AI TECHNOLOGIES AND LEARNING: TERTIARY LEVEL STUDENTS' AWARENESS AND PERCEPTIONS OF AI: TO WHAT EXTENT ARE STUDENTS AWARE OF THE OPPORTUNITIES OF AI FOR LEARNING?

Assoc. Prof. Dr. Katerina Mitevska Petrusheva
ORCID 0000-0002-7007-7340
International Balkan University
Asst. Prof. Dr. Emin Idrizi.
ORCID 0000-0002-1924-2363
International Balkan University, Faculty of Education

ABSTRACT

This paper examines the topic of the use of AI technologies for the purpose of learning. It presents the findings of a survey conducted on a sample of 95 university students, and aims to give answers to the following research questions: 1) To what extent are tertiary level students aware of the opportunities of AI technologies for learning?; and 2) How do they perceive the use of AI technologies as a means in the process of learning and to which purposes do they serve? Results have shown that the majority of the students are familiar and aware of different AI tools which can be used for learning in the education process. However, when it comes to how they perceive these technologies for the purpose of learning, results are rather unfavorable. Namely, most of the students believe that the use of AI tools is acceptable because it saves time and helps in preparing more creative assignments. In addition, some of them have the perception that AI tools are useful because they can help them to complete assignments with less effort, regardless of the fact that it may not lead to real quality learning and can cause difficulties in terms of academic dishonesty. In this regard, it can be argued that the higher education institutions should observe this issue more carefully and emphasize the need to influence students, for the purpose of helping and guiding them in understanding the real benefits of the use of AI tools in the process of learning and education in general.

Keywords: AI technologies, AI tools, learning, academic dishonesty

1. Introduction

The development of AI tools and their application in different areas has been noticeable in recent years. This refers to education as well, in which it brings its own strengths and weaknesses. This has urged the need for developing appropriate policy responses, which will define the frameworks for a systematic integration of AI in education and that will support further development trends toward innovative education, in both teaching and learning. In the Beijing Consensus on artificial intelligence and education of UNESCO (2019) and its member countries, the complexity and rapid development of AI is recognized, while at the same time the need for humanistic approach in its use is re-affirmed. It is stated that: "The development of AI should be human-controlled and centered on people; its development should be in the service of people to enhance human capacities; and people should be prepared with the appropriate values and skills needed for effective human-machine collaboration in life, learning and work." (UNESCO, 2019, p. 4). In this regard, certain actions that should be taken are suggested, such as: "introducing new models for delivering education through the use of AI, and appropriate adjustments of the curricula in a way that will promote in-depth integration and transformation of learning methodologies;" Still, it is emphasized that innovative AI solutions should be used in cases where the benefits clearly outweigh the risks and serve in supporting the development of interdisciplinary skills and competencies; and although AI solutions support teachers in their educational and pedagogical activities, the human interaction and collaboration between teachers and learners must remain at the core of education" (UNESCO, 2019, p. 5-6).

In general, the application of AI technologies in education raises multiple questions, related to what should be taught and how, what would be the role of the teachers in the new context and which ethical implications will arise throughout the process.

1.1. Advantages of using AI technologies in education

When speaking about AI, it should be noted that AI is defined as: "Machines capable of imitating or even exceeding human cognitive capacities, including sensing, language interaction, reasoning and analysis, problem solving, and even creativity" (COMEST, 2019, p. 3). The application of AI technologies in education context is seen as a contribution in achieving UNESCO's Sustainable Development Goal 4: Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all.

Miao et. Al (2021) proposed four needs-based categories of emerging and potential AI applications. They are the following: (1) education management and delivery; (2) learning and assessment; (3) empowering teachers and enhancing teaching; and (4) lifelong learning.

