Exploring Challenges and Benefits of AI in Higher Education-A Samoan case

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Abstract

The rapid integration of technology in classrooms globally is unmistakable. However, this raises a crucial question: Can a machine truly replace a teacher? How can technology instill essential human values needed to thrive in society, let alone the critical skills graduates require to succeed in the workplace and beyond? This qualitative study aimed to explore views of practicing teachers and teacher trainers on the benefits and challenges of AI in higher education and assess AI's potential to replace or supplement human teachers. Data was gathered via email, through open ended questionnaires from nine (9) practicing teachers and nine (9) teacher trainers. The findings revealed that while AI offers substantial benefits, such as improved access to information, immediate feedback, personalized learning experiences, and support for educational resources, it also presents challenges. These include emotional deficits, potential misinformation, and limitations in fostering critical and creative thinking pertaining to AI. Similarly, learners' over-reliance on AI generated information can lead to cognitive deficit. Thus, the findings advocate for a complementary approach where AI enhances, but does not replace, human teaching. This balance ensures a holistic educational experience.

Introduction

The rapid integration of technology in classrooms globally is unmistakable especially in the likes of artificial intelligence (AI). Artificial intelligence is the future element of technology, designed to make easier the lives of individuals easier. This rapid growing field has the potential to transform every facet of our social interactions. In the realm of education, AI has already started introducing

innovative teaching and learning solutions-the latter are currently being tested and refined in various contexts (Bostrum, 2017). Although, AI seems to be a promising technological educational tool, it raises crucial questions: What are challenges and benefits of AI in education , especially in higher institutions like universities? Can AI truly replace a teacher? How can technology instill essential human values needed to thrive in society, let alone the critical skills graduates require to succeed in the workplace and beyond? These are questions this paper aims to discuss based on empirical data.

Study context

At the national university of Samoa, where we work as teacher trainers, the first time that we ever heard about GPT Chatbots was in early 2024. This was when our university introduced the concept to lecturers as a means to facilitate teaching and learning process. However, preliminary observations suggest that not many educators within our teacher training institution are familiar with or knowledgeable about AI. For example, whenever the AI concept cropped in our conversations with other colleagues within the faculty of education, more than half of our colleagues do not seem to have an idea as to what this phenomenon is. On the contrary, students that we work with seem to have a much better idea of AI chatbots as they would frequently use their technological devices for information during class discussions. Although this technological support for students can be applauded by lecturers, however it also raises some concerns in connection to plagiarism. For instance, how much of the work students submitted assessments are of their own and how much are AI generated? It has been noted that the work some students produce shows a mismatch with their classroom performance. Hence, although AI seem to be beneficial, it can be challenging at the same time. In Samoa, limited research has been conducted on the significance of AI in education.

This paper aims to explore the views of practicing teachers and teacher trainers regarding the benefits and challenges of using AI (particularly chatbots, in education for both students and educators. Additionally, it seeks to determine the role of AI in the classroom and whether AI can fully replace the teacher. By understanding these perspectives we can gain insights into how AI can be effectively integrated into the educational landscape, addressing both its potential and its limitations.

Literature Review

Historical Context

The development and evolution of AI in education have been significant over the past few decades. Initially, AI applications focused on computer-assisted instruction, providing basic educational tools and resources. In recent years, advancements in AI have led to the creation of intelligent tutoring systems, adaptive learning platforms, and AI-driven educational tools that enhance the learning experience (Luckin et al., 2016). These technologies have transformed how students interact with educational content, offering more personalized and engaging learning experiences.

AI and AI Chatbots defined

Artificial Intelligence (AI) refers to the simulation of human intelligence processes by machines, especially computer systems, encompassing learning, reasoning, and self-correction (Holmes et al., 2019). AI chatbots are software programs created to mimic human conversation through text or voice interactions. Artificial intelligence technologies, such as natural language procession (NLP) and machine learning are chatbots that comprehend and respond to user inputs in a human-like manner (Holmes, et al., 2019). They are versatile tools capable of handling various tasks, including answering queries, offering technical support, engaging in casual dialogue, and providing personalized recommendations. AI chatbots are widely used across different industries, including customer service, healthcare, and education, to enhance user experiences and boost efficiency (Wang et al., 2022).

AI in education

AI technologies, such as chatbots, learning analytics, and adaptive learning systems, are increasingly being integrated into higher education to enhance teaching and learning processes (Holmes et al.,2019). Universities are using AI to provide personalized learning experiences, support administrative tasks, and improve student performance. For instance, AI-driven platforms can analyse student data to identify learning gaps and provide tailored feedback, improving academic performance. Clearly, AI seem to offer some significant benefits for the teaching and learning process.

