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Examining the Chatbot Usage Habits of Students Participating in Talent Development

Thesis summary

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Abstract

Chatbots excel at answering questions and uncovering information, making them potentially significant tools in education when used appropriately.

In my study, I investigate how high school students participating in talent development programs use chatbots and, more broadly, artificial intelligence. My work introduces a method to assess the efficiency with which students in the study answer posed questions and verify the correctness of the provided answers. As a reference point, the responses generated using traditional search tools and the time required to uncover these answers are used. The survey was conducted under classroom conditions. The participating classes were randomly divided into two groups, A and B. One group had to answer a set of questions using traditional search tools, while the other group was allowed to use ChatGPT in addition to these tools. For verification, a cross-over method was applied: the groups switched roles and answered another set of questions of similar nature and difficulty. This method enables an evaluation of how different tools influence the speed and accuracy of student responses and the strategies employed in information retrieval. Participants submitted their answers via a custom-developed website designed specifically for this purpose. The questions were concise, requiring answers such as a year, a concept, or a few words. The answers and their timestamps were recorded in the database underlying the system. By analyzing these data, I examined the proportion of correct answers provided using each method. The second part of the study involved evaluating interviews conducted with the students. During these interviews, participants shared valuable insights about their experiences with the tools, including any challenges they faced and the areas where artificial intelligence proved particularly beneficial. Summarizing these discussions offers a clear picture of how students engaged in talent development use these technological innovations. Furthermore, the research also encompasses the exploration of the extent and nature of knowledge possessed by primary school students who intend to continue

their studies in talent development programs, the degree to which they rely on chatbot responses, and the purposes for which they employ AI-based tools.

Keywords: artificial intelligence, chatbot, talent development, AI in education, personalized learning, self-improvement

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Introduction

Artificial Intelligence (AI) is one of the most defining and rapidly developing technologies of our time, fundamentally transforming the functioning of society and the economy. AI is not merely a technical innovation but a transformative force that affects nearly every area of life—from the economy and industry to healthcare and education. Throughout history, every major technological innovation, whether it was the steam engine, electricity, the computer, or the spread of the internet, initially triggered fear and resistance. However, in the long run, these innovations not only eliminated certain jobs but also created new opportunities, industries, and professions. A similar process can be observed with AI: although many fear labor market disruptions, human creativity and adaptability usually open new pathways for progress. Education is a particularly sensitive area where AI is already making an impact. AI-based applications, such as chatbots, not only enable quick information retrieval and personalized learning but also support the development of learners' independence and questioning skills. These technologies have the potential to revolutionize the processes of teaching and learning, while also presenting challenges: there is a need for regulation, ethical frameworks, and for learners to critically evaluate the answers provided by AI. While AI can be an effective tool, it cannot replace the human factor, since teachers not only transmit knowledge but also motivate, educate, and inspire.

This research is directly connected to my teaching practice, as I teach computer science subjects at the Bolyai Talent Support Grammar School and Dormitory in Senta, a high school specialized in talent development. Based on my everyday experience, I observe that students are increasingly using AI-based tools, particularly chatbots, in completing their schoolwork. The aim of my research is to map how high school students participating in talent development use these tools and how critically they treat the answers obtained.

In my dissertation, I present the key concepts related to the topic and briefly outline the most important historical milestones in the development of AI, with

particular attention to the increasingly prevalent chatbots. I then present the main trends in both international and Hungarian literature. Within the theme of talent support, I also discuss relevant institutions in Serbia and Vojvodina. The empirical section of the dissertation details the development of the measurement tool and the process of conducting the survey, including the functioning of the custom-developed online platform designed for recording students' responses. After the statistical evaluation of quantitative data, I conduct a qualitative analysis of students' interview responses. In the next section, I present the results of a questionnaire survey carried out with prospective talent support students, followed by hypothesis testing linked to the surveys and interpretation of the results, with special emphasis on media literacy and critical thinking.

1. Perspectives on the Use of Chatbots in Education in Hungarian and International Literature

1.1. International Perspectives on the Use of Chatbots in Education

The international outlook is based on a study in which the authors applied the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) method and selected and analyzed a total of 51 relevant articles. Although numerous other review publications are available on the topic, this particular work and its included articles proved to be the most relevant for my research, as they present the perspectives of chatbot use in education in a comprehensive and systematic manner. In the second part of this chapter, I turn to Hungarian literature, where I applied my own PRISMA-based selection process to identify the articles most closely related to my research objectives. This ensures comparability between international and Hungarian findings, as well as mapping the similarities and differences in the academic discourse on the educational use of chatbots in global and Hungarian contexts.

