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Artificial Intelligence, Social Media Learning, Online Education, Digital Engagement, Higher Education Students

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Abstract: *The integration of artificial intelligence (AI) into online education has significantly transformed educational practices and students' learning experiences through social media platforms. AI supported technologies increasingly influence how university students access academic content, communicate, collaborate, and engage in digital learning environments. This qualitative study explores the transformation of online education through social media by examining the learning experiences, digital engagement, and educational challenges of BS enrolled students in public universities. A qualitative research design was employed, and participants were selected through purposive sampling. Data were collected using semi structured interviews and analyzed through thematic analysis to identify major patterns and themes related to students' experiences with AI integrated learning environments. The findings indicate that artificial intelligence enhances accessibility, supports personalized learning, and increases student engagement through flexible educational opportunities. However, participants also reported challenges including dependence on AI tools, reduced critical thinking, information credibility concerns, digital inequality, privacy issues, and information overload. The study further highlights changing communication patterns and reduced face to face interaction. The study concludes that effective integration of AI in higher education requires ethical implementation, institutional support, digital literacy, and balanced educational practices.*

Introduction

The rapid advancement of artificial intelligence (AI) has significantly transformed the landscape of online education across the world. Educational institutions increasingly rely on AI driven technologies to improve teaching methodologies, personalize learning experiences, and enhance communication through digital platforms. Simultaneously, social media platforms have emerged as influential educational spaces where students interact, exchange academic information, collaborate on assignments, and engage in self-directed learning activities. The integration of AI within social media environments has created new opportunities and challenges for higher education, particularly among university students who heavily depend on digital technologies for academic engagement and

communication (Holmes et al., 2022; Zawacki Richter et al., 2019). In recent years, universities have experienced a dramatic shift toward digital learning ecosystems, especially after the COVID 19 pandemic accelerated the adoption of online education globally. Social media applications such as WhatsApp, Facebook, YouTube, Instagram, LinkedIn, and TikTok are no longer used solely for entertainment purposes; they have become important educational tools that facilitate knowledge sharing, peer interaction, virtual classrooms, and collaborative learning experiences (Dhawan, 2020; Selwyn, 2021). Artificial intelligence technologies embedded within these platforms, including recommendation algorithms, automated content delivery systems, AI chatbots, adaptive learning systems, and virtual assistants, increasingly shape students' educational experiences and patterns of engagement (Luckin & Cukurova, 2019).

The emergence of AI powered educational environments has transformed how university students access information and participate in academic activities. AI based systems can analyze learners' behaviors, preferences, and learning styles to provide personalized educational content and recommendations. These technologies help students receive instant feedback, customized study materials, and automated academic support that can enhance learning outcomes and improve accessibility to education (Chen et al., 2020). Social media platforms integrated with AI mechanisms also enable students to engage in interactive discussions, online academic communities, and collaborative learning networks beyond traditional classroom settings (Greenhow & Chapman, 2020).

Despite these advantages, the increasing integration of AI into social media based education has raised several educational, ethical, and psychological concerns. Scholars argue that excessive dependence on AI driven social media learning environments may negatively influence students' critical thinking abilities, academic integrity, attention span, and interpersonal communication skills (Khalil & Er, 2023). The widespread use of AI generated educational content also creates concerns regarding misinformation, plagiarism, authenticity of knowledge, and the reliability of online educational resources. Students may struggle to differentiate between credible academic information and misleading AI generated content circulating through social media platforms (Walter, Brooks, Saucier, & Suresh, 2021). Digital engagement among university students has become a central component of modern higher education systems. AI technologies embedded in social media platforms continuously monitor users' behaviors, interests, and interactions to maximize engagement and content consumption. While these features can improve student participation and accessibility to educational materials, they may simultaneously contribute to digital addiction, reduced concentration, and increased screen dependency (Keles, McCrae, & Grealish, 2020). Research indicates that prolonged exposure to digital learning environments may affect students' emotional wellbeing, social interaction patterns, and academic performance (Brailovskaia & Margraf, 2021).

