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PAPER

Exploring the Ethical Boundaries of AI Use in Secondary Vocational Education

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ABSTRACT

The integration of artificial intelligence (AI) into vocational education presents both significant opportunities and complex ethical challenges. This study examines the use of AI among learners attending secondary technical and vocational schools, with a particular focus on the boundary between legitimate learning support and academic dishonesty. A quantitative questionnaire survey was conducted with 1,745 learners from Slovakia, the Czech Republic, Hungary and Poland. The collected data were analysed using descriptive statistics and a thematic analysis of open-ended responses. The results indicate widespread use of AI tools among the surveyed learners. Most respondents reported regular use of AI to understand learning materials, generate texts, complete assignments and support project work. Many respondents reported confidence in evaluating AI-generated content, suggesting a perceived level of digital literacy and critical awareness. Nevertheless, open-ended responses revealed several forms of academically dishonest AI use, particularly for generating code, writing essays, preparing presentations and completing tasks without meaningful cognitive engagement. Thematic analysis identified key motivations such as time efficiency and pragmatic task management, alongside a nuanced awareness of the ethical boundary between legitimate assistance and misconduct. The findings highlight the urgent need for pedagogical approaches that promote responsible and ethical use of AI. Moreover, the study reinforces the view that, in an increasingly technology-driven educational landscape, competencies in interacting with AI, such as formulating effective prompts, verifying outputs, and engaging in critical evaluation, are becoming essential skills for vocational school graduates.

KEYWORDS

artificial intelligence (AI), vocational education, ethics in education, academic dishonesty, digital competencies, secondary technical schools

1 INTRODUCTION

Artificial intelligence (AI) is increasingly shaping educational practice and transforming how learners access information, solve problems and complete

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academic tasks. The widespread availability of generative AI tools such as ChatGPT, Microsoft Copilot and Google Gemini has introduced new possibilities for personalised learning, immediate feedback and knowledge support. At the same time, these technologies raise important questions concerning academic integrity, learner autonomy, critical thinking and the ethical boundaries of AI-assisted learning. These issues are particularly relevant in vocational education, where the development of both technical competencies and professional responsibility represents a central educational objective.

At the European level, the growing role of AI in education is reflected in strategic policy initiatives. The Digital Education Action Plan 2021–2027 emphasises the need to strengthen digital readiness, promote high-quality digital education and equip learners with competencies required for participation in an increasingly technology-driven society [36]. Similarly, the DigComp 2.2 framework identifies critical and responsible use of digital technologies as a key component of digital competence, including the ability to evaluate information, understand technological limitations and act ethically in digital environments [37]. These priorities are particularly relevant for vocational education, where digital competence, technical expertise and professional responsibility are closely interconnected.

A broad spectrum of scholars has examined the integration of AI into education. Given the diversity of perspectives and research objectives, existing studies can be grouped into five thematic areas relevant to the present research:

1. Conceptual and strategic perspectives on AI in education [1–5];
2. Inclusion, accessibility and equity through AI [6, 7];
3. AI, academic integrity and ethical challenges [8–11];
4. Attitudes, adoption and use of AI by teachers and learners [12–14];
5. Applications of AI in specific educational contexts [15, 16].

Research consistently demonstrates that AI can enhance teaching and learning by supporting personalised instruction, adaptive learning environments, immediate feedback and greater accessibility of educational content [2, 4, 6]. AI technologies may help learners better understand subject matter, identify knowledge gaps and engage with educational resources tailored to their individual needs. In vocational education, AI also offers opportunities to simulate authentic professional situations, support technical problem-solving and strengthen competencies increasingly demanded by contemporary labour markets [17–20].

At the same time, the growing availability of AI introduces important pedagogical and ethical challenges. Tools capable of generating text, code, presentations, images and solutions to problems may support learning, but they may also reduce learners' cognitive engagement when used as substitutes for independent work. Consequently, questions concerning academic integrity, learner autonomy, critical thinking and the ethical boundaries of AI-supported learning have become increasingly prominent in educational research [8–11].

The ethical dimension of AI use in education extends beyond the question of whether AI is used and includes the purposes, conditions and consequences of its use. European approaches to trustworthy AI emphasise principles such as human agency and oversight, transparency, fairness, accountability, privacy protection and the prevention of harm [38]. In educational settings, these principles imply that AI should support, rather than replace, learning processes and be integrated in ways that preserve meaningful learner engagement and educational integrity. The Ethical

Guidelines on the use of AI and data in Teaching and Learning for Educators further stress the importance of responsible implementation, teacher preparedness and clear institutional policies governing AI use in schools [39].