The international literature review is based on the study The use of ChatGPT in teaching and learning: a systematic review through SWOT analysis approach by Duong Thi Thuy Mai, Can Van Da, and Nguyen Van Hanh (Mai et al., 2024), published in Frontiers in Education in February 2024. The authors, from the Faculty of Education at Hanoi University of Science and Technology, used the PRISMA method to select and analyze 51 relevant publications. My analysis builds on the findings of this study and the results of the systematically selected articles, which together provide a comprehensive picture of international experiences and perspectives regarding the use of chatbots in education.

The application of ChatGPT in the preparatory stages of teaching and learning offers significant opportunities for both teachers and students. The technology has been widely received positively, as both groups appreciate ChatGPT's versatility and support its integration into education (Kiryakova & Angelova, 2023; Bitzenbauer, 2023; Chan & Hu, 2023; Lozano & Blanco, 2023). ChatGPT fulfills four key functions: as a dialogue partner it ensures active participation, as a content provider it enriches learning material, as an educational assistant it supports teachers, and as an evaluator it provides real-time feedback (Jeon & Lee, 2023). In this way, digital instructors can take over cognitive tasks previously performed by human teachers, allowing educators to focus on higher-order thinking skills and provide deeper learning experiences. ChatGPT is particularly suitable for developing learning materials: it can quickly generate exercises, research resources, project reports, and quizzes across subjects, and provide tailored materials for students (Ivanov & Soliman, 2023; Adams et al., 2023). However, its use also comes with weaknesses, as responses for novice learners may often be superficial or contradictory, making it difficult to identify inaccuracies. Employing the technology requires students to develop new skills, including critical analysis, evaluation, and interpretation of information. Entering an era dominated by AI systems and chatbots requires adaptation, yet it is important to emphasize that ChatGPT cannot replace human expertise, judgment, and creativity (Kooli, 2023).

In the learning process, ChatGPT provides significant benefits, including personalized, adaptive learning experiences that support equal access to education (Chan & Hu, 2023; Kooli, 2023). Students must verify the information provided by ChatGPT through more reliable sources (Firaina & Sulisworo, 2023). Educational institutions need to introduce new assessment methods, such as tasks based on diagrams and tables, to reduce the potential for cheating (Nikolic et al., 2023).

Instead of banning the technology, the most effective solution is to consciously integrate ChatGPT into education while attempting to mitigate its risks. This requires adapting curricula and learning objectives, as well as incorporating skills such as digital literacy and media literacy, which help students critically evaluate technology. Furthermore, it is essential that both teachers and students reflect on the effects of the technology together, acknowledging the purpose of its use—whether for mere quick progress or for acquiring genuine knowledge (Farrokhnia et al., 2023).

1.2. Hungarian Literature on the Use of Chatbots in Education

The Hungarian-language journal articles were selected using a systematic literature review method from the Hungarian Scientific Works Repository (MTMT) and Google Scholar databases. During selection, I followed the PRISMA 2020 guidelines, which support a transparent and reproducible filtering process. As a result of the systematic search, I had to select relevant studies from a total of 402 potential works. A large portion of these (n = 306) were thematically distant from the focus of my study and could easily be excluded based on their titles. Since three articles were unavailable, I had to review 52 studies to determine which ones to exclude with justification. The inclusion criterion was that the study should relate to Hungarian or Hungarian minority education and contain either survey results or personal reflections. The following exclusion criteria (EC) were defined:

(EC-1): literature reviews mainly based on international studies

(EC-2): non-educational in nature

(EC-3): irrelevant to the research topic

(EC-4): other

Altogether, 32 studies were excluded based on these criteria, leaving 20 relevant studies forming the basis of the literature review.

In recent years, AI, particularly chatbots, has gained increasing prominence in Hungarian educational literature and in domestic academic discourse. The synthesis of research and studies makes it clear that AI is not merely a technological innovation but is comprehensively transforming teaching and learning processes, bringing new opportunities and challenges. According to the literature, instead of banning the technology, the way forward is its conscious and responsible use (Bognár, 2023; Tolner et al., 2023; Marciniak et al., 2024), which requires the collaboration of all stakeholders in education to ensure that learning environments meet the expectations of the 21st-century labor market (Bognár, 2023).