In the context of our topic of interest, the second category is the one that has received most attention from educators and policymakers, and it is even considered as constituent of the "fourth education revolution" (Seldon and Abidoye, 2018, Miao et. al, 2021). This category refers to the use of intelligent systems, like dialogue-based tutoring systems, exploratory learning environments, AI supported reading and language learning, smart robots, educational virtual and augmented reality, and AI-enabled collaborative learning, among others (Miao et. al, 2021). Although revolutionary, various concerns, especially from the ethical perspective, still arise. The third category is also important since it refers to the role of teachers and enhancing teaching through the use of AI. In this regard, it is believed that through the use of AI technologies, teaching can be enhanced, since different applications help in reducing teacher's workload related to assessment, plagiarism detection, and different administrative jobs, so that the teachers will be able to focus on more meaningful tasks with the students (Miller, 2023). Some of the benefits in this regard are possibilities for differentiated instruction, where student's individual strengths, interests and preferences for use of different AI tools can be taken into consideration (Chaudry & Kazim, 2022).

However, in order to achieve this, teachers will need to strengthen their competencies in the use of AI technologies, and furthermore, to find smart and pedagogically appropriate ways of their application, which will enhance the learning process.

1.2. Potential risks of the use of AI in education

Besides multiple benefits of the use of AI in the education process, educators must be aware and always attentive towards potential risks. In this regard, special emphasis should be placed on Generative AI (GenAI) in educational settings. Generative AI is defined as "an artificial intelligence technology that automatically generates content in response to prompts written in natural-language conversational interfaces" (UNESCO, 2023, p. 8). GenAI uses data collected from webpages, social and other media, and produces new content. In educational settings, this presents a major threat since it allows the students to use this technology (for instance ChatGPT) for generating different types of assignments. Among the many controversies and ethical issues arising from the use of GenAI, one is that it cannot produce genuinely new content about the real world, but only reproduces the existing one, which may include producing inaccurate text, re-creating fake-news etc. In this regard, different actions can be taken to prevent negative effects of the use of GenAI, like increasing students' technological literacy and developing AI competencies, which will prepare them for appropriate, meaningful and ethical use of AI for educational purposes. On the other hand, educators should also be equipped with appropriate skills which will allow them to implement the new technologies in the best possible way. Miller (2023) points out that it is not enough for teachers to know how to apply some specific technology, since in some specific time it may become obsolete, and therefore they should learn how to keep pace with the new technologies and be supported in trying new ones when they appear.

1.3. Possible solutions for appropriate use of AI technologies

Bearing in mind that the use of AI technologies cannot be banned, nor should it be, educators need to find a way to use its opportunities in the best possible way. Given this, in the UNESCO's publication "Guidance for Generative AI in Education and Research" (2023), a human-centered and pedagogically appropriate interaction approach is proposed. It emphasizes the following considerations: the use of the AI tools should contribute to more effective learning; it should be controlled by educators and learners; the chosen tools should be in accordance with learner's age and expected results; and should ensure that there is active engagement from the side of the learner and higher-order thinking is targeted (UNESCO, 2023, p. 29). In this regard, Miller (2023) also points out that technology can enhance the overall learning process.

Also, using AI tools can give more autonomy to students and make their learning experiences more meaningful, but this also implies that they need to take responsibility for the process, i.e. that students "must be active agents engaging with a technology and utilizing it to co-construct a knowledge base" (Al-Maawali, 2022, p. 4). A research study on this topic was conducted by Kim and Cho (2023) who have examined students' perceptions of advantages and barriers of student-AI collaboration, in which students had an AI tool as a learning partner in a drawing task. Their study indicates that students expected from the applied tool to serve them as a tutor that will support and lead them during the task and provide them with hints; the other expectation was to serve them as a tool for completing the task in an efficient manner. Kim and Cho (2023) reported that the general experience for the students was enjoyable. When it comes to the barriers in this process, it was reported that the most prominent one was lack of appropriate pedagogical knowledge and support. Another one was the AI's inability to explain cause-and-effect relationship.

2. Method

The aim of this paper was to explore students' perspectives on using AI technologies for learning. The focus was on tertiary level students and how they perceive the importance and possibilities that AI technologies offer in the educational process. Two research questions guided the study:

- To what extent are tertiary level students aware of the opportunities of AI technologies for learning?
- How do they perceive the use of AI technologies as a means in the process of learning and to which purposes do they serve?

Having in mind these perceptions, the purpose of this paper is to propose ways on how to approach the use of AI technologies in the higher education, in a way that it will make a balance between using most of the potentials that AI technology offers and maximizing students possibilities for its use, while decreasing or minimizing possible misuse.

