

# Students' Perceptions of Using AI Instruments in Developing Learning-to-Learn Skills: An Exploratory Qualitative Study

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**Abstract**—Considering the rapid evolution of digital technologies and the emergence of AI, within the Fourth Industrial Revolution university training should equip students with knowledge and skills to address the challenges of the labour market and, more importantly, successfully navigate their daily personal and professional lives. This implies teaching university students to use innovative digital technologies, including AI tools. Given the ongoing development of digital technologies, learning in the 21st century is a significant challenge. Although the use of AI tools in the university classroom raises many controversial issues, it is apparent that AI, as one of the newest digital technologies, is already an inseparable part of students' lives. The paper aims to understand students' perceptions of AI and its potential to develop their learning-to-learn skills. The researchers used a voluntary response sampling technique to select the research sample. To collect basic data on students' perceptions of using AI tools to develop their learning-to-learn skills, the researchers conducted an exploratory qualitative study. The findings indicate that the majority of students agree strongly that AI and AI tools open new opportunities for learning in general and for developing their learning-to-learn skills in particular.

**Keywords**—University students, learning-to-learn skills, AI tools, digital technologies.

## I. INTRODUCTION

Digital technologies are rapidly evolving and constantly changing, as evidenced by the emergence of artificial intelligence, which is currently one of the key areas of their development. This statement also applies to the field of education, as educational systems (including higher education) worldwide are constantly evolving and seeking effective ways to improve instruction in response to today's challenges [1]. Considering education in general and higher education in particular as an open dynamic

system which tends to change with time, including the changes in its key components (i.e., teachers and students, instruction, teaching and learning approaches, technologies, methods and techniques, teaching and learning tools, etc.), it is worth mentioning that it always tries to take advantage of technologies advanced for their time. Within the Fourth Industrial revolution, equipping students with knowledge and skills to address the challenges of the labor market and, more importantly, successfully navigate their daily personal and professional lives implies teaching them to use innovative digital technologies, including AI tools [2; 3].

Regarding AI as a transformative force in higher education, Howard and Ulferts define it as “a pivotal tool to enhance student engagement, optimize administrative tasks, and democratize access to education” [4, p. 2].

Kwid, Sarty, and Yang believe that AI in education performs several functions, among which they distinguish personalization and/or differentiation of learning, provision of technical support during the evaluation process, and integration of adaptive learning platforms into the education process that adjust to students' needs [5].

Modern researchers are currently actively studying the impact of Artificial Intelligence (AI) and AI tools on the quality of education. Thus, for instance, Harry and Sayudin analyze the role and potential of AI in education [6]. The researchers conclude that one notable benefit of using AI tools in the classroom is the opportunity to personalize students' learning, thereby improving learning outcomes. Besides personalizing students' learning, the use of AI tools enables students to improve their efficiency and engagement [7].

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Incorporating AI in the educational process can improve the performance of administrative tasks (including providing faster feedback to students), tailor more effective teaching and learning methods for students based on their individual educational preferences and interests, and, what seems to be also important, help teachers detect students' learning styles [8]. The use of AI tools leads to better teaching and learning, and, as a result, to better student learning outcomes, facilitated by the early identification of students' learning shortcomings and their correction. Moreover, the use of AI tools enables teachers to generate educational content that is responsive to students' needs, thereby helping students make more informed choices about their career paths.

While we acknowledge the idea expressed by Krstić, Aleksić, and Krstić that the use of AI tools reshapes the educational landscape, we argue that "traditional learning methods are becoming obsolete and various educational institutions are slowly rejecting them" [9, p. 227]. We believe that combining traditional teaching and learning methods with the use of innovative digital technologies, including AI, enables university teachers to provide students with a higher-quality education that can teach them to engage in lifelong learning, help them realize their full potential, and adapt more quickly to the rapidly changing requirements of the job market after graduating from higher educational institutions.

