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Perception of Students on Use of AI Technologies in Educational Communication

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ABSTRACT

The integration of Artificial Intelligence (AI) technologies in educational settings has transformed the way students learn, interact with content, and participate in the classroom. This research examines student perceptions of AI applications within learning environments, specifically looking at how these technologies influence their academic experiences, engagement levels, and attitudes toward technology-enhanced education. While AI offers the potential for personalized learning, automated feedback, and adaptive content delivery, understanding student acceptance and trust in AI is crucial for its effective implementation. The objectives of this study are to evaluate students' perceptions of the effectiveness and usefulness of AI technologies in enhancing their learning experiences. To analyse factors influencing student acceptance, trust, and comfort in using AI-driven educational tools and to identify key challenges and concerns students encounter with AI applications in education. The data for this study will be collected through quantitative research methods. Data will be collected through structured questionnaire from the samples. This research seeked to enrich the existing literature on AI in education by offering nuanced insights valuable to educators, policymakers, and developers who are striving to create AI tools that resonate with the unique needs and expectations of students. The ultimate goal is to maximize educational outcomes while nurturing a supportive and student-centered learning atmosphere that fosters engagement and academic success. This research will illuminate the path forward for harnessing AI technology to enhance educational experiences.

Keywords: Artificial Intelligence, Student, Education, Perception, Learning, Communication

Introduction

Integrating Artificial Intelligence (AI) in educational settings represents a significant transformation in the delivery, experience, and perception of learning. In recent years, AI technologies have advanced rapidly, finding applications in personalized learning, automated assessments, adaptive content delivery, and intelligent tutoring systems. These innovations hold the potential to redefine traditional educational paradigms by providing more customized, interactive, and efficient learning experiences. However, while the ability of AI to enhance academic outcomes is broadly recognized, its successful implementation largely hinges on the acceptance, trust, and comfort of the key stakeholders—students.AI is being used in education in a variety of ways, including adaptive content distribution, intelligent tutoring systems, automated assessment tools, and personalized learning systems, all of which are intended to produce more efficient and customized learning environments (Luckin et al., 2016). Knowing how AI affects student learning is crucial as the educational landscape changes in tandem with technology. By addressing each student's unique learning demands, AI-driven solutions have the ability to completely transform educational methods. To ensure a tailored educational experience, personalized learning systems, for example, evaluate student performance and modify content to fit their learning style and speed (Chen et al., 2020). By departing from the conventional "one-size-fits-all" model, this method creates a more welcoming and encouraging atmosphere for students from a variety of backgrounds. Furthermore, automatic feedback systems offer assessments in real time, enabling students to quickly recognize their areas of strength and weakness (Baker & Smith, 2019). In addition to improving learning outcomes, this ongoing feedback loop fosters self-regulated learning, which is an essential ability for academic achievement. Despite significant advancements, the integration of AI in education faces several challenges. Student acceptance, trust, and comfort with AI technologies are critical factors that affect their effectiveness. While some students may value the advantages of personalized learning and automated feedback, others might express skepticism or discomfort, driven by concerns regarding data privacy, algorithmic bias, or the perceived impersonal nature of AI interactions (Selwyn, 2019). Trust in AI tools is essential, as students are more likely to engage with technology, they consider reliable and transparent. Thus, understanding these perceptions is vital for the successful implementation of AI in educational contexts. Research indicates that student attitudes toward technology significantly influence their engagement and learning outcomes. According to Davis's Technology Acceptance Model (TAM), perceived usefulness and perceived ease of use are primary determinants of technology acceptance (Davis, 1989). In the realm of AI, if students do not view these tools as useful or user-friendly, their engagement and learning experiences may suffer. Furthermore, factors such as digital literacy, prior technology experiences, and cultural attitudes toward AI can shape student perceptions (Kim & Lee, 2021). While AI offers the potential to revolutionize education, it also presents several significant challenges. One of the most pressing concerns is data privacy and security, as AI systems often depend on extensive data collection for effective operation. Students may feel apprehensive about how their information is gathered, stored, and utilized, leading to a lack