These issues are particularly significant in secondary vocational education. Learners in technical and vocational programmes are among the most intensive users of digital technologies and are simultaneously preparing for professions in which AI-assisted work is becoming increasingly common. Understanding how these learners use AI, how they perceive its benefits and risks, and how they navigate the boundary between legitimate educational support and academic dishonesty, therefore, represents an important research challenge.

The present study addresses this challenge by examining the use of AI among learners attending secondary vocational schools in four Central European countries: Slovakia, the Czech Republic, Hungary and Poland. Particular attention is paid to the ethical boundaries of AI use, including the distinction between meaningful learning support and academic dishonesty. By analysing learners' experiences, attitudes and reported behaviours, the study aims to contribute to the ongoing discussion on responsible AI integration in vocational education and to provide evidence to support future pedagogical, institutional, and policy decisions.

2 ETHICAL BOUNDARIES IN THE USE OF ARTIFICIAL INTELLIGENCE IN EDUCATION

As noted by [4], although AI offers significant potential for personalised teaching and learning, its integration into education raises important ethical and pedagogical challenges. The ethical boundaries of AI use in education should not be understood solely as individual decisions made by learners or teachers. Rather, it is shaped by broader legal, institutional, and ethical frameworks. The European concept of trustworthy AI defines AI systems as lawful, ethical and robust, while emphasising principles such as human agency and oversight, transparency, fairness, accountability, privacy protection and the prevention of harm [38]. In educational settings, these principles imply that AI should support learning processes without replacing learners' cognitive engagement and should remain subject to meaningful human supervision. One of the central issues concerns the boundary between the legitimate use of AI as a learning aid and its misuse for academic dishonesty. While some learners use AI to better understand educational content, others may rely on it to replace their own cognitive engagement and original work. Studies indicate that teachers are increasingly aware of this risk and perceive a growing prevalence of AI-assisted misconduct, although most do not consider the use of AI itself inherently unethical [8]. These concerns reflect broader tensions regarding academic integrity in technology-enhanced learning environments.

The risks associated with AI misuse have been highlighted in several educational contexts. Research conducted during the COVID-19 pandemic showed that distance learning environments increased learners' reliance on digital technologies for cheating, often justified by low motivation or disengagement from school tasks [9]. More recent studies focusing on generative AI, particularly in programming education, demonstrate that AI systems can produce sophisticated solutions to assignments, thereby complicating objective assessment and creating opportunities for academic misconduct [10]. At the same time, these technologies may support learning, motivation and feedback when used appropriately. However, inaccurate or misleading AI-generated outputs, together with excessive dependence on automated solutions, may undermine the development of authentic skills and critical thinking. Consequently, several authors emphasise the importance of formative assessment strategies and pedagogically guided AI integration that promotes academic integrity [9, 10].

Research further suggests that learners' attitudes toward AI-assisted cheating are shaped by personal values, moral beliefs and the educational environment [11]. Studies show that learners are often reluctant to openly admit to dishonest AI use, particularly when directly questioned, whereas anonymous responses reveal substantially higher levels of self-reported misconduct [11, 24, 25]. These findings underline the need for supportive educational environments that strengthen intrinsic motivation, reduce excessive performance pressure and incorporate values-based education. Simultaneously, teachers face significant barriers in integrating AI into pedagogical practice, including concerns about academic dishonesty, limited confidence in their own AI competencies and restrictive institutional policies [12, 14]. This discrepancy is evident in learners adopting AI tools considerably faster than teachers [12, 13], creating tension between rapid technological development and the readiness of educational institutions to implement AI responsibly and effectively.

3 VOCATIONAL EDUCATION AND THE ROLE OF ARTIFICIAL INTELLIGENCE

Vocational education, whether delivered in face-to-face or distance learning formats, focuses on developing learners' technical reasoning, creativity and practical skills. In doing so, it supports the acquisition of essential technical literacy and competencies required for informed career decisions and further professional development. Vocational education encompasses a range of pedagogical and psychological dimensions that influence the quality, efficiency, and effectiveness of instruction [17–20].

In this context, AI is becoming an increasingly important component of modern vocational education. AI technologies can support personalised learning, identify knowledge gaps, propose individualised learning activities, and create adaptive educational environments. Furthermore, they enable the simulation of authentic technical scenarios, allowing learners to gain practical experience even in online or hybrid settings. In technical education, AI can also support data analysis, process modelling, automation and the design of technical solutions.

As Huľová et al. [17] emphasise, modern technical education should integrate practical skills, learner engagement, digital technologies, high-quality feedback, creativity, ethical standards and preparation for future professional practice. Within this framework, AI may support vocational education by enabling adaptive learning, feedback, simulation of technical scenarios, and the development of digital competencies required in technical professions.

