Are AI Tools Helping The Students Too Much?

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***Abstract*—With recent advances in the development and usage of Artificial Intelligence (AI), we experienced a surge among the student body to take advantage of its many benefits. Despite the advantages, with AI taking over the major part of the work, we often face the dilemma of having students unwilling to engage cognitively in the learning process. This is especially true for works such as seminars, projects, and theses. In this idea paper, we present an expert interview conducted among six university professors to explore how AI adoption has led to negative student productivity outcomes. Based on this, we explore the question, "Are AI tools helping the students too much?" and provide a list of suggestions to quantify learning productivity and performance when using AI tools.**

Keywords-AI*, *Framework*, *Education

I. Introduction

In recent years, various technologies have gained popularity such as virtual reality [1], augmented reality [2] and Artificial Intelligence (AI). Among these mentioned, the popularity of AI technologies has pierced into our daily lives and we now knowingly or unknowingly embraced AI adoption in all sectors of our lives [3]. One such is the education sector, where both teachers and students use AI tools to assist in their work [4]. Although we have not fully grasped the magnanimous extent to which AI will change our lives, we acknowledge that AI is changing the world and will continue to do so. This forces us to ask, are all metrics associated with AI for good? Or do we also need to consider performance paradoxes: situations where AI adoption can lead to neutral or negative productivity outcomes? This idea paper explores the performance paradox in the education sector. We investigate how often students and teachers use AI tools for assistance and attempt to answer the question Are AI tools helping the students too much?

We present a qualitative interview with six experts (university professors) to understand their perspective. Their experiences tell us that the scenario of teaching and learning is constantly changing with AI tools, and we need to reform our metrics to use AI adoption effectively. Currently, in many cases, AI tools are a hindrance to critical thinking and creative development of students. We present the need for a refined framework to quantify learning productivity and performance using AI tools.

In section II, we present a brief literature review on AI tools and its impact on the education sector. Section III presents the methodology used to design and conduct our expert interview. The results are presented and discussed in section IV. We end our work in section V with the conclusion and future work.

II. Related work

AI is now having an impact everywhere, from machines, robots, and cars to mobile voice assistance and many more applications. This technology is influencing the future of every industry and changing the lives of all humans. With its numerous positives, there are also severe dangers ahead of us.

Ng et al. [5] present a review article showcasing how AI literacy has evolved from 2000 to 2020. Zhu et al. [6] introduce a research framework for smart education. The authors argue that there are numerous benefits to adapting to the latest technologies, such as AI, to assist a smart learning environment. Smart education empowers students, educators, and administrators in many ways [7].

Basha acknowledges the balance between positives and negatives in the education sector [8]. The author offers suggestions such as greater parental control over students to ensure proper and ethical usage of AI. However, as mentioned, there needs to be a deeper understanding of AI usage to uplift student performance and ensure that AI is not a hindrance to learning.

In this literature review, we find that industry and academic professionals all agree that AI is here to stay, and it comes with many positives. But we must also assess the dangers associated with it and work to mitigate them. One such context is the education sector, where students are becoming highly dependent on AI tools to complete their coursework, and we now contribute to this area with a framework to reduce the drawbacks.

III. Methodology

We now present our qualitative interview to understand how AI adoption in learning affects student productivity. The interview was conducted with six university professors aged between 35-65 years. We consider the participants to be experts in their fields with varying years of professional experience (5-15 years). The interview focused on questions targeted at understanding the current use of AI tools among students, how this is affecting students' performance, and whether there is a need to reform the usage of AI in learning and education.

The interviews were conducted online and with voluntary participation. Interviews and discussions revolved primarily around the following questions:

1. Do you witness your students using AI tools for assignments or projects?
2. Are there negative sides to using AI, if so, what are they?
3. Should there be metrics to evaluate the effectiveness of

using AI by students?
4. What kind of framework do you propose to restrict the use of AI?
5. In what area are students most affected and what can we propose to mitigate it?

IV. Results & Discussion

All professors unanimously agree that all students use AI tools to varying degrees and it negatively impacts their abilities. There is no denying that there are numerous benefits to using AI tools, for example, any auto-correction tools are now widely used by students to check for spelling and grammar mistakes, and even suggest better formation of sentences. These are frequently used by students to write their project reports or other assignments. But we believe these affect students and using AI tools to a large extent would negatively impact their learning skills and their ability to independently perform any assignment. According to the experts, these tools always limit creativity and make students dependent on external sources. One professor (expert P4) mentioned that students now are so dependent on AI tools to generate assignments, reports, and papers that they are unable to understand the concepts, and they pass a course at only a superficial level. Blind trust in such technology can also result in a loss of analytical and critical thinking. Ubiquitous technologies are designed and intended for people for use in their daily lives, and the education sector is no exception.

All professors discussed the use case scenario where students are doing their master's or bachelor's level thesis writing. A majority of the students turn in their reports where AI is doing the writing, as a result, different theses from different students look the same, read the same, using the same vocabulary. While we acknowledge that AI tools are here to stay and will assist the students, we believe there is an urgent need to understand both the positive and negative impacts on students. This will help teachers understand the students better and allow teachers to evaluate students and teach them concepts better, because the eventual goal is for the students to learn the concepts and apply them independently.

The discussion around a possible framework opened up various aspects that needs to be looked into. P1 says, "I would not say to restrict AI usage but rather open it to a certain limit. At the end of the day, it is a tool that could benefit them". Similar to this, expert P2 also agrees that AI tools should not be restricted, but we need to understand how students should be using them so that it is not used in a counterproductive manner. Based on our interviews, we believe there is a need to impose a ethical AI usage framework and ensure that the students are still able to complete the tasks themselves. We suggest the following steps as a first draft to a framework

1. Make it compulsory for students to perform certain sections of the work without assistance.
2. Record sections of the activities.
3. Classify different aspects of coursework and limit the usage of AI tools in restricted sections.
4. Implementation of oral evaluations of students instead of only written coursework.

V. Conclusion and Future Work

In this idea paper, we presented an open-ended interview with six university professors and discussed how positively or negatively AI tools impact the students. One limitation of our study is that it was only with a limited number of experts. As part of future work, we aim to have a higher sample population to represent our target community better. In addition, we would also like to understand the students' perspective on how AI makes an impact on their learning curve.

Our discussions indicate that all students do use AI tools for assistance, and more often than not, this leads to students losing their creativity or critical analysis skills. AI tools are beneficial in many contexts, but we need to limit their capabilities for the betterment of the students. But this may also entail a higher workload for the teachers. There is a need to establish a framework to measure effectiveness, critical analysis, creativity, and writing assessment, and a scale to ensure that AI tools are being used ethically, and the extent to which AI tools can be used for assistance. For future works, we plan to conduct a survey among students to better understand the use of AI for their university assignments to refine our proposed framework.

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