of trust in AI technologies (Crawford, 2021). Additionally, algorithmic bias represents a major challenge, as biased data can lead to unfair or discriminatory outcomes. It is essential to ensure that AI systems are transparent and ethically designed to foster student trust and confidence. Another important concern is the risk of over-reliance on AI, which may hinder the development of critical thinking and problem-solving skills. While AI can enhance the learning experience, it should not supplant human interaction and mentorship. Educators must find a balance between utilizing AI tools and maintaining meaningful human connections to cultivate a well-rounded learning environment (Luckin et al., 2016). Given the challenges and opportunities presented by AI, there is an urgent need for empirical research that explores student perceptions of artificial intelligence in educational settings. While many existing studies primarily focus on the technical and pedagogical aspects of AI, they often overlook the lived experiences and attitudes of students (Holmes et al., 2021). This research aims to address this gap by investigating how students perceive the effectiveness, usefulness, and trustworthiness of AI technologies. By employing structured questionnaires to gather data, this study will yield valuable insights into the factors that influence student acceptance and identify potential barriers to the adoption of AI. Understanding student perceptions is essential for several reasons. Firstly, it can guide the development of AI tools tailored to the needs and expectations of students. Developers and policymakers can leverage these insights to create more effective and user-friendly AI applications, thereby enhancing educational outcomes. Secondly, this research can assist educators in designing AI-integrated curricula that promote a supportive and engaging learning environment. By addressing student concerns and fostering transparency, educators can build trust and encourage the wider adoption of AI technologies. Furthermore, this study holds broader implications for the future of education. As AI continues to advance, it will increasingly shape learning experiences. Ensuring that students feel comfortable with and receptive to AI technologies is crucial for maximizing their potential benefits. This research aspires to contribute to the existing literature by providing a nuanced understanding of student perceptions, ultimately guiding the development and implementation of AI in educational contexts.

Literature Review

Review of literature found that how Saudi university students use GenAI tools. Research found out that 78.7% of people regularly use GenAI; ChatGPT is the most often used. Benefits include time savings and accessibility. Reliability issues, plagiarism, and less contact are problems. highlights the importance of awareness and moral principles. heightened consciousness and moral standards for the application of GenAI. creation of guidelines and infrastructure to facilitate the integration of GenAI(Ahmad, Almassaad., Hayat, Alajlan., Reem, Alebaikan 2024).

The study examines Slovenian university students' perceptions on AI tools. Results emphasize the necessity for responsible AI integration and efficiency issues. Though they worry about the quality of their education, students acknowledge AI's efficiency. The majority use AI technologies, however utilization differs depending on the topic of research (Ajda, Fošner 2024).

Lam, Ky, Nhan. (2024) through their research found out about the influence of AI assistants on English speaking ability of students like real-time feedback from AI technologies and individualized education.

The study looks on how students see intelligent tutoring programs. The impact of technology on education is emphasized, particularly with regard to distant learning (Nenad, Djokić., Nikola, Milićević., Ines, Djokic 2024).

Pius, John, Bassey, and Dwii Buana (2024) through their research investigates Indonesian students' opinions about AI in the classroom. Although there are favorable opinions, privacy and teacher replacement problems surface. The majority of pupils have a favorable opinion of AI in the classroom. Data privacy and teacher replacement are among the concerns.

Scope of Study

The present study explored how students perceive AI technology within higher education learning environments. The research assessed the impact of AI-driven tools on students' academic experiences, engagement levels, and attitudes toward technology-enhanced education. These tools include adaptive material delivery systems, automated feedback mechanisms, and personalized learning platforms. The study specifically focused on the factors that influence students' comfort, acceptability, and trust in utilizing AI technologies, as well as the challenges and concerns they face.

