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Artificial Intelligence in Education: An Exploration into the University Teachers' Perspectives about Opportunities and Challenges

Abstract

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Keywords: Artificial Intelligence, University Teachers, Higher Education

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Contents

Abstract

This was a qualitative endeavor to explore the university teachers' perspectives on opportunities and challenges regarding Artificial Intelligence in higher education. For this purpose, there were eight university teachers (from both public and private) who were sampled conveniently from the social sciences disciplines. The data have been collected with the help of a Semi-structured protocol that has been developed by the investigator(s). It comprises 10 items including one introductory and one closing question. The collected data have been analyzed with the help of the Thematic analysis. Based on the results, it is concluded that, while AI has the potential to significantly transform education, there is a clear need for more targeted support and training for educators. Addressing these challenges is crucial to fully leveraging the benefits of AI and ensuring that its integration into education enhances, rather than complicates, the teaching and learning experience.

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Introduction

In short, AI has left its impact in every field from home, and earbuds to Vehicles. It converts traditional homes into smart homes, adds AI to electronic devices and enables vehicles to be drivable (Wang et al., 2023). The notion of AI was conceived at the Dortmund Conference by John McCarthy in 1956, who presented it as a replacement for human intelligence in manufacturing (Lee & Yeo, 2022). AI aims to simulate human and animistic behaviors by performing complex computations. It performs tasks to which methods

of logical reasoning and problem-solving are being effectively applied (Chiu et al., 2023).

The educational resources and educational software have witnessed a visible upgrade with the incorporation of AI in education. This use of AI has improved not only the teaching and learning processes but also the research work (Sipică & Toma, 2022). More so, AI has contributed to the development of management systems of educational institutions as well as to virtual classroom environments. It has helped teachers to teach in a much more efficient way and students to receive the information more easily (McGrath et al., 2023).

This change has in turn made it possible to undertake more AI-related research work. As we move towards an era where information is becoming plentiful, the progress of AI is becoming more dynamic and finding proper use in many other areas.

The emerging trends in education caused by the use of AI seem to be making the sector more relevant to the industry while transforming society. There is an integration of AI with education which is creating different methods for both teaching and learning and these are being implemented in various settings (Iku-Silan et al, 2023). In regards to technology, it is not incorrect to say that AI allows the development of systems like Adaptive Learning Management Systems or Intelligent pedagogical platforms. Such systems replicate teachers through AI and provide individualized education to every child according to his needs (Sharma et al., 2021). In addition, the scope of education is greatly being improved with the addition of augmented reality and holography which are powered by AI-inducing IT build-outs. It is also clear that these advancements in technology so to speak are being used in education for the purpose of enhancing education quality and efficiency (Tam & El-Azar, 2020).

Engineering students were surveyed to understand their views on AI, with most expressing optimism about its potential to revolutionize education by simplifying teaching and learning compared to traditional methods (Perkins, 2023). However, many also expressed concerns about AI, particularly its ability to replace humans in the workforce, raising fears about job security and potential unemployment in the future (Li & Du, 2021).

AI is exerting an influence across all sectors globally, blending intelligence and consciousness as part of the technological revolution. The economy, like many other fields, is being significantly shaped by AI, underscoring the necessity of integrating AI into the education system (Wang et al., 2023). Doing so would ensure that students are trained in such a way that, once educated, they can contribute effectively to managing the economy using AI. If AI is excluded from their educational experience, they may struggle to be beneficial to society. Therefore, incorporating AI into education is the key to equipping students with the capabilities needed to navigate and drive the economy in the digital era (Tahiru, 2021).

It has been observed that students' views on AI differ depending on their academic programs. Consequently, the study aimed to investigate the differences in their perspectives on AI. The AI revolution in the industry presents both advantages and disadvantages, and today's youth are entering the job market in this context. AI's impact is evident in the industry, where machines are now enhanced with AI technology. As a result, individuals educated in AI are likely to perform more efficiently. Thus, integrating AI into education is crucial, as recommended by UNESCO (Sloan, 2020).

A study revealed that undergraduate medical students had a limited understanding of Artificial Intelligence. Interestingly, researchers found that students were not particularly concerned about AI's impact on the healthcare sector (George et al., 2020). In a study involving 206 undergraduate medical students in Lebanon, around 59.7% claimed to have a strong understanding of basic AI concepts, with no significant difference between male and female participants. Looking at the 38 studies that were analyzed, the focus of 26 studies was the awareness of AI among healthcare students. Of these, 18 studies showed that the students possessed knowledge below the average score and only half had something … "Joglekar et al, 2020". This demonstrates that there is a gap requiring improvement in the level of AI literacy for these students (UNESCO, 2020).