From the students' perspective, it can be stated that learners are widely familiar with AI-based tools and generally hold a favorable view of them (Dabis, 2023; Belényesi & Kukoda, 2024). ChatGPT enjoys particular popularity, most often used by students for translation, text generation, acquiring new knowledge, and programming (Gergely & Székely, 2024; Dabis, 2023). Although many recognize the potential of these tools, consistent use for learning purposes is less common (Forman et al., 2023). Experience shows that students primarily value quick task completion and reduced learning time, while making less use of the deeper, long-term learning benefits offered by the technology (Forman et al., 2023). From the perspective of personalized learning, AI opens new horizons. Adaptive systems can monitor student performance, generate materials aligned to the learning pace, and identify gaps for targeted development. This enables students to progress at their own pace and according to their interests while receiving continuous personalized feedback (Ollé, 2023; Szűts, 2023). This approach not only supports differentiated education but may also play a

particularly important role in talent development, where high-performing students are constantly provided with challenges (Esztelecki & Szűts, 2024).

From the teachers' perspective, AI also offers numerous opportunities, but it also presents tasks and challenges. AI can be used to generate learning materials, lesson plans, summaries, and exam questions, and can support the automation of routine tasks, freeing teachers' time for personal mentoring and direct interaction with students (Tolner et al., 2023; Belényesi & Kukoda, 2024). At the same time, experience shows that the teacher's role does not diminish with AI use, since educators remain indispensable in building human relationships, providing motivation, and transmitting values (Bessenyei, 2024; Bessenyei, 2024).

Research also highlights the importance of ethical and data protection challenges (Belényesi & Kukoda, 2024; Kovari, 2025). Plagiarism and irresponsible use of the technology pose serious risks. Traditional plagiarism detection tools are often unable to identify AI-generated content, making new strategies necessary to ensure academic integrity (Kovari, 2025). To support responsible and ethical use, it is important to develop students' competencies and prepare teachers methodologically, which also requires comprehensive institutional strategies (Ollé, 2024; Rajki et al., 2023; Gergely & Székely, 2024).

2. Research Questions and Hypotheses

A The aim of the research is to answer the following questions:

Q1. Do students who are allowed to use chatbots during the search for answers provide more accurate responses?

Q2. Do students using chatbots need less time to complete the tasks than those who do not?

Q3. Do the examined students use, or have they already used, AI-based tools when solving their school tasks?

Q4. Do students adopt a critical attitude toward the answers generated by AI?

Q5. Do primary school students who plan to enroll in computer science or mathematics majors already use chatbots or other AI-based services, and do they have sufficient knowledge of how AI works?

The following hypotheses were tested based on the survey results, and their acceptance or rejection was decided accordingly:

H1. Members of the experimental group who are allowed to use chatbots during answer retrieval will provide more accurate responses.

H2. The same experimental group will need less time to complete the tasks than the other group.

H3. The majority of the students involved already use or have used AI-based tools when solving school tasks.

H4. The majority of the examined students adopt a critical stance toward AI-generated responses.

H5. The majority of primary school students intending to enroll in mathematics or computer science majors already use chatbots or other AI-based services, but during their studies they have not, or only to a limited extent, gained knowledge about AI.

3. Presentation of the Surveys

3.1. Presentation of the Method Developed for Comparing Chatbots / GPTs and Traditional Search Tools

The study was conducted on a special sample: students of the mathematics and computer science talent development programs at the Bolyai Talent Support Grammar School and Dormitory in Senta (Vojvodina). The number of lessons and curricular content of both majors significantly differ from those of general or science-oriented grammar schools and technical secondary schools in Serbia. The survey was carried out between April 25 and April 30, 2024, involving 9th–12th grade students specializing in computer science (group

label: i) and mathematics (group label: m), with a total of 111 participants across all eight classes.

