

Exploring the Issues and Challenges of Online Assessment and Evaluation in the Era of Artificial Intelligence

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Abstract

With the advent of artificial intelligence and sources like ChatGPT, students' assessment and evaluation have become incredibly challenging. It has become an uphill task for teachers to ascertain the reliability of submitted assignments and other formative assessments. Because these text generators can draft articles, make summaries, and even write codes. These text generators, at one end, have supplemented the efforts of the teachers to develop quality content and, at the other end, have equally benefitted the students to solve the assignments and quizzes. How can teachers assess such unethical attempts? And what do they think about it? This study is aimed at exploring the challenges faced by the teachers of online/distance education institutions in the availability of artificially intelligent text generators. Qualitative research methodology has been used in this study. A grounded theory approach, as prescribed by Gioia, is employed. This methodology has been preferred because the data structure can reflect the whole research. Data have been collected from 20 teachers at higher education institutes involved in distance/online learning and classroom teaching using semi-structured interviews. Subjects have been selected using a purposive sampling technique. Results show that AI text generators have raised concerns among teachers in the evaluation of formative assessments. Students are using such text generators to solve the assignments and other activities given to them. However, there are some websites and software (like Turnitin) that can assess whether an assignment has been written using an AI text generator. However, these AI detectors are in their infancy stage and do need more precision. Teachers fear that such AI can take away the creativity and writing skills of students, and this technology might handicap them. This study has highlighted the concerns of academicians that need to be addressed by educationists.

Keywords: Online Assessment, Artificial Intelligence, ChatGPT, Higher Education.

Introduction

Artificial Intelligence (AI) has been playing a significant role in every aspect of our society, from healthcare to infrastructure, law enforcement to financial services, and from education to business. According to Timms (2016), artificial intelligence has the potential to cause bigger changes in various sectors of society, and the education sector is one that AI has majorly impacted. The education sector has witnessed extensive usage of AI in different areas, including student assessments, teaching methods, student-teacher communication, and content development (Chen et al., 2020). Artificial intelligence has greatly improved the economy, increased the quality of products or services, and enhanced social welfare. But at the same time, artificial intelligence has posed certain challenges for humankind (Cath, 2018). With the increasing usage of AI, its ethical, legal, and technical difficulties have also increased. It has

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become imperative for its developers and policymakers to keep a check on its ethical usage (Tobin et al., 2019). Ethical usage of AI has become a great concern for academicians after the development of various artificial intelligence text generators that have raised a question mark on the credibility of academic writing.

Artificial Intelligence Text Generators (AIGTs) are powerful tools that allow businesses and individuals to produce high-quality content using artificial intelligence quickly. AI text generators are software programs that use artificial intelligence to make written content. This technique can be used in a number of applications, including creating content for websites or social media, generating reports or articles, or even writing stories or poems (Hewitt, 2023). Several AI text generators can be trained to write in a particular style or tone, making them highly versatile tools. AITG papers can easily mislead inexperienced readers because they are written using technical language in a proper format, making them appear more credible. These tools also cite reputable sources to increase the trustworthiness of the content. This can lead readers to believe the information presented in the papers without critically evaluating it (Abd-Elal et al., 2019). There are several AITGs available in the market; some of those are CopyAI, Jasper AI, Content At Scale, Rytr, Writesonic, WordAI, and ChatGPT (Hewitt, 2023).

This artificial intelligence has become a concern for teachers when students use these tools for their academic tasks. Students use artificial intelligence text generators to solve their assignments, write articles, and complete projects, deceiving their teachers. This type of cheating can have serious consequences for the student's academic performance and integrity. Teachers must be aware of this issue and take steps to ensure that students are not using artificial intelligence text generators for educational projects. Teachers should monitor students' work closely and look for any signs of AI-generated text. Students should also be educated on the risks of using AI text generators and the consequences of cheating. If a student is caught cheating, it can have serious repercussions, such as suspension or expulsion from school and reputation damage. It can also lead to decreased academic performance in the future since the student was not able to learn the material as intended. To prevent this, teachers should be proactive in educating students on the risks of using AI text generators and should take steps to monitor students' work for any signs of cheating.

Research Gap

We can see exponential growth in the articles and research published on the benefits of artificial intelligence in the education sector (Chassignol et al., 2018; Chen et al., 2020), but there needs to be more research on the negative effects of AI for students and teachers. Sharma et al. (2019) highlighted the need to prepare educators to use artificial intelligence systems effectively by devising some control mechanisms. Moreover, research on AITGs is still in its infancy; little literature is available (Rudolph et al., 2023). Celik et al. (2022) stated that there needs to be more research on the perspective of teachers regarding the role of AI in education. In response to his call, this study aims to identify the challenges teachers have faced due to AITGs and what mechanisms teachers have adopted to mitigate the adverse effects of artificial intelligence on education. Therefore, this study aims to explore the issues and challenges faced by the teachers at Higher Education Institutes in Pakistan due to the advancements in AIGTs.

Significance

This study's results will help academicians understand the impact of artificial intelligence on the education sector. The study's findings have highlighted the nature and extent of its implications that ultimately will guide the policymakers in developing policies to mitigate its adverse effects and promote its benefits. On the other hand, this study has provided a clear picture of the issues and challenges faced by the teachers of higher education institutions that might compel the Higher Education Commission to devise strict policies against the unethical

use of AIGTs by students at the national level. Moreover, the coping mechanisms identified in this study will help teachers ascertain plagiarism in students' assignments and take corrective measures at the individual level.