Benefits of AI in education

Research has identified several benefits of AI in education as will be discussed in this section.. One of the benefits relates to the concept of personalized learning. That is, AI can customize experiences to meet individual student needs, helping to bridge learning gaps and promote deeper

understanding (VanLehn, 2011). Personalized learning is seen as one of the most significant advantages of AI, as it allows students to learn at their own pace and style. Similarly, AI is beneficial in relation to administrative efficiency. For instance, AI can automate routine administrative tasks such as grading, scheduling, and tracking student progress, freeing up time for educators to focus on instruction and interaction with students (Luckin et al., 2016). This increased efficiency can lead to more effective classroom management and better students outcomes. The literature also indicated the critical role AI play in enhancing engagements. For example, AI technologies, including virtual reality (VR) and augmented reality (AR), can create immersive and engaging learning environments (Bacca et al.,2014) These tools can make learning more interactive and enjoyable, increasing students motivation and participation. In addition to these benefits, AI have been found to have the ability to provide support within the inclusive education environment. For example, AI can provide assistive technologies for students with disabilities, making education more accessible and inclusive (Holmes et al., 2019). An example of this is noted in the support that AI tools offers for student with special needs. For instance. AI can offer speech recognition for hearing impaired students or text-to speech for visually impaired students, ensuring that all learners have equal access to educational opportunities.

Challenges of AI in higher education

Despite its benefits, the integration of AI in education presents several challenges. For example, one of the issue pertaining to ethical consideration. AI raises ethical concerns, such as data privacy, bias in algorithms, and the potential for misuse of students' information (Williamson, 2017). Hence it is crucial to ensure that AI systems are transparent and fair in addressing these ethical challenges. An additional challenge concerns with data privacy. For instance according to Slade & Prinsloo (2013), protecting the privacy and security of student data is a significant consent as AI systems often rely on large amounts of personal information. Hence it is crucial for schools and educational institutions to have in place robust data protection measures to safeguard students' information.

Researches (Zhai, Wibowo and Li (2024) also highlight the implications of students over reliance on AI dialogue systems mainly those embedded with generative models within educational research contexts. Although beneficial, however, there is concern over the potential erosion of critical cognitive skills, due to ethical challenges such as misinformation, algorithmic biases, plagiarism, privacy breaches and transparency issues. In a similar vein, Gao et al., (2022) also

noted a concerning trend where users exhibit an over-reliance on AI dialogue systems, and accepting their generated outputs, hallucination, without validation. This over-reliance is intensified by cognitive biases where judgments deviate from rationality and heuristics or the use of mental shortcuts, leading to uncritical acceptance of AI- generated information. Xie et al., (2021) found that relying too heavily on unverified AI outputs, can lead to errors in classification and interpretation.

The literature also highlights another challenge connected to equity. For instance, there is a risk that AI could exacerbate existing inequities in education if not implemented thoughtfully. For example, students in under-resourced schools may not have the same access to advanced AI technologies as those in well-funded schools (Holmes, et al., 2019). Addressing these disparities is essential to ensuring that AI benefits all students equally. Moreover, is the issue related to change resistance which is a common challenge within the change literature, that is; when individuals resist the use of AI as a new unfamiliar concept. For example, educators and institutions may be resistant to adopting AI technologies due to a lack of understanding or fear of job displacement (Zawacki-Richter et al., 2019). The implementation of AI is not possible without adequate training and support for educators to help mitigate these concerns and facilitate the effective integration of AI in education.

Comparing AI and classroom teachers

Now that we have highlighted some benefits and challenges of AI, we will now look at some of the literature that focus on the role or AI compared to the human classroom teacher. One of the questions made at the outset of this paper was whether AI can be a substitution for the classroom teacher. In reviewing the literature, the common findings point to the complementary roles AI and teachers bring to the teaching and learning process. For example, Wang et al., (2022) conducted a systematic review of 74 empirical studies on AI in science education. The review highlighted AI's pedagogical benefits but concluded that AI tools are generally seen as complementary to human teachers rather than replacements. Additionally, Holmes et al., (2019) examined how six science teachers used an AI-enabled inquiry intelligent tutoring system (Inq-ITS) and their perceptions of AI integration. The study found that teachers recognized AI's potential benefits but also encountered various challenges. Teachers viewed AI as a supportive tool that enhanced traditional teaching methods rather than a replacement for human educators. Williamson and Eynon (2020) provide an overview of research on the use of AI applications and machine learning methods by

teachers. They highlighted AI's opportunities for improved planning, implementation, and assessment of teaching but also discussed significant challenges, including ethical considerations and data privacy concerns. The authors concluded that while AI holds promise for supporting teachers, it is not considered a replacement for the unique qualities and skills that human teachers bring to the educational process. Overall, the literature clearly underscore the complementary roles that both AI and the human teacher play in the teaching and learning process

Gaps in the literature

While there is growing research on AI in education, there are still significant gaps, particularly in the context of small island developing states like Samoa. This study aims to fill this gap by investigating perceptions of educators and students in Samoa regarding the use of AI in education. Understanding their views and experiences can provide valuable insights into the unique challenges and opportunities associated with implementing AI in diverse educational settings.