After the students took their seats at the school computers, I randomly divided them into Groups A and B. I then explained the task and how to use the system that supported it. Students had to answer 30 quiz-style questions (the questionnaire had been validated prior to the survey) in the fields of sports, history, film, music, and general knowledge—topics in which they could very rarely provide correct answers based solely on prior knowledge, so they had to look up the information. This ensured that the tool measured how students search for answers and how readily they accept them as correct. Thus, the test was not designed to measure the prior knowledge of participants.

Members of Group A were allowed to use ChatGPT-3.5 (registration or Google account login was not required) to retrieve answers, and they could also verify correctness using Google searches. Members of Group B, however, had to avoid all AI-based services, using only Google searches to find answers. After both groups answered the first 15 questions within 40 minutes, they had another 40 minutes to answer the remaining 15, but then the groups switched roles according to the crossover method: Group B was allowed to use ChatGPT, while Group A had to switch to Google searches. After the 15-question set, members of the ChatGPT group had to indicate, through self-reporting in the application, which questions they had additionally verified using Google tools.

Since I could not find a suitable free application for this purpose, I decided to develop my own system for the survey, meeting all requirements I had defined. I wrote the website using Notepad++ with HTML (for static elements), PHP (for dynamic elements and database storage), and CSS (for basic design), while storing data in a MySQL database. Before deployment, the website underwent a stress test to ensure stability and reliability. To avoid potential technical or network errors in online data storage, students also recorded their answers and timestamps on paper. During evaluation, incorrect answers were awarded 0 points, fully correct answers 2 points, and partially correct answers

(e.g., answering only part of a question or providing a nearly correct solution) 1 point.

3.2. Analysis of Interviews with Students in Talent Development

To explore more thoroughly how high school students participating in talent development use chatbots and AI in general, what their opinions are of this new innovation, and how much they trust it, I conducted interviews with 42 students. These were students I had taught either in the 2024/2025 academic year or in the year prior, since I felt that I had a more direct relationship with them and that they would speak more openly and candidly about how they use AI and chatbots. I prepared and noted down the questions in advance, but I kept open the possibility of exploring some topics in greater depth, discussing them in more detail, or deviating from the predetermined order.

3.3. Attitudes of Prospective Talent Development Students toward Artificial Intelligence

The Bolyai Talent Support Grammar School and Dormitory has been organizing its highly popular natural science and fine arts winter camp for over fifteen years, with participation from 6th–8th grade primary school students. As part of my research, I considered it important to investigate, through a short questionnaire, what knowledge our future students have about AI and what tasks they perform with it.

At the camp held in January 2025, the students were divided into three groups. The first group consisted of 6th–7th graders, the second of 7th–8th graders, and the third of 8th graders only. All 66 students participated in the survey.

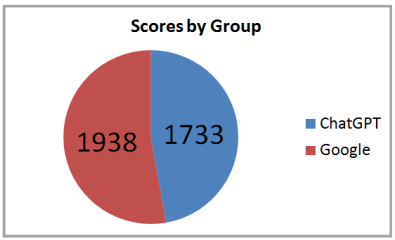
4. Interpretation of Research Findings

4.1. Hypothesis Testing

Based on the processing of survey data and a thorough analysis of the conducted interviews, the hypothesis testing yielded the following results:

H1. Members of the experimental group who could use chatbot services in the process of searching for answers would provide more accurate responses.

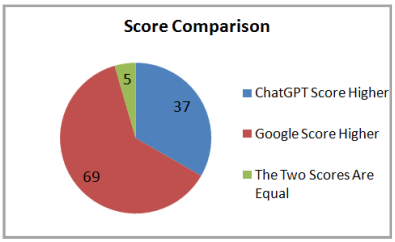
Surprisingly, this hypothesis must be rejected. Students in the ChatGPT group achieved 1,733 points (which corresponds to 866 correct answers and one partially correct answer), while the other group, which could not use AI-based services, achieved 1,938 points (969 correct answers). Although the difference is not particularly large in proportional terms, the outcome emerged because members of Group A accepted incorrect AI-generated answers as correct and did not spend additional time verifying them.



1. figure: Development of scores across groups

Among the surveyed students, 37 (33.33%) achieved higher scores in the 15 test questions when they could use ChatGPT, while 69 (62.16%) performed better using Google tools, and five students (4.50%) achieved identical scores in both parts. Results of the Shapiro–Wilk test indicated that the differences between students' scores in the two roles did not follow a normal distribution, supported

by a significance level of 0.007. Therefore, instead of a paired t-test, I applied the non-parametric Wilcoxon signed-rank test. The results revealed a significant difference between the scores obtained with ChatGPT and Google ($Z = -3.326$, $p = 0.001$), indicating that the difference cannot be attributed to chance.