Literature Review

Intelligence generally refers to the human mind's ability to learn, understand, perceive, and plan. Computer scientists have been able to replicate this intelligence with the help of machine learning, termed "Artificial Intelligence." Artificial Intelligence (AI) is a scientific and technological knowledge used to construct computer programs (Pallathadka et al., 2022). Chassignol et al. (2018) defined AI as the area of computer sciences that aims to solve cognitive problems associated with human intelligence, like learning, pattern recognition, understanding, and adapting. Artificial intelligence was coined in the 1950s to describe entities possessing human-level intelligence (Jordan, 2019). Although the journey of artificial intelligence started over 70 years ago, this field has witnessed exponential growth and advancement in recent years. As a result, AI has influenced various facets of our lives, such as medicine, transportation, commerce, and education (Tobin et al., 2019). Artificial intelligence has offered many benefits to academicians, for example, identifying learning patterns to predict student performance (Pallathadka et al., 2022), use of web-based chatbots to perform instructors' duties independently (Chen et al., 2020) or grading students' assignment effectively. Those in the education sector have long expressed a wide range of opinions regarding technological innovations and their use in the classroom (Cano et al., 2023). Sharma et al. (2019) stated that in the era of artificial intelligence, educators must develop ethical codes so that AI may be used effectively without harming the integrity of teaching and learning.

Today's generation is bombarded with technological advancements, especially AI tools meant to increase the effectiveness of teaching and learning methods (Chassignol et al., 2018). Among these tools, the most prominent are Artificial Intelligence Text Generators (AITGs). At the beginning of 2023, an AITG called ChatGPT (Generative Pre-trained Transformer) was introduced, which generates text in response to questions. This artificial intelligence can create articles, summaries, essays, or code within seconds. According to Hewitt (2023), natural language processing (NLP) techniques are used by AI text generators to analyze existing text and generate new text that is similar in style and content to the existing text. Although its benefits are countless, educators understandably have concerns about the risks of this new technology for teaching and evaluating students. Concerns may include plagiarism, the over-reliance on AITGs by students, and the inability of AITGs to correctly assess students' work (Cano et al., 2023).

Using artificial intelligence (AI) tools such as text, paper, and thesis generators constitutes severe academic and research misconduct because they do not accurately represent the author's original work (Abd-Elaal et al., 2019). A lack of teachers' knowledge about AI tools can also affect the teaching quality as the student might get away with the misconduct unnoticed (Celik et al., 2022). Academic integrity was also threatened by ghostwriting (getting someone else to do the writing) in the past decade (Abd-Elaal et al., 2019), and AI has made it more convenient. This practice has undermined the quality of education by allowing students to get degrees without mastering the material. It also leads to an uneven playing field for honest and hard-working students.

Additionally, it has created a situation of mistrust between students and faculty. Ghostwriting has become a major problem in higher education because it allows students to submit work they did not create, eroding the degree's credibility. Additionally, it can lead to a lack of accountability among students since they can get away with not doing their assigned work. It also leads to an unfair advantage for those students who engage in this practice since they can

achieve better grades without putting in the effort. A study by The Center for Academic Integrity found that almost 80% of college students admit to cheating at least once.

Now, it has become inevitable for academicians to look for ways through which the negative effects of AI can be minimized so that maximum benefits can be achieved. This can only be possible when awareness increases and the issues and challenges are studied deeper (Celik et al., 2022). Sharma et al. (2019) claim that AI is not a self-employed or self-organized entity; humans generate it and enable it to imitate and learn from us. Therefore, it cannot replace human beings, and it is in the hands of the developer or the users how they utilize it. Educators need to know about the algorithms working in these AITGs to identify students' cheating or unethical behavior. As these AI tools outperform systems designed to detect academic and research malfeasance, such as plagiarism, detecting AI-generated papers requires a vigilant instructor or reviewer (Abd-Elaal et al., 2019). Though many are impressed by AI tools, these tools commit serious mistakes, and their outputs are not reliable (Rudolph et al., 2023). Huh (2023) conducted a study in South Korea by administering the same questions to ChatGPT and medical students and found that the answers generated by this software were inferior in quality compared to medical students. For instance, AITG papers on health topics may use sophisticated language to discuss the purported benefits of a certain food or supplement, even though the paper's data does not support the claims. This type of language can be misleading, as it can make the claims sound more scientific and believable than they are.

Furthermore, it can make it difficult for readers to understand the actual data and draw their conclusions. Kendrick (2023) found that AITGs (ChatGPT) produced inaccurate references that either did not exist or came from very limited sources when asked to generate an article with references. Additionally, teachers, researchers, and anti-plagiarism instruments must exert additional effort to detect AITG-generated content (Abd-Elaal et al., 2019).

Thus, the role of the instructor is the most crucial factor in this AI era, and it is important to consider their opinions, experiences, and expectations for the successful implementation of artificial intelligence in the education sector (Holmes et al., 2023). Different technologies have evolved since the 20th century, like radio, TV, internet, computers, mobile learning, social media, etc.. Every time, it was presumed that education had been revolutionized, but classroom teaching remained the same, and buzzwords like MOOCS could not challenge the monopoly of higher education institutes (Rudolph et al., 2023; Terzian, 2019).

Therefore, this study has explored the perceptions of higher education teachers currently facing the challenges raised by artificial intelligence, especially AITGs, and how they are coping with these challenges.