The study was guided by the following research questions:

1. What type of AI Chatbots are you well familiar with
2. How do you utilise AI Chatbot as a student or learner?
3. How do you utilise AI chatbots as a trainer ?
4. What do you see as benefits of AI Chatbots for educational purposes ?
5. What do you view as limitations of AI Chabots for educational purposes?
6. What are your views concerning the idea of AI Chatbots replacing the teacher in the classroom ?

Methodology

This study employed a qualitative case study research approach to gain detailed insights into participants' views and experiences concerning AI in education. Neuman (2014) noted that qualitative research is about depth rather than breadth. Researchers draw upon qualitative methods to develop a deep understanding of a phenomenon experienced in a particular setting rather than draw broad conclusions about a particular aspect of human behaviour.

Purposive sampling was used to select respondents likely to yield appropriate and useful information (Kelly, 2010). Rai and Thapa (2015) describe purposeful sampling as a non-probability method where researchers choose participants based on specific criteria, including specialised knowledge of the research topic. The participants for this study were specifically

selected based on their presumed learning and teaching experience using AI. The sample was selected from eight (9) teacher practitioners who were at the time of the research involved in their postgraduate studies within the faculty of education. They were selected based on their presumed knowledge of and utilisation of AIs in their studies as learners. It should be noted that given their dual role as both a classroom teacher and a learner, a number of these participants responded from both perspectives— a teacher's and a learner's perspective. In addition to teacher practitioners, nine (9) teacher trainers were purposively selected for their perceptions of AI. It is important to find out views of trainers themselves about the studied phenomenon. For the purpose of this study and in the presentation of findings, teacher practitioners are coded as teacher learners (TL) while teacher trainers are given the code (TR)

Four open-ended questions in a questionnaire document were used to collect the data. In this manner, the participant's voice can be heard and coordinated with descriptive data (Denzin & Lincoln, 2011). According to Hyman and Sierra (2016), questionnaires should be designed in a format that participants can easily understand and respond to. Open-ended questions offer respondents an opportunity to provide a wide range of answers. One set of questionnaires was developed and distributed to the participants.

We used the thematic analysis approach by Miles and Huberman (1994) to analyse data. The following steps were followed: becoming familiar with the data, generating initial codes, searching for themes, reviewing themes and defining themes. The themes were derived from analysing participants' responses to the research questions and in connection to the predetermined categories that guided the analysis. Data was analysed according to benefits and challenges of AI for teacher learners and teacher trainers, as well as comparable roles of AI and the teacher. These findings will be presented in table 1, table 2 and table 3 in the next section.

Findings

We present the findings under the following headings: AI benefits, AI challenges, and complementary roles of AI and teachers in education

In table 1, we will present findings in relation to benefits of AI in education

Table 1. Benefits of AI in Higher Educational Settings

Themes	Subcategories	Definitions
Benefits for the teacher learner	Accessibility /availability	*Easy access to information*
	Immediate feedback / Perpetual preparedness	*AIs instantaneous response Readied support at all times*
	Language development	*Writing and language skills*
	Flexibility	*Ability to learn despite the location, time and learner's pace*
	Improved learning	*Simplification of concepts*
Benefits for the teacher trainer	Accessibility	*Easy information access*
	Innovating ideas	*Development new ideas*
	Improve English writing skills	*Academic writing enhancement*
	Training resources	*Online resources availabilty*
	Differentiated instructions	*Tech-enabled instruction*

AI benefits for teacher learner

Accessibility

Findings (Table 1) indicated one of the benefits of AI is ease of access to information as noted by these teacher learners:

> As a learner, I believe that AI can only help feed us ideas on certain topics and break them down into simpler language **(TL2).**

> Students of a younger generation benefit from AI Chatbots in terms of accessibility to different types of writings which they can apply in assessments /assignments **TR7**

Immediate feedback/ perpetually prepared

Participants also highlights the benefit of AI in connection to the swift and timely nature of the response provided by AI:

> For me personally, advantages and benefits of AI chatbots can immediately answer any questions or queries that I have… (**TL2)**

> AI systems are available around the clock, providing tailored assistance with assignments such as essays, clarifying challenging ideas, and responding to inquiries. This constant

availability allows students to learn at their preferred speed and alleviates the already scarce time of teachers. In addition, AI aids helping students find answers to unspoken questions and assist them in a variety of ways such as asking for assistance with paper preparation or developing a tailored learning plan(**TL5)**

In addition to AI's ability to provide feedback instantaneously, almost all of the participants applauded AI's readiness to provide the support learners needed at any time

> As a learner I think one of the advantages of AI chatbots is its availability. This means that AI chatbots are available 24/7 when a learner needs its assistance for an assignment that needs to be done. A learner will get an immediate answer to questions, access resources and can clarify thoughts outside of school hours**(TL4)**

Language development

AI was also noted for its ability to assist in development of learner's language as noted here:

> As a student, I use Grammarly to assist with my writing, spell checks and grammatical errors. This is a great tool in this way, because at the end of an assignment, I learn new things and it comes useful for the next assignment**(TL3)**