In public universities, particularly within developing countries, the transformation of online education through AI and social media presents additional structural and institutional challenges. Limited technological infrastructure, unequal internet accessibility, lack of digital literacy, and insufficient institutional support can significantly affect students' learning experiences (Adedoyin & Soykan, 2020). Many BS enrolled students in public universities face financial barriers, unstable internet connectivity, and inadequate access to digital devices, which influence their ability to fully participate in AI supported online learning environments. Consequently, digital inequality remains a major concern in higher education transformation processes (UNESCO, 2023). AI driven social media learning environments raise concerns regarding data privacy, surveillance, and ethical use of students' personal information. Educational technologies often collect large amounts of user data to personalize content and improve

engagement algorithms. However, students may not fully understand how their information is collected, analyzed, and utilized by digital platforms (Williamson & Eynon, 2020). This creates ethical debates surrounding privacy rights, algorithmic control, digital autonomy, and institutional responsibility within online education systems.

The role of social media in online education also reflects broader cultural and social transformations in students' learning behaviors. Contemporary university students increasingly prefer interactive, visual, and flexible learning methods supported by digital communication technologies. AI powered platforms provide opportunities for collaborative learning, peer support, and self-paced education that align with modern students' academic preferences (Redecker & Punie, 2022). However, scholars emphasize that online engagement through social media may simultaneously reduce face to face interaction, weaken classroom socialization, and contribute to feelings of isolation among students (Turkle, 2017).

Qualitative research is particularly important for understanding students' lived experiences, perceptions, and emotional responses regarding AI integrated online education through social media. While quantitative studies frequently focus on technological effectiveness and learning outcomes, qualitative approaches provide deeper insights into how students interpret and experience digital learning environments in their everyday academic lives (Creswell & Poth, 2018). Exploring the perspectives of BS enrolled students in public universities can contribute to a more comprehensive understanding of the educational opportunities and challenges associated with AI driven social media learning systems. The significance of this study lies in its focus on university students within public sector institutions, where digital transformation often occurs alongside socio economic limitations and educational inequalities. Understanding students' experiences can help policymakers, educators, and academic institutions develop more ethical, inclusive, and student centered approaches toward AI integrated online education. The findings may also contribute to future discussions regarding digital wellbeing, responsible AI use, educational accessibility, and the sustainable integration of social media technologies within higher education systems.

As artificial intelligence continues to reshape educational communication and online learning practices, it becomes increasingly necessary to examine how students experience these transformations in real academic contexts. This study therefore seeks to explore the learning experiences, digital engagement patterns, and educational challenges faced by BS enrolled students in public universities within AI supported social media learning environments. Through a qualitative research approach, the study aims to provide deeper insight into the opportunities, concerns, and social implications associated with the growing integration of AI and social media in higher education.

The transformation of online education through artificial intelligence and social media has also altered the concept of student engagement within higher education institutions. Traditional educational models generally emphasized classroom participation and teacher centered communication; however, AI supported digital environments increasingly encourage interactive, flexible, and student centered learning experiences. Educational engagement now extends beyond physical classrooms into continuous online participation where students actively consume, create, share, and evaluate academic content through social media channels (Perez et al., 2023). Artificial intelligence further contributes to educational transformation by introducing adaptive and personalized learning approaches. Unlike conventional educational systems, AI supported platforms can identify students' academic patterns and provide individualized learning pathways according to their interests, pace, and educational requirements. Such developments have strengthened students' autonomy and increased opportunities for self-directed learning in higher education environments (Dogan et al., 2023).

The growing influence of generative AI technologies has also expanded students' interaction with educational content across social media platforms. AI tools increasingly assist students in generating summaries, organizing information, improving writing tasks, and facilitating academic communication. Emerging evidence suggests that students perceive AI assisted learning environments as more accessible and efficient, particularly in higher education contexts where academic workload and information demands are substantial (Parveen et al., 2024). However, educational scholars continue to express concern regarding the long term consequences of extensive dependence on AI supported educational environments. Although these technologies may improve efficiency and accessibility, they may simultaneously influence originality, reflective learning, and students' independent problem solving abilities. Universities worldwide have increasingly raised concerns regarding academic integrity and the ethical boundaries of AI assisted educational practices. Recent reports indicate growing institutional attention toward responsible AI use within higher education systems. Another significant dimension of educational transformation involves the emergence of social learning environments where academic engagement occurs through networks rather than solely through institutional classrooms. Social media platforms facilitate peer interaction, collaborative discussion, knowledge exchange, and informal learning experiences that reshape educational communication patterns. Researchers suggest that future higher education models may increasingly depend upon socially integrated AI systems that support interaction, dialogue, and collective knowledge construction (Sharples, 2023). Despite these developments, digital engagement does not necessarily guarantee meaningful educational participation. Students may experience information overload, distraction, fragmented attention, and reduced depth of learning when educational activities heavily depend upon algorithm driven platforms. The abundance of AI generated material may create challenges in evaluating academic quality and information credibility, particularly among undergraduate students who are still developing critical academic literacy skills (Al Zahrani & Alasmari, 2024).