Turn up three hundred forty-seven respondents in the study including the participants, only 35.3% were acknowledged with basic concepts concerning Artificial Intelligence. Most of the individuals that had basic knowledge were males and out of those males, nearly 77% did not know that AI can be applied in the health sector. These findings point out that some medical students have a basic understanding of AI but lack knowledge of its application (Mollick & Mollick 2023).

The application of AI in education is probably the most profound change which is fraught with new difficulties and

opens new horizons. This technology also provides new approaches to the practice, such as instead of using typical books in classes through the learning management systems ensured, there are likely to be digital textbooks with the system, and through the big data, individualized learning (Lee & Yeo, 2022). AI-based technologies have bright prospects in the educational environment assuring improvement of the delivery systems, revolutionizing the methods of teaching, and even confronting existing paradigms (George et al., 2020). This transition could significantly improve education by offering innovative tools and strategies for both educators and learners.

Recently, the tremendous growth of Artificial Intelligence (AI) has been noticeable and this is proving to be a new and growing technology, specifically one that will disrupt both the education and healthcare sectors. Nonetheless, even when the argument is made for the use of AI in higher education, many educators cannot picture all its potential (Mizumoto & Eguchi, 2023).

Evidence suggests that both the educators and the learners could do better in comparison to the present situations if they were more informed on the ways in which educational skills can be augmented by AI. Moreover, the research benefits from employing AI technology since there is a potential increase in educational performance (Sharma et al., 2021).

Increasing use of information technology in teaching and learning leads to the finding that the more the students accept the use of AI in education, the more they believe it can be integrated into the teaching and learning processes. Study data collected from qualitative analysis portrayed that the students perceived that AI use in education would augment teaching and learning, which would change the way in which learning was done to make it more productive and effective (Tahiru, 2021).

These 385 students were studied and as part of the study, it was reported that 39.06% of the participants found that AI incorporation in education is beneficial, and 49.48% found that it is beneficial in the area of learning. In addition to that, students also pointed out that AI would help track student participation and progress, interact with students and teachers, and assess student attention levels during classroom activities (Wand et al., 2023).

As the International Labour Organization put it, 'the spread of Artificial Intelligence (AI) may be impacting the job market, but yojos are hardly at risk of being found performing lonely tasks of creative or interacting with others.' Many occupations in the past would have placed a high premium on cognitive skills, but recent trends show that such skills are becoming secondary to social and emotional capacity in one's undertaking within a job. These abilities are valued in the world of work today, or in the near future as the always-considered orthodoxy of logic, those who are emotionally and socially intelligent will be rewarded in careers (George et al., 2020).

With the change in consumption and the optimization of production through the incorporation of new technologies that replace human activities, new job competencies for every person of age must be fostered for example the deep integration of new technologies that are stressed by the fourth industrial revolution (Liu e tal., 2022). Contrary to this, evidence shows that people are familiar with AI but are not adequately knowledgeable about its workings. According to a factual poll of Northeastern University and Gallup, participants feel unprepared for an environment that will be ruled by AI. In the same vein, research conducted at Hult International Business School shows that only a handful of participants are "very prepared" for the changing work environment and there is a notable disconnect between what academia teaches and what the industry demands particularly in regard to how advanced techniques such as computing and ICT are dealt with (Kolade & Owoseni, 2022).

In the concluding chapter, we recognize that while AI presents certain possibilities, there is a need for people to prepare for the changing world of work by emphasizing a broad set of skills that should not be limited to cognitive abilities only but should also encompass social and emotional skills. In many cases, the university syllabuses have no relation to those in demand on the job market, as it is mostly academic traditions and personal preferences of the lecturers that are of primary importance, rather than the skills needed by the employers. One of the reasons why such initiatives fail is that graduates are unable to fit into an AI-driven world of work (Runge et al., 2023). Participants in the research claimed that they do not know enough about AI, in order to see how it will change their careers for the better, if at all. The findings emphasize the need for curricular revisions to better equip students with the skills necessary for success in a job market increasingly shaped by AI (Mizumoto & Eguchi, 2023).

