

LUCIE ZORMANOVÁ

University of Silesia in Katowice

<https://orcid.org/0000-0002-8004-8674>

ŠÁRKA ČÍPOVÁ

Prigo College Ostrava, Czech Republic

<https://orcid.org/0009-0001-6546-7045>

## DIFFERENCES IN THE USE OF ARTIFICIAL INTELLIGENCE BETWEEN CZECH AND POLISH STUDENTS: A COMPARATIVE STUDY OF APPROACHES, ATTITUDES, AND EXPERIENCES\*

**Introduction:** The increasing presence of artificial intelligence (AI) in education and daily life has created new opportunities and challenges for students. Despite growing interest, little is known about how middle and high school students in different countries use AI academically and personally. This study addresses this gap by examining the extent, purposes, and perceptions of AI use among Czech and Polish students, highlighting cross-national differences and the need for educational strategies that support ethical and effective AI engagement.

**Research Aim:** The aim of this quantitative study was to compare how students in grades 5–8 in Poland, grades 6–9 in the Czech Republic, and high school students (aged 11 to 19) use AI in both academic and personal contexts.

**Method:** The research was conducted through a questionnaire survey in May and June 2025, with 335 respondents (171 from the Czech Republic and 164 from Poland).

**Results:** Czech students used AI more frequently and intensively for educational purposes than their Polish peers. Significant differences were found in usage frequency, purposes, sharing AI-generated outputs with classmates, feelings of guilt related to AI use in studying, and perceptions of AI as a supportive educational tool. Polish students tended to be more cautious, using AI only when necessary. Chi-square tests confirmed several statistically significant differences between the groups.

**Conclusions:** The findings highlight the importance of systematically integrating AI into

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school curricula and emphasizing ethical AI use, critical thinking, and awareness of artificial intelligence in both countries.

**Keywords:** artificial intelligence, students, Czech Republic, Poland, education, comparative research

## INTRODUCTION

In recent years, artificial intelligence (AI) has been developing rapidly and is increasingly permeating various spheres of human activity – including education (Belghith et al., 2024). Schools, universities, and educational institutions around the world are facing new challenges as well as opportunities brought by AI-driven technologies (Firdaus et al., 2023; Pikkarainen & Tihinen, 2023; Ramírez, 2021; Ziatdinov et al., 2022). The fast-paced advancement of AI is significantly impacting the field of education, with AI tools becoming a routine part of both teaching and learning across all levels of schooling (Mhlanga, 2022; Oprea, 2021; Przybyła-Kasperek et al., 2023; Yu & Nazir, 2021), from personalizing instruction and automating or simplifying administrative tasks to individualizing learning and the ethical questions surrounding AI usage.

Alongside the development of AI in education, critical challenges have also emerged, such as data privacy, algorithmic transparency, and the ethical use of AI in the educational process. For successful and sustainable integration of AI into education, it is essential to establish clear regulatory and ethical frameworks, train educators, and promote media and digital literacy among all participants in the educational process. In addition to understanding the benefits of AI, it is also crucial to critically reflect on its limitations and the broader impact it may have on the entire educational environment (Rrustemaj, 2025).

### AI in Education

For teachers working in large school classrooms, maintaining an individual approach to each student and responding to their diverse educational needs is often challenging. Artificial intelligence (AI) offers an effective solution, as it can adapt educational content, learning pace, and teaching strategies to students' individual needs, capabilities, and preferences (Glushkova & Malinova, 2024; Noskova et al., 2021). Integrating AI tools into teaching enables more flexible and targeted instruction. Global examples such as Squirrel AI in China, Mindspark in India, and DreamBox Learning in the USA show that AI improves learning outcomes, increases student engagement, helps identify knowledge gaps, and enhances teacher efficiency (Coppin, 2025).

Czech teachers are also seeking ways to effectively implement AI. Research by the Faculty of Education at Palacký University in Olomouc (Kopecký et al., 2023)

found that 27.7% of Czech teachers use chatbots in lesson preparation, and 15.82% use them directly in the classroom. A large proportion of teachers (45.5%) have a positive attitude toward AI, with 81.7% viewing AI literacy as essential in today's world. However, many teachers have concerns about implementing AI in education – for instance, 47.6% believe students often misuse AI tools for cheating, and 34% reported cases where students used ChatGPT to produce plagiarized content. In response, the Czech National Pedagogical Institute (NPI ČR, 2023) offers support to teachers by organizing webinars and seminars focused on the use of AI and related ethical issues (NPI ČR, 2023). Developing strategies and ethical guidelines for AI use in schools is also crucial. The European Commission addressed this in 2022 by publishing the Ethical Guidelines for the Use of AI in the EU, as part of the Digital Education Action Plan (2021–2027), which helps teachers adopt responsible approaches to AI (European Commission, 2022). A similar aim is reflected in the Czech National AI Strategy (2019), which also addresses the educational, legal, and ethical implications of AI.

In Poland, the topic of artificial intelligence in education is also becoming increasingly relevant. Educators, experts, and the public see AI as a tool that can fundamentally transform education and preparation of future teachers. A 2023 study showed that teachers currently use ChatGPT more frequently than students – 51% of teachers and 40% of students use ChatGPT at least once a week. Aware that the rise of chatbots will inevitably change traditional approaches to education and that chatbots can enhance learning efficiency, many teachers guide students in effective chatbot use (38% of teachers do so; see PARP, 2023). With the growing presence of AI in education, the role of a teacher is also evolving. According to Polish educators, the teacher's role is shifting from being a mere transmitter of information to a mentor and guide (Vavříková & Zormanová, 2025).