> I believe that AI chatbots are a good tool that can be used to learn and aide learning …for instance, AI can be used to help the student learn the correct sentence structure and grammar as English is not our first language**(TL2)**

Flexibility

> An advantage of AI chatbots to teachers will be creating or collecting information for a certain topic and be given to students to study. A teacher can also use AI chatbots to create assignments, tasks for students that connects to a certain topic or unit that they're teaching. **(TL4)**

> AI offers numerous advantages and benefits for students. One such benefit I've observed is its ability to give students continuous support whenever required and from any location. **(TL5)**

Improved learning

This trainer shared what she perceived to be benefits of AI for the learner which in turn a help for the trainer herself as it may help ease her own work in terms of support offered to the student:

> Even though I am not familiar with its use but one of my friends shared with me some advantages this Chabot has on educational purposes, such as, it helps students get some sense of information about any research topics or issues, it gives a simplify background of what a students needs, it helps inform students of some information. **(TR1**)

> And with the use of these information from AI, will provide with the students ideas on how to create his/her own personal reflection on issues. It will also confirm to the students information they are doubt with, and will also help create some sense of confidence with the students to paraphrase and use own ideas to create essays and response to issues and research **(TL9)**

AI benefits for educators

Accessibility

One of the most significant advantages of AI to educators lies in its easy to access element as noted by the following comments:

> Fast way to get information and help you arrange thought to explain a particular topic to a short notice circumstance **(TR4)**

> AI is easy to access and saves time for me. For example AI chatbots are available anytime, which is helpful when I have enough data or internet access. It also saves the teachers time as it assist teachers with grading and planning etc. However, teachers need to review their responses to ensure alignment with our cultural context and beliefs **(TR8)**

> The greatest advantage of AI for me is the ability to provide me with the information instantaneously and whether that information is reliable is another story, It is the easiest and fastest way to access information **and** whatever information I require I just search for it in Copilot a type of chapbot that is on our university PC's **(TR6)**

My understanding is based on the definition of AI chatbot and has given me the confidence to think critically on its usefulness as a tool to use on a research based on a particular topic. Based on what I found from my search on AI chatbots, I get views from different research scholars using AI would have enhanced our own way of thinking to search for more information in terms of a variety of educational resources (**TR7)**

Reduce teacher load

Moreover, AI can help ease teachers work load through

These AI tools can correct grammar, syntax, and semantic issues in the English language, as well as check for plagiarism in students' assessments. However, I don't rely heavily on these tools, as I ensure I compare their suggestions with other reliable sources**(TR8)**

Provision of training resources

Google search is what I mostly used to search information and data for my work especially when I really need to clarify or ask for simple information about a topic in maths that can be used to make sure my student teachers can understand a particular concept in our maths curriculum **TR9** The availability of variety of sources and information that I can use to fit the level of students' abilities, different students can get an idea of what I can try to convey about a concept, the alternative ideas can make others get the message **(TR9)**

Speaking from her teaching perspective, this teacher indicated the value of AI in terms of supporting her teaching. In relation to planning activities for students but AI provides her with a quick response to a student's queries

Tech-enabled i As a teacher, AI chatbots are quite useful for quick activities for advanced students in class to maintain classroom management. Sometimes, when a child asks a question that you may not have been ready for, AI chatbots can provide you with a quick answer to respond to the child with rather than leaving the questions hanging **(TL6)**.

The adaptive features of the programme is another benefit that can be evolved out of the google search. The affordability features can be another benefit. We can become an expert with the information we can get from it, i.e we can improve our teaching service when we search for simple information and the students response also improved a lot (**TR9)**

Table 2. Challenges of AI in higher educational Settings

Themes	**Sub-categories**	**Definitions**
Challenges for the teacher learner	Intellectual inhibition	Limits thinking capacity Development *of passive/lazy learners, dependent mindset, overreliance on AI,*
	Unreliable information	*AI's misleading information*
	Social isolation	*AI limits social skills*
	Inspirational deficit	*AI lacks emotions to inspire learners*
	Data privacy	*Lack of data protection*
Challenges for the teacher trainer	Authenticity verification Cheating / Plagiarism	*Student cheating*
	Unreliable information and Historical unawareness	*Misleading information, Limited knowledge of historical ideas*
	Limited knowledge / understanding of AI	*Lack of inspiration for personal development*
	Resistant to change	*Educators lacks the desire to learn new tech*

AI challenges for teacher learner

Findings in relation to AI (Table 2) reveal a number of challenges in connected to learners and trainers.