At the same time, it is essential to acknowledge the risks associated with AI misuse. When completing assignments, projects, or practical tasks, learners may rely on AI in ways that reduce genuine cognitive engagement and hinder the development of professional competencies. Consequently, vocational education should incorporate not only technical instruction in AI use but also explicit guidance regarding its responsible and ethical application. Such an approach can help ensure that learners develop both the technical competencies and the ethical awareness necessary for effective participation in increasingly AI-supported professional environments.

4 RESEARCH METHODOLOGY

Given the growing significance of AI in vocational education, along with its potential benefits and risks, a survey was conducted among learners at secondary vocational schools. The primary objective of the research was to obtain an authentic perspective from learners regarding the use of AI in the educational process. The study focused on how learners perceive AI and the ways it is utilised for learning, preparing for classes, completing homework and working on projects. Particular attention was paid to the extent to which learners are aware of the boundaries between meaningful use of AI and its potential misuse.

4.1 Research questions

In alignment with the main objective of the study, the following research questions were formulated:

RQ$_1$ *How do learners in secondary vocational schools use artificial intelligence for learning, class preparation, and fulfilling academic responsibilities?*

RQ$_2$ *To what extent do learners use AI tools in ways that may be considered cheating or academic dishonesty?*

4.2 Study sample

The study sample comprised 1,745 learners enrolled in the first through fourth years of secondary vocational schools, with a focus on technical education, across four Central European countries: Slovakia, the Czech Republic, Hungary and Poland. The respondents were recruited through convenience sampling, primarily via existing professional contacts with secondary vocational schools focused on technical education, and learners voluntarily participated by completing the online questionnaire. This non-probabilistic sampling approach was chosen primarily for practical reasons, including accessibility and feasibility across multiple countries. No specific criteria were applied regarding gender, academic achievement, socioeconomic status, or other personal characteristics; thus, the sample represents a diverse cross-section of learners in technical secondary education. Participation was entirely voluntary and anonymous, with respondents informed of the study's purpose and assured of confidentiality before completing the questionnaire. In terms of distribution, the largest proportion of respondents was from Slovakia (n = 612; 35.08%), followed by the Czech Republic (n = 537; 30.77%), Poland (n = 356; 20.39%), and Hungary (n = 240; 13.75%). This distribution reflects the varying levels of institutional participation across the participating countries. Although the sample cannot be considered statistically representative of the entire population of secondary vocational learners in these nations, it provides a substantial, contextually relevant dataset for examining trends and comparisons in technical education in Central Europe. Therefore, the findings should be interpreted as indicative of tendencies observed within the sample rather than as population-level conclusions.

4.3 Measurement and evaluation methods

In the study, the primary data collection method was a quantitative questionnaire administered electronically via Google Forms. The non-standardised questionnaire, developed by the researcher, comprised 17 items, predominantly closed-ended (dichotomous, multiple-choice and Likert-type), along with several semi-open-ended questions to gather information about learners' experiences, behaviours and opinions on the use of AI in education [21, 22].

The questionnaire was designed as an exploratory research instrument focused on several thematic areas related to the use of AI in the educational process. Example questionnaire items focused on learners' experiences with AI-supported learning, recognition of inaccurate AI-generated outputs and the use of AI to complete school assignments, generate text, or write code. The items primarily focused on the use of AI in learning, AI literacy and critical evaluation of AI-generated outputs, perceptions of AI in the school environment, and ethical aspects of AI use (refer to Table 1). The content validity of the questionnaire was verified through expert evaluation by five specialists in didactics, vocational education, educational technologies and the implementation of AI in educational practice.

The internal consistency of the selected closed-ended ordinally scalable questionnaire items was orientationally verified using Cronbach's alpha coefficient ($\alpha \approx 0.79$). However, due to the multidimensional nature of the research instrument, this coefficient cannot be interpreted as the reliability of a single homogeneous scale. Cronbach's alpha, therefore, represents a general orientational indicator of the internal consistency of the selected closed-ended items of the research instrument.

Table 1. Thematic areas of the questionnaire and relationship of items to Cronbach's alpha calculation

Thematic Area	Questionnaire Items	Focus of Items	Included in α Calculation
Use of AI in Education	2, 3, 4, 5, 6, 7	Use of AI in learning, homework, projects, and perceived usefulness of AI	yes: 2, 4, 5, 6, 7; no: 3
AI Literacy and Critical Evaluation of AI	9, 12, 13	Recognition of inaccurate AI responses, orientation in AI tools, and safe AI use	yes: 9, 13; no: 12
Perception of AI in the School Environment	10, 11, 14, 15	Integration of AI into teaching, AI-related risks, expected teacher support, experience with AI prohibition	yes: 10; no: 11, 14, 15
Ethical Aspects of AI Use	16, 17	Reflection on experiences, dishonest AI use, and the boundary between assistance and cheating	no–open ended responses

Notes: Item 1 represented a demographic variable (year of study) and was therefore not included in the thematic categorisation. Item 8 consisted of multiple-choice subject categories and was analysed descriptively but was not included in the Cronbach's alpha calculation. Only items with a closed-ended format that could be clearly ordinally coded were included in the Cronbach's alpha calculation. Multiple-choice items, nominal categories and open-ended responses were not included in the calculation.