Statement of Problem

The swift integration of Artificial Intelligence (AI) technologies in higher education has unveiled transformative opportunities for enhancing learning experiences. AI tools, including personalized learning platforms, automated feedback systems, and adaptive content delivery, have the potential to revolutionize traditional educational methods by offering tailored learning pathways and boosting student engagement. However, despite these advancements, the successful implementation of AI in education hinges on student acceptance, trust, and comfort with these technologies. Existing research has largely concentrated on the technical capabilities and pedagogical benefits of AI, often neglecting the crucial role of student perceptions in determining the success of AI integration. There is a limited understanding of how students view the usefulness and effectiveness of AI-driven educational tools, as well as the factors that influence their willingness to adopt these technologies. Additionally,

challenges such as data privacy concerns, fears of technological dependency, and potential biases in AI algorithms raise significant questions about trust and comfort levels among students. This research sought to address these gaps by evaluating students' perceptions of AI applications in educational settings. It examined the factors that shape their acceptance and trust in AI tools while identifying the key challenges and concerns they encounter. The study provided empirical insights into how AI technologies affect student engagement, academic performance, and overall learning experiences. Understanding these dynamics is essential for educators, policymakers, and developers striving to create AI tools that align with students' unique needs and expectations. Failing to address student perspectives and concerns may hinder the realization of AI's potential benefits in education. Therefore, this research aimed to illuminate the path forward for leveraging AI technology to create a supportive, engaging, and effective learning environment.

Objectives

1. To evaluate students' perceptions of the effectiveness and usefulness of AI technologies in enhancing their learning experiences.
2. To analyse factors influencing student acceptance, trust, and comfort in using AI-driven educational tools
3. To identify key challenges and concerns students encounter with AI applications in education.

Methodology

The present research adopted qualitative and quantitative research methods to address the objectives. The qualitative content analysis and survey with questionnaire was used for primary data collection. The convenient sampling method was used to select the respondents. The sample size is 50, due to time limitation.

Data Analysis and Interpretation

The data was collected from 50 respondents. Among 50 respondents 24 were female and 26 were male. The most common age group is 21-23, which accounts for 48% of respondents. Majority of the respondents 46% are studying their postgraduation, 48% of respondents are studying graduation and only 6% of respondents are in their high school education.Among the respondents 32% are from science, 26% are from arts and commerce accounts for only 10%.

To evaluate students' perceptions of the effectiveness and usefulness of AI technologies in enhancing their learning experiences.

Among the respondents, it is observed that majority of the respondents 90% have used AI – driven tools in their learning, while only 8% have not used it.

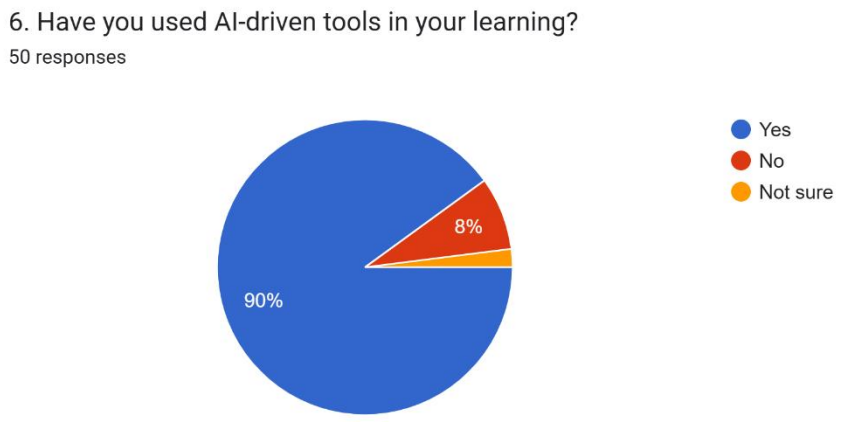

Fig: 7.1.1 Use of AI-driven tools in learning

Respondents have rated their experience as 3 out of 5 of the Likert scale which accounts for 52% where 1 being excellent to 5 being very poor. 22% among the respondents have rated their experience with AI tools in learning as 4 and only 10% have rated it as 2.

Among the respondents, 94% have used ChatGPT, 42% have used Google Gemini, 38% have QuillBot, 36% have used Grammarly, 22% have used Midjourney and Duolingo and 20% have used Microsoft Copilot.