Intellectual inhibition

> As a learner, AI Chatbots limits our abilities as learners to think for ourselves. It only makes us learners lazy to study and research on certain study topics. Once learners rely on AI, it will kills our brains from thinking and learning **(TL1)**

This teachers adds her concern over learners' over dependent on the machine to provide all the answers hence depriving learners of the opportunity to develop intellectually

> One of the major disadvantages or limitations of AI that I have observed is, the increased reliance of students on technology. In saying this, most students turn to AI for completing assessments without using critical thinking. Additionally, it might hinder the cultivation of critical thinking and problem-solving abilities in students, as they could become reliant on AI systems to provide them with answers and solutions **(TL5)**

Another teacher shared her own frustration on students who rely on the machine to think for them leading to cognitive deficit:

> A great disadvantage of AI is the fact that it makes the human brain lazy and rely on a machine to do the thinking for them. As a teacher, I have experienced the irritation of receiving AI generated work. Sadly, the students using this tool do not share identical thoughts with their submitted work. Some of them do not know how to pronounce the words used in their work because they are AI generated. This creates a gap between work submitted and what they know… they let AI create and write their work for them which does not help because when asked in regards to their work submitted, they have no understanding **(TL3).**

> A disadvantage of AI chatbots for learners will be over-reliance. Students rely heavily on Ai chatbots to provide them with answers to their questions without making the effort to face people, reading books, researching and getting out of their comfort zones to interview, survey etc…. to find answers to their questions **(TL4)**

Some trainers also share their sentiment concerning challenges of AI as pertains to learners:

> …it will encourage students to be dependable on these sites for educational research and studies…It will also limit the mind use of students, It will provide students with the same shared ideas by the site towards an issue that is researched. .Another disadvantage is that it only make students lazy for students will not use one of God's important gift, the mind! **(TR1)**

A similar view about the laziness of individuals to use their God given brain was also raised by another trainer

From a trainers perspective of the challenges for AI is it will develop an 'AI dependency syndrome' for student as well for any individual. That is, students and individuals will depend totally on AI to do the learning for them hence may inhibits mental capacity that God provided **(TR6)**

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Unreliable information

The issue related to unreliability of information provided by AI was also highlighted by a number of participants:

For one it is untrustworthy as some information it provides may be inaccurate or repetitive. AI chatbots are mostly general in the information it provides that a simple question may end up with a complex response. Also, AI chatbots have limited information that it may not be able to assist in eras or years prior to its set date of information stored **(TL6**)

AI sometimes provides incorrect or biased answers. I recall asking a question I already knew the answer to, only to receive an incorrect response (**TL7)**

Misleading information can become a norm if not well researched and carefully maneuvered(**TR9)**

Social isolation

Students will lose the opportunity to interact with real people as this will help develop their social skills to communicate with people directly …so they go to AI chatbots as their comfort zone to just ask questions and find solutions to their problems so the machine provides them with answers that can't solve the problems they are facing in real life (**TL 4)**.

Inspirational deficit

As a teacher a disadvantage of AI Chatbots would be the lack of motivation to boost students to learn and be inspired. A teacher's enthusiasm, humor or encouragement can spark interest and motivation in students. AI chatbots may be reliable and efficient but it lacks genuine emotions to inspire learners when they feel like giving up and wanted to quit or stop learning(**TL4)**

AI cannot understand feelings or connect with students as a teacher does. There is also a lack of emotional connection - AI cannot understand feelings or connect with students as a teacher does**(TR8**)

Data privacy

One of the concerns regarding AI generated work relates to how safe one's data is from prying eyes:

Data leakage can become a disadvantage i.e. confidentiality of sensible information might be preached and wrongly interpreted **(TR9)**

AI challenges for trainers

There have also been challenges according to trainers which include the following

Authenticity verification

One of the significant challenges according to educators is in trying to verify he integrity of students' work as noted by these comments.

The disadvantages are when people copy and paste the whole idea from AI Chatbots and use it as their own and that will lead to limited ideas and cause a problem to more depend for answers (**TR4)**

Plagiarism when the educator does not have an idea as how much student has contributed to their assessments. Our university has yet to have a reliable system to track plagiarism **(TR6)**

I heard that AI can write essays for students, that can be a disadvantage, now we cannot tell whether the work is the actual work of the students or the AI (**TR2)**

Unreliable information

I experienced a couple of times that not all information produced by AI are correct.

For example, at one time I tested it by asking it to provide authors for a paper that I coauthored with other researchers and I was very surprised when it came up with the wrong authors. I decided there and then that one need not totally rely on information provided by AI and one has to go back to the original research or article for evidence **(TR6)**

AI Limited knowledge

AI is limited to what is uploaded to its digital brain, it cannot sum up the knowledge and intelligence of the human brain as well as work or information that has not been entered or uploaded **(TL3)..**

Limited Context Understanding - AI struggles to grasp cultural or personal details about certain topics or individuals(**TR8)**

Some viewed limitation of AI to lack of familiarity regarding ideas and concepts That originated before the modern era. It suggest an insufficient grasp of historical thoughts, philosophies, and cultural practices that shaped earlier civilizations.