As shown in Table 2, descriptive statistics were used to summarise the collected data, including measures of central tendency (arithmetic mean, median), variability (standard deviation, standard error of the mean), and distributional shape (skewness and kurtosis coefficients) [23].

Skewness and kurtosis were calculated using Fisher's moment coefficients, as implemented in IBM SPSS Statistics.

Table 2. Overview of statistical methods used in the analysis of questionnaire data

Area of Data Processing	Statistical Tool/ Method Used	Description of Use
Data Processing Software	IBM SPSS Statistics (Version 29)	Data entry, cleaning, and analysis of questionnaire data
Descriptive Statistics	Measures of Central Tendency	Calculation of mean and median
Descriptive Statistics	Measures of Variability and Distribution Shape	Calculation of standard deviation, standard error of the mean, skewness coefficient, and kurtosis coefficient
Qualitative Analysis of Responses	Thematic Analysis (manual theme classification)	Analysis of open-ended responses, identification of meaningful patterns and thematic areas
Final Data Interpretation	Tabular and Graphical Presentation	Outputs in the form of tables and graphs, accompanied by a verbal description

Open-ended responses were analysed using an inductive thematic analysis approach. The coding process involved repeated reading of the responses and identification of recurring ideas, expressions and behavioural patterns related to the use of AI in education. Conceptually similar codes were subsequently grouped into broader thematic categories. Theme development was guided by the frequency of occurrence, semantic similarity, and relevance to the research questions. Each response was assigned to the thematic category that best reflected its dominant meaning and intention.

Separate questionnaire versions were prepared for each participating country. Learners from Slovakia and the Czech Republic completed a Slovak-language version of the questionnaire, while learners from Poland and Hungary completed an English-language version. The content, structure and order of questionnaire items remained identical across all versions to ensure comparability of the collected data. The questionnaire was anonymous and did not collect personally identifiable information. Responses were analysed only in aggregated form and were not linked to individual respondents or schools.

4.4 Ethical considerations

The study was conducted in accordance with the ethical principles for educational research involving human respondents. Prior to data collection, the research design, questionnaire instrument and data management procedures were reviewed and approved by the Ethics Committee of the University of Ss. Cyril and Methodius in Trnava (Ref. No. 2025/ET/017), by the Ethics Committee of the Czech University of Life Sciences Prague (Ref. No. 2025/EK/CZU/022) and by the Ethics Committee of DTI University, Dubnica nad Váhom (Ref. No. DTI-EK-2025-03-14). The study was conducted in accordance with institutional ethical requirements and applicable GDPR regulations. Because the study involved learners attending secondary vocational schools, particular attention was paid to informed consent procedures. Participation was voluntary, and respondents were informed about the purpose of the study, the anonymous nature of data collection, and their right to discontinue participation at any stage without consequences. The study was conducted across four countries (Slovakia, the Czech Republic, Hungary and Poland). Data collection procedures were designed to comply with applicable national regulations and the principles of the General Data Protection Regulation (GDPR). To ensure consistency across participating countries, identical information regarding participation, confidentiality and data processing was provided to all respondents. No personally identifiable information was collected. Parental or legal guardian consent procedures were handled by participating schools in accordance with applicable national and institutional regulations. To minimise cross-country procedural differences, identical survey instruments, instructions and consent procedures were used across all participating countries. All responses were anonymised at the point of collection, and the dataset contained no names, addresses, contact details, IP addresses, or other information that could directly identify individual respondents or schools. The collected data were stored on password-protected institutional devices accessible only to the research team. Research data will be retained for a maximum of three years following publication of the study for verification and scientific purposes and will subsequently be securely deleted in accordance with institutional data management policies.

5 RESULTS AND INTERPRETATION

Of the 17 questionnaire items, the interpretative section focuses on a selection of representative questions identified as the most significant to the research objectives. These items were chosen because they exhibited apparent differences in responses or revealed prominent behavioural tendencies among the respondents. The selected items illustrate the key findings, while the remaining items contribute to a more comprehensive understanding and may warrant further analysis. The initial questionnaire item assessed the respondents' year of study (refer to Table 3). The largest group consisted of first-year learners [n = 503].