For the purposes of this research, we designed a questionnaire, which consisted of 14 questions, including open-ended and closed-ended questions and statements on a 3-point Likert-type scale.

The sample included 95 participants, students of different faculties at the International Balkan University. Out of the total number of participants, 74 (77.9%) were females, and 20 (21.1%) male students. Categorizing them into faculties, the participants were included as follows: 32 (33.7%) were students from the Faculty of Education (FEDU), 28 (29.5%) from the Faculty of Humanities and Social Sciences, 25 (26.3%) from Faculty of Engineering and 10 students (10.5%) from the Faculty of Art and Design. Regarding the study year, the majority of them were students in the third year of studies, that is 47 students (49.5%), followed by 32 (33.7%) fourth-year students, 14 (14.7%) second year students, and only 2 (2.1%) first-year students.

Table 1. Sample of general information

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1	1.1	1.1	1.1
	Male	20	21.1	21.1	22.1
	Female	74	77.9	77.9	100.0
	Total	95	100.0	100.0	

Faculty

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	FEDU	32	33.7	33.7	33.7
	FHSS	28	29.5	29.5	63.2
	FENG	25	26.3	26.3	89.5
	FAD	10	10.5	10.5	100.0
	Total	95	100.0	100.0	

YearOfStudies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	First	2	2.1	2.1	2.1
	Second	14	14.7	14.7	16.8
	Third	47	49.5	49.5	66.3
	Fourth	32	33.7	33.7	100.0
	Total	95	100.0	100.0	

3. Discussion and results

The following section provides students responses. Regarding the first question, which intended to explore if students are familiar with some AI tools or platforms that can be used for educational purposes, the majority of the students, that is 82 students (86.3%), answered positively, while 13 students (13.7%) answered negatively (Table 2).

Table 2. Familiarity with AI tools

DoYouKnowAnyAItools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	82	86.3	86.3	86.3
	No	13	13.7	13.7	100.0
	Total	95	100.0	100.0	

Those familiar with some AI tools, were then requested to point out which tools they specifically know. Their responses included: ChatGPT, Duolingo, Quizlet, Plagiarism Checker, paraphrasing tools, Runway, Jasper, MyAI, Twee, AI video, Natural readers, Safari, My all, Chata, Mybib, Quillbot, Sci-hub, WOMBO dream, Image generator, English club, Agent GPT, Gamma app, Khan academy, Brainly, OpenAI, Dolle, ChatterBot, Kipper.ai, Chat Sonic, Dall-E, Firefly, Perplexity.lo, Phind, and Edomondo. Accordingly, it can be concluded that students are familiar with a variety of AI tools which can be used for educational purposes.

We were then interested to see how they have found out about available AI platforms. Here it was possible for the participants to choose more of the offered options. Consequently, most of them (62 participants) have found out on social media, while others found them through their friends (30 participants). Significantly less participants said that they have learned about them from their professors or found out on YouTube (13 participants), while only 13 students have read an article (Figure 1).