The fact that it cannot provide any contextualised information or data about where I'm from… for e.g. for the faa Samoa culture **(TL2**)

Resistance to Change

One of the issues that emerged from a couple of trainers in connection to AI and technology relates to learning complications i.e, for these trainers, trying to grasp an understanding of how to utilize new technology can be very complicated and off- putting off leading to frustration:

….I am so sorry but I am not a computer technology person.. I am not very interested in IT due to lots of hassle. I only know the basics, even the Moodle I am not very good at it (**TR5)**

Table 3: Comparative Capacities of AI and Human Teachers in Higher Education

Theme	Subcategory	Capacity of AI	Capacity of Human Teachers
Preference and Emotional Support	Authentic Interaction	Limited	High
	Emotional Support	Limited	High
	Role Models	None	High
	Emotional Deficit	High	Low
	Human Experience and teacher's God given brain	Limited	High
Cultural and Contextual Sensitivity	Cultural Sensitivity	Limited	High
	Behavioral Management	Limited	High
Critical Skills and Personal Development	Critical Thinking	Limited	High
	Creative Development	Limited	High
	Holistic Development	Limited	High

Theme	Subcategory	Capacity of AI	Capacity of Human Teachers
Technological Assistance and Limitations	Information Interpretation	High	Limited
	Supportive Role	High	Limited
	Programmed Responses	High	None
	Inflexibility	High	Low
	Supplementary Tool	High	Limited
	Classroom Management	Limited	High
	Individualized Teaching	Limited	High

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Findings (Table 3) regarding the capacity of AI to replace teacher in the classroom, revealed four significant themes, each assessed as either high or low based on data analysis. These themes include; preferences and emotional support, cultural and contextual sensitivity, critical skills and personal development and technological assistance and limitations. Each theme was evaluated to determine how well AI could perform in comparison to human teachers, highlighting areas where AI excels and where it falls short.

Preferences and emotional support

This theme shows a strong preference for human teachers over AI in educational settings, highlighting the unique and irreplaceable qualities that AI lacks and that human teachers bring to the classroom such as authentic interactions and genuine care and emotions from human teachers as noted by these comments:

> A teacher is human to face human, can understand humans' feeling and emotions but AI is made by men to help improve human intelligence, survival instincts, improve living conditions, health and safety initiatives. A Human brain is a God given gift for any human being. This makes us special from other things that God created. Even though how smart AI is, a human brain is the most advanced technology that God created for men to rule, make their own decision and decide their own fate (**TR 9)**

> As a teacher, I know what I bring to the table that an AI chatbot cannot. I can relate to the children, as I was once a child, I can relate to them as students, I once was a student, I can relate to them as a mother, care for them, sympathize with them, take care of them when they are unwell, make decisions for the safety of the child based on what I see and feel. Would an AI chatbot be able to do that? Apply a band aid on a cut when a child is hurt, put a wet cloth on their forehead when they have a fever or feeling unwell? (**TL3)**

> As I learner, I highly disagree to AI replacing teachers. I prefer face to face teachers or realistic teachers to learn from. AI are programmed therefore it only works that way they were programmed. Real teachers on the other hand give authentic senses that help learners to effectively learn in terms of knowing that teachers do care about them (**TL1)**

This trainer added:

> No way in which AI a machine can replace a human with a God given brain to operate. AI do not have real human emotions such as the real person. They cannot teach significant moral values that is required by a human being to operate in a society and to make society a better place to live **(TR6)**

The other vital quality pertaining to teachers is role modelling which AI lacks:

> These Chatbots cannot compare to a role of a teacher. Because a teacher is more than a source of knowledge. A teacher is a guide, motivator and most of the time they are role models for the students they are teaching **(TL4)**.

> I don't think the AI Chatbots can replace the role of a teacher, given the fact that the teacher can go on in explaining just about anything, make various and relatable examples in order for the students to learn and understand(**TL2)**

> No, teaching should stay in the traditional way of teaching because AI Chatbots doesn't have compassion towards students; AI chatbots cannot stop a class so that the students gain concertation. AI chatbots don't know how to translate into Samoan when a student needs the Samoan explanation (**TL8)**

Cultural and contextual sensitivity

This theme addresses the challenges AI faces in adapting to diverse cultural needs and the importance of human teachers in managing these aspects:

> For Samoa a country with strong cultural values and beliefs, I do not see AI teaching me about these values. As a learner I would not want AI Chatbots to be my teacher. Because AI Chatbots are just machines that humans have created to assist learners with resources that they need as they are learning(**TL4)**

Teaching is viewed as a sacred calling and the teachers responsibility is to nurture the child's mind:

As a teacher I would not want AI Chatbots to replace my responsibility and calling as teacher or an educator. Being a teacher is a very sacred calling because deal with what's in the minds of the students **(TL4**)

The theme also emphasize the crucial roles of the teacher to manage students behavior due to trusting relationship between the teachers and students:

We not only teach them with to achieve academically but most of the times we deal with their behaviors, and problems that others cannot see and know. Most of the students trust their teachers more than their own parents. They will open to us with their problems, fears and even share with us things that are happening in their families. So, AI Chatbots cannot never replace our responsibilities because students can never share their feelings with technology **(TL4**)