Table 3. Learners by year of study

Year of Study	Number (n)	Percentage (%)
First	503	28.83
Second	486	27.85
Third	414	23.72
Fourth	342	19.60

In the second item, respondents were asked whether they had ever used AI in preparing for lessons. The findings indicate that the majority of respondents utilise AI for lesson preparation. The average ordinal response value [AM = 2.49] and the median [MDN = 3.00] suggest that responses predominantly ranged between "yes, occasionally" and "yes, often", with the most frequent choice being regular use of AI. A significantly negative skewness coefficient [$g_1 = -1.48$] indicates that responses are concentrated toward the higher end of the scale, meaning that most respondents actively use AI tools. The kurtosis coefficient [$g_2 = 2.69$] further suggests a moderate variability in the intensity of AI usage (refer to Table 4).

Table 4. Use of AI by respondents in preparation for lessons

AM	MDN	SD	SE	g_1	g_2	n
2.49	3.00	.68	.016	–1.48	2.69	1745

Key: AM – arithmetic mean, MDN – median, SD – standard deviation, SE – standard error of the mean, Skewness (g_1) – skewness coefficient, Kurtosis (g_2) – kurtosis coefficient, n – number of responses. (Applied within Tables 5–10).

In the third questionnaire item, respondents were asked what they most frequently use AI for during learning or completing assignments. The data indicate that AI is most often used to explain subject matter and generate texts. The average ordinal response value [AM = 1.95] and the median [MDN = 2.00] suggest that responses predominantly fell between the first two options, namely "explaining subject matter" and "text creation." A positive skewness coefficient [g_1 = .97] indicates a concentration of responses toward the lower end of the scale, suggesting that the majority of respondents actively use AI. Conversely, only a small portion reported not using AI at all. The kurtosis coefficient [g_2 = .32] suggests a mild concentration of responses around the most common options, with relatively low variability in preferences (refer to Table 5).

Table 5. Use of AI in learning and completing assignments

AM	MDN	SD	SE	g_1	g_2	n
1.94	2.00	1.09	.026	.97	.32	1745

In the third questionnaire item, in addition to the preset options, respondents were also allowed to select an "Other" response, which [n = 165] respondents chose. Based on a qualitative analysis of their open-ended answers, AI usage within this group was described as multifunctional, personalised and often combined with other uses. Respondent statements revealed that AI was used for a broad range of tasks, from combining several preset options (e.g., explaining subject matter and programming) to more specific tasks such as note-taking, solution searching, error correction, text reformatting, idea generation and product searching based on descriptions. Multiple responses indicated practical, everyday use of AI across all learning areas, with an emphasis on efficiency, speed of information retrieval, and support in both creative and routine tasks.

In the fourth questionnaire item, respondents were presented with the statement "AI helps me learn more effectively" and responded on a five-point Likert scale.

The analysed data show that most respondents agreed or strongly agreed with this statement. The average ordinal response value [AM = 3.89] and median [MDN = 4.00] indicate that responses were primarily concentrated in the upper range of the scale. The negative skewness coefficient [g_1 = –.72] indicates a predominance of higher ratings, supporting the finding that most respondents perceive AI as a tool that aids more effective learning. The kurtosis coefficient [g_2 = –.05] suggests that the distribution of responses deviates only slightly from normality, with a balanced spread of preferences and no significant extremes (refer to Table 6).

Table 6. Effectiveness of learning with AI

AM	MDN	SD	SE	g_1	g_2	min	max	n
3.89	4.00	1.03	.025	–.72	–.05	1	5	1745

The visualisation of the response distribution (see Figure 1) indicates a predominance of higher Likert ratings. The median falls within the agreement area, indicating that most respondents expressed positive attitudes toward the statement. A slight extension toward lower values also indicates the presence of respondents with more reserved opinions.

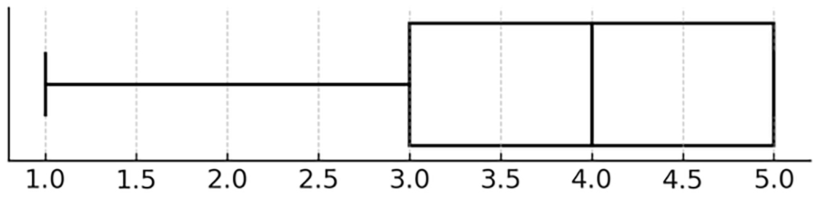

Fig. 1. Distribution of agreement levels with the statement "AI helps me learn more effectively"

One questionnaire item asked respondents whether they could recognise when an AI-generated response was incorrect. Responses were categorised into four options, with the majority selecting "Yes, mostly", indicated by [n = 1001] respondents. The mean response value [AM = 1.49] and the median [MDN = 1.00] suggest that most respondents report a high ability to identify inaccuracies in AI responses. A positive skewness coefficient [g_1 = 1.54] indicates that the distribution of responses is concentrated toward the lower end of the scale, i.e., agreement, with fewer responses falling into the "No" or "I do not know" categories. The kurtosis coefficient [g_2 = 3.20] suggests a sharp concentration of responses around the dominant category. These results indicate that most respondents reported confidence in their ability to critically assess the accuracy of AI-generated outputs (refer to Table 7).