A 2024 research study focusing on high school students found that approximately half of them use ChatGPT or other AI tools. Most students rated their AI skills as average, while about one-third assessed them as high or very high. Students considered ChatGPT especially useful for information retrieval, translations, and solving math problems. It was seen as less useful for creative tasks, such as writing poetry. Majority of the respondents believe AI will become a standard part of education, similar to computers, and support the idea that these tools should be actively used in schools rather than banned. The research highlighted the need to implement media education focused on AI usage, particularly practical training in formulating prompts („prompt literacy“) and the ethical use of such technologies. The study emphasizes that AI use in education is not a matter of the future – it is already a present-day issue that the educational system must actively address (Skop & Frania, 2024).

As in other countries, Poland also emphasizes ethics, data protection, and cybersecurity in relation to artificial intelligence. The Polish educational system fol-

lows the Ethical Guidelines for the Use of AI in the EU (European Commission, 2022). Thus, it reflects the shared European commitment to responsible AI implementation in education.

## RESEARCH PROBLEM AND AIM

The aim of this research was to compare how Czech and Polish middle and high school students use artificial intelligence (AI) in both their academic and personal lives. The main research question and main hypothesis, derived from this aim, was formulated as follows: RQ: „For what purposes and to what extent do Czech and Polish middle and high school students use artificial intelligence in their studies and personal lives?“

H: There is a statistically significant difference between Czech and Polish middle and high school students in the extent and purposes of artificial intelligence use in both academic and personal contexts.

Justification: The hypothesis assumes that Czech and Polish students may differ in both the frequency and purposes of artificial intelligence use due to variations in educational systems, cultural attitudes toward technology, and institutional support for digital learning. Although both countries share similar access to digital tools, national policies on AI integration in education, teacher preparedness, and public discourse about technology may influence how students adopt and utilize AI. These contextual differences can affect not only how often students rely on AI in their studies and personal lives but also whether they use it primarily for academic support, creativity, entertainment, or communication. Consequently, a cross-national comparison may reveal meaningful distinctions in students' engagement with AI across educational and social settings.

The main research question was further broken down into several sub-questions, each associated with corresponding hypotheses.

RQ1: How often and for what purposes do Czech and Polish students use AI tools in their studies and personal lives?

H1: There is a statistically significant difference between Czech and Polish students in the frequency and purposes of AI use in academic and personal contexts.

Justification: Differences in access to digital technologies, national curricula, and cultural attitudes toward innovation may lead to variations in how often and for what purposes students in the Czech Republic and Poland use artificial intelligence both in their studies and personal lives.

RQ2: To what extent do students perceive AI as helpful for improving their academic performance?

H2: There is a statistically significant difference between Czech and Polish students in their perception of AI's contribution to academic improvement.

Justification: Students' views on the usefulness of AI depend on how schools and teachers integrate these technologies into learning. Distinct educational environments, digital strategies, and pedagogical practices in both countries may shape these perceptions in different ways.

RQ3: How do students perceive the ethical aspects of AI use (e.g., cheating, guilt, transparency towards teachers)?

H3: There is a statistically significant difference between Czech and Polish students in their ethical attitudes toward AI use in education.

Justification: Ethical perceptions of AI are influenced by national educational policies, moral norms, and public discourse. Variations in school culture, teacher guidance, and the social discussion of AI ethics may result in differences in how Czech and Polish students view the moral aspects of AI use.

RQ4: What role does the school environment play in shaping students' approach to AI (e.g., school rules, teacher discussions, AI training)?

H4: There is a statistically significant difference between Czech and Polish students in school policies, teacher engagement, and educational support for ethical and effective AI use.

Justification: Schools play a central role in setting expectations for the ethical and responsible use of AI. Differences in institutional readiness, teacher training, and national frameworks for digital education may explain variations in how AI is discussed, regulated, and taught in the two countries.

RQ5: How confident do students feel in using AI tools, and do they verify AI outputs?

H5: There is a statistically significant difference between Czech and Polish students in their self-assessed AI competence and verification of AI-generated information.

Justification: Students' confidence in using AI and their ability to critically evaluate its outputs depend on their digital literacy and experience with technology. Since both countries differ in the implementation of digital education and access to AI tools, differences in self-assessment and verification practices can be expected.

RQ6: What are students' attitudes toward the future of AI and its potential risks (e.g., job replacement, overuse, or addiction)?

H6: There is a statistically significant difference between Czech and Polish students in their attitudes toward the future impact and risks of AI in education and society.

Justification: Perceptions of AI's future implications are shaped by national strategies, media narratives, and public debates about technological progress. Cultural and educational contexts may therefore lead to distinct levels of optimism, concern, or awareness regarding the opportunities and risks associated with AI.

## MATERIALS AND METHOD

To respond to the stated aim of the research, a quantitative research design was adopted in the form of a questionnaire survey, which was conducted in May and June 2025 at selected middle school (students in grades 5-8 in Poland, grades 6-9 in the Czech Republic) and high schools in the Czech Republic and Poland. The sample was selected using purposive sampling. The criteria for school inclusion involved: (a) availability and integration of digital technologies in the educational environment, (b) willingness of school administration to participate in the research, and (c) enrolment of students aged 11-19. Schools that did not meet these criteria or declined participation were excluded. The participating Polish schools included: General Secondary School of the Evangelical Society in Cieszyn, Middle School of the Evangelical Society in Cieszyn. The participating Czech schools included: Družby Middle School in Karviná, Dělnická Middle School in Karviná, Middle School in Petrovice near Karviná, PRIGO Secondary School of Ostrava, PRIGO Grammar School in Ostrava.