Methodology

This research adheres to the paradigm of interpretivism, according to which reality is subjective because it is socially constructed and subject to change based on the individual's interpretation. There is no singular "reality"; multiple realities are possible (Saunders et al., 2009). Therefore, qualitative research was conducted following the interpretive paradigm to achieve the research objectives. This study seeks to investigate the challenges teachers face in this era of artificial intelligence chatbots; therefore, an inductive method was used to identify the underlying themes from the collected data (Creswell & Poth, 2016).

The grounded theory method was used for qualitative analysis to identify the issues and challenges confronted by higher education teachers. Grounded theory was used because of its flexible and exploratory nature.

The grounded theory approach develops a theory grounded in data; consequently, data are the foundation for prescribing study findings (Glaser & Strauss, 2017). Glaser and Strauss (2017) introduced the concept of grounded theory. Still, their successors, such as (Corbin & Strauss, 1990) and (Gioia et al., 2013), have made significant contributions to the development of this

theory. Gioia et al. (2013) contributed to grounded theory by developing a data structure for qualitative analysis; their methodology for qualitative research is known as the Gioia methodology. This investigation also employed the Gioia method. This methodology provides a visual picture of the themes that emerged and the data analyzed.

Sampling and Subjects

Purposive sampling has been used to identify the informants who have the requisite information and best serve the purpose of the study (Sekaran & Bougie, 2016). Purposive sampling was used to identify the informants who possess the necessary information and best serve the study's purpose. This sampling method allowed us to generate a homogeneous sample of academicians. Informants were selected from public sector universities in Punjab, Pakistan. Before conducting interviews, participants were provided with an overview of the research. Interviews were audio recorded with the participants' permission. After each interview, each respondent has designated a pseudonym to protect their anonymity.

In qualitative research, five to twenty-five interviews are deemed adequate (Brinkmann & Kvale, 2018). The sample size of this study is twenty. In grounded theory, however, data are collected until data saturation is reached, a process known as theoretical sampling (Glaser & Strauss, 1967). Saturation occurs when the interview analysis yields no new information for the researcher (Creswell & Poth, 2016). This study reached data saturation after 15 interviews because no new themes emerged. Five additional interviews were conducted to confirm the results of the previous fifteen interviews. Each interview was transcribed, and themes were extracted from each transcript. According to the methodology of Gioia et al. (2013), initial motifs are referred to as first-order categories. Second-order themes are derived from first-order categories, and aggregate dimensions are extracted from second-order themes. According to the grounded theory methodology, all responses were continuously compared.

The data were gathered through semi-structured interviews; an interview guide was created to facilitate semi-structured interviews. It provides the primary interview queries or ideas. Due to the adaptable nature of semi-structured interviews, an additional inquiry was conducted when necessary.

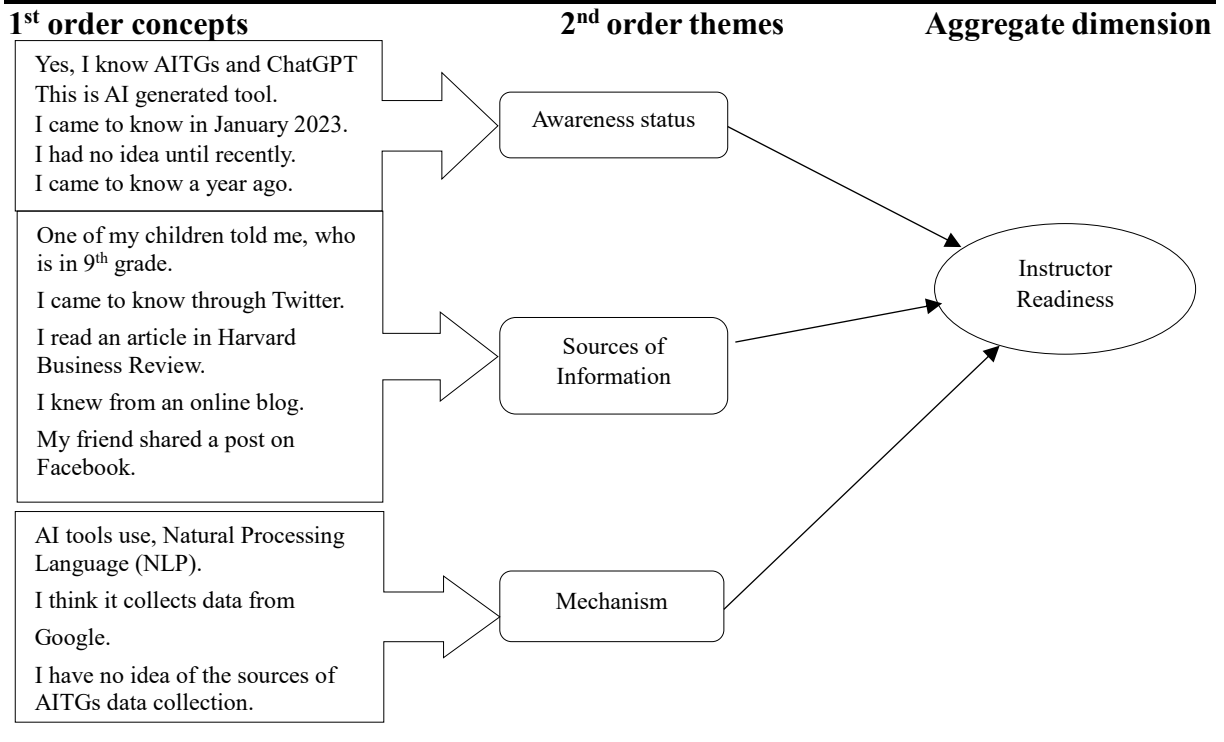
Table 1: Details of informants

Informant	Gender	Teaching experience	Mode of teaching
1	Female	15	Online
2	Male	12	Online
3	Female	20	Classroom
4	Female	13	Classroom
5	Female	2	Online
6	Male	25	Online/Classroom
7	Male	20	Online
8	Male	14	Online/Classroom
9	Male	14	Online
10	Male	3	Online
11	Female	16	Online
12	Male	4	Online
13	Female	25	Classroom
14	Male	5	Online
15	Female	16	Online
16	Female	5	Online
17	Male	10	Classroom
18	Female	4	Online
19	Male	15	Online
20	Male	6	Online