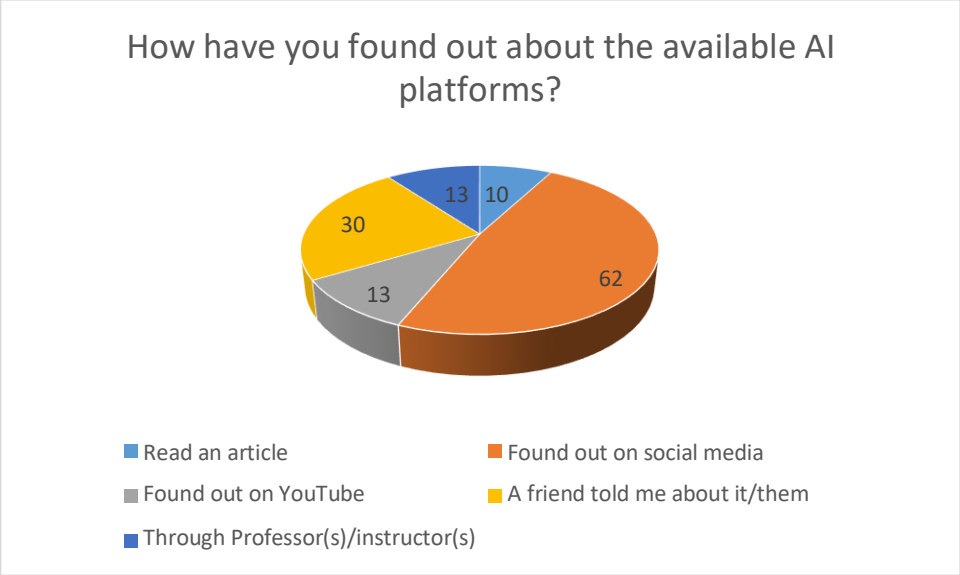


Figure 1. Learning about available AI tools

Since we were specifically interested to discover how AI tools were presented and their possible use for educational purposes, the question that followed was whether some of the tools that they were familiar with were introduced or suggested by their professors. Here the answers were almost equal, i.e. 46 (48.4%) of students learned through their professors, while 49 students (51.6%) haven't been introduced with or suggested to use some AI tools by their professors (Figure 2).

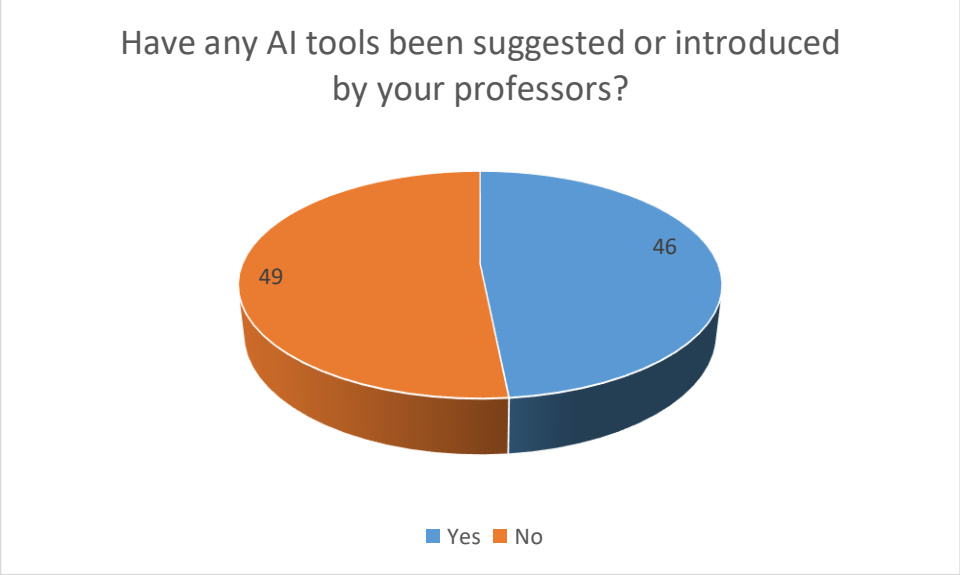


Figure 2. AI tools suggested by professors

Based on the presented results, regarding the first research question of this survey, it can be summarized and concluded that the majority of the students, or more than 86% of participants, are familiar with some AI tools which can be used for educational purposes. The social media are the most often source for learning and exploring about possible AI tools for educational purposes, followed by friends informing or sharing experience about different tools. Regarding the role of professors, although it was noted that they are not the primary source for learning about some AI tools, still a significant number of them suggests the use of AI tools for educational purposes, and this is the experience of almost half of the students.

In the following part students' responses which refer to their perceptions of the use of AI technologies in the process of learning and the purposes they serve are presented.

Firstly, the students were asked what was, in their opinion, the general attitude of the professors regarding the use of AI tools. The answers show that 22 students (23.2%) believe that their professors have positive attitude towards the use of AI tools, 17 students (17.9%) consider the opposite, 16 of them (16.8%) haven't discussed with professors on this issue, whereas most of them, that is 40 students (42.1%), are not sure whether the attitude of their professors is positive or negative (Figure 3).