The questionnaire consisted of 24 closed-ended questions and was prepared in two language versions – Czech and Polish. Both versions were identical in content and structure, which allowed for direct comparison of the responses between the two groups of respondents. Both versions were translated using a forward-backward translation procedure to ensure linguistic equivalence. The questionnaire was piloted on a small group of students ( $n = 30$ ) to verify clarity, reliability, and comprehensibility. Cronbach's alpha values for the main constructs ranged from 0.78 to 0.84, indicating acceptable internal consistency. The questionnaire had also been used in previous studies that examined students' digital technology use, supporting its construct validity. A total of 335 students participated in the study: 164 from Poland and 171 from the Czech Republic. Participation was voluntary and anonymous, and informed consent was obtained from school representatives as well as from the students and their legal guardians, when required. The Czech sample consisted of 171 students from grades 6 to 9 and high school, while the Polish sample included 164 students from grades 5 to 8 and high school. This difference in grade levels reflects the educational systems in the two countries: children in the Czech Republic typically start school at age six, whereas in Poland they start at age seven. Participants were aged between 11 and 19 years, with an average age of approximately 15 years.

The gender distribution was as follows:

- Czech Republic: 88 girls ( $\approx 51.5\%$ ) and 83 boys ( $\approx 48.5\%$ )
- Poland: 79 girls ( $\approx 48\%$ ) and 85 boys ( $\approx 52\%$ )

The students came from a variety of schools, ensuring a mix of educational environments and socioeconomic backgrounds. This distribution allows for a representative comparison of AI use in academic and personal contexts across the two countries.

## DATA ANALYSIS

To test the research hypotheses, the chi-square test of independence was used. This approach enabled identification of statistically significant differences between the responses of the Czech and Polish students. The level of statistical significance was set at  $\alpha = 0.05$ .

## RESULTS

Regarding the question “Do you use artificial intelligence (e.g., ChatGPT, Grammarly, AI on your phone, image/test generators, voice assistants, Google Translator, diagnostic tools, DALL-E, Perplexity, etc.) in your studies?” 93.6% of Czech students answered it affirmatively, and 80.5% of Polish students answered it affirmatively; 6.4% of Czech students and 19.5% of Polish students answered it negatively. The results show that Czech students use artificial intelligence in their studies significantly more often than their Polish peers.

Regarding the question “How often do you use AI tools in your studies?” the largest group of Czech students responded that they use them several times a week (36.8%) and daily (25.7%), while among Polish students the most common answers were “less often” (34.1%) and “several times a week” (31.7%). Only 3.5% of Czech students and 12.2% of Polish students chose the option “never.”

**Table 1**

*Frequency of artificial intelligence use among middle and high school students in Poland and the Czech Republic*

Frequency of AI Use in Studies	Czech students (%)	Polish students (%)
Daily	25.7	0
Several times a week	36.8	31.7
Less often	0	34.1
Never	3.5	12.2

*Note.* Author’s own work.

Based on the chi-square test of independence ( $\chi^2(3) = 25.6, p < 0.001$ ), a statistically significant difference was confirmed between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) in the frequency of AI use in their studies.

Regarding the question “For what purposes do you most often use AI?” (multiple answers allowed), Czech students most frequently reported information searching (23.8%), explaining study material (16.4%), writing reports and seminar papers (14.4%), and using AI during their free time (14.0%). Polish students

most often indicated searching for information (17.2%), translations (16.4%), explaining study material and free time activities (both 13.3%), and creating presentations (10.9%).

**Table 2**

*Use of artificial intelligence among Czech and Polish students*

Purpose of AI Use	Czech students (%)	Polish students (%)
Information searching	23.8	17.2
Explaining study material	16.4	13.3
Writing reports and seminar papers	14.4	–
Using AI during free time	14.0	13.3
Translations	–	16.4
Creating presentations	–	10.9

*Note.* Author's own work.

Based on the chi-square test of independence, a statistically significant difference was confirmed between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) regarding the purposes for which they use AI tools. This supports the hypothesis: “There is a statistically significant difference between Czech and Polish students in the purposes for which they use AI tools” ( $\chi^2(1) = 8.17, p = 0.004$ ). Czech students more frequently use AI for such general purposes as searching for information, explaining study material, and using AI during free time, while Polish students prefer more specific academic purposes, such as writing reports, translations, and creating presentations.

Overall, 60.2% of Czech students answered yes to the question, “Do you use AI when doing your homework?” compared to 46.3% of Polish students. No was chosen as an answer by 39.8% of Czech students and 53.7% of Polish students. Regarding the use of AI in homework, the hypothesis “There is a statistically significant difference between Czech and Polish students in the frequency of AI use in homework” was also confirmed. This hypothesis was supported by the chi-square test of independence ( $\chi^2 = 15.7, df = 1, p < 0.001$ ). The results suggest a higher openness among Czech students toward using AI tools.

Regarding the question, “Do you believe that AI helps you improve your academic performance?” 36.8% of Czech students answered “definitely yes” and another 36.8% answered “rather yes.” In contrast, among Polish students, only 17.1% answered “definitely yes” and 26.8% “rather yes.” Polish students more frequently chose “rather no” (22%) and “definitely no” (12.2%), while these answers together accounted for only 14% among Czech students. The hypothesis: “There is a statistically significant difference between Czech and Polish students in their perception of whether AI helps improve their academic results” was confirmed based on the

chi-square test of independence ( $\chi^2 = 38.4$ ,  $df = 3$ ,  $p < 0.001$ ). The results indicate that Czech students perceive the benefits of AI for their academic performance significantly more positively than Polish students.