Data Analysis

Data have been collected from 20 informants. Teachers from traditional classrooms and online teaching institutes participated in the study. Table 1 shows the details of the informants. These teachers have good experience in their respective fields. We asked a number of questions. The following figures have been extracted as the data structure for each question. Figure 1 below represents the data structure derived from these questions.

Figure 1: Instructors’ readiness

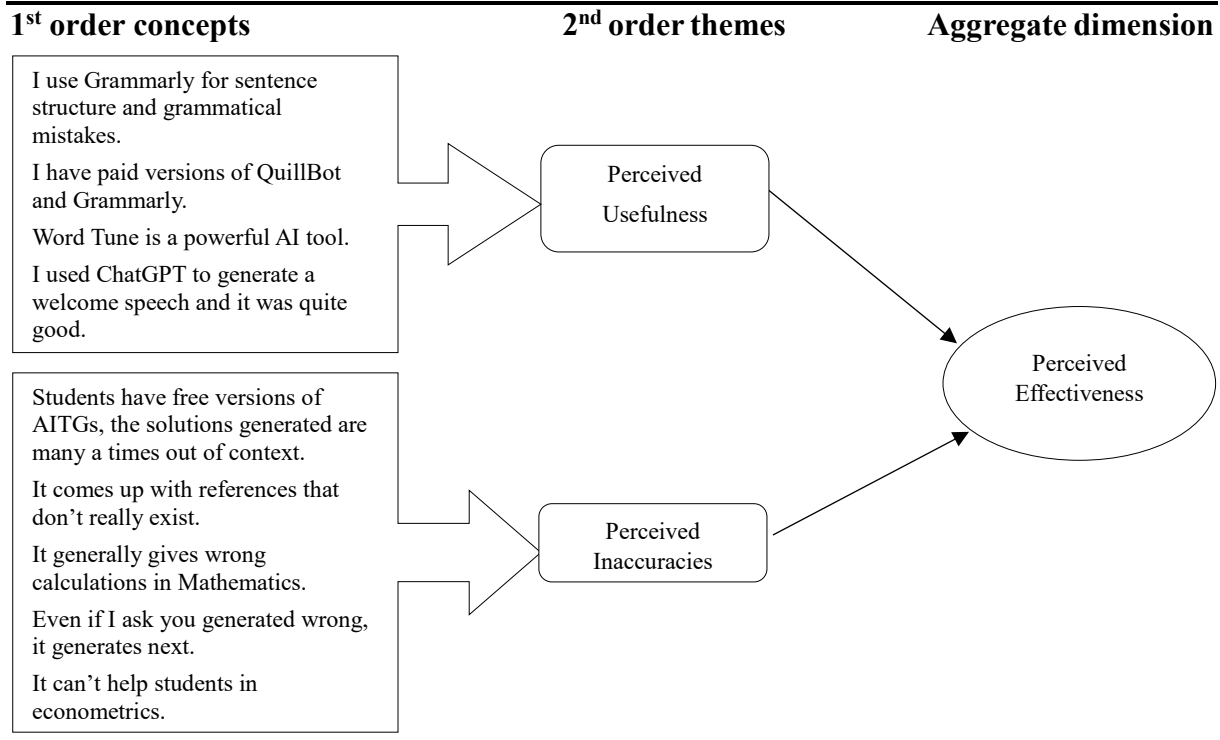


Most teachers knew AI tools that generate text, but their knowledge was incomplete. However, they could only recall one AI tool, ChatGPT. None of them knew this information more than a year ago. Most of the informants came to know in early 2023. Their sources of this information were diverse; as one informant said, “My brother is in Canada; he told me about this tool.” Some of the teachers came to know through social media like Facebook and Twitter. One informant came to know through his young son, who was studying in grade 9, which shows that younger ones have more updated knowledge regarding such advanced tools. When asked if they knew the mechanism of how these text generators work, only two informants knew that these tools use Natural Language Processing (NLP) and algorithms. Others thought this uses Google more efficiently to produce texts. From this data, three second-order themes, awareness status, sources of information, and mechanism, emerged, which formed the aggregate dimension of “instructor readiness.” Instructor readiness explains the information regarding AI tools and the understanding of the mechanism used by the AI tools to generate text and do other stuff.

We asked the teachers if they used AI tools for text generation or editing. And how accurate are these tools?

As a result, two second-order themes, perceived usefulness, and perceived inaccuracies, emerged, forming the aggregate dimension of the “perceived effectiveness” of these tools. Figure 2 depicts this data structure.