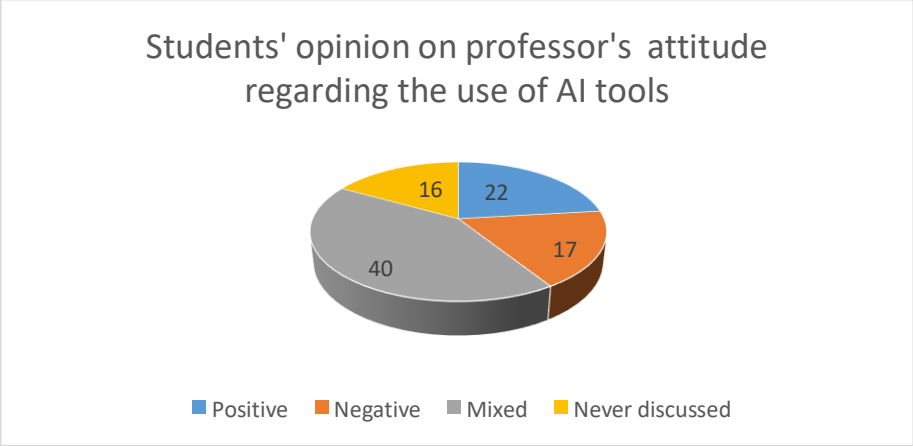


Figure 3. Students' opinion on professor's attitude regarding the use of AI tools

The reason for this variety of answers can be searched in multiple factors. Namely, in everyday practice, professors and students meet with different uses of AI tools for educational purposes. Some of them contribute to producing more successful and creative assignments, but also some tools are used only for the purpose of making students' life easier, i.e. completing the assignments without a lot of effort. Whereas the first case can be recognized, usually the second one is followed by a more pronounced and often negative comment, since it may not put real effort in completing the assignment, and thus haven't learned a lot, which is contrary to the expectations of the education process and its purposes. Due to this, and the fact that students have more professors in different subjects at one specific time, it might be difficult to generalize on this matter and due to this the variety of opinions are noted on this issue.

In continuation to this, students were asked how they viewed AI tools when it comes to their use in education. Responses in this regard also differ. Namely, 38 students (40%) see AI tools as a learning opportunity, 18 students (19%) as an opportunity to complete assignments without a lot of effort, whereas 39 students (41%) see AI tools from both perspectives (Figure 4).

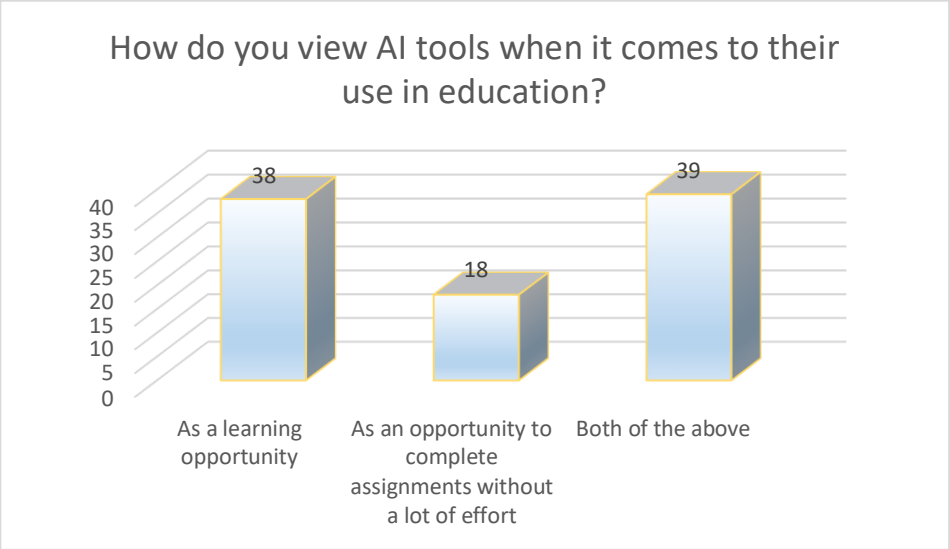


Figure 4. Student's views on the AI tools in education

In the following part, we were interested to examine how students perceive the use of AI tools in different situations, as acceptable or not acceptable. Results are presented in Table 3.