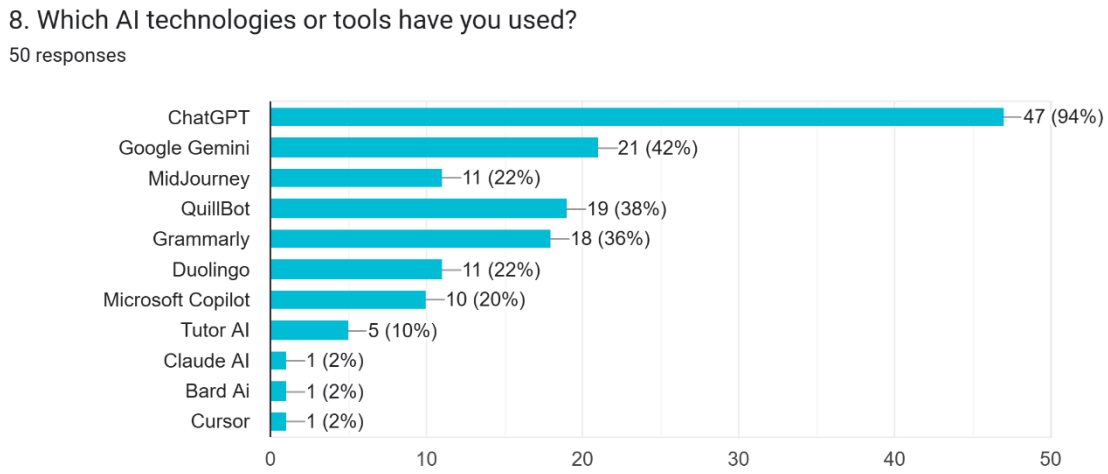

Fig: 7.1.2 Usage of various AI tools

27 out of 50 respondents have agreed to the statement that they have stopped referring to books, 24 respondents have agreed that they do not bother about the language ability when using AI tools for their educational purposes. Out of 50 respondents, 24 have agreed that it has reduced the learning

time, 22 have agreed that they spend less time in making notes, 20 respondents have agreed that AI tools help them understand complex concepts better. Among the respondents 25 are neutral about AI-driven tools providing accurate and reliable information, 24 are neutral about AI tools make learning more engaging, 23 are neutral about AI tools respecting their privacy and data security and 20 are neutral about AI tools being easy to use and can be integrated into their learning process.