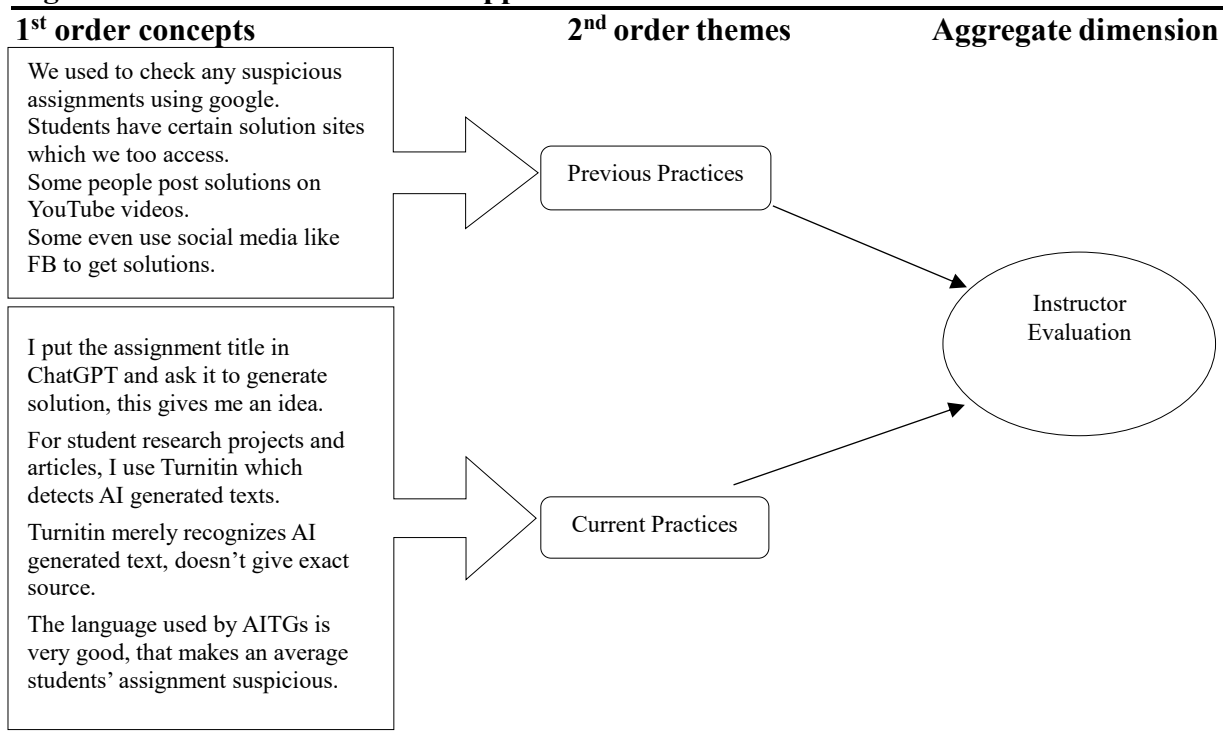
Figure 2: Perceived effectiveness of AI tools



Teachers use different types of software like Grammarly and Quilbot as language editors. As English is not the first language in this country, teachers do take the help of such tools that provide grammar, punctuation, sentence structure, and spell check facilities. Teachers were using paid versions, which were more powerful. However, only one teacher said, “I used ChatGPT to prepare a welcome speech, and it was quite good.” According to the informant, in a short time, the speech was prepared. However, teachers did not use AI tools to develop academic activities. According to one informant, “Students use the free version of ChatGPT, generated solutions don’t match the context, and it is easy to detect cheating.” One informant, a mathematics teacher, said, “It generally gives wrong calculations in Mathematics.” An economics teacher was confident that AITGs can’t affect much, as she provides specific scenarios and data in her econometrics course, which ChatGPT cannot provide accurate solutions. So, overall, teachers perceive that solutions generated by these AITGs are not accurate enough so far, but they fear these will be accurate soon.

We asked the teachers what difference these AITGs made in checking students’ assignments now and before this advancement.

Figure 3 represents the data structure derived from the responses of the informants. Previously, teachers used to read the assignment and check any assignment from Google in case it was suspicious of cheating. Students have certain sites where they post the solutions and even develop videos and upload them on YouTube or Facebook. Teachers have also registered themselves on such sites, and they easily get the solutions that students use.

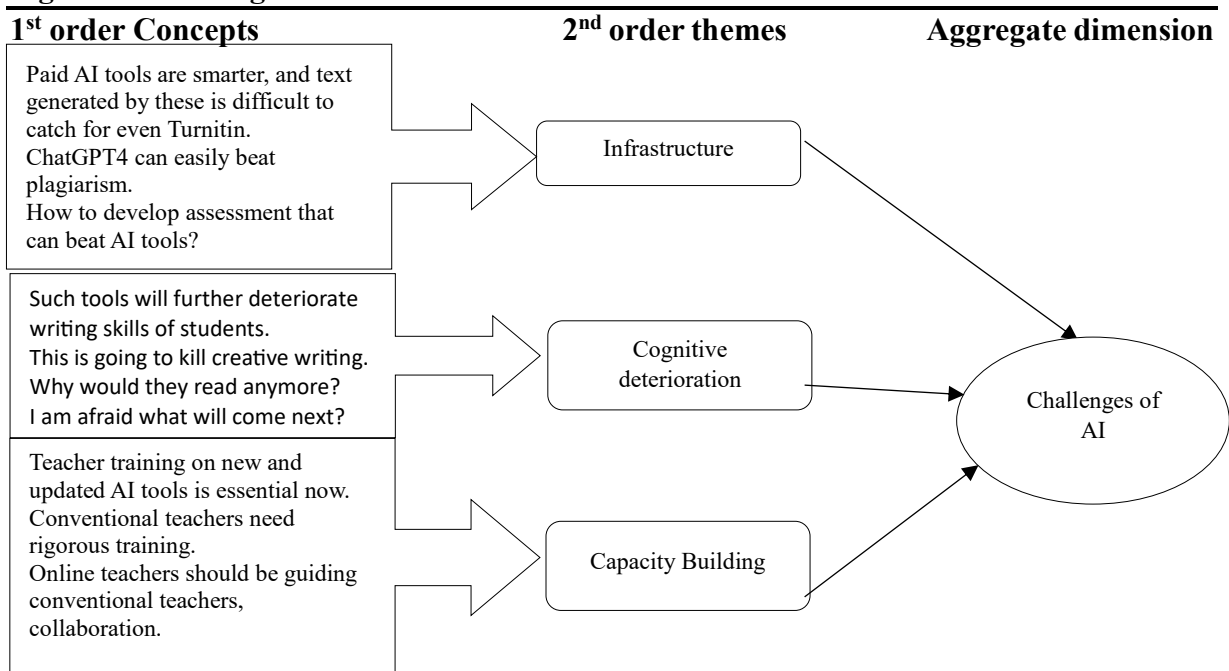
Figure 3: Instructors' evaluation approaches