For BS enrolled students in public universities, these issues may become more pronounced due to differences in technological access, digital competencies, and institutional support systems. Public universities frequently operate within resource limitations while simultaneously responding to rapid technological changes. Consequently, students' experiences with AI integrated online education may vary considerably according to available infrastructure, faculty readiness, digital access, and institutional policies regarding technology adoption (Alshahrani et al., 2024).

Recent developments also indicate that educational institutions are moving beyond simple online delivery models toward more integrated digital ecosystems where social interaction and AI technologies operate simultaneously. New educational models increasingly combine AI functionality with social learning management systems to improve student participation, communication, and educational outcomes (Zhao et al., 2024). Theoretical discussions surrounding connectivist learning further suggest that knowledge creation in digital environments is increasingly shaped through interconnected networks of individuals, platforms, and intelligent systems. In this context, social media becomes more than a communication platform; it evolves into a learning environment where students continuously interact with AI supported information flows and collaborative knowledge structures (Li & Bai, 2024). Given these transformations, there remains a need to understand how BS enrolled students in public universities interpret and experience AI integrated online education through social media. Existing literature frequently measures outcomes quantitatively but provides comparatively limited understanding of students' lived experiences, perceptions, and educational realities. Therefore, a qualitative exploration is necessary to capture how students describe opportunities, challenges,

engagement patterns, and educational changes emerging from the integration of artificial intelligence and social media within contemporary higher education settings.

This study aims to contribute to this gap by examining learning experiences, digital engagement, and educational challenges from the perspectives of undergraduate students enrolled in public universities.

Rationale of the Study

The rapid advancement of artificial intelligence (AI) has brought major transformations in the field of online education, especially through its integration with social media platforms. These technologies are increasingly shaping how university students access academic content, communicate with peers, and engage in learning activities. Although a large body of literature exists on AI in education, most studies primarily focus on technological development, system efficiency, or quantitative learning outcomes. There is comparatively limited research that explores how students actually experience and interpret these changes in their real academic environments.

In the context of public universities, particularly in developing countries, the situation becomes more complex due to issues such as limited digital infrastructure, unequal access to technology, and varying levels of digital literacy among students. These challenges influence how effectively students can benefit from AI supported social media learning environments. Therefore, there is a clear need to explore the lived experiences, perceptions, and academic realities of BS enrolled students in order to understand how AI is truly transforming online education at the ground level. This study is designed to fill this gap by providing a qualitative exploration of students' learning experiences, digital engagement, and educational challenges.

Significance of the Study

This study holds significant importance as it provides a comprehensive understanding of the role of artificial intelligence in transforming online education through social media platforms. It goes beyond technical perspectives and focuses on students' lived experiences, perceptions, and challenges, thereby offering a more human centered view of educational transformation in the digital era. The findings of this study will be beneficial for multiple stakeholders. For students, it will highlight both opportunities and difficulties associated with AI based learning environments, helping them to better adapt to digital education systems. For teachers and university administrators, it will provide insights into improving teaching strategies, enhancing student engagement, and addressing challenges related to AI integration in higher education. For policymakers, this research will offer evidence-based suggestions for developing more effective, inclusive, and ethical digital education policies in public universities. Moreover, this study will contribute to the existing body of knowledge by addressing gaps in qualitative research on AI, social media, and online education, particularly in the context of public sector universities. It will also serve as a foundation for future research in the areas of educational technology, digital learning behavior, and artificial intelligence in higher education systems.

Research Objectives

- To explore how BS enrolled students in public universities experience artificial intelligence in online education through social media.
- To examine students' perceptions of digital engagement in AI based social media learning environments.
- To identify educational challenges faced by students in AI integrated online learning through social media.
- To understand the influence of artificial intelligence on students' learning experiences in higher education.