Methodology

This was a qualitative endeavor that was conducted under the

interpretivist paradigm to explore the university teachers' perspectives on opportunities and challenges regarding Artificial Intelligence in higher education. For this purpose, there were eight university teachers who were sampled conveniently from the social sciences disciplines. They belonged to both the public and private universities across Punjab. The data have been collected with the help of a Semi-structured protocol that has been developed by the investigator(s). It comprises 10 items including one introductory and one closing question. The data collection instrument has been validated by taking the experts' opinions. The data have been collected while conducting the individual interviews.

Data Analysis & Results

The collected data have been analyzed with the help of the Thematic analysis. The details are as under:

Opportunities for Better Education:

Improved Teaching

When the participants were asked how do they see the AI regarding its benefits to the teachers' teaching? The majority of the participants responded that AI is affecting education generally and teachers' teaching specifically and positively. AI has helped teachers improve their teaching as compared to earlier. It has made the teaching planning easier for the teachers than earlier. It also has brought the different sources to one platform. AI has enabled teachers to schedule the students' learning experiences so that they can learn individually.

One of the participants stated that:

AI has brought innovation in planning. Within a few of the technical prompts, the AI platform gives you the lesson plan within a few minutes as compared to the manual planning. You are just required to give the related information, then it prepares an effective lesson plan for you.

A similar stance has been shared by another participant:

Individualized teaching has become such an easy thing for teachers in the presence of AI. AI has completely changed the way I teach. Planning lessons used to take a lot of time, but now AI tools have made it much more streamlined. I can find a variety of resources in one place, which helps me create more engaging and varied lesson plans.

Another participant responded in a similar way:

AI's biggest benefit in education is how it simplifies the preparation process. Now, I can easily gather materials from different sources and have everything I need right at hand. This allows me to concentrate more on delivering effective lessons rather than spending too much time on preparation.

The former stance is also second to the former stance that:

AI has given me the ability to tailor my students' learning experiences. With AI, I can set up activities that match each student's learning pace, ensuring that everyone receives the appropriate level of attention. This level of personalization would have been very difficult to achieve with traditional teaching methods.

A similar perspective has been shared by another participant that:

AI integration into teaching has been transformative. It's not just about making my work easier; it's about raising the standard of education. By combining various educational resources into one comprehensive platform, AI has enriched my teaching practice, which has had a positive impact on my students.

Improved Learning

When the participants were asked how they felt regarding the current status of learning in the presence of AI, the majority of the participants were of the view that AI has given a boost to learning activities in a way that now the students are at ease to access the maximum of the content online. They can get help regarding their learning difficulties online if the teacher is not available for the time being. Similarly, they can get creative ideas for their creative assignments. Now they can even access some of the paid content with the help of the AI platforms. The AI is becoming an active actor in the provision of the universal education. Every student across the globe can access the educational resources with the help of the AI. They can get guidance from the AI anytime they are in need.

One of the participants stated that:

AI has completely transformed the manner in which students learn. It is much easier for learners to access the information that they need online, whether they are stuck on something or simply wish to find out about something new. Even if the teacher is not around, the learners are always able to get the assistance that they require, when they require it.

Another participant has supported the same stance:

AI has indeed taken away quite a great deal of pressure. There are so many materials available all over the internet for

the learners and it seems as though a tutor is there 24/7. When students face complicated subjects or need some inspiration for their artistic projects, AI helps them come up with ideas.

Another participant shared the perspective that:

For me, the most encouraging thing about AI is its impact on educational access. With the help of the respective AI platforms, the students can even view paid media content that they would have not viewed in the first place. It is like anywhere you are on the globe, you have everything you want to know standing at your fingertips.

Another participant has the same response:

There is no denying the fact that AI is now beginning to infiltrate the world of education.

It's incredible to think that students from all corners of the world can now access the same resources and learn at their own pace. Whenever I need guidance, AI is there, making education more accessible and inclusive.

Educational Assessment

When the participants were asked regarding the role of AI in the educational assessment, the majority of the participants gave their views that the educational assessment has been improved with the help of AI. It suggests different online platforms for the teachers where they could get the readymade assessments along with the solutions which saves their time and effort. The individualized assessment has been easier with the help of AI than earlier.

One of the participants stated that:

AI has significantly enhanced how we manage assessments. Now, it is much easier to search different websites that provide ready-made tests with the solutions included. This has drastically curtailed the time and resources I expenditure on developing assessments which has guaranteed me more teaching.

A similar stance has been given by a participant:

Implementing individual assessments has hugely been made easier by AI. Earlier there used to be problems in addressing such diversity in the classroom, but presently with AI, it is possible to develop tests based on every individual learner's progress and capacity.