Gradually, things changed, higher education institutes have powerful software, “Turnitin,” and academicians widely use that to detect plagiarism. But ChatGPT has raised a serious concern; it does detect AI-generated responses but doesn't accurately tell its sources; one informant explained, “Turnitin merely recognizes AI-generated text, doesn't give exact sources.” One informant said, “The language used by AITGs is very good, that makes an average student's assignment suspicious.” One innovative teacher said, “I put the assignment title in ChatGPT and ask it to generate a solution; this gives me an idea.”

Previous and current practices form an aggregate dimension of “Instructor Evaluation.” Instructors use these approaches to ascertain the authenticity/cheating of a student-submitted activity. These approaches have become sophisticated as software like Turnitin and Authenticate are available now.

We asked the informants about the advent of AI tools and the issues and challenges for teachers in assessment, evaluation, and pedagogy.

Three second-order themes, infrastructure, cognitive deterioration, and capacity building, emerged, and the aggregate dimension “Challenges of Artificial Intelligence” was developed. Figure 4 below depicts the data structure.

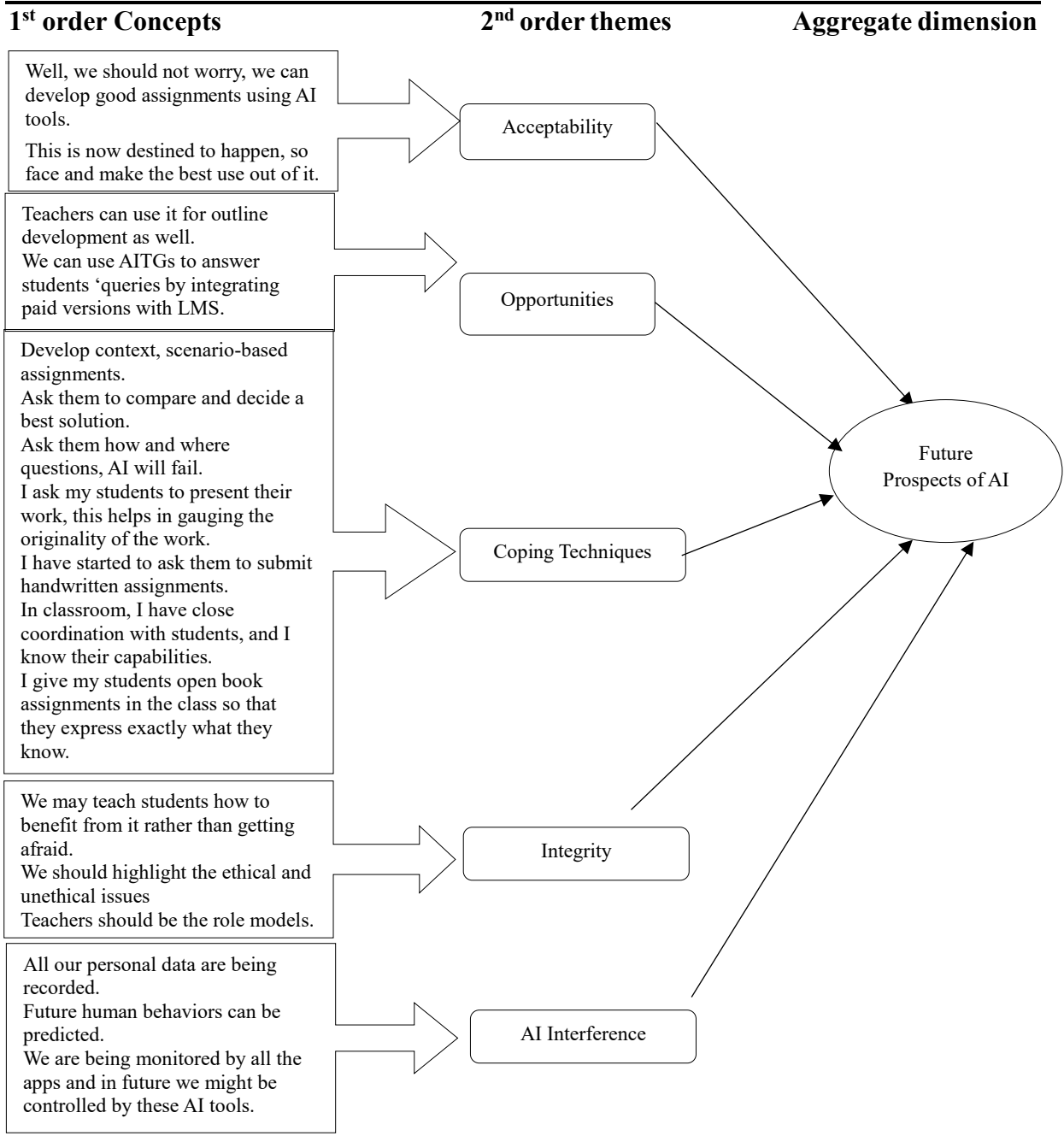
Figure 4: Challenges of AI tools

Strong and updated IT infrastructure is imperative now. Higher education institutes need to invest in IT infrastructure (both hardware and software). At the moment, teachers are using the free version of ChatGPT, which is not that powerful as compared to the paid version (this applies to all free applications); this is a disadvantage as, according to one informant, “Paid AI tools are smarter, and text generated by these is difficult to catch for even Turnitin.” If students use paid versions, how can teachers ascertain the authenticity? Teachers had grave concerns about the writing abilities of today’s students. With the advent of social media, students’ language skills have already been affected, and if they get help from such AI tools, they will lose their critical and creative writing skills. One teacher said, “This is going to kill creative writing. Why would they read anymore?”

Students of this era are much smarter and technology experts than their teachers; as one teacher said, “My 11-year-old daughter told me about ChatGPT, and she was already using a free version of Grammarly”. In this study, we interviewed conventional and online classroom teachers; we found that those teaching online were well-versed with online tools. A conventional teacher expressed, “Conventional teachers need rigorous training.” universities must pay serious attention to teachers’ training regarding new AI tools and techniques so that they incorporate these tools in their pedagogy and properly evaluate their students. The challenges of AI are bigger, and we need to approach them creatively.

The pertinent question is, what next? What would be the future of education, and how should we approach this challenge? We asked the teachers about the times ahead in education in particular and human lives in general the effects of AI.

Figure 5: Future prospects of AI



A variety of responses were received. Five second-order themes, acceptability, opportunities, coping strategies, integrity, and AI interference, appeared, and from these, “Future Prospects of AI” was developed.

