A particularly detailed reflection was provided by R18, who described the workshop as "perfectly prepared and organised from the very first contact," praising the smooth communication, thoughtful logistics, and supportive guidance throughout. They highlighted the instructors' attentive assistance, "they carefully followed every step and directed us to the next one," and appreciated the friendly, non-judgmental environment in which participants felt welcomed and encouraged to contribute. The usefulness of demonstrations and materials was frequently underscored (R1, R2, R3), and R16 highlighted the "highly professional preparation," noting that the small group size fostered active engagement.

Although respondents were generally positive, they identified several **areas for improvement**, most of which related to technical limitations, time constraints, and group composition rather than the workshop itself. A recurring issue was weak internet connectivity and insufficient institutional equipment, as highlighted by R2 and R4, with the latter noting that limited time for some activities was caused by "inadequate technology and connection, which our institution failed to provide." Several participants suggested allowing more time for certain tasks (R1, R11, R14), while others pointed out that the heterogeneous skill levels within the group slowed the pace; R12 observed that they sometimes had to wait for colleagues who were "technically weaker," and R5 mentioned challenges arising from an "undisciplined and

diverse group." Respondents also commented on instances of inappropriate behaviour during the workshop, with R3 noting that some colleagues "talked constantly, which was very distracting." Importantly, several participants recognised that the lecturers cannot influence the quality of participants' devices, the stability of the internet connection, or the varying levels of participants' technical skills, particularly since the workshops were conducted not in the lecturers' own facilities but in schools or other educational institutions hosting the event. A few respondents reported no weaknesses at all (R6, R7, R10, R15).

One of the clearest indicators of the workshop's success is that all participants stated they would **recommend** it to their colleagues, frequently emphasising its practical value and immediate relevance for teaching. Respondents appreciated the workshop's hands-on, practice-oriented approach. R10 highlighted the "focus on practice and prompting" and many underscored its usefulness for beginners, with R7 noting that it is ideal for those new to AI, while R5 stressed its importance for colleagues who "resist or fear" such technologies. Participants also praised its clarity and structure, describing it as "a good starting point and an excellent overview of tools" (R9) and "a way to make work easier and more attractive" (R12). The perceived benefits extended beyond mere recommendation. For example, R1 reported learning "how to use AI effectively so that you have more time for other responsibilities," and R12 remarked that the workshop "dramatically shifted my abilities and made my daily preparation 200% easier." Several respondents also valued the engaging and motivating atmosphere, as expressed by R7 ("you will have great fun"), R4 ("you will learn to use AI tools in a playful way"), and R5 ("efficient, practical, well-organised"). Additional endorsements highlighted its inspirational nature; for instance, R6 noted that "it will make their work easier and they should not resist it," while R14 added that "you might regret not attending." Overall, participants regarded the workshop as a highly beneficial and inspiring professional development opportunity that enriched their digital competencies, enhanced the efficiency of their teaching practice, and provided a motivating, interactive learning experience.

6 Evaluation of the Research Results

The research results show that the pilot implementation of the VETAssIst course effectively addressed the immediate training needs of Slovak VET teachers and offered practical, motivating experiences with AI tools. Qualitative feedback indicates that the workshops strengthened teachers' digital competencies, boosted their confidence, and increased their willingness to integrate AI-supported activities into their teaching. Participants particularly valued tools for text and image generation, presentation design, and prompt formulation, confirming that hands-on, application-oriented training aligns well with their everyday professional needs.

The workshops also contributed to more positive perceptions of AI. Many teachers began to view AI as a helpful assistant that saves time and simplifies routine tasks, while initial fears or

scepticism diminished. At the same time, respondents demonstrated an awareness of potential risks, especially student overreliance on technology, weakened critical thinking, and superficial learning. Participants evaluated the workshops very positively, highlighting the lecturers' expertise, clear demonstrations, and supportive atmosphere. All stated they would recommend the training to colleagues. Nonetheless, several systemic challenges affected the experience, including unstable internet, limited equipment, and varying digital skill levels.

The pilot workshops achieved their goals and provided a solid foundation for developing AI literacy among VET teachers. The results, along with participants' suggestions, such as enhancing training on verifying AI outputs, creating tests, and designing assessments, offer clear directions for improving the next phase. The evaluation also underscores the importance of ongoing, practice oriented professional development and stronger institutional support for the sustainable integration of AI into VET.