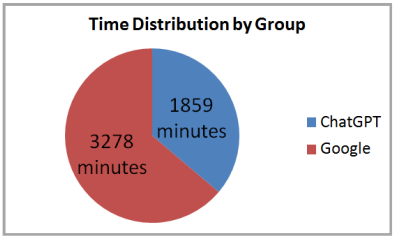


2. figure: Comparison of scores in different roles

Both international and Hungarian sources emphasize that chatbot-generated responses must be treated with caution and verified through reliable sources. ChatGPT's responses are often superficial, sometimes contradictory, and not infrequently contain inaccurate or misleading information (Stojanov, 2023; Kooli, 2023). At the same time, students tend to accept these responses uncritically (Gergely et al., 2024). Moreover, practical applications pose challenges, especially regarding accuracy and reliability (Belényesi & Kukoda, 2024). Findings show that chatbots often provide partial or incorrect information, and students frequently adopt AI-generated texts without critical evaluation or verification (Molnár et al., 2023)—a phenomenon clearly visible in the results of this survey as well. ChatGPT also struggles with complex or multi-element questions (Nikolic et al., 2023), a limitation evident in the survey. An Indonesian research duo also highlights that students should verify ChatGPT's answers through more reliable sources (Firaina & Sulisworo, 2023). Developing critical thinking is therefore essential for students to effectively solve problems and evaluate relevant sources appropriately (Halaweh, 2023).

H2. The same experimental group needs less time to solve the tasks than the other group.

This hypothesis can be accepted. The ChatGPT group needed a total of 1,859.02 minutes (3.98 hours) to complete the answers, while the other group required 3,277.73 minutes (54.63 hours). Notably, Group A students who also cross-checked most questions using Google used up the full 40 minutes but achieved higher scores.



3. figure: Time spent answering questions by groups

Correlation coefficients show that students who verified more ChatGPT-generated answers achieved higher overall scores ($r = 0.302$; $p < 0.01$) and, naturally, required more time ($r = 0.204$; $p < 0.05$). Those who checked more responses spent significantly more time solving the ChatGPT-based tasks ($r = 0.675$; $p < 0.01$) and achieved higher scores ($r = 0.458$; $p < 0.01$).

According to Gergely (2024), AI often serves as a "quick survival tool" for students, but time savings do not necessarily lead to better results. Educators have expressed concerns that students frequently fail to question AI-generated content and automatically treat it as correct (Gergely, 2024). Students often highlight the time-saving benefits of AI. Some authors argue that they perceive only the short-term advantage of quick task completion (Forman, 2023), while in practice, the use of such technology reduces the time devoted to learning and written assignments (Belényesi & Kukoda, 2024; Szűts et al., 2024). It is

important for students to reflect on whether they use the technology for quick progress or genuine knowledge acquisition (Farrokhnia et al., 2023).

H3. The majority of the students involved use, or have already used, AI-based tools in completing school tasks.

This hypothesis is acceptable, as my students' honest responses confirmed it. They prioritized essay writing and error detection (spelling and word misuse), but they also relied on AI for solving programming tasks, explaining assignments, creating summaries, and translations. They also mentioned adaptive and personalized learning, such as mastering programming languages with chatbot assistance or requesting step-by-step explanations. Thus, the surveyed students apply AI-based tools in diverse ways, both for schoolwork and in their private lives. Among the elementary students surveyed, only seven (three 7th graders and four 8th graders) indicated they had never used chatbots, meaning that nine out of ten had already taken advantage of such tools.

Both international and Hungarian literature reports that most students make use of chatbots. In the interviews, we also touched upon adaptive content generation and personalized learning, although in the literature these potentials are highlighted with greater emphasis (Kiryakova & Angelova, 2023; Bitzenbauer, 2023; Chan & Hu, 2023; Lozano & Blanco, 2023; Stojanov, 2023; Kooli, 2023; Gulbault, 2025). One survey confirmed that ChatGPT is the most widely used AI tool among students (Gergely, 2024). Forman and colleagues found that students primarily use ChatGPT for study support, information retrieval, and entertainment, but they also find it useful in preparing assignments, exam preparation, conducting research, reviewing literature, and developing essay and presentation ideas (Forman et al., 2023). Other sources mention brainstorming support, organizing ideas (Belényesi & Kukoda, 2024), language learning (Molnár et al., 2023), grammar correction, text translation, as well as writing abstracts, formal emails, and program code (Dabis, 2023).