Table 3. Students' opinion on the use of AI tools in different situations

		Disagree	**Undecided**	**Agree**	**Mean**
1.	Acceptable because it saves time	12	13	70	2.61
		12.6%	13.7%	73.7%	
2.	Acceptable because no real effort is required	36	38	21	1.84
		37.9%	40.0%	22.1%	
3.	Acceptable because produces more creative assignment than the student would do by himself/herself	16	21	58	2.44
		16.8%	22.1%	61.1%	

4.	Acceptable if professor doesn't notice	41	34	20	1.78
		43.2%	35.8%	21.1%	
5.	Acceptable, whenever it is used as a helping tool for the improvement of already prepared assignments or tasks.	6	11	78	2.76
		6.3%	11.6%	82.1%	
6.	Not acceptable because it doesn't contribute to real learning	34	31	30	1.96
		35.8%	32.6%	31.6%	
7.	Not acceptable because is a type of cheating	33	35	27	1.94
		34.7%	36.8%	28.4%	
8.	Not acceptable because it's not fair to other students who put real effort in their assignments	30	23	42	2.13
		31.6%	24.2%	44.2%	

From the aspect of time saving, for the majority of students, that is for 70 students (73.7%), the use of AI tools is acceptable, and for 12 of them (12.6%) it is not. 13 students (13.7%) are undecisive on this matter.

The use of AI tools as a means for producing more creative assignments, compared with what the student will produce by him/herself was acceptable for 58 students (61.1%). 16 students (16.8%) had opposite opinion, while 21 of them (22.1%) were undecided.

There were more positive perceptions when it comes to using AI as a helping tool for improvement of assignments already prepared by the students. At this point, 78 students (or 82.1%) agreed with this type of use of the AI tools, 11 (11.6%) were undecisive, whereas only 6 students (6.3%) disagreed in this regard.

When it comes to using AI tools as a means for completing the assignments with less effort, the participants were asked to rate the statement "Using AI tools is acceptable because no real effort is required". 21 students (22.1%) agreed with the statement, 38 (40%) were undecided, while 36 students (37.9%) disagreed. In the same vein is the following one, i.e. "Using AI tools is acceptable if professor doesn't notice" with almost similar answers. Namely, 20 students (21.1%) agreed with this, 34 (35.8%) were undecided, while 41 students (43.2%) disagreed.

The following statements refer to the reasons why the use of AI tools is not acceptable.

In terms of quality of the learning process, students' perceptions differ. Therefore, on the statement "Use of AI tools is not acceptable because it doesn't contribute to real learning", 30 students (31.6%) agreed, 34 (35.8%) disagreed with this, while 31 students (32.6%) indicated that they were undecided on this matter.

Furthermore, the use is unacceptable for 27 students (28.4%) because it's perceived as a type of cheating. Opposite perceptions were given by 33 students (34.7%), while 35 students (36.8%) were undecided on this matter.

The last is the statement "Using AI tools is not acceptable because it's not fair to other students who put real effort in their assignments". The results show that 42 students (44.2%) agreed with this statement, 30 (31.6%) disagreed, whereas 23 students (24.2%) were undecided.

Based on the presented results, it can be concluded that when speaking about the benefits of the use of AI tools, in terms of saving time, preparing more creative assignments and improving assignments which are already prepared by the student, in general, our participants have positive perceptions, and this refers to around 60-80% of them. The percentage of those with negative perception is from 6 to 16%, while 11-22% are undecided regarding this matter.

When it comes to potential benefits the students can have from the use of AI tools, but which is not related to enhancing the process of learning, but rather to making it easier and sometimes questionable (examined through the statements: "Acceptable because no real effort is required" and "Acceptable if the professor doesn't notice"), significant part of the participants, that is around 38-43%, don't approve or disagree, while for around 20% of the students this is acceptable. It is worth pointing out that 35-40% of the students are undecided in this regard, which may be a basis for assuming that these students may be prone to use AI tools for this type of potential benefit.