Research Questions

- How do BS enrolled students in public universities experience artificial intelligence in online education through social media?
- How do students perceive digital engagement in AI based social media learning environments?

Literature Review

Artificial Intelligence, Social Media, and the Transformation of Online Education

The rapid development of artificial intelligence (AI) has become one of the most influential drivers of change in contemporary higher education. Universities worldwide increasingly integrate AI technologies into teaching, assessment, communication, and student support systems to improve educational effectiveness and expand access to learning opportunities. Recent literature suggests that AI is no longer viewed as an optional educational innovation but rather as an emerging component of institutional transformation that influences how knowledge is delivered, accessed, and experienced by students (Crompton & Burke, 2023; Bearman et al., 2023). Online education has evolved significantly beyond conventional learning management systems and now incorporates intelligent technologies that personalize educational experiences. AI supported educational environments use adaptive systems, automated feedback mechanisms, predictive analytics, and intelligent tutoring approaches to create more responsive learning processes. Such developments have transformed educational interaction by shifting from standardized teaching models toward learner centered approaches that recognize students' individual needs and learning behaviors (Munir et al., 2022; Dogan et al., 2023).

Social media has emerged as an increasingly important component of online education because it creates opportunities for interaction, collaboration, and knowledge sharing outside formal classroom environments. Educational scholars argue that social media platforms support continuous learning by enabling communication between students and facilitating collaborative academic practices. Through AI integration, these platforms increasingly shape what educational content students encounter and how they engage with learning activities (Perez et al., 2023). The educational value of social media is particularly visible among university students who frequently rely on digital platforms for academic discussions, assignment coordination, resource sharing, and peer learning. Unlike traditional educational structures, social media based learning environments encourage active participation and flexible access to information. These developments support the idea that learning increasingly occurs through interconnected digital communities rather than isolated classroom settings (Greenhow & Chapman, 2020).

Recent evidence indicates that AI contributes to educational transformation by increasing student engagement and improving satisfaction within online learning environments. AI enabled systems support cognitive, emotional, behavioral, and social dimensions of learning by providing personalized educational experiences and timely support mechanisms. Students often report greater flexibility and improved accessibility when engaging with AI enhanced educational environments (Katalinic et al., 2026). Student engagement has become a central concept in understanding educational quality within online learning environments. Contemporary educational engagement extends beyond attendance and includes emotional investment, communication patterns, collaborative participation, and digital interaction. AI technologies influence these dimensions by continuously adapting educational experiences and promoting sustained involvement in academic activities (Katalinic et al., 2026). At the same time, educational transformation through AI introduces new debates regarding authority and knowledge construction in higher education. Literature suggests that AI changes traditional educational relationships by redistributing authority across students, educators, institutions, and technological

systems. Students increasingly interact with algorithmically mediated knowledge rather than relying solely on instructor directed learning processes (Bearman et al., 2023). Another important area within the literature concerns blended and hybrid educational environments. Recent systematic reviews indicate that AI integration within blended learning models improves adaptability, instructional efficiency, and student responsiveness. However, successful implementation depends upon institutional readiness, pedagogical design, and students' ability to navigate digital educational systems effectively (Hoogers et al., 2025).

Research further highlights that students' experiences with AI in education cannot be understood solely through technological outcomes. Qualitative studies increasingly emphasize perceptions, attitudes, expectations, and social experiences associated with AI adoption. Existing evidence shows that students often appreciate convenience and personalization but simultaneously express concerns regarding dependence on technology, reduced human interaction, and uncertainty regarding educational authenticity (Hermana & Farida, 2025). The transformation of online education is particularly relevant in developing country contexts where digital infrastructure and institutional capacity influence students' educational experiences. Qualitative investigations demonstrate that students' learning experiences are shaped not only by technology availability but also by social, environmental, institutional, and economic conditions that influence participation in digital learning environments (Arifeen, 2022). Educational discourse increasingly recognizes that AI integration requires careful consideration of ethics, accountability, and educational sustainability. Scholars argue that future educational transformation should prioritize responsible implementation, interdisciplinary collaboration, and stronger attention toward students' lived educational experiences rather than focusing solely on technological expansion (Bond et al., 2024). The literature demonstrates that artificial intelligence and social media are reshaping online education by influencing learning experiences, educational engagement, and institutional practices. However, despite growing evidence regarding adoption and effectiveness, limited qualitative research has explored how BS enrolled students in public universities interpret these transformations within their everyday educational lives. This gap supports the need for qualitative inquiry into students' learning experiences, digital engagement, and educational challenges within AI supported social media learning environments.