H4. Most of the examined students adopt a critical stance toward AI-generated responses.

This hypothesis cannot be clearly accepted or rejected, since interviewees explained that this is situation-dependent, primarily influenced by the weight of the answer and the consequences of an incorrect response. Since the test results carried no consequences, students paid less attention to verifying answer accuracy. Correlation analysis confirmed that students who cross-checked more responses achieved higher scores and also spent more time. Across the test, students verified responses with Google 199 times, out of 1,665 answers generated with AI, meaning verification occurred in 11.95% of cases. On average, each student verified 1.79 answers out of 15. Interviews indicated that students generally use chatbots consciously and do cross-check answers from other sources when accuracy has stakes.

Qualitative analysis suggests that some respondents trust AI-generated answers, especially when using them for problem-solving, acquiring new knowledge, or linguistic support. In such contexts, students often view chatbots as complementary to teachers and frequently verify responses for effective learning—an indication of critical and responsible use. However, trust levels are much lower in contexts where chatbot answers are compared with Google searches or when considering AI as a potential substitute for teachers. Notably, codes such as "cheating" and "not verifying" often co-occur, highlighting the risk of uncritical reliance on AI. Conversely, the co-occurrence of "time saving" and "regular verification" codes suggests that while efficiency is a primary goal, many students still strive to ensure response reliability.

Literature confirms that students recognize the potential dangers of chatbots (Fajt & Kállai, 2024) and fear misleading information, but they also demonstrate critical thinking and creativity, striving for quality knowledge (Marciniak et al., 2024). Other sources, however, express concern that students often accept chatbot answers without questioning them (Gergely, 2024; Molnár et al., 2023). It is crucial that students understand principles of ethical use and

develop technological competences, contributing to conscious and responsible learning. This requires a culture in which students are aware of AI's risks but are able to use it responsibly to support their learning (Marciniak et al., 2024; Kovari, 2025).

H5. The majority of primary school students intending to enroll in mathematics or computer science majors already use chatbots or other AI-based services, but during their studies they have not, or only to a limited extent, gained knowledge about AI.

This hypothesis is supported by the winter camp survey results. Out of 66 participants, 59 students (89.39%) reported having used chatbots or other AI-based tools. According to their feedback, nearly 61% had not learned about AI at all in school, 30% indicated that it had only been mentioned, and nearly 10% reported a brief discussion. None claimed to have studied AI in depth.

	6th grade	**7th grade**	**8th grade**
Learned a lot about AI	,00%	,00%	,00%
Talked about it in general	9,09%	4,76%	11,76%
Mentioned, but not studied	18,18%	38,10%	29,41%
Did not learn about AI	72,73%	57,14%	58,82%

1. table: Students' AI-related knowledge acquired in elementary school (percentages)

Since most researchers work in higher education, the majority of studies target university students, likely due to easier sampling. Several studies (Boulhrir & Hamash, 2025; Ottenbreit-Leftwich et al., 2022) confirm that while AI's role has been widely investigated in secondary and higher education, its role in elementary classrooms—where developmental characteristics and pedagogical needs differ greatly—remains underexplored. Some articles emphasize the potential for personalized learning even in elementary contexts (Boulhrir & Hamash, 2025; Jauhiainen & Guerra). It is crucial that younger students are introduced early to AI fundamentals, how the technology works, and its potential risks. One research group (Ottenbreit-Leftwich et al., 2022) developed a problem-based, experiential AI curriculum covering machine learning, computer vision, AI

design, and AI ethics. Results showed that students in grades 3–5 were capable of mastering the related concepts.

A Swedish study (Walan, 2024) investigated 11–12-year-old students' perceptions of AI. Students described it as an information tool (e.g., Google, ChatGPT), but some also saw it as human-like, capable of "thinking for itself." Their perceptions followed two main directions: AI as a machine (robot, computer, phone, self-driving car) and AI in terms of its functions. Some believed AI could possess human-like qualities (independent thinking), while others stressed its lack of feelings. They highlighted AI's usefulness in writing, ease of access, and learning support, but also pointed out risks such as mistakes, laziness among users, and fears about AI's rapid development.