I would not prefer students under my care nor the children of Samoa to limit their capabilities to technological applications. The laziness of the child stems from the performance of the teacher(**TL6)**

Critical skills and personal development

I would not agree with AI chatbots teaching my child Why ? An AI Chatbot is a machine, although intelligent, do not have feelings. I want my child to feel bonded to her teacher, learn how to trust, how to show her emotions, how to interact in her social circle and classroom. An AI Chatbot cannot do that (**TL3)**

Definitely not… AI chatbots cannot replace teachers. While they are helpful for answering questions, simplifying information, providing ideas and correcting/checking information, AIs lack the human qualities that teachers bring to the classroom. Teachers connect with students emotionally, understand their learning needs, and inspire them to grow. Teachers also teach critical thinking, creativity, and social skills, which AI cannot do. They guide students morally and emotionally, helping them become well-rounded individuals. AI chatbot tools only work within their programming and often fail to adapt to cultural or personal situations (**TR8)**

While AI can assist teachers with tasks like grading or planning, it cannot replace the relationships, trust, and mentorship that teachers provide. Teachers are essential for both academic and personal development in ways AI can never achieve **(TR8**)

Although AI can help some aspects of teaching and learning, I believe it cannot completely replace the role of a teacher. In fact, I would highly prefer having teacher instead of AI for these reasons: while AI can supply knowledge and track progress, it cannot fully provide emotional support, which can significantly improve a student's learning experience in the classroom. Teachers also play an important role in developing critical thinking, creativity, and problem-solving abilities (**TL5)** .

Technological Assistance and Limitations

While AI serves as a valuable tool in the educational landscape, its role remains that of an assistant rather than a replacement. This theme highlights the supportive functions of AI and its dependence on programming

Never, AI only listens to the user's instruction in order to perform…it can never replace the classroom teacher. AI can provide support for teaching and learning (**TR3)**

AI cannot replace the teacher physically e.g.,some information that will be provided by the AI will always need the teacher to explain and interpret **(TL9)**

My understanding AI is a computer designed tool that can assist students and teachers. But should not take away the teacher from his or her place as a facilitator. For Samoa, AI can never replace the teacher (**TR2)**

Additionally, AI is limited in assessing and addressing individuals students needs:

I do not think that AI can replace the teacher in the classroom For example all students have different needs, they need the teacher to facilitate their learning. AI chatbots do not provide particular types of assessments to assess students strengths and weaknesses(**TR7)**

Overall findings in this theme indicate that AI can never replace the value of the classroom teacher but can supplent teachers by providing support such as resources materials and information to facilitates the teachers' classroom instructions. Findings also highlighted that more than fifty percent of teacher trainers in this study have insufficient of AI Chabot's as revealed by this participant:

> I know little about AI and am not familiar on how to utilize in any educational program. As an educator, it is a new phenomenon, that needs to research more on this topic **(TR 7)**

Types of AI chatbots participants utilize

One of the questions deal with type of chat bots that participants are familiar with and the manner of utilization. Findings revealed that only a few trainers compared to more teacher learners have some AI knowledge and they use the following AI:

> The only AI chatbot that I am familiar with is Generative AI. When I'm having trouble starting an essay or any other sort of writing, Generative AI often provides insights to assist me get started. I never use Generative AI for essays because I've observed how it doesn't help with critical thinking **(TL5)** .

> I am only aware of one, which is Chat GPT. It is a useful tool in class as it allows me to generate activities based on the learning need of the student. The language of the Samoan curriculum is too complex, that I often used Chat GPT to simplify its context in order for me to know exactly how to prepare for a lesson. As stated before, this AI chatbot may be useful but often it generates inaccurate information, that not only do I seek help from it, I also have to go through it again to check whether the information and vocabulary used is suitable for the child based on their reading and comprehension skills **(TL6**)

A couple of trainers indicated using some of these chatbots:

> I'm familiar with AI tools such as Google Bard, Duolingo, Proofreader, and Plagiarism Checker. I use them to edit/check lesson ideas, assessments, quizzes, and simplify complex topics etc. They also provide quick feedback and extra learning resources for students. For instance, I ask them for feedback on student work, and they respond with numerous suggestions for improvement. **TR8**

I used copilot that is installed on my office PC **(TR6)**

The overall findings reveal a balanced perspective on the integration of AI in education, highlighting both its benefits and challenges. AI provides notable advantages such as improved accessibility to information, immediate feedback, and supplementary support in administrative and instructional tasks, enhancing the overall learning experience. However, it also presents significant challenges, including emotional deficits, inflexibility, and potential dissemination of unreliable information, which limit its effectiveness in dynamic classroom environments. When comparing AI to human teachers, the study underscores that while AI can significantly aid in educational processes, it cannot replace the essential roles of human teachers. Human educators excel in providing authentic interactions, emotional support, cultural sensitivity, and fostering critical and creative thinking skills, which are crucial for holistic student development. Thus the findings advocate for a complementary approach where AI enhances but does not replace human teaching. These findings will be discussed in the next section.