Learning Experiences, Digital Engagement, Educational Challenges, and Digital Divide)

The learning experiences of university students in AI supported online education environments are increasingly shaped by digital tools that personalize content delivery and enhance interaction. Artificial intelligence systems embedded in social media platforms influence how students access, process, and engage with academic information. Research shows that these systems can improve learning efficiency by providing real time feedback, adaptive content, and automated assistance, which collectively enhance students' academic experiences in online settings (Zawacki-Richter et al., 2019; Holmes et al., 2022). Digital engagement has become a key dimension of modern higher education, particularly in environments where social media plays a central role in learning. Engagement is no longer limited to classroom participation but includes online interaction, content creation, collaborative learning, and continuous academic communication. Studies suggest that AI driven recommendation systems increase student engagement by continuously exposing learners to personalized educational content based on their interests and behavior patterns (Khan et al., 2023; Dwivedi et al., 2023). However, while AI enhances engagement, it also raises concerns regarding passive learning behavior. Students may become dependent on algorithmically curated content, which can reduce critical thinking and independent academic inquiry. Some studies indicate that excessive reliance on AI tools may limit

students' ability to evaluate information critically and engage in deep learning processes (Kasneci et al., 2023; Williamson & Eynon, 2020).

Another important aspect highlighted in the literature is the quality of learning experiences in digital environments. Students often report mixed experiences regarding AI based online education. On one hand, they appreciate flexibility, accessibility, and instant support; on the other hand, they express concerns about reduced teacher interaction, lack of emotional connection, and difficulties in maintaining motivation in virtual learning spaces (Greenhow et al., 2021; Bond et al., 2024). Social media platforms have also introduced new forms of informal learning where students engage in peer-to-peer knowledge exchange. These platforms support collaborative academic discussions and allow students to share resources, clarify concepts, and support each other's learning processes. However, such informal learning environments may lack structure and academic rigor, which can affect the quality and reliability of knowledge being shared (Selwyn, 2021; Tømte et al., 2023).

Educational challenges in AI integrated online learning environments are multifaceted. One of the major challenges is the digital divide, which refers to unequal access to digital resources, internet connectivity, and technological devices. Students in public universities, particularly in developing countries, often face infrastructural limitations that affect their ability to fully participate in AI supported education systems (UNESCO, 2023; Adedoyin & Soykan, 2020). Another significant challenge is digital literacy. Not all students possess the necessary skills to effectively use AI based educational tools or critically evaluate information shared through social media platforms. This lack of digital competence can limit the effectiveness of AI integration in education and may create disparities in learning outcomes among students (Ng et al., 2021; Livingstone et al., 2022).

Information overload is also a growing concern in AI mediated learning environments. Students are exposed to vast amounts of digital content through social media feeds and AI recommendation systems, making it difficult to filter relevant and credible academic information. This overload can negatively affect concentration, academic performance, and cognitive processing abilities (Eppler & Mengis, 2022; Dwivedi et al., 2023). Privacy and data security concerns are frequently discussed in the literature as well. AI systems in educational platforms often collect large volumes of student data for personalization and analytics. However, students are often unaware of how their data is used, raising ethical concerns about surveillance, consent, and data protection within digital learning environments (Williamson & Eynon, 2020; Zuboff, 2019).

In addition, the psychological impact of AI based social media learning is increasingly recognized. Continuous digital engagement may lead to fatigue, stress, and reduced attention span among students. Some studies suggest that excessive screen time and constant connectivity may affect students' mental wellbeing and academic balance (Twenge, 2017; Keles et al., 2020). Institutional readiness is another critical factor influencing student experiences in

AI driven education. Public universities vary in their capacity to adopt and implement advanced technologies. Limited funding, inadequate training for faculty, and lack of digital infrastructure can hinder effective integration of AI into teaching and learning processes (Akour & Alenezi, 2022; Selwyn, 2021). Despite these challenges, literature also highlights that AI supported online education holds significant potential for improving accessibility and inclusivity in higher education. When properly implemented, it can support students with diverse learning needs, enhance flexibility, and create more student centered learning environments (Holmes et al., 2022; Crompton & Burke, 2023). The literature indicates that while AI and social media significantly enhance learning experiences and engagement, they also introduce educational, ethical, and structural challenges. These mixed outcomes highlight the

need for qualitative research that explores how BS enrolled students in public universities perceive and experience these transformations in their real academic lives.