4.2. Interpretation of Research Findings from the Perspective of Education

The question of whether today's high school students use chatbots or other AI-based applications can immediately be reframed into what purposes and how they use such tools, since in this study all students in grades 9–12 had already used them, and even among upper elementary students, nine out of ten reported having done so.

The survey applied in my research resembled the situation when students are asked to write a report on a given topic. This can be accomplished by blindly copying ChatGPT's response, presenting it as one's own work without any verification. To answer the test questions, students had to do only slightly more: skim the generated response, interpret it at some level, and then extract or rephrase the key terms. This corresponds to the scenario where a student briefly reviews the AI-generated report to avoid irrelevant or misleading answers. However, only a few students checked the correctness of chatbot-generated responses. This attitude highlights a tendency among students to trust ChatGPT's answers blindly, without adopting a skeptical stance or considering the importance of validation. This is a striking observation, as students did not always

invest additional effort—such as using Google—to ensure the accuracy of responses, especially when incorrect answers carried no negative consequences. This phenomenon arises from the high degree of trust students place in AI-generated outputs.

The next level of use is when a student thoroughly reads the generated answer, interprets it, and gains new knowledge from it. In the context of test questions, such in-depth work was unnecessary, since the time limit meant that the aim was not broad knowledge acquisition but the concise and accurate formulation of an answer. Ideally, however, students would review AI-generated responses with other sources as well.

The research also revealed that the majority of students were satisfied with ChatGPT's responses, even when the system occasionally provided incorrect information. Due to time constraints, students opted for quick responses, often without carefully examining the information. This trend reflects one of the core challenges of modern education: students frequently prioritize immediate results over thorough research and critical analysis. Such behavior underscores the need for educational systems to focus more on fostering critical thinking, particularly when using AI-based tools. The high level of trust placed in ChatGPT and similar applications may reduce students' perceived need to verify responses, potentially undermining learning processes and the development of critical thinking skills. While AI tools are effective and often provide quick solutions, students must be taught to use them responsibly and encouraged not merely to accept outputs passively but to examine, verify, and interpret them.

Interviews shed further light on an important aspect: students tend to accept responses without verification only when incorrect answers carry no consequences. Since the survey did not involve grades or sanctions for wrong answers, a group of students perceived the task as a "necessary evil" to be completed as quickly as possible in order to move on to other activities.

In recent years, students have increasingly pursued "just-in-time" knowledge acquisition—learning only what they need, when they need it—rather than developing deeper, long-lasting understanding. AI-based tools such as

ChatGPT fit perfectly into this approach, offering fast and direct responses that immediately satisfy students' informational needs. However, this comes at the cost of deeper processing or grasping underlying connections. The advantage of "just-in-time" knowledge is efficient problem-solving, but it restricts students' capacity for complex reasoning and critical analysis. From an educational standpoint, this is highly relevant: quick answers cannot replace deep comprehension, which is essential for genuine mastery and application of knowledge. Educational institutions must therefore strike a balance between fast information access and the cultivation of long-term knowledge, encouraging students to critically examine and apply what they learn.

Conducting and processing the interviews was time-consuming, but the effort proved worthwhile, as students revealed numerous insights into their AI-use habits, especially within talent-development contexts. Analysis showed that AI-based tools—particularly ChatGPT—play an increasingly prominent role in both education and students' everyday lives. Students primarily use them for information retrieval, translation, proofreading, and summarization. Many also employ ChatGPT for preparing assignments and essays, as well as solving tasks in mathematics, physics, or biology. Among informatics students, it is especially valued for identifying programming errors and explaining code. AI is also applied in image editing, preparing presentations, and even generating music.

Students expressed varying levels of trust in AI-generated outputs. In critical contexts, such as assessments or graded assignments, they tended to verify chatbot responses through other sources, such as Google. For less significant tasks, however, they often accepted responses without deeper review, saving time and energy. Their experience suggests that AI performs particularly well in tasks requiring lexical knowledge but is less reliable in complex calculations or programming. Trust in AI-generated content largely depends on the context and purpose of use. According to the interviews, students expressed the greatest confidence in AI for translations, paraphrasing, and summarization, considering these areas to have the lowest likelihood of error. Although fewer students used AI for image and music editing, they reported no major issues apart from ethical

concerns. Trust was also high in information retrieval, though students stressed that for more nuanced or less accessible knowledge, non-AI-generated sources should also be consulted when accuracy is crucial.