Another participant shared a similar view:

The ease of use of AI in evaluation has many advantages in education. It's not only about time management now; it's also about the quality enhancement of the evaluation. AI improves assessment in that it provides me with the most appropriate tools for evaluation that meet the needs of my students, which was pretty difficult before.

A similar stance is shared by a participant that:

AI has become a vital tool in modern education, particularly in assessments. The ability to quickly access and use high-quality assessments through AI platforms has revolutionized how I evaluate my students. It's made the process more efficient and personalized, benefiting both teachers and students.

Evolution in Research

When the participants were asked to share their perspectives regarding the role of AI in the research conducted in this era, the majority of the participants responded that AI has brought evolution in the field of research. The researchers are at more ease to find the latest research, research platforms, and access to paid content and even they can get a consultation regarding the process of research from the AI. Even they can get guidance regarding topic selection, methodology selection, and data collection, and they are even helped out regarding the data analysis techniques.

One of the participants stated that:

AI has dramatically changed how I approach research. Finding the latest studies and accessing various research platforms has become much more straightforward. Spending only a little time to search for current relevant information has cut down this stage of literature review into just a moment.

A similar stance has been given by a participant:

The inclusion of AI in research has its advantages, one being the availability of articles behind paywalls that otherwise would be hard to acquire. Another value of AI is that it helps me comb the seeds of data so that I can keep myself abreast of the developments in my field.

Another participant shared a similar view:

AI has become one of the most important tools in all stages of research and writing. With respect to developing research questions, finding appropriate methodology, and collecting and analyzing data, I am assisted by AI in all of these practical activities. While I am doing research, it is as good as having help with no research when I want it.

A similar stance is shared by a participant that:

It is amazing how AI assists in the analytical work. The task of data analysis was always a hard one but today because of the AI tools the work is more simplified.

Challenges:

Difficulty in Opting AI for Teaching

When the respondents were probed with the question about the barriers encountered while applying the AI into the education. The most dominant element in the responses was that the majority of them had problems when trying to learn the necessary skills for the proper application of AI tools. For people like these, it can be overwhelming to start using AI more actively in their classes. Whereas conventional pedagogical methods do not include the need for understanding complicated programs, analysis of data, and working on computers, in the case of AIE, these knowledge and skills are essential and some teachers may find it inappropriate or tough.

However, applying such an approach poses a steep learning curve regarding the use of these technologies and thus takes time. Teachers are likely to spend a considerable amount of time and energy learning to use and perfect these tools. This is likely to be a challenge to those whose plates have been filled for some time since the quest to have some additional time to study and practice these novel skills may add to their misery.

While replying to one of the questions, one of the participants expressed that:

I've found it quite hard to develop the ability to employ AI in my work. As I'm not the most technology-literate person, I find using AI a little bit too much for me at times. It is much more complicated than the typical teaching practices which I am used to.

Another participant gave a similar response:

The use of AI requires a good knowledge of intricate software applications, data, and digital systems which I am not very versed in. It has been such a steep learning curve from day one and it is quite difficult to cope with. More often than not, I get overwhelmed by the prospects of making the best use of these new resources.

A similar picture was presented by a participant that:

Learning how to use AI technologies has proven to be a challenge for me, Keith. The learning that these tools require is very high and time-consuming which is difficult to do when already taking up a lot of teaching hours. Looking and trying

to fit in the extra time to learn and put into practice AI together with everything else has certainly upped my anxiety levels.

Another similar picture was presented by the participant:

For a person who is not particularly fond of technology, the prospect of using AI in education is very daunting. It is not simply learning how to use a new instrument; it is adapting to an entirely new concept of learning where multi-platform use and analytics are the problems. I have found this quite a challenge.

When the participants were asked about the challenges faced regarding the upgradation of AI technology and learning how to use such an evolving technology integrated in education. The most overwhelming amount of the participants reported that technology is ever-present but has to be in a state of motion and there are new AI devices and platforms for educators these days. What this means is that teachers have to learn new things over and over, which can be a factor that discourages those who have difficulties being up to date with new technology. Consequently, it comes to be that some teachers will hesitate to use and adopt AI tools as they are concerned about being effective and in the case that any tool's performance affects the teaching quality.

It was noted by one of the participants that:

One of the most important challenges I encounter is the race against constant change in technology. AI tools and platforms are always getting updated, and there always seems to be something new that needs to be learned. And that very anxiety of constant change needs to be customized how even when I have a complete teaching list of activities to perform.