Table 7. Ability to identify inaccurate AI responses

AM	MDN	SD	SE	g_1	g_2	n
1.49	1.00	.65	.016	1.54	3.20	1745

The questionnaire measured respondents' level of agreement with the statement that AI should be integrated into school teaching. Responses were recorded on a five-point Likert scale ranging from "Definitely yes" to "Definitely no." The most frequently chosen response was "Rather yes" [n = 581], followed by "Definitely yes" [n = 559], indicating a predominantly positive attitude among respondents toward the integration of AI in education. The mean response value [AM = 2.22] and median [MDN = 2.00] suggest that answers clustered around agreement. A positive skewness coefficient [g_1 = .68] indicates a slight predominance of lower (agreeing) values on the scale, while a negative kurtosis coefficient [g_2 = –.42] suggests a slightly flattened distribution, reflecting a more dispersed occurrence of opinions beyond the most common responses (refer to Table 8). It shows that respondents mainly hold a favourable view of incorporating AI into school education, with "Rather no" [n = 213] and "Definitely no" [n = 67] accounting for the remaining disagreement.

Table 8. AI as a part of school education

AM	MDN	SD	SE	g_1	g_2	min	max	n
2.22	2.00	1.13	.027	.68	–.42	1	5	1745

The distribution of responses is visualised in Figure 2, which confirms a concentration in the lower range of the Likert scale. The median is 2, corresponding to the response category 'Rather yes', while the distribution is concentrated in the categories 'Definitely yes' and 'Rather yes'. A slight elongation of the distribution toward higher values indicates a greater prevalence of reserved attitudes, though they were only marginally represented. Figure 2 visually supports the conclusion that there is a predominantly positive perception of integrating AI into education.

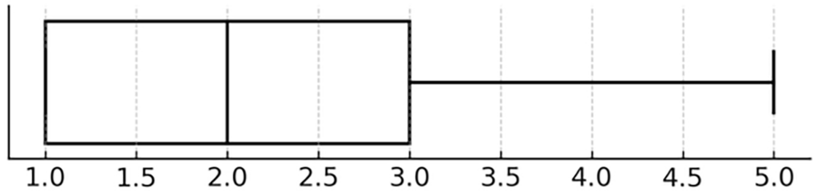

Fig. 2. Distribution of responses to the statement "The use of AI in learning should be part of school education"

Another questionnaire item focused on identifying the risks respondents perceive in using AI within the educational process. Respondents were presented with six categories of potential risks. The most frequently selected response was "reduced independent thinking" [n = 912], followed by "false or misleading information" [n = 324] and "dependence on AI" [n = 240]. Other options, such as "misuse for cheating" [n = 45], "none" [n = 129], and "all of the above" [n = 95], were chosen considerably less often. The average ordinal value of responses [AM = 2.54] and the median [MDN = 2.00] suggest that responses were concentrated at the lower end of the scale, indicating a predominance of cognitively oriented concerns about AI use. The skewness coefficient [g_1 = 1.33] indicates a prevalence of lower values in the distribution, suggesting that perceived risks are primarily associated with a decline in independent reasoning. The kurtosis coefficient [g_2 = 1.11] further indicates an increased concentration of responses around the most frequently selected category ("reduced independent thinking") and a lower incidence of extreme values, supporting the interpretation of low variability in risk assessment (refer to Table 9).

Table 9. Perceived risks of using AI in education

AM	MDN	SD	SE	g_1	g_2	n
2.54	2.00	1.29	.031	1.33	1.11	1745

The following item in the questionnaire examined respondents' experiences with teachers prohibiting the use of AI. The most frequently selected response was "Yes, multiple times" [n = 1001], followed by "No" [n = 296], "Yes, once" [n = 230], and "I do not know" [n = 218]. The average ordinal response value [AM = 1.85] and the median [MDN = 1.00] suggest that the experience of being prohibited from using AI is relatively widespread among respondents, with a significant portion reporting repeated occurrences. The skewness coefficient [g_1 = 1.08] indicates a concentration of responses toward the lower end of the scale (i.e., more frequent prohibitions). In contrast, the kurtosis coefficient [g_2 = .24] indicates a moderate increase in clustering of responses around the most common option ("Yes, multiple times"), with relatively low variability (refer to Table 10). These findings suggest that teacher-imposed restrictions on AI use are a common experience for a substantial number of respondents.