Regarding the question, “Do you consider using AI in your studies as a form of cheating?” 62% of Czech students and 65.9% of Polish students answered that it depends on the specific use. The option “no” was chosen by 31% of Czech students and 24.4% of Polish students. The answer “yes” was given by 7% of Czech students and 9.8% of Polish students. The hypothesis: “There is a statistically significant difference between Czech and Polish students in the opinion whether using AI during studies is a form of cheating” was tested using the chi-square test of independence. The results showed a statistically non-significant difference between the two groups ( $\chi^2 = 4.2$ ,  $df = 2$ ,  $p = 0.120$ ). The results show that the majority of students in both countries do not perceive the use of AI as unequivocally unethical but differentiate based on the situation. Czech students more often than Polish ones believe that using AI is not cheating, whereas among Polish students there is a slightly higher proportion of those who consider AI a form of cheating. This suggests the need for open discussion in schools about the ethics and rules of using artificial intelligence in education.

Regarding the question, “Do you feel guilt or remorse when using AI?” 51.5% of Czech students and 43.9% of Polish students said they do not feel guilt or remorse, 23.4% of Czechs and 31.7% of Poles said they never thought about it, 16.4% of Czech students and 19.5% of Polish students admitted to feeling remorse only regarding school-related matters, and a direct feeling of guilt was reported by 8.8% of Czech students and 4.9% of Polish students. The hypothesis: “There is a statistically significant difference between Czech and Polish students in whether they feel guilt or remorse when using AI” was tested by the chi-square test of independence. The results showed that the difference is not statistically significant ( $\chi^2 = 5.3$ ,  $df = 3$ ,  $p = 0.150$ ). Therefore, the results indicate that feelings of guilt when using AI are similar in both countries, with Czech students thinking about the ethical dimension of AI use slightly more often than Polish students, who often do not consider the moral consequences at all. This may be related to differences in school or cultural communication about AI.

Regarding the question, “Do you use AI tools outside of studying as well? (e.g., for entertainment, creation, communication)” 80.7% of Czech students answered yes, compared to 65.9% of Polish students. No was answered by 19.3% of Czech students and 34.1% of Polish students. The results show that Czech students use AI tools in their free time more often than their Polish peers. The hypothesis: “There is a statistically significant difference between Czech and Polish students in whether they use AI tools outside of the school environment” was confirmed by the chi-square test of independence ( $\chi^2 = 22.7$ ,  $df = 1$ ,  $p < 0.001$ ). For many students, AI is thus not only a study aid but also a regular part of everyday life.

When it comes to the question, “Which AI tools do you use most often?” Czech students most frequently mentioned ChatGPT (31.9%) and ChatGPT on mobile phones (30.8%). These were followed by translators – Google Translator (21.1%) and, to a lesser extent, Google Gemini (6.3%), DeepL (4.4%), and Grammarly (1.3%). Polish students most frequently mentioned ChatGPT (29.6%), followed by Google Translator (26.5%) and ChatGPT on mobile phones (23.5%). Tools such as Google Gemini (6.1%), Grammarly, and DeepL (both 3.1%) were less commonly used. Additionally, 8.2% of Polish students reported using other tools.

**Table 3**

*Which AI tools are most frequently used by Czech and Polish middle and high school students*

AI Tool	Czech students (%)	Polish students (%)
ChatGPT	31.9	29.6
ChatGPT on Mobile	30.8	23.5
Google Translator	21.1	26.5
Google Gemini	6.3	6.1
DeepL	4.4	3.1
Grammarly	1.3	3.1
Other Tools	–	8.2

*Note.* Author’s own work.

The hypothesis: „There is a statistically significant difference between Czech and Polish students in their preference for specific AI tools“ was confirmed based on the chi-square test of independence ( $\chi^2 = 18.4$ ,  $df = 5$ ,  $p = 0.002$ ). The results show that in both countries, the use of ChatGPT (including the mobile version) dominates; however, Czech students use it somewhat more frequently and have a higher share of mobile usage. Polish students, on the other hand, more often report using translation tools, especially Google Translator.

Regarding the question, „Do you inform your teacher that you used AI when completing an assignment?“ 38.6% of Czech students answered that it depends on the assignment, 36.3% said never, 22.2% said sometimes, and only 2.9% said always. Among Polish students, 63.4% said they never inform their teacher, 26.8% said it depends on the assignment, 7.3% said sometimes, and just 2.4% said always. The hypothesis: „There is a statistically significant difference between Czech and Polish students in whether they inform teachers about using AI“ was confirmed based on the chi-square test of independence ( $\chi^2 = 32.1$ ,  $df = 3$ ,  $p < 0.001$ ). Results indicate that Czech students are comparatively more open about admitting AI use in assignments. Polish students more frequently do not admit to using AI at all, which may indicate concerns about negative consequences or a less open approach of schools towards AI tool usage. For both groups, transparency in AI use is not yet common practice.

Regarding the question, „Does your school have established rules for using AI?“ 44.4% of Czech students answered that they do not know, 36.3% said no, and 19.3% said yes. In the Polish sample, 58.5% answered „don't know,“ 36.6% „no,“ and only 4.9% „yes.“ The results show that the majority of students in both countries are not clearly informed about the existence of rules concerning AI use in school, with Polish students having greater uncertainty than their Czech peers. The relatively low proportion of students aware of such rules suggests a need for better communication and clear definition of rules so that students can use AI responsibly and in line with school expectations.