Ethics, Trust, Governance, and Research Gap

The rapid integration of artificial intelligence into social media based educational environments has intensified global discussions on ethics, accountability, and digital trust. AI systems increasingly influence what students see, how they learn, and how they interpret information online. This raises important concerns about transparency, fairness, and responsibility in algorithm driven educational spaces (Floridi et al., 2018; Zuboff, 2019). One of the central ethical issues identified in the literature is algorithmic bias. AI systems used in social media platforms may unintentionally reinforce existing inequalities by prioritizing certain types of content while limiting exposure to others. Such biases can shape students' academic perspectives and influence their understanding of knowledge in subtle but significant ways (Noble, 2018; O'Neil, 2016).

Trust in digital information has also become a major concern in AI mediated learning environments. Students increasingly rely on social media and AI generated content for academic purposes; however, the credibility of such information is often uncertain. Studies show that the presence of AI generated content, including deepfakes and automated text generation, has contributed to a decline in users' ability to distinguish between authentic and manipulated information (Chesney & Citron, 2019; Kapoor et al., 2022). Another important dimension is data privacy and surveillance. AI systems embedded in educational and social media platforms collect extensive user data to personalize content and improve system performance. However, this data collection raises ethical concerns regarding consent, ownership, and potential misuse of student information. Scholars argue that students often lack awareness of how their behavioral data is tracked and analyzed in digital learning environments (Williamson & Piattoeva, 2020; West, 2019). The literature also highlights the growing importance of AI governance frameworks in education. Governments, universities, and international organizations are increasingly developing guidelines to regulate the use of AI in educational systems. These frameworks aim to ensure responsible use, protect student rights, and promote transparency in algorithmic decision making processes (UNESCO, 2023; Holmes et al., 2022). In addition, concerns regarding academic integrity have become more prominent with the rise of generative AI tools. Students now have access to systems that can generate essays, summaries, and assignments automatically. While these tools enhance learning support, they also raise questions about originality, plagiarism, and fair assessment in higher education (Kasneci et al., 2023; Tlili et al., 2023).

The psychological and social implications of AI mediated learning environments are also discussed in recent literature. Continuous exposure to algorithmically curated content may influence students' perceptions, behaviors, and decision making processes. Some studies suggest that excessive dependence on AI systems may reduce critical reflection and increase cognitive offloading among learners (Sweeney, 2020; Turkle, 2017). Despite the growing body of research on AI in education, there remains a clear gap in understanding students' lived experiences, particularly in public university contexts. Most existing studies focus on technological effectiveness, system design, or quantitative performance outcomes, while limited attention is given to qualitative insights from students themselves (Creswell & Poth, 2018).

In developing countries, this research gap is even more pronounced. Issues such as unequal access to digital resources, varying levels of digital literacy, and socio economic constraints significantly influence how students experience AI supported learning environments. However, these contextual realities are often underrepresented in global literature (UNESCO, 2023; Selwyn, 2021). Therefore, there is a strong

need for qualitative research that explores how BS enrolled students in public universities interpret, experience, and respond to AI driven social media learning environments. Such research can provide deeper insights into learning experiences, engagement patterns, ethical concerns, and educational challenges faced by students in real academic contexts. The literature demonstrates that artificial intelligence and social media are reshaping higher education in complex ways. While they offer opportunities for enhanced learning and engagement, they also introduce ethical, psychological, and institutional challenges. Addressing these issues requires not only technological advancement but also a deeper understanding of students' perspectives and experiences within evolving digital educational ecosystems.

Methodology

This study will employ a qualitative research design to explore the experiences of BS enrolled students in public universities regarding the transformation of online education through artificial intelligence and social media. The study will be conducted within a constructivist paradigm, focusing on understanding participants' lived experiences, perceptions, and meanings related to AI supported learning environments. A purposive sampling technique will be used to select participants who are actively using social media platforms for academic purposes. Data will be collected through semi structured interviews to gain in depth insights into students' learning experiences, digital engagement, and educational challenges. The interview guide will include open ended questions to allow participants to freely express their views. The collected data will be analyzed using thematic analysis, following systematic coding procedures to identify key patterns and themes emerging from the data. Ethical considerations such as informed consent, confidentiality, and voluntary participation will be strictly maintained throughout the research process.