At the end are the opinions for not accepting the use of AI tools, due to negative aspects, like no contribution to real learning, perceiving it as a form of cheating and since it's not fair towards students who put real effort in completing the assignments. This is the case and applies for around 30-44% of the participants, while opposite are the perceptions of 31-35%, which means that use of AI tools is acceptable for them, despite the negative connotation. It is also worth mentioning that undecided on this matter are 24-36% of students, which is not a small part, considering that the indecisiveness can easily shift from positive to negative connotation and appropriately, application in practice.

In general, it can be summarized that although the majority of the students have positive perceptions when it comes to using the benefits of AI tools for the process of learning, in regards to creativity and saving time, the results are not so favorable when the possibility for its use is in the direction of choosing the easier path, by this referring to the attitudes of acceptance of using these tools, from around 20% of the students, for completing the assignments with less effort, followed by no real learning and questionable honesty in the academic sense. Moreover, refusing to use AI tools because of the negative aspects is not seen as necessary. As noted previously, this refers to 20-35% of the student participants in this study. Additionally, a significant part of the participants in this study (25-40%) were undecided for most of the statements, which can be interpreted as not having established a clear perception and attitude on this matter, which represents a threat for moving toward the easier possibility, but nevertheless, this does not necessarily mean that it will result in such outcome. All this points to the conclusion that a significant part of the students may be prone to use AI tools in the manners that do not always contribute to improving the quality of learning and education.

4. Conclusion

Considering the results analyzed in the previous section, it can be concluded that students are aware of the existence of different AI tools and technologies which can be used for learning in the education process. Yet, when it comes to their perceptions on the possible use and application in the process of preparing assignments, results are not always in line with what is desired, i.e. a part of students have perceptions that the use of AI tools is acceptable because it helps to complete assignments with less effort, regardless of the fact that it may not lead to real quality learning or it may result in academic honesty. In this regard, the key role should be given to academic staff and professors who have the task and responsibility to influence all students, to help and guide them to understand the benefits of the use of AI tools in the process of learning and education in general, but also to point to its shortcomings and possible threats. Accordingly, when used in an inappropriate manner, AI tools can lead to academic dishonesty.

Another thing to emphasize is the significant part of participants in this study who did not have a clear point of view on this matter, which can be shifted in a positive, but also, in a negative direction. We believe that the role of higher education institutions and the help of academic staff in this regard is crucial. Therefore, being more purposeful in this manner, especially when it comes to giving assignments and assessing them, the

academic staff should have more intentional approach in defining clear rules on what is acceptable and what is something to be avoided. In addition, students should be offered good practices through well-organized and structured activities and assignments which will help them learn ways to understand and maximize the potential of the use of AI tools for learning and growth.

References

Al-Maawali, W. (2022). Integrating critical thinking into digital Connectivism theory: Omani pre-service teacher development. Language Teaching Research Quarterly, 2022, Vol.32, pp.1-15. https://doi.org/10.32038/ltrq.2022.32.01

Chaudry, M., A. & Kazim, E. (2022). Artificial Intelligence in Education (AIEd): A high-level academic and industry note 2021. AI and Ethics (2022) 2:157-165. https://doi.org/10.1007/s43681-021-00074-z

Kim, Jinhee., & Cho, Hoan Young. (2023) My teammate is AI: understanding students'perceptions of student-AI collaboration in drawing tasks. Asia Pacific Journal of Education, https://doi.org/10.1080/02188791.2023.2286206

Miao, Fengchun., Holmes, Wayne., Huang, Ronghuai., & Zhang, Hui. (2021) AI and Education: Guidance for Policy-makers. UNESCO, Paris.

Miller, A. L. (2023). AI Assisted Learning: A Tool or a Threat?. Journal of e-learning Research, 2(2), 52-65. https://doi.org/10.33422/jelr.v2i2.510

Websites:

Beijing Consensus on Artificial Intelligence and Education (2019), UNESCO, Paris. https://unesdoc.unesco.org/ark:/48223/pf0000368303

COMEST (UNESCO World Commission on the Ethics of Scientifc Knowledge and Technology) 2019. Preliminary Study on the Ethics of Artificial Intelligence. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000367823.

Guidance for Generative AI in Education and Research, UNESCO (2023), Paris.