Teachers have ultimately accepted that AI is the next era, and there is no remedy; it will prevail now. “This is now destined to happen, so face it and make the best use out of it.” as explained by one informant. There has always been resistance to change, and this new phenomenon is no exception, but teachers seem to embrace this change much quicker. According to a teacher, “Well, we should not worry; we can develop good assignments using AI tools.” Some feel AI text generators would be a blessing; these will lessen their certain tasks and help them out. According to one teacher, “I used AITG to prepare a welcome speech.” The teacher believed, why can’t we develop good assignments, course outlines, learning outcomes, and even question papers using ChatGPT?

Teachers also have many things to do to develop an assessment that can challenge AITG; for example, one said, “Develop context, scenario-based assignments.” another proposed, “Ask them to compare and decide the best solution.” And one teacher was confident that “Ask them how and where questions, AI will fail.” Classroom teachers said that they have adapted old techniques again; for example, one teacher told, “I ask my students to present their work; this helps in gauging the originality of the work.” Another teacher stated, “In the classroom, I have close coordination with students and know their capabilities.” An interesting coping technique was “I have started to ask them to submit handwritten assignments.” And “I give my students open book assignments in the class so that they express exactly what they know.”

So, teachers now do not just ask for submissions; they have adapted viva and presentations to confirm the students’ submitted work.

Another important aspect highlighted by the teachers was “academic integrity”, which means emphasizing ethical behavior and avoid getting unethical help from anyone, humans or AITGs. One teacher believed that teachers should exhibit high moral character in academic writing so that students follow them, “Teachers should be the role models.”

A general concern of the informants was the high interference of AI tools in our daily lives; they feel that the gadgets (cell phones, for example) we carry track all our data, listen to our discussions, and then use these data to predict our future behaviors, “ We are being monitored by all the apps and in future these AI tools might control us.”, this was the comment of a teacher. It seems that AI surrounds us, and there is no way out.

Discussion

Using Reinforcement Learning with Human Feedback (RLHF), OpenAI Corporation produced ChatGPT in 2019 and an improved version of this conversational chatbot in late November 2022 (Cano et al., 2023). ChatGPT uses algorithms and is trained to generate conversational writing that is natural and understandable to humans. It can interact with users in a natural language setting, responding to questions and supplying information (Cano et al., 2023; Hewitt, 2023; Kendrick, 2023). Other Artificial Intelligence Text Generators (AITGs) interact similarly with users to produce generative models, images, text-to-speech stories, and even creative writing. This new technology has generated quite a stir since its release, but it is not the only one (Cano et al., 2023). This development was there in late 2022, and the year 2023 marked its real imprint and shook the academicians. Teachers are perplexed about what to do, resist, or adapt (Cano et al., 2023).

The data and literature on this phenomenon are in their infancy. Rudolph et al. (2023) found only eight articles to cite in their marvellous article “ChatGPT: Bullshit spewer or the end of traditional assessments in higher education?”

This study focused on the issues and challenges that academicians face in the Artificial Intelligence (AI) era. AI is inevitable now; academicians must face reality and see how they can benefit from it while also training the students to use it productively.