7   Research Limitations

The study offers valuable insights into VET teachers' perceptions of AI, yet several limitations must be acknowledged. First, the research is based solely on qualitative data from open-ended questions completed immediately after the workshops. Although this method provided rich reflections, it limits generalisability. The dataset includes 18 responses, which is relatively small; however, several of these reflect the shared viewpoints of small groups rather than individual participants. Second, the findings were strongly shaped by contextual factors, as participants' experiences reflected not only the workshop content but also external conditions such as unstable internet, limited equipment, and varying levels of digital skills.

The results do not examine how teachers apply newly acquired skills over time, how their perceptions evolve, or what challenges emerge during classroom implementation. This gap will be addressed in the next phase of the project through additional quantitative data to better capture teachers' progress and the long-term impact of the training. Taken together, while these limitations restrict broader generalisation, they point to important directions for future research, including mixed-method designs, larger and more diverse samples, and longitudinal follow-up.

8   Recommendations

The research findings suggest several key recommendations for the sustainable integration of AI into vocational education and training. Teachers emphasised the need for ongoing, practice oriented professional development, particularly hands-on work with AI tools for generating materials, creating assessments, verifying outputs, and designing interactive activities.

Strengthening competencies in evaluating AI-generated content and ensuring ethical, responsible classroom use should remain a priority.

Participants also called for a broader thematic focus in future workshops, including AI-supported test creation, strategies for monitoring students' independent work, and advanced applications that enhance engagement and collaboration. Using authentic classroom examples and optional mini projects with feedback may further support practical transfer. Finally, the results highlight the importance of institutional and infrastructural support. Schools should invest in reliable technology and ensure access to necessary hardware, software, and connectivity. Clear institutional policies on ethical AI use, data protection, and academic integrity are essential for creating a safe and supportive environment for both teachers and learners.

9 Conclusion

The findings of this study demonstrate that the pilot implementation of the VETAssIst course represents an important step towards strengthening AI literacy among Slovak VET teachers and supporting their preparedness for the digital transformation of vocational education and training. The teachers' reflections clearly indicate that practical, hands-on AI training enhances their confidence, enriches their pedagogical repertoire, and motivates them to integrate innovative digital tools into their teaching practice. At the same time, the results underline the need for systematic professional development, adequate institutional support, and long-term monitoring of how AI related competencies are translated into authentic classroom practice.

In the broader educational context, the integration of AI aligns with contemporary shifts in teaching, learning, and evaluation. As Miština and Jurinová (2022) observe, the increasing use of information and communication technologies enables the adoption of new interactive multimedia forms of assessment, which corresponds closely with VET teachers' calls for more dynamic and meaningful ways of evaluating students' skills and knowledge. Moreover, AI driven changes in education reflect deeper societal transformations. At the core of these changes lies the evolving concept of digital identity, shaped by technologies that increasingly define human interaction, communication, and learning (Pecníková, 2018). These developments highlight the importance of cultivating not only technical skills but also digital awareness and responsibility among teachers and learners.

Given the expansion of new AI tools and the vast amount of information now available, the role of critical thinking becomes even more essential. As Javorčíková and Badinská (2021) emphasise, critical thinking empowers both students and teachers to evaluate information sources, establish hierarchies of relevance, identify plagiarism, and assess authors' credibility; competencies that are essential in an AI rich learning environment. Similarly, the linguistic dimension of AI integration cannot be overlooked. As Dančišinová (2022) notes, the

knowledge of a foreign language must always be understood in relation to its purpose of use. English, as a global language of creativity, digital connectivity, and technological innovation, plays a central role in navigating AI applications. This was reflected in the training, where VET teachers learned not only to generate and analyse content but also to translate texts efficiently and accurately without being limited by language barriers.

To conclude, the study highlights that AI offers significant opportunities for innovation in VET. Yet its effective and responsible integration requires a balanced combination of technical skills, pedagogical reflection, ethical awareness, and critical judgment. The insights from the pilot workshops will guide the next phase of the VETAssIst course and help build a robust foundation for future research and professional development. By fostering teachers' competencies and confidence, the project contributes to ensuring that artificial intelligence becomes not a threatening force but a meaningful, supportive, and empowering component of vocational education and training.

Acknowledgement

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