AI in education can support not only students but also teachers. For instance, teachers may save significant time when using it to generate summaries or review questions. It can also be useful in preparing worksheets and even in correcting tests and essays. However, students emphasized that AI should not be used uncritically, as erroneous outputs can cause problems. Overreliance on chatbots can also foster laziness, enabling students to substitute their own effort with AI, thereby hindering deeper learning. Inaccuracies, misinterpretations of poorly phrased questions, and the risk of detection are additional concerns. While AI can be effectively applied in many areas, the majority of students agreed that it cannot replace teachers. At its current level, AI lacks empathy, pedagogical intuition, and practical experience—qualities that are fundamental to teaching. Teachers are capable of assessing student knowledge, motivating learners, and adapting to their individual needs. AI, therefore, should be viewed as a supplementary tool that enhances the learning process rather than as a substitute for teachers.

In my view, students should not be prohibited from using modern technological tools such as ChatGPT and other AI-based applications. However, it is essential that within the framework of schooling, they are taught to use these tools consciously and responsibly. AI-generated responses must not be accepted blindly; their verification and analysis are just as important as obtaining the answer itself. Education must emphasize that ChatGPT and similar tools can be mistaken and do not always provide in-depth or comprehensive answers. Students must therefore be encouraged to dedicate time to critical evaluation and to cross-check AI-generated content with other sources whenever possible. This process not only helps avoid errors but also enables students to develop a deeper understanding of the subject matter. It is the educator's role to communicate that AI does not replace critical thinking but can complement it when used properly.

Time spent interpreting and verifying responses often yields significant educational benefits.

5. Summary

Artificial intelligence has now become present in almost every aspect of life, and education is no exception, where it plays an increasingly significant role. The aim of my research was to explore how students participating in talent-development programs use AI-based applications, with particular attention to chatbots. The survey examined students' answer accuracy, time management, critical thinking, and attitudes toward different tools.

Hypothesis	Acceptance or Rejection
H1. Members of the experimental group who could use chatbot services in the process of searching for answers would provide more accurate responses.	
H2. The same experimental group would need less time to solve the tasks than the other group.	
H3. The majority of the students involved use, or have already used, AI-based tools in completing school tasks.	
H4. Most of the examined students adopt a critical stance toward AI-generated responses.	
H5. The majority of elementary students who intend to pursue mathematics or computer science already use chatbots or other AI-based services, but their studies so far have provided little or no knowledge about AI.	

2. table: Summary of hypothesis acceptance or rejectio

The findings revealed that since chatbots provided faster answers to posed questions, students often accepted responses without any verification and did not resort to slower but more accurate tools such as Google. Those students who cross-checked ChatGPT's answers using additional sources achieved higher accuracy, but their work was more time-consuming.

As a teacher, I had assumptions about how my students used AI, whether to simplify their own work or to make it more effective. These assumptions were confirmed and enriched through interviews, which—thanks to the students' honest and detailed responses, provided numerous new insights into how talent-development students perceive and use AI in both education and daily life, as well as what future they foresee for it.

Students widely apply AI-based tools for essay writing, programming, translation, error detection (spelling and word use), and problem-solving. However, validation of the obtained information is not always prioritized. As the interviews revealed, the most decisive factor for students is the extent to which accuracy is critical and what consequences incorrect answers might entail. Since the test results had no direct consequences, responses were checked only in relatively few cases.

The research also highlighted that AI cannot replace teachers but should instead be integrated as supplementary support. Students must learn to use these tools consciously and critically so that rapid access to information is complemented by opportunities for deeper knowledge acquisition. It is equally important that educators understand the potential and limitations of AI. Educational institutions should consider organizing training and workshops specifically dedicated to AI use, its advantages, and its boundaries. This would equip both students and teachers with the competencies essential for today's modern educational environment.

Education must place special emphasis on ensuring that students gain meaningful experiences in the conscious, responsible, and effective application of AI-based tools, while simultaneously developing their critical thinking and independent problem-solving skills.

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