Discussion

The study was aimed at exploring teachers and teacher trainers' views about the benefits and challenges of AI in higher educational settings. Additionally to find out the possibility of AI to replace the human teacher. This section provides the discussion of the findings.

The findings highlights both the opportunities and challenges presented by the integration of AI in education. On the positive side, AI offers substantial benefits for learners by providing easy access to information, immediate feedback, and the ability to personalize learning experiences (Holmes et al., 2019). This flexibility allows students to learn at their own pace, regardless of time or location, and supports the development of language and writing skills (Williamson & Eynon, 2020). Additionally, AI simplifies complex concepts, making them more accessible and improving overall learning outcomes (Wang et al., 2022). For teachers, AI provides valuable support by stream lining access to educational resources, fostering the development of innovative teaching strategies, and enhancing writing skills (Holmes et., al 2019). It also offers tools for differentiated instructions, allowing educators to tailor their teaching to the diverse needs of their students. Furthermore, AI serves as a valuable supplementary tool, aiding in information interpretation and providing continual support to both teachers and learners (Williamson & Eynon, 2020).

However, the study also identifies significant challenges associated with AI in education. One major concern is the potential for AI to limit critical thinking and promote dependency among students, leading to a passive learning mindset (Holmes et al., 2019). In the same vein, Zhai, Wibowo and Li (2024) argue that although AI is beneficial, there is the challenge regarding with respect to the erosion of critical cognitive skills, due to ethical challenges such as misinformation, algorithmic biases, plagiarism, privacy breaches and transparency issues. Floridi & Cowls, (2019) also highlight the challenge concerning the reliability of information provided by AI as there is a risk of disseminating misleading or inaccurate data. Moreover, the emotional and social aspects of education, such as the development of social skills and the ability to inspire and motivate students are areas where AI falls short (Williamson & Eynon, 2020). Data privacy is a critical concern, with the need for robust protections to safeguard student information (Slade & Prinsloo, 2013). Teachers also face challenges in verifying the authenticity of student work and combatting academic dishonesty facilitated by AI tools (Gao et al., 2022). Additionally, there is a resistance to change among some educators, who may lack the desire or ability to integrate new technologies into their teaching practice (Holmes et al., 2019).

Findings with respect to the question of whether AI can replace the teacher reveals a strong preferences for human teachers over AI in providing authentic interaction and emotional support. Human teachers excel at building meaningful relationships with students, serving as role models, and offering emotional support that AI currently cannot replicate. This is supported by literature emphasizing the importance of teacher-student relationships for effective learning (Holmes et al., 2019). However, the study also highlights several limitations of AI, including its emotional deficit. AI's programmed responses lack the spontaneity and adaptability of human teachers, making it less effective in dynamic classroom environments. These limitations are consistent with concerns raised in previous research about the constraints of AI in replicating the nuanced roles of human educators (Wang et al., 2022).

Despite these limitations, AI is recognized as a valuable supplementary tool in education. It can assist with information interpretation and provide support in various administrative and instructional tasks. However, AI cannot fully replace human teachers, especially in areas requiring emotional and cultural sensitivity. This findings aligns with studies that advocate for the integration of AI to enhance, rather than replace human teaching (Williamson & Eynon, 2020).

These findings underscore the need for a balanced approach to AI in education, where the strengths of AI are utilized to enhance, rather than replace, the essential human elements of teaching and learning. By addressing these challenges, educators can better harness the potential of AI to create a more effective and engaging educational environment.

Conclusion

This study explore perceptions of practicing teachers and teacher trainers concerning benefits and challenges using AI in educational settings. The findings underscore the significant benefits of AI in improving learners writing skills and learning as a whole. Additionally the support for trainers in terms of work overload reduction such as grading and marking students' assessments as well as resource production. These benefits notwithstanding, some concerns were highlighted in connection to inhibiting of cognitive skills which resulted from learners' overreliance on AI generated information. Findings also highlighted that AI should not fully trusted to provide reliable information as it does not have the ability to consistently supply reliable information. Findings also strongly emphasized that AI can never fully replace the classroom teacher but can only play a supplementary role.

Limitations

Some limitations of the study are worth noting. First the limited sample of eighteen participants is inadequate to get a fuller picture of the studied phenomenon. Additionally, the focus of the study was on AI in higher institution hence a more inclusive approach considering various educational levels would be a consideration in future, to provide a more robust and comprehensive analysis of AI generating systems.

Recommendations

There is a need for policymakers to establish robust data privacy guidelines to protect student information. Institutions like our university should use AI systems that are transparent and explainable. This will help educators and students understand how data is being used and ensure trust in the technology. Educators should be trained to effectively use AI tools and interpret AI-generated data. This training should include understanding the ethical implications and limitations of AI. There is also a need to establish mechanisms to continuously monitor and evaluate the impact of AI on education. This includes ranking students' progress and addressing any negative outcomes promptly.

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