Although it is apparent that AI, as one of the newest digital technologies, is already an inseparable part of students' lives, its use in the university classroom still raises many controversial issues. Some researchers point out that AI education tools used in higher education provide teachers and students with excellent opportunities to make instruction more interactive and personalized [10; 11]. They point out that to help students succeed in their future careers, higher education institutions should implement advanced training and digital technologies in learning instruction. It is also evident that, as the most revolutionary technology, artificial intelligence enables higher education institutions to equip students with digital skills that help them stay at the forefront of technological progress [12]. At the same time, other researchers believe that AI can pose a serious threat to the quality of higher education, as their studies reveal that university teachers are concerned about data misuse, the facilitation of plagiarism, and privacy risks associated with AI tools [13; 14; 15].

Moreover, among other potential risks of AI that may adversely affect the quality of education, scientists also identify issues related to inequalities in access to AI systems, differences in teachers' and students' digital literacy, and academic integrity [14]. While focusing their attention on positive aspects of using AI in higher education, namely, improving the learning-teaching process, enhancing students' skills and competencies, better inclusion, and more efficient use of administrative resources, Pisica et al. also reveal some negative aspects of AI which include possible psychosocial effects, data security, ethical issues, unemployment threats, problems

related to the costs and efforts of implementing AI in higher education [15].

Thus, a literature review indicates that effective teaching and successful learning often depend on teachers' and students' knowledge, skills, and ability to use technological innovations in the classroom. It means that the skillful use of digital technology is one of the most important keys to effectively equipping students with the ability to learn lifelong and to acquire knowledge, skills, and expertise necessary for quickly adapting to new, non-standard situations in the workplace and to changing requirements in the labor market. The paper aims to understand students' perceptions of AI and its potential to develop their learning-to-learn skills. The decision to focus this research on how today's students perceive AI stems from the need to identify its positive potential for developing their learning-to-learn skills in the context of higher education's digital transformation. Paying close attention to the positive aspects and potential of AI in developing students' learning-to-learn skills may reveal the mechanisms of its effective use in the educational process and, at the same time, optimize the digital educational environment in higher education institutions.

## II. MATERIALS AND METHODS

To collect basic data on students' perceptions of using AI tools to develop their learning-to-learn skills, the researchers conducted an exploratory qualitative study. To achieve the research aim, the researchers developed a questionnaire comprising open- and closed-ended questions. The questionnaire also includes several questions on demographic information, namely gender, age, and field of study. Given the current situation in Ukraine, which is marked by hostilities on its territory, the researchers considered it appropriate to use a mixed data collection approach. In this regard, the researchers developed two questionnaires in Ukrainian: paper-based and web-based. The researchers distributed questionnaires by hand where possible.

The researchers used a voluntary response sampling technique to select the research sample and the research sample consisted only of students who use AI for educational purposes. The sample comprised 119 students majoring in the following fields of study, namely, Marketing, Computer Science and English Philology, from National University of Life and Environmental Sciences of Ukraine (Kyiv, Ukraine), Taras Shevchenko National University of Kyiv (Kyiv, Ukraine), Kyiv National University of Technologies and Design (Kyiv, Ukraine), Interregional Academy of Personnel Management (Kyiv, Ukraine), Kyiv National Economic University named after Vadym Hetman (Kyiv, Ukraine).

To find out students' perceptions of using AI tools to develop their learning-to-learn skills, both versions of the questionnaire included the following questions:

1. *How has your learning changed since you started using AI tools? Explain your answer.*
2. *What AI tools do you use for educational purposes?*

3. *In what ways do AI tools help you develop your learning-to-learn skills?*
4. *What exactly makes AI-based learning effective for developing your learning-to-learn skills?*
5. *Do AI tools provide you with any advantages in developing your learning-to-learn skills? Explain your point of view?*
6. *Can you assess your ability to use AI tools in developing your learning-to-learn skills?*

The mixed research design implies qualitative and quantitative data processing, including manual calculations.

The survey lasted four months, from September to December 2025.

### III. RESULTS AND DISCUSSION

The results show that 64.71% of respondents are female (77 students) and 35.29% are male (42 students). 28.57% of respondents (34 students) are majoring in "Marketing", 26.89% (32 students) – in "Computer Science", and 44.54% (53 students) – in "English Philology".

The first question aims to determine how students' learning has changed since they started using AI tools. We infer from the results that the respondents' opinions on changes in their learning caused by AI tools were approximately identical. Table 1 presents general ideas from respondents' replies.