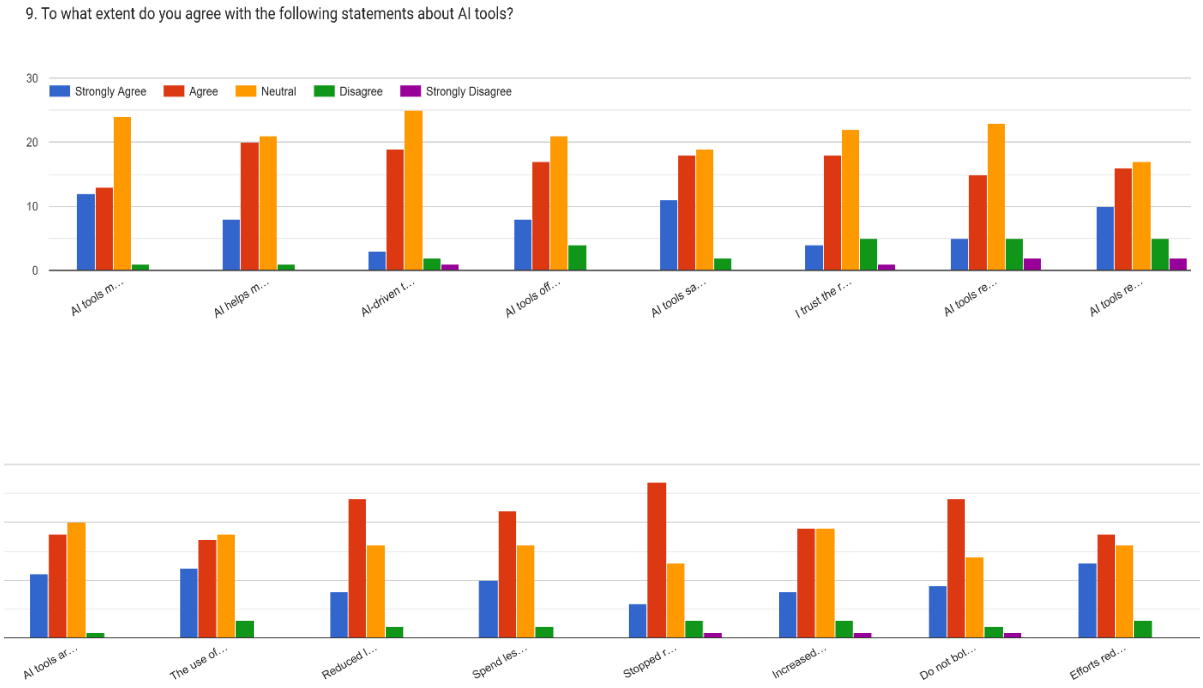

Fig: 7.1.3 Understanding the AI tools in learning process

44% of the respondents are open to using AI tools but do not rely on them heavily, 30% use AI tools with ease for various tasks and only 16% use AI tools occasionally and face challenges.

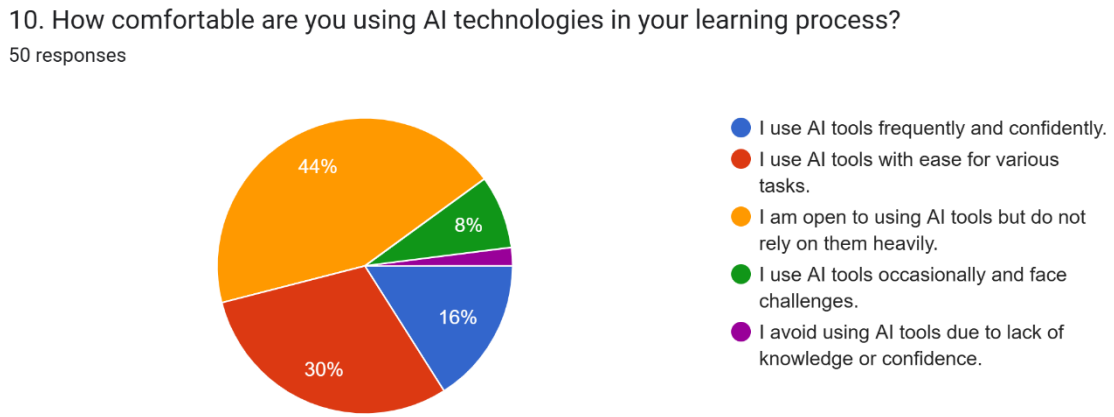

Fig: 7.1.4 Comfort of using AI tools in learning process

To analyse factors influencing student acceptance, trust, and comfort in using AI-driven educational tools

Majority of the respondents, 66% believe that the factor that influence their trust, acceptance and comfort in AI driven educational tools is because it is accurate. 46% believe that it is the transparency of AI processing data and providing results, whereas 42% chose the driving factor as the ability to verify or cross check AI generated content. Among the respondents, 40% believe that the factor that has made them trust AI driven educational tools is because of the recommendations from the educators or institutions, however only 34% believe that it is from their previous personal experiences with AI tools.