Table 10. Experience with AI prohibition by teacher

AM	MDN	SD	SE	g_1	g_2	n
1.85	1.00	1.10	.026	1.08	.24	1745

As part of the questionnaire, respondents were allowed to elaborate on their answers to a question concerning the potentially dishonest use of AI in learning or completing assignments. A total of [n = 1242; 71.15%] respondents provided responses, which were analysed using a qualitative thematic analysis. Drawing on recurring linguistic patterns and frequently used expressions, five dominant thematic areas were identified in the responses (t_{o1} to t_{o5}):

- **[t_{o1}]** The use of AI to generate solutions to tasks, including programming code, often without a deeper understanding of the resulting output;
- **[t_{o2}]** Assistance in producing written outputs, such as presentations, essays, or reports, with an emphasis on saving time or reducing the perceived difficulty of the assignment;
- **[t_{o3}]** Substitution of one's activity with AI-generated solutions, frequently in contexts of unpreparedness, lack of motivation, or a desire to circumvent teachers' expectations;
- **[t_{o4}]** Various forms of automated copying or delegation of the entire task to an AI tool, with only minimal subsequent editing;
- **[t_{o5}]** Reflections on the ethical dimension of AI use, where respondents acknowledged the boundary between acceptable assistance and rule violation, often accompanied by an awareness that the approach was non-standard.

The content analysis of these responses suggests that AI was primarily perceived as a tool for reducing cognitive load, bypassing creative effort and accelerating task completion, particularly in situations that respondents regarded as formal, repetitive, or excessively demanding, given the time available or their personal motivation. Such use was often framed pragmatically, as a coping strategy aimed at fulfilling school obligations while minimising the effort required. Furthermore, many responses revealed a relativized perception of the boundary between legitimate assistance and dishonest conduct, with respondents frequently rationalising their approach by citing efficiency, ease of access to the tool, or a low level of personal investment in the subject.

This trend may reflect a broader shift in how respondents perceive school assignments as formal performances that can be optimised through technology. However, some responses also pointed to reflective and constructive uses of AI, particularly when it was employed as a supportive tool for understanding the subject matter, structuring tasks, or serving as a "starting point" for individual creative work. In this regard, AI is not viewed solely as a means of circumventing effort, but in some instances, as a learning manager, highlighting its potential in educational contexts, provided its use is guided by pedagogical reflection and supervision. These findings underscore the need for a didactic framework that integrates AI use into teaching, alongside an emphasis on shaping a value-based orientation in which respondents are encouraged to distinguish between assistance and the substitution of their activity.

Based on content analysis of responses to the item "Which AI tools do you know or use?" a categorisation of reported AI tools was conducted. Responses were classified, and individual entries were assigned to relevant AI-based tools or applications. During processing, duplicates, linguistic variations, typographical errors and non-standard or unidentifiable mentions were eliminated.

The most frequently mentioned tool was ChatGPT, which appeared in most responses. Other tools cited with high frequency included Microsoft Copilot/Bing AI, Google Gemini and AI features integrated into applications such as Canva, Notion and Duolingo, representing commonly accessible solutions with embedded AI functionality. Tools such as Grammarly, DeepSeek, Claude, Grok and GitHub Copilot were reported with significantly lower frequency.

Less common, yet identifiable entries included locally operated large language models (LLMs) and tools such as Perplexity, Brave AI, Ollama, or those labelled as Qwen. A smaller number of responses contained irrelevant or unidentifiable entries, which were categorised as "unclassified". The overall classification (refer to Table 11) contributed to greater accuracy and clarity in the analysis of AI tools used or known to the respondents. These findings indicate a high level of awareness and active use of a diverse range of AI tools within the target group.

Table 11. Frequency of reported AI tools in respondents' answers

AI tool	Occurrence (n)
ChatGPT	n = 1745
Microsoft Copilot/Bing AI	n = 873
Google Gemini	n = 727
AI in applications (e.g., Canva, Duolingo ...)	n = 543
Grammarly	n = 196
DeepSeek	n = 95
Claude	n = 34
Grok	n = 22
Github Copilot	n = 22
Perplexity	n = 17

6 DISCUSSION AND COMPARISON WITH RELATED RESEARCH

Learners reported regularly using AI tools for their studies. These findings indicate substantial use of AI tools among the surveyed respondents and are consistent with the conclusions of authors [12, 13, 24], who indicate that a significant portion of respondents actively use AI in their daily school practice. In the item investigating the purposes for which AI is utilised, the most frequently mentioned uses were text generation and subject-matter explanation.

The findings are also relevant in the context of ongoing educational reforms. In Slovakia, the recently introduced roadmap for AI in Education emphasises the development of AI literacy, responsible use of AI, teacher preparedness and the creation of methodological guidance for schools [40]. Similar priorities can be found in the Czech Strategy for the Education Policy 2030+, the Policy for the development of AI in Poland from 2020 and Hungary's Artificial Intelligence Strategy 2020–2030, all of which stress digital competencies, AI literacy, and preparation for technological change [41–43]. Together, these strategic initiatives indicate a broader Central European trend towards integrating AI competencies into education systems while simultaneously addressing ethical, societal and workforce-related challenges associated with AI technologies.