TABLE 1 RESPONDENTS' GENERALIZED IDEAS ON CHANGES CONNECTED WITH LEARNING CAUSED BY USING AI TOOLS

| Respondents' Generalized Ideas                                                 | N   | %     |
|--------------------------------------------------------------------------------|-----|-------|
| Help with translating information found in different sources                   | 85  | 71.43 |
| Assistance with explaining the educational material of any level of difficulty | 104 | 87.39 |
| A possibility to control one's own learning                                    | 67  | 56.30 |
| Help in finding the information you need                                       | 110 | 92.44 |
| Assistance in preparing presentations and visual materials                     | 73  | 61.34 |
| Help with organizing and structuring information                               | 78  | 65.66 |
| Assistance with tailoring educational material to individual needs             | 91  | 76.47 |
| Equipping with new knowledge and skills                                        | 81  | 68.07 |

As we can see, respondents admit that their learning has changed due to the use of AI tools. The most noticeable change is the use of AI tools to find the information they need (92.44%). The only drawback was that the information they received often had to be verified. However, they saw some positives in this as well: by verifying the information, they gained a thorough understanding of the issue. Another positive idea was the possibility of getting help with explaining educational

material at any level of difficulty (87.39%). The students also noted that they can receive this assistance at any time. 73 respondents (61.34%) praised the AI assistance for tailoring educational material to their individual needs. They pointed out that they could explore the topics that interest them in greater detail. When searching for the information you need, you often have to analyze various sources written in different languages. Various tools that help translate this information are invaluable in this regard. You do not have to spend a lot of time translating; you can use AI tools and enjoy high-quality translations (71.43%). Many respondents (68.07%) believe that these tools help develop various skills useful in different fields, including digital skills.

The second question aims to determine what AI tools students use for educational purposes. Among the most popular answers, respondents mentioned DeepL Translate (81.51%), ChatGPT (100.00%), NotebookLM (42.86%), Canva (61.34%), Slides AI (44.54%), Gamma AI (38.66%), Microsoft Copilot (29.41%). The respondents consider them useful for preparing visual materials for their classes, finding the information they need, and translating sources from various languages.

Question 3 aimed to identify how AI tools help respondents develop their learning-to-learn skills. In response to this question, 82 respondents (69.91%) noted that being able to understand difficult material and get answers to their questions has a positive impact on their motivation and desire to learn. 65 respondents (54.62%) pointed out that the use of AI tools helps find and structure the information they need to complete homework assignments. However, we need to note that these respondents also recognized the fact that AI tools (especially ChatGPT) might present wishful thinking as fact. If you do not want to look into the matter and are not taking your studies seriously, this information could turn out to be false when verified. Such an attitude toward learning always leads to negative consequences. On the other hand, if you take your studies seriously, double-checking the information gives you the opportunity to gain a deeper understanding of the educational material. 49 respondents (41.18%) reported that the ability of AI tools to provide them with the opportunity to identify gaps in their knowledge and help them improve their knowledge according to their educational needs helps develop their learning-to-learn skills.

The researchers were also interested in what exactly makes AI-based learning effective for developing students' learning-to-learn skills. Table 2 demonstrates the results on this question.

TABLE 2 RESPONDENTS' REPLIES ON THE EFFECTIVENESS OF AI-BASED LEARNING IN DEVELOPING THEIR LEARNING-TO-LEARN SKILLS

| Opinions                                                                 | N  | %     |
|--------------------------------------------------------------------------|----|-------|
| Identification of educational gaps and creation of tasks to address them | 78 | 65.55 |
| Better track the understanding of the educational material               | 53 | 44.54 |

| Opinions                                                                                    | N  | %     |
|---------------------------------------------------------------------------------------------|----|-------|
| Explanation of any mistakes made and creation of exercises to help practice correcting them | 46 | 38.66 |

78 respondents (65.55%) reported that using AI-based learning helps not only identify educational gaps (especially when preparing for seminars, practical classes, or exams), but also creates tasks to address them. Explaining their responses, they explained that by completing such tasks, students can receive immediate feedback and, if mistakes occur, focus more on correcting them. Moreover, AI-based learning allows users to adjust the difficulty level of the exercises to their current level of knowledge and vice versa. 53 respondents (44.54%) indicated that AI-based learning helps them better track their understanding of the material. For example, when using AI, students can ask it not only to create interactive exercises based on specific educational content, but also to check whether they completed them correctly. 46 respondents (38.66%) mention that they can also ask for explanations of any mistakes made and ask the AI to create exercises to help them practice correcting them. In its turn, involving students in creating various exercises using AI tools may positively influence their cognitive curiosity, leading them to seek more specific information and expand their personal educational experience.