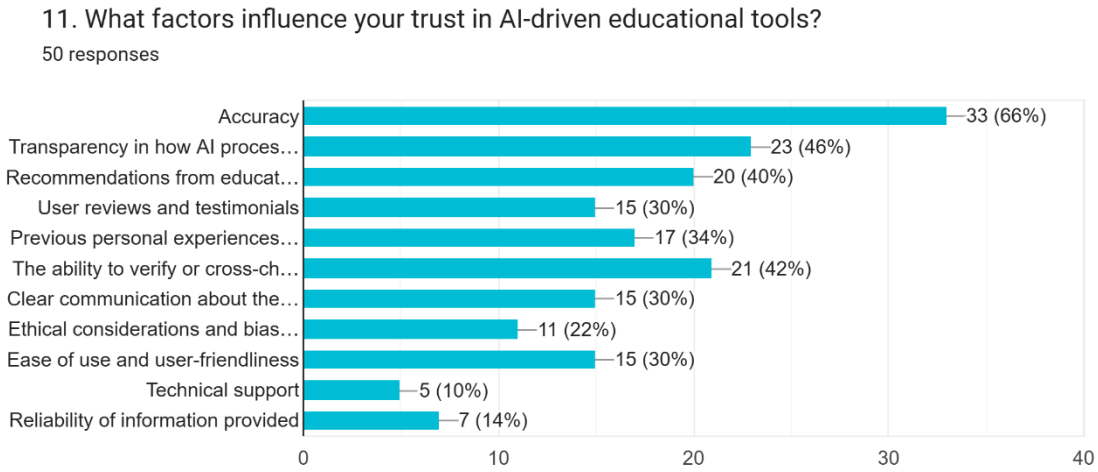

Fig: 7.2.1 Factors influencing trust in AI driven educational tools

Among the respondents 44% have agreed that they have faced ethical or privacy concerns when they are using AI tools while 28% of the respondents are both tied between no and not sure.

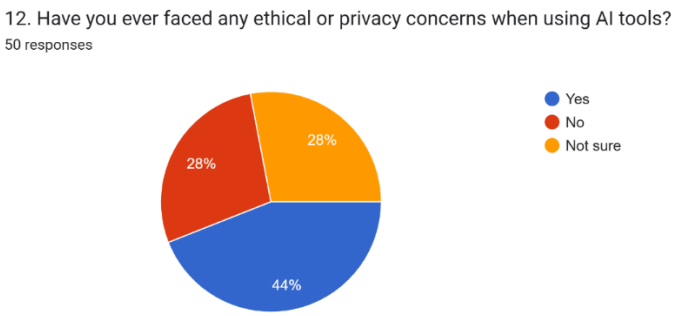

Fig: 7.2.2. Respondents' opinion on privacy concerns while using AI tools

To identify key challenges and concerns students encounter with AI applications in education.

The most prevalent challenge, cited by 60% of respondents, is difficulty in understanding or using AI technologies. Bias or unfair treatment in AI systems is another significant concern, reported by 50% of the respondents. Related to this is the lack of accuracy or reliability of AI tools, noted by 44% of students, suggesting that some students question the precision and dependability of AI-generated feedback or assessments.Concerns about limited personalization (46%) and dependence on the internet (34%) further emphasize challenges that affect the effectiveness of AI tools in addressing individual learning needs and ensuring consistent access. Additionally, privacy and data security concerns were reported by 26% of respondents, reflecting anxiety about how their personal information is handled by AI systems.Other notable challenges include lack of integration with existing tools (24%), cost or accessibility issues (24%), and fear of over-reliance on AI (26%). A smaller portion of students (10-14%) also highlighted issues like ethical concerns, language or cultural limitations, anddifficulty in verifying AI-generated information.