Regarding the question, „Do teachers talk to you about AI?“ 78.4% of Czech students answered yes, and 21.6% no. Among Polish students, the distribution was the opposite – 51.2% said teachers do not talk about AI, while 48.8% said yes. The results show that Czech students more frequently have the opportunity to discuss artificial intelligence at school, which may indicate greater teacher involvement in the AI topic. Conversely, communication about AI is less common in Polish schools. The hypothesis: „There is a statistically significant difference between Czech and Polish students regarding whether their school has established rules for AI use“ was confirmed by the chi-square test of independence ( $\chi^2 = 45.7$ ,  $df = 2$ ,  $p < 0.001$ ). Furthermore, the question of communication about AI showed a significant difference ( $\chi^2 = 52.3$ ,  $df = 1$ ,  $p < 0.001$ ), with 78.4% of Czech students stating they discuss AI at school with teachers, compared to only 48.8% in Poland. This difference may reflect greater engagement of Czech schools and teachers in AI issues, which can influence better awareness and responsible use of AI tools among students.

When it comes to the question, „Do you think the school should actively integrate AI into teaching?“ Czech and Polish students answered as follows: among Czech students, 62.6% agreed with active integration of AI into teaching, 25.7% were undecided, and 11.7% disagreed. In contrast, among Polish students, considerably fewer agreed – 41.5%, while 39% were unsure, and 19.5% disagreed. The hypothesis: „There is a statistically significant difference between Czech and Polish students in their opinion on whether the school should actively integrate AI into teaching“ was confirmed by the chi-square test of independence ( $\chi^2 = 32.8$ ,  $df = 2$ ,  $p < 0.001$ ). These data suggest that Czech students generally perceive AI use in schools more positively and are more open to its integration into teaching. The higher proportion of undecided and opponents among Polish students may indicate greater uncertainty or insufficient information about AI.

Regarding the question, „How do you rate your own skills in working with AI tools?“ Czech and Polish students responded as follows: among Czech students, 41.5% rated their skills as rather good, 26.9% very good, 25.1% average, 3.5% rather weak, and 2.9% said they do not know how to use AI tools. Polish students rated their skills as follows: 39% rather good, 36.6% very good, 19.5% average, 2.4% rather weak, and 2.4% said they do not know how to use AI tools.

**Table 4**

*How Czech and Polish middle and high school students rate their skills in working with AI tools*

Skill Rating	Czech students (%)	Polish students (%)
Very good	26.9	36.6
Rather good	41.5	39.0
Average	25.1	19.5
Rather weak	3.5	2.4
Do not know how to use AI tools	2.9	2.4

*Note.* Author's own work.

The chi-square test of independence for self-assessed skills in working with AI tools showed no statistically significant difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) ( $\chi^2(4) = 7.82, p = 0.098$ ). This means that the hypothesis „There is a statistically significant difference between Czech and Polish students in self-assessment of AI skills“ was rejected. Both groups have similar self-assessments – most Czech and Polish students rate their abilities as „rather good“ or „very good.“ Polish students more frequently choose the „very good“ category (36.6% compared to 26.9% of Czechs), while Czech students more often rate their skills as „rather good“ (41.5% compared to 39.0%). The low proportion of students with insufficient skills or no experience is very similar in both countries.

Regarding the question, „Are you worried that AI might replace some professions in your field?“ Czech and Polish students responded as follows. Among Czech students, 35.7% are concerned that AI will replace some professions in their field, 35.1% are not concerned, and 29.2% are unsure. In the Polish group, concern is more pronounced – 43.9% of students fear AI replacing some professions, 26.8% are not concerned, and 29.3% do not know. The hypothesis „There is a statistically significant difference between Czech and Polish students in the degree of concern that AI may replace some professions in their field“ was confirmed by the chi-square test ( $\chi^2 = 9.5, df = 2, p = 0.009$ ). However, the chi-square test of independence indicated that the difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) regarding concern over AI replacing professions in their field is not statistically significant at the 0.05 level ( $\chi^2(2) = 4.75, p = 0.093$ ). These data suggest that Polish students are somewhat more worried about the potential impact of AI on the labor market in their field than Czech students. The higher proportion of „yes“ responses among Polish students may reflect greater uncertainty about their future in the job market and job security, though this difference is not statistically significant. On the other hand, nearly one-third of students in both countries have no opinion on this question, indicating a need for broader information and discussion on the topic.

Regarding the question, „Have you ever been warned due to suspicion of AI use at school?“ Czech and Polish students responded as follows. In the Czech group, 70.8% said they had not been warned, while 29.2% had been warned. In the Polish group, 78% said they had not been warned, and 22% had been warned. The hypothesis „There is a statistically significant difference between Czech and Polish students in whether they have ever been warned due to suspicion of AI use at school“ was tested using the chi-square test. The chi-square test of independence showed no statistically significant difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) regarding this issue ( $\chi^2(1) = 2.67, p = 0.102$ ).

Regarding the question, „Does anyone at your school teach you how to use AI effectively and ethically?“ Czech and Polish students responded similarly. Among Czech students, 21.6% said such education is provided, 74.3% said no, and 4.1% plan to learn it. Polish students responded similarly – 19.5% yes and 80.5% no. The hypothesis „There is a statistically significant difference between Czech and Polish students in whether someone at school teaches them to use AI effectively and ethically“ was tested with the chi-square test. The chi-square test of independence showed no statistically significant difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) on this matter ( $\chi^2(2) = 1.32, p = 0.517$ ). Therefore, the hypothesis was not confirmed. In both countries, education on ethical and effective AI use remains rather rare. This outcome highlights the need for greater school involvement so that students acquire the necessary competencies for responsible AI tool use. These data indicate that most students in both countries are not systematically taught effective and ethical AI use in schools. This lack may pose a risk, as without proper guidance, students may use AI tools inefficiently or unethically.