Another participant gave a similar response:

Since the advancement of AI technologies is constantly happening, I have to constantly learn and respond to the developments, which can be very stressful. The challenge is to keep track and incorporate all the new additions and changes that come with these tools and most of the time I fear I won't be able to manage these tools well and this can affect my quality of teaching.

A similar stance was given by a participant that:

It's very hard to catch up with all the improvements that every AI implementation in education suggests. There's an enormous pressure to constantly reinvent myself and upgrade my competencies so that I can keep on par with the advancing technology, which is often very difficult and puts me in a very vulnerable situation. This makes me rather

reluctant to fully incorporate AI in my work as I'm worried that I won't be able to use it properly when the time comes.

Another similar stance was given by the participant that:

The case of this essay is about the constant changes in AI technology and how it strains a person to keep up with such changes. At some point, it can be very tiresome having to constantly change and learn phobia, more so for people who especially don't see themselves as tech-savvy. Once in a while, I fear that this will impact my teaching if I do not manage to keep up.

Lack of Professional Training to Use AI

When asked about their experiences regarding the attainment of professional development and training regarding using AI in education, what came to their knowledge regarding all these professional development opportunities offered was insightful. Most of the participants pointed out that the hurdle might be the presence or absence of enough professional development and training opportunities that are focused on refining the ability of the teachers to incorporate AI into teaching. In such instances, if no other systems are in place to assist, teachers will be left in a situation where they cannot carry on with their AI-centered lessons in peace as they feel all alone which only serves to coax frustration, discouraging them even further from using such technologies.

As one of the participants related with the perspectives that:

I - Like others - have suffered from one of the biggest maladies of this educational climate: the lack of education provisions for the effective application of AI in teaching. The appropriate culture and attitudes towards these tools' use are just not there. Often, I feel as though I take on AI's application in my classroom all by myself without the help I need.

In another case, a participant stated that:

There simply aren't enough specialized training opportunities for teachers when it comes to incorporating AI into education. This gap in professional development makes me feel isolated in my efforts to bring AI into my teaching practice. It's frustrating because the potential is there, but without the right guidance, it's difficult to use these tools effectively.

A similar stance was given by a participant that:

There are limited professional development options for learning how to use AI in education. This shortage of specialized training has made it difficult for me to feel confident in using AI in my teaching. Without adequate support, it's easy to feel frustrated and uncertain about how to best apply these tools in the classroom.

Conclusion & Discussion

AI adoption in the education sector provides bravery opportunities and threatens properly revolutionary challenges. On the positive side, the kreascend, saw machine is changing the way education is being offered by enhancing both the learning and the teaching process. When one of the participants mentioned that class materials could be prepared very easily thanks to AI, the integration of various resources for teaching became simpler, and more effective and versatile teaching techniques were introduced. Enhanced teaching has been observed where these students' individual needs are met more effectively. Similarly, AI could afford students vast sources of information and various modes of learning even without the aid of teachers. The introduction of AI in minute analysis as well as research was appreciated and it regards that It makes the assessment preparation a rather easy task while making any research activities much easier.

However, the study still brings out some barriers in relation to the phenomenon of AI ecosystem integration. Especially, practitioners of AI applications often encounter difficulties associated with their usage. It is also an additional barrier to adopting and deploying new technologies for training purposes, as the technology of AI is changing rapidly. In addition, the other factors that aggravate these issues include inadequate professional development and training courses that are more addressed to AI in education, and some teachers are left unsupported and alone in trying out AI to enhance their teaching.

Considering the results, it is pointed out that there is tremendous potential for AI to bring about change in education, however, it has been identified that further resources and training are necessary to focus on the needs of teachers. Focusing on these problems is vital to maximizing the advantages offered by AI and also making sure that the application of AI in education is an improvement of the actual teaching and learning experience rather than being a burden.

Recommendation

This study brings out the unmistakable promise of AI in education. However, it identifies an area that remains insufficiently addressed – supporting and training the

educators with the necessary emphasis. It argues that in addressing these challenges, especially how to empower teachers with the relevant knowledge and tools, it will be easier to adopt AI in such a way that it adds value to the learners' lives rather than making it more complex. These insights are especially important for policy makers, schools within the system, and AI developers as these are the issues national and institutional policies would need to address in order to realize the full benefits of AI in teaching and learning processes.

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