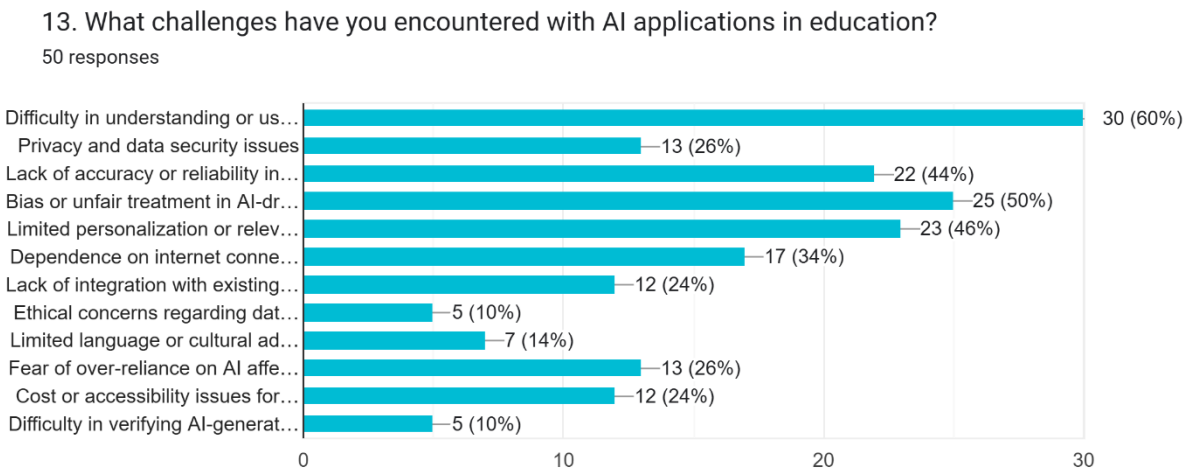

Fig: 7.3.1 Challenges encountered by the respondents with AI applications in education

Out of 50 respondents, nearly half 48% believe that the use of AI in education is inevitable. On the other hand, 22% of respondents do not think AI usage is inevitable. Meanwhile, 30% of students expressed uncertainty, selecting "Maybe."

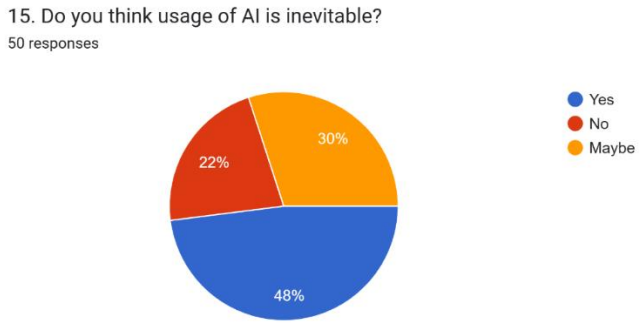

Fig: 7.3.2 Respondents opinion on usage of AI is inevitable

The most significant improvement, noted by 76% of respondents, is in understanding concepts, indicating that AI tools have a strong capacity to clarify complex topics. Quick answers to queries were reported by 48% of respondents, showcasing AI's role in providing timely information. Improved language and writing skills were highlighted by 40%, while 36% acknowledged AI's assistance in summarizing research. Enhancements in interactive learning tools and creativity in assignments were recognized by 32% and 28%, respectively. Tailored recommendations and increased engagement were noted by 34% and 22%. Technical problem-solving and feedback provision were less prominent, at 24% and 18%. Notably, only 6% reported no significant impact, reflecting a largely positive reception of AI in education. These findings underscore AI's versatility in addressing various educational needs and its potential to revolutionize learning processes.

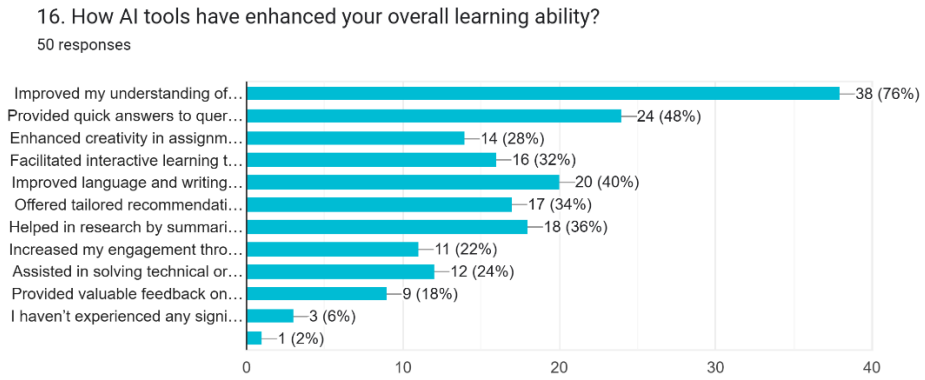

Fig: 7.3.3. Respondents perception on how AI tools have enhanced their learning ability

The majority 40% affirmed their access to such content. However, a significant proportion 38% expressed uncertainty. Meanwhile, 22% reported an inability to access regional or local content.