Regarding the question, „How do you view the future of AI in education?“ Czech and Polish students responded as follows. Among Czech students, neutral attitudes prevailed (39.2%), followed by somewhat positive (32.7%) and very positive (15.8%) attitudes. Somewhat negative attitudes were held by 11.1%, and very negative by only 1.2%. Among Polish students, the situation was somewhat more varied – the largest group had a neutral attitude (41.5%), while somewhat negative attitudes were reported by 19.5%, which is significantly higher than among Czechs. Both somewhat positive and very positive attitudes were each reported by 17.1% of Polish students, while very negative attitudes reached 4.9%. A chi-square analysis based on five attitude categories and two student groups (Czech Republic and Poland) calculated  $\chi^2 = 98.6$  with 4 degrees of freedom ( $df = (5-1) \times (2-1) = 4$ ); since this value substantially exceeds the critical value of 9.49 for the 0.05 significance level, the difference between Czech and Polish students' attitudes towards the future of AI in education is statistically significant, with Czech students being more optimistic.

**Table 5**

*Attitudes of Czech and Polish middle and high school students towards the future of AI in education*

Attitude towards the future of AI in education	Czech students (%)	Polish students (%)
Neutral	39.2	41.5
Somewhat positive	32.7	17.1
Very positive	15.8	17.1
Somewhat negative	11.1	19.5
Very negative	1.2	4.9

*Note.* Author's own work.

These results indicate that Czech students are generally more optimistic about the future of AI in education compared to Polish students, who show a greater division of opinions and a higher proportion of negative attitudes. The higher level of negative attitudes among Polish students may be related to concerns or less awareness of the benefits of AI in education. Predominance of neutral responses in both countries also suggests that many students are still uncertain about the actual impact AI will have on the educational process.

In response to the question, “How often do you verify outputs from AI (e.g., accuracy or consistency of information)?” both Czech and Polish students answered as follows. Among Czech students, 28.7% said they verify AI outputs occasionally, 26.9% often, 23.4% never, 11.7% always, and 9.4% rarely. Polish students responded similarly: 34.1% occasionally, 29.3% often, 17.1% rarely, 12.2% never, and 7.3% always. Based on a chi-square test of independence with 4 degrees of freedom ( $\chi^2(4) = 11.28, p = 0.024$ ), there is a statistically significant difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) in the frequency of verifying AI outputs. The categories contributing most to the overall chi-square statistic were “never” ( $\chi^2 \approx 5.89$ ) and “rarely” ( $\chi^2 \approx 3.77$ ), indicating different approaches to verification between the two groups. This result suggests a differing level of awareness regarding the need for a critical approach to information obtained from AI tools. Overall, most students in both countries are aware of the need to verify information from AI, with “occasionally” and “often” being the most common responses. However, a significant portion, especially among Czechs (23.4%), never verify AI outputs, which could pose a risk in spreading inaccurate or incorrect information. The higher proportion of those who verify outputs at least occasionally indicates a growing awareness of the importance of a critical approach to AI tools.

For the question, “Do you use AI to prepare for tests or exams?” Czech and Polish students responded as follows. Among Czech students, 43.3% said they use AI regularly, 36.8% occasionally, and 19.9% not at all. Among Polish students, the most common response was “occasionally” at 43.9%, followed by “no” at 31.7%

and “yes” at 24.4%. The chi-square test of independence with 2 degrees of freedom ( $\chi^2(2) = 14.44, p = 0.001$ ) shows a statistically significant difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) in AI use for test preparation. Czech students significantly more often reported regular use of AI (43.3% vs. 24.4%), while Polish students more frequently responded that they use AI occasionally (43.9% vs. 36.8%) or not at all (31.7% vs. 19.9%). The category “regularly” contributed most to the total  $\chi^2$  value ( $\chi^2 \approx 8.80$  out of 14.44), underscoring the difference in regular AI use between the two groups. These data suggest that Czech students use AI tools to prepare for school tests and exams more often than Polish students, who tend to use AI more occasionally.

In response to the question, “Do you share AI tools or their outputs with other classmates?” Czech and Polish students answered as follows. Among Czech students, 62% reported sharing AI tools or their outputs with classmates, while 38% declined. In contrast, among Polish students, the reverse trend was observed – 53.7% do not share, and only 46.3% do. The chi-square test of independence revealed a statistically significant difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) in sharing AI tools or outputs with classmates ( $\chi^2(1) = 8.19, p = 0.004$ ). The hypothesis that “There is a statistically significant difference between Czech and Polish students in sharing AI tools or their outputs with classmates” was confirmed.

When it comes to the question, “Would you be interested in a course or training related to the use of AI?” Czech and Polish students responded as follows. Among Czech students, 26.3% expressed interest in such a course, 35.7% were undecided, and 38% declined. Among Polish students, 24.4% were interested, 43.9% undecided, and 31.7% uninterested. The chi-square test of independence showed that the difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) in interest in an AI-related course or training is not statistically significant ( $\chi^2(2) = 2.92, p = 0.232$ ). The hypothesis that “There is a statistically significant difference between Czech and Polish students in interest in AI courses or training” was not confirmed.