The results correspond with the claims of [1, 2], who state that AI enables personalised learning, content generation and immediate feedback. They also support previous findings concerning AI's potential to facilitate cognitive processes and adapt educational content to individual learner needs [6]. Respondents generally reported confidence in recognising inaccurate AI outputs, which aligns with the digital literacy requirements outlined in [3]. Moreover, it suggests that respondents perceive themselves as possessing a certain level of digital competence necessary for the responsible use of AI in education. Positive attitudes toward integrating AI into teaching further correspond with trends in inclusive and adaptive education identified in [2, 5, 6, 7].

At the same time, the findings reveal important ethical concerns. Respondents identified reduced independent thinking as the primary risk associated with AI use, which is consistent with concerns raised in studies examining the boundary between educational assistance and the replacement of respondents' cognitive activity [10, 11]. Teachers' restrictions on AI use, as reported by respondents, reflect broader concerns about academic dishonesty, uncertainty about AI integration and limited teacher preparedness [8, 14, 16, 24, 25].

Open-ended responses revealed several forms of academically dishonest AI use, including automated task completion, code generation without understanding, AI-produced essays and presentations, and complete delegation of assignments to AI tools. Similar concerns have been documented in previous studies on AI-assisted cheating and academic integrity [9–11, 35]. Nevertheless, some respondents also described constructive uses of AI for task analysis, problem decomposition, and learning support, reflecting the educational potential of AI-enhanced learning [10, 26].

The findings are consistent with recent studies examining AI in educational settings. Research involving university students and teachers highlights both the pedagogical benefits of AI and concerns regarding academic integrity, ethical responsibility, transparency and institutional preparedness [26–28]. Likewise, studies conducted in K–12 contexts emphasise the importance of curriculum integration, ethical frameworks, data governance, and systematic policy implementation to ensure responsible AI adoption [29–33]. The present findings support these conclusions by demonstrating that vocational secondary school learners actively use AI while simultaneously encountering ethical challenges related to its responsible application.

According to [34], AI is increasingly used by secondary school learners to support homework and other academic activities, while [35] demonstrates that generative AI has altered the strategies learners use to engage in academic dishonesty. Together with the present findings, these studies suggest that the challenge for schools is no longer whether learners will use AI, but how educational institutions can guide its ethical and pedagogically meaningful use.

Based on the synthesis of these findings, research question RQ1 was answered affirmatively within the surveyed sample: AI was reported to be widely used by vocational secondary school learners in the learning, preparation and completion of school tasks. Regarding research question RQ2, it was confirmed that AI is, to some extent, also used in ways that can be characterised as academically dishonest, with the boundary between legitimate use and misuse being perceived subjectively and variably. These findings further underscore the need for systematic pedagogical guidance toward responsible and ethical AI use in the educational process.

A limitation of the present study is that several findings regarding AI literacy, critical evaluation of AI-generated outputs and recognition of inaccurate responses are based on respondents' self-reported perceptions rather than direct assessments of their actual competencies. Consequently, the reported results should be interpreted with appropriate caution. Future research could complement self-report measures with performance-based and task-based assessments that directly evaluate respondents' ability to use AI tools critically, effectively and ethically in authentic educational situations.

7 CONCLUSION

The study analysed the use of AI in the educational process at secondary vocational schools. The findings revealed a broad application of AI tools by learners across various dimensions of learning, including knowledge acquisition, text generation, task completion and project implementation. The integration of generative AI platforms such as ChatGPT, Microsoft Copilot and Google Gemini into learners' everyday academic practice indicated widespread use of these technologies among the surveyed respondents.

The data further indicated that a considerable proportion of respondents reported being able to critically assess the accuracy and validity of AI-generated outputs, suggesting a degree of digital and critical literacy. At the same time, it was identified that a significant number of respondents employed AI in ways that circumvented active cognitive engagement, including the automated generation of programming code, written assignments and task solutions without adequate understanding of the outcomes. This instrumental use of AI reflected pragmatic strategies aimed at minimising time and cognitive load, with some respondents acknowledging an ethical boundary between legitimate assistance and academic dishonesty.

The findings confirm the need for a comprehensive, ethically grounded pedagogical framework that systematically fosters respondents' digital, cognitive and metacognitive competencies while equipping educators with the tools and skills to responsibly integrate AI into educational practice. As AI becomes increasingly embedded in vocational and professional environments, the ability to critically evaluate AI-generated outputs, formulate effective prompts and engage in responsible human-AI collaboration is likely to become an essential component of vocational competence.

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