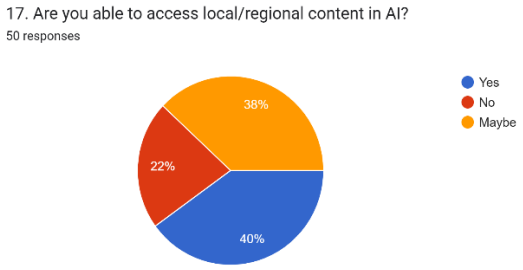

Fig: 7.3.4 Respondents opinion on access to local content in AI

A majority of respondents 42% expressed uncertainty, indicating that they are unsure about the extent to which language proficiency impacts the effectiveness of their prompts. Meanwhile, 40% agreed that language ability poses a limitation. On the other hand, 18% believed language ability does not hinder their use of AI tools.

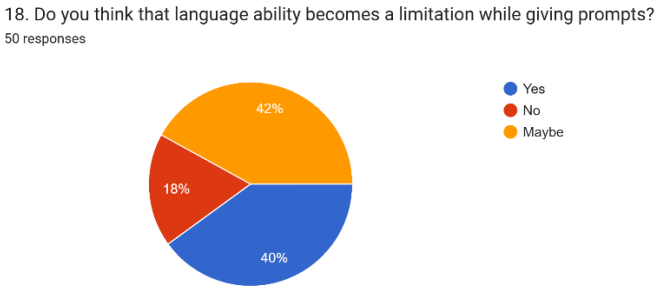

Fig: 7.3.5 Respondents view on the language ability as limitation for giving prompts

While a significant portion 48% of respondents believe AI tools might contribute to such a divide, a substantial number 36% disagree and the remaining 16% expressed uncertainty.

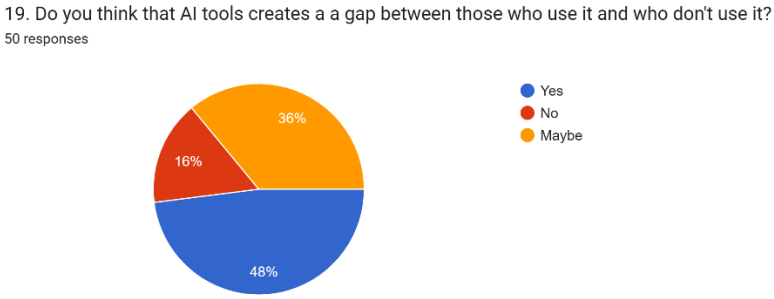

Fig: 7.3.6 Respondents view on AI tools creating a gap between its user and non-user

Conclusion

The findings of this study provide a comprehensive overview of students' perceptions, experiences, and challenges with AI-driven educational tools. A significant majority of respondents have utilized

AI tools in their learning, demonstrating their widespread adoption. AI tools have been recognized as effective in improving understanding of complex concepts, providing quick responses 48%, and enhancing language and writing skills. However, students also highlighted various challenges, such as difficulty in understanding AI systems, bias in AI outputs, and concerns over accuracy and personalization. While most respondents view AI tools positively, with many acknowledging their inevitability in education concerns over ethical, privacy, and security issues persist. Factors such as transparency, accuracy, and verification influence trust and comfort in using AI, emphasizing the need for AI tools to prioritize these aspects. Access to local or regional content and language proficiency also emerged as critical factors, with a significant portion of respondents either unable to access local content or unsure about the limitations posed by their language skills. Furthermore, ethical concerns and the risk of creating a divide between users and non-users of AI remain areas requiring attention. AI tools hold great potential to revolutionize education by making learning more accessible, efficient, and engaging. However, addressing the concerns related to bias, privacy, accuracy, and inclusivity is crucial for fostering greater acceptance and trust. Future efforts should focus on refining these tools to ensure equitable and effective learning experiences for all students, irrespective of their backgrounds or proficiency levels.

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