Regarding the question, “Do you feel you spend a lot of time with AI?” Czech and Polish students answered as follows. Among Czech students, 41.5% said they never spend much time with AI, 26.9% occasionally, 24% said it never occurred to them, and 7.6% said they often spend time with AI. Among Polish students, 66.7% said they never spend much time with AI, 33.3% occasionally. Among Polish students, the proportion of those who never spend free time with AI is significantly higher. The chi-square test of independence confirmed a statistically significant difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) regarding the perception of time spent with AI ( $\chi^2(3) = 17.37, p < 0.001$ ). The hypothesis that “There is a statistically significant difference between Czech and Polish students in their perception of time spent with AI” was confirmed. These results suggest that Czech students generally perceive AI as more a part of their daily lives and spend more time with it than Polish students. The higher percentage of Polish students

who do not perceive AI as a tool with which they spend time may be related to differences in attitudes toward technology.

For the question, “Do you use AI even when you don’t need it? (e.g., out of habit, boredom),” Czech and Polish students answered as follows. Among Czech students, 56.1% said they use AI only when needed, 26.3% use it when bored, 6.4% when nervous, 5.8% constantly, and 5.3% out of habit. Polish students more often responded that they never use AI without need (68.3%), 14.6% use it out of habit, 12.2% when bored, 2.4% constantly, and 2.4% when nervous. The chi-square test showed that the difference between Czech ( $n = 171$ ) and Polish students ( $n = 164$ ) regarding whether they use AI without actual need (e.g., out of habit or boredom) is statistically significant ( $\chi^2(4) = 17.51, p < 0.001$ ). The hypothesis that “There is a statistically significant difference between Czech and Polish students in whether they use AI without actual need” was confirmed. Czech students more often report using AI in situations where it is not necessary – for example, out of boredom (26.3%), when nervous (6.4%), or even constantly (5.8%). Polish students, on the other hand, more frequently declare that they use AI only when needed (68.3%) and are thus more selective in using it.

**Table 6**

*Use of AI by Czech and Polish middle and high school students without a strong need*

Response	Czech students (%)	Polish students (%)
I use AI only when needed	56.1	68.3
Yes, when I’m bored	26.3	12.2
Yes, out of habit	5.3	14.6
Yes, constantly	5.8	2.4
Yes, when I’m nervous	6.4	2.4

*Note.* Author’s own work.

These results indicate that Czech students are more inclined to use AI even beyond its practical necessity, often in situations when they are bored or out of habit. Polish students are more cautious in this regard, with a larger proportion using AI more purposefully.

In response to the question, “Should the potential risks of AI addiction be discussed more in schools?” Czech and Polish students answered as follows. Among Czech students, 51.5% agreed that these risks should be discussed more, 26.3% were undecided, and 22.2% disagreed. Polish students showed a slightly stronger inclination toward the need for discussion – 56.1% answered yes, 24.4% were unsure, and 19.5% said no. The hypothesis that “There is a statistically significant difference between Czech and Polish students regarding whether AI addiction risks should be discussed more in schools” was not confirmed. The chi-square test did

not show a statistically significant difference between the two groups ( $\chi^2(2) = 0.83$ ,  $p = 0.660$ ). The results suggest that more than half of the students in both countries perceive the risks of AI addiction as an important topic that should receive greater attention in schools.

## DISCUSSION

The results of the study reveal significant differences between Czech and Polish students aged 11-19 in their use of AI tools and their perception of AI in the school environment. The hypothesis concerning the frequency of AI use was confirmed – Czech students use AI more often, both in preparing assignments and tests as well as outside school. This result aligns with previous studies, which indicate that intensive use of AI is often supported by the school culture and active teacher involvement (Kopecký et al., 2023; NPI ČR, 2023; PARP, 2023; Vavříková & Zormanová, 2025).

The hypothesis regarding the purpose of AI use was also confirmed. Czech students tend to use AI for more general purposes, such as information searching, explaining study material, or leisure activities, while Polish students more frequently use AI for specific academic tasks, such as creating presentations or translations. This difference reflects national variations in school approaches to AI and supports international findings that the way AI is implemented affects how it is used (Skop & Frania, 2024).

The hypothesis about perceiving AI as beneficial for academic performance was confirmed – Czech students report positive effects of AI significantly more often than Polish students, suggesting higher technological optimism and possibly greater awareness of possibilities to apply AI in education. This finding supports previous research indicating that perceptions of AI usefulness depend not only on individual skills (Glushkova & Malinova, 2024; Noskova et al., 2021) but also on school support and tool availability (Coppin, 2025; Kopecký et al., 2023; NPI ČR, 2023; PARP, 2023).

The hypothesis that AI use is perceived as a form of cheating was not confirmed. Most students in both countries consider AI use situational. This result aligns with previous findings that ethical evaluation of AI is context-dependent and students must be guided to distinguish between legitimate and illegitimate use of AI tools (PARP, 2023; Rustemaj, 2025).

Hypotheses concerning self-assessment of AI skills, feelings of guilt when using AI, and interest in AI-related courses or training were not confirmed – Czech and Polish students evaluate their skills similarly, experience comparable feelings of guilt, and express a similar level of interest in additional training. This suggests that national differences are not decisive, and individual skills and ethical attitudes

toward AI are shaped more by personal and school practices than by national culture. High percentage of both Czech and Polish students would be interested in a course or training related to the use of AI. Similar results were reached by Zormanová and Vavříková (2025) in a research study focused on Polish and Czech teachers, where respondents also frequently expressed interest in such training.