The fifth question aims to determine whether using AI tools provides today's students with any advantages in developing their learning-to-learn skills. 65 respondents (54.62%) believe that applying AI inside and outside the classroom opens new opportunities to improve learning instruction, equipping students with new knowledge and skills. Moreover, using AI tools helps them stay up to date. 15 respondents (12.61%) find it difficult to answer this question, and 39 respondents (32.77%) maintain that modern digital technologies (including AI tools students use in their learning) have already proven their worth. They explain that to make the most of the advantages AI tools offer in developing learning-to-learn skills, students should thoroughly understand their features and know exactly how to apply them. Moreover, mastering and understanding all the subtleties takes some time.

Question 6 aims to assess students' ability to use AI tools to develop their learning-to-learn skills. Table 3 summarizes the obtained results.

TABLE 3 RESPONDENTS' SELF-ASSESSING THE ABILITY TO USE AI TOOLS IN DEVELOPING LEARNING-TO-LEARN SKILLS

| Levels               | N  | %     |
|----------------------|----|-------|
| High                 | 18 | 15.13 |
| Higher than moderate | 25 | 21.01 |
| Moderate             | 43 | 36.13 |
| Low                  | 33 | 27.73 |

The results indicate that most students assess their ability to use AI tools for developing their learning-to-learn skills as moderate (36.13%) or low (27.73%). Only a small proportion reported a high level of this ability (15.13%), while the majority demonstrated moderate or below-moderate self-assessment. This conclusion suggests that this ability is not sufficiently developed among a significant number of students and may require further support and targeted development. We may assume that such a perception of this ability is mostly related to the rapid development of digital technologies, including AI, and, as a consequence, to students' inability to even monitor the emergence of more refined AI tools. However, we also believe that access to, availability, and active use of various AI tools cannot guarantee a high level of this ability. Enhancing students' ability to use AI tools to develop their learning-to-learn skills requires a gradual, systemic, and purposeful implementation of AI in the educational process.

#### IV. CONCLUSIONS

Given that integrating AI into higher education is revolutionizing, and that the use of AI tools in teaching and learning opens up endless opportunities to improve the quality of higher education, the paper aimed to understand students' perceptions of AI and its potential to develop their learning-to-learn skills. The findings indicate that the majority of students agree strongly that AI and AI tools open new opportunities for learning in general and for developing their learning-to-learn skills in particular. Among the most noticeable changes associated with AI learning, respondents mention finding the necessary information, getting help explaining educational material at any level of difficulty, tailoring educational material to their individual needs, helping translate information from various resources, and developing skills useful in different fields, including digital skills.

The use of various AI tools for educational purposes helps today's students prepare visual materials for their classes, find the information they need, and translate sources from various languages. Moreover, it helps provide more personalized learning support, stimulate students' cognitive activity, has a positive impact on students' motivation and desire to learn.

The findings clearly demonstrate that students consider AI-based learning effective in improving their engagement and learning motivation, individualizing learning, addressing learning gaps and developing learning-to-learn skills.

The obtained results provide a basis for further research into the opinions of university teachers across different age groups regarding the impact of AI tools on the educational process in general and on the development of students' learning-to-learn skills in particular, which will enable them to be integrated more effectively into educational practice. Further research may also focus on revealing and comparing the positive and negative aspects of using AI to develop students' learning-to-learn skills, given the

controversy surrounding this didactic phenomenon in contemporary educational discourse.

## V. STUDY LIMITATIONS

The key limitations of the study are the relatively small sample size, which may limit the generalizability of the findings, and its exclusive focus on the positive aspects of AI use in developing students' learning-to-learn skills. Given that the negative effects of implementing AI in higher education are not analyzed in this research, it may also narrow the comprehensiveness of the interpretation of the obtained findings.

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