The data analysis revealed Five aggregate dimensions: instructor readiness, perceived effectiveness, instructor evaluation, challenges of AI, and future prospects of AI. The teaching community will take some time to get fully equipped to cope with this new phenomenon of AI. In the era of hard-copy assignments, teachers had initially evaluated the students’ work by relying on their own acumen. After that came the era of soft copy submissions, and this made the work of teachers a little easier as they could google the suspicious work, see the sources, and guide the students accordingly. The major breakthrough in students’ work evaluation was made when education institutes got the new software Turnitin, which could detect plagiarism from diverse sources and quantify it by giving a percentage. However, the interpretation was subjective, yet it was a good measure until recently. With the launch of the first Artificial Text Generator (AITG) ChatGPT, the capacity of Turnitin is somewhat questioned. Tools like

Grammarly, QuillBot, WordTune, and ChatGPT have raised concerns. The paid versions produce such auto text, which is difficult to ascertain for Turnitin as plagiarism.

Teachers now have some idea of these AI tools and are exploring the mechanism used by these tools. Teachers have also started to use these tools to get some academic help, like developing course outlines, learning outcomes, and even assessments. The assessment of submitted work has become a bit difficult to gauge. So, the teachers now require students to present their work in class, take oral exams, submit handwritten assignments, and conduct open book (with no PC and cell phone) class activities to ensure students do their work themselves. Teachers fear that this availability of text generators will take away the students' writing skills, creativity, and critical thinking.

AI will also affect our daily lives as the gadget we possess all the time collects our data through the installed applications, which can also predict human behaviors. Marketers are buying this data from the app owners, and our privacy is at stake. Moreover, Learning Management Systems can be linked to AITGs to answer their queries moderated by teachers. The authors of this study have vast experience in online/distance and traditional classroom teaching, our experience shows that such things will continue. The first threat was posed by Google's search engine, but teachers found ways to fairly evaluate students' work. And the quest continues.

Conclusion

This is a qualitative study using grounded theory methodology. Data are collected from 20 informants who are university teachers using purposive sampling. Five aggregate dimensions emerged including instructor readiness, perceived effectiveness, instructor evaluation, challenges of AI and future prospects of AI. These dimensions suggest a proactive approach on the part of academicians.

Teachers from online/distance education and traditional classroom teaching both participated in the study, which added to the variety of data and understanding of the phenomenon of AITG. Teachers view AITGs both as a threat and an opportunity, a threat in the sense that this facility might take away students' critical thinking and writing capabilities. Opportunity in the sense that it can help and facilitate teachers in their academic endeavors and reduce their workload. Artificial intelligence has been viewed as a concern for common lives as well.

References

- Abd-Elaal, E.-S., Gamage, S., & Mills, J. E. (2019). Artificial intelligence is a tool for cheating academic integrity. 30th Annual Conference for the Australasian Association for Engineering Education (AAEE 2019): Educators becoming agents of change: Innovate, integrate, motivate,
- Brinkmann, S., & Kvale, S. (2018). *Doing interviews*, 2. Sage.
- Cano, Y., Venuti, F., & Martinez, R. J. H. B. P. E. (2023). *Chatgpt and AI text generators: Should academia adapt or resist?* Harvard Business Publishing Education.
- Cath, C. (2018). Governing artificial intelligence: ethical, legal and technical opportunities and challenges. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 376(2133), 20180080.
- Celik, I., Dindar, M., Muukkonen, H., & Järvelä, S. J. T. (2022). The promises and challenges of artificial intelligence for teachers: A systematic review of research, 66(4), 616-630.
- Chassignol, M., Khoroshavin, A., Klimova, A., & Bilyatdinova, A. (2018). Artificial Intelligence trends in education: a narrative overview. *Procedia Computer Science*, 136, 16-24.

- Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *Ieee Access*, 8, 75264-75278.
- Corbin, J. M., & Strauss, A. J. Q. s. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *13*(1), 3-21.
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. J. O. r. m. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *16*(1), 15-31.
- Glaser, B. G., & Strauss, A. L. (2017). *Discovery of grounded theory: Strategies for qualitative research*. Routledge.
- Hewitt, C. (2023). *The Complete Guide to AI Text Generators for Creators (How They Work, Limitations, and How to Use Them)*.
- Holmes, W., Bialik, M., & Fadel, C. (2023). Artificial intelligence in education. In. Globethics Publications.
- Huh, S. (2023). Are ChatGPT's knowledge and interpretation ability comparable to those of medical students in Korea for taking a parasitology examination?: a descriptive study. *J Educ Eval Health Prof*, 20(1).
- Jordan, M. I. (2019). Artificial intelligence—the revolution hasn't happened yet. *Harvard Data Science Review*, 1(1), 1-9.
- Kendrick, C. L. (2023). The Efficacy of ChatGPT: Is it time for the librarians to go home?
- Pallathadka, H., Sonia, B., Sanchez, D. T., De Vera, J. V., Godinez, J. A. T., & Pepito, M. T. (2022). Investigating the impact of artificial intelligence in education sector by predicting student performance. *Materials Today: Proceedings*, 51, 2264-2267.
- Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning and Teaching*, 6(1).
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Pearson education.
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.
- Sharma, R. C., Kawachi, P., & Bozkurt, A. (2019). The landscape of artificial intelligence in open, online and distance education: Promises and concerns. *Asian Journal of Distance Education*, 14(2), 1-2.
- Terzian, S. (2019). The history of technology and education.
- Timms, M. J. (2016). Letting artificial intelligence in education out of the box: educational cobots and smart classrooms. *International Journal of Artificial Intelligence in Education*, 26, 701-712.
- Tobin, S., Jayabalasingham, B., Huggett, S., & de Kleijn, M. (2019). A brief historical overview of artificial intelligence research. *Information Services & Use*, 39(4), 291-296.