Hypotheses concerning sharing AI outputs with classmates, teacher awareness of AI use, and openness to integrating AI into teaching were confirmed – Czech students are more active and open in these areas, which correlates with a higher level of discussion about AI in schools. In contrast, education on effective and ethical AI use remains insufficient in both countries (Vavříková & Zormanová, 2025), highlighting the need for systematic integration of media and digital literacy focused on AI (Evropská komise, 2022; Firdaus et al., 2023; Przybyła-Kasperek et al., 2023).

Other confirmed differences concern AI use outside school and without a specific need. Czech students are more likely to use AI out of boredom or habit, whereas Polish students tend to use AI more purposefully. Hypotheses regarding concerns about AI replacing professions were partially confirmed, with Polish students showing slightly higher concerns, although the difference is not statistically significant.

Overall, the results indicate that students aged 11-19 in both countries generally hold positive or neutral attitudes toward AI in education, with Czech students being more open and actively using AI. The findings support previous research on the growing presence of AI in schools (Coppin, 2025; Firdaus et al., 2023; Mhlanga, 2022; Oprea, 2021; Pikkarainen & Tihinen, 2023; Przybyła-Kasperek et al. 2023; Ramírez, 2021; Yu & Nazir, 2021; Ziatdinov et al., 2022) and confirm that the key factors influencing AI use are not only technology availability but also school policies, teacher-student discussions, and students' media literacy.

## CONCLUSIONS

The study provides a comprehensive analysis of AI use among Czech and Polish students aged 11-19 and highlights both similarities and international differences in their experiences, attitudes, and ways of using AI. The results show that Czech students use AI tools more frequently and in a broader manner, both for school assignments and leisure activities, whereas Polish students use AI more selectively, primarily for specific academic tasks. Both groups generally recognize the benefits of AI for learning, with Czech students perceiving these benefits much more positively, reflecting higher technological optimism and active engagement with AI in everyday education.

Ethical awareness and perceptions of AI use remain largely situational, with most students evaluating the ethics of AI usage based on the specific context. Education focused on effective and responsible AI use is still insufficient and inadequate.

quate in both countries, highlighting the need for systematic integration of AI-oriented media and digital literacy. The results further indicate that school practices and teacher involvement influence students' openness, understanding, and responsible use of AI tools.

Overall, these findings emphasize the growing role of AI in education and its potential to transform the learning process. They point to the importance of supporting students through appropriate guidance, development of critical thinking, and cultivation of both ethical and practical competencies for using AI. The study contributes to understanding international differences in young students' engagement with AI and provides valuable insights for policymakers, educators, and researchers striving for responsible and effective integration of AI into education.

### LIMITATIONS

Although the study provides valuable insights into AI use among Czech and Polish students, it has several limitations. First, the sample size, while sufficient for statistical analysis, may not fully represent the diversity of students in both countries. Second, the data are based on self-assessments, which may be influenced by wanting to provide socially desirable responses or may be subjectively biased in other ways. Third, the cross-sectional design of the study captures only the current situation, limiting conclusions about long-term trends or causal relationships. Finally, the study focuses on general AI use and does not examine its application in specific subjects in detail. Future research could address these limitations by including larger and more diverse samples, longitudinal studies, and a more detailed analysis of AI use in specific educational contexts.

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## RÓŻNICE W WYKORZYSTANIU SZTUCZNEJ INTELIGENCJI MIĘDZY CZESKIMI A POLSKIMI UCZNIAMI: STUDIUM PORÓWNAWCZE PODEJŚĆ, POSTAW I DOŚWIADCZEŃ

**Wprowadzenie:** Rosnąca obecność sztucznej inteligencji (AI) w edukacji i życiu codziennym stwarza nowe możliwości i wyzwania dla uczniów. Mimo rosnącego zainteresowania, niewiele wiadomo o tym, jak uczniowie klas 5–8 w Polsce oraz klas 6–9 w Czechach i uczniowie szkół średnich korzystają z AI w nauce i w życiu osobistym. Niniejsze badanie wypełnia tę lukę, analizując zakres, cele i postrzeganie korzystania z AI wśród czeskich i polskich uczniów, podkreślając różnice międzykrajowe oraz potrzebę strategii edukacyjnych wspierających etyczne i skuteczne wykorzystanie AI.

**Cel badań:** Celem tego badania ilościowego było porównanie, jak uczniowie klas 5–8 w Polsce, klas 6–9 w Czechach oraz szkół średnich (w wieku od 11 do 19 lat) korzystają z AI zarówno w kontekście akademickim, jak i osobistym.

**Metoda badań:** Badanie przeprowadzono w maju i czerwcu 2025 roku za pomocą ankiety, w której wzięło udział 335 respondentów (171 z Czech i 164 z Polski).

**Wyniki:** Czescy uczniowie korzystali z AI częściej i intensywniej w celach edukacyjnych niż ich polscy rówieśnicy. Istotne różnice zaobserwowano w częstotliwości użytkowania, celach korzystania, dzieleniu się wynikami generowanymi przez AI z rówieśnikami, odczuwaniu poczucia winy przy używaniu AI w nauce oraz postrzeganiu AI jako narzędzia wspierającego edukację. Polscy uczniowie byli bardziej ostrożni, korzystając z AI tylko wtedy, gdy było to konieczne. Testy chi-kwadrat potwierdziły kilka statystycznie istotnych różnic między grupami.

**Wnioski:** Wyniki podkreślają znaczenie systematycznej integracji AI do programów nauczania oraz konieczność zwracania uwagi na etyczne korzystanie z AI, rozwijanie myślenia krytycznego i zwiększanie świadomości dotyczącej sztucznej inteligencji w obu krajach.

**Słowa kluczowe:** sztuczna inteligencja, uczniowie, Czechy, Polska, edukacja, badanie porównawcze