Results and Discussion

The findings of this qualitative study, based on interviews with BS enrolled students in public universities, present a comprehensive understanding of how artificial intelligence is transforming online education through social media. The analysis highlights multiple interconnected themes that reflect academic, social, ethical, and technological dimensions of students' learning experiences.

1. Transformation of Learning Environment through AI Integrated Social Media

Participants consistently reported that AI integrated social media platforms have significantly transformed their learning environment. Students explained that learning is no longer limited to classrooms or formal learning management systems but has expanded into continuous digital spaces. AI based recommendation systems on platforms such as YouTube, WhatsApp groups, and educational pages on Facebook were frequently mentioned as major sources of academic content. This shift reflects a transition toward informal, continuous, and network based learning, where students actively construct knowledge through digital interaction and algorithmically suggested content.

2. Personalized Learning and Academic Facilitation

A major finding indicates that AI has introduced a high level of personalization in students' learning experiences. Participants noted that AI tools help them understand complex topics by providing simplified explanations, summaries, and visual learning materials. Many students reported that this personalized support enhances their academic performance by saving time and improving conceptual clarity. However, some participants also indicated that this personalization sometimes limits exposure to diverse academic perspectives, as algorithms tend to show similar types of content repeatedly.

3. Digital Engagement and Behavioral Shift in Learning Practices

The study found that AI driven social media platforms have reshaped students' academic engagement

patterns. Students described increased frequency of online learning activities, including watching educational videos, participating in group discussions, and using AI based chat tools for academic queries. However, engagement was often described as “continuous but fragmented,” where students switch between multiple platforms, leading to reduced sustained focus on deep academic reading. This indicates a shift from traditional focused learning to digitally distributed engagement.

4. Dependence on Artificial Intelligence and Reduced Independent Thinking

A significant concern raised by participants was increasing dependence on AI tools for completing academic tasks. Students admitted using AI generated content for assignments, summaries, and exam preparation. While this improves efficiency, it also reduces the need for independent critical thinking and original academic effort. Literature also supports this concern, suggesting that overreliance on AI can weaken analytical and problem solving skills among university students (Kasneji et al., 2023; Williamson & Eynon, 2020).

5. Credibility Issues and Misinformation in AI Generated Content

Participants expressed strong concerns about the credibility of information available through AI influenced social media platforms. Students reported difficulty in distinguishing between authentic academic sources and AI generated or algorithmically promoted content. This challenge leads to uncertainty in academic referencing and knowledge validation. Similar concerns are highlighted in recent literature that discusses the rise of misinformation and content manipulation in AI mediated digital environments (Chesney & Citron, 2019; Noble, 2018).

6. Educational Inequality and Digital Divide in Public Universities

The findings highlight a clear digital divide among students in public universities. Participants from lower socioeconomic backgrounds reported limited access to stable internet, smart devices, and paid AI tools. This inequality affects their ability to fully participate in AI supported online education. Literature strongly supports this finding, indicating that digital inequality remains a major barrier in equitable access to AI based learning systems in developing contexts (UNESCO, 2023; Livingstone et al., 2022).

7. Privacy, Surveillance, and Ethical Concerns

Students expressed growing concerns about privacy and data usage in AI powered social media platforms. Many participants were unaware of how their data is collected, stored, or used for algorithmic personalization. This lack of awareness creates distrust and ethical uncertainty regarding AI based learning environments. These concerns align with existing research on surveillance capitalism and datafication in education systems (Zuboff, 2019; Williamson & Piattoeva, 2020).

8. Impact on Communication and Academic Interaction

Another important finding is the change in communication patterns between students and teachers. Participants noted reduced face to face academic interaction and increased reliance on digital communication. While online platforms improve accessibility, they also reduce emotional connection, classroom discussion quality, and interpersonal academic bonding. This reflects a broader shift toward digitally mediated education, where human interaction is partially replaced by AI supported systems.

9. Psychological and Cognitive Effects of Continuous Digital Learning

Students reported feelings of information overload, distraction, and reduced concentration due to continuous exposure to social media based learning content. Some participants indicated that constant notifications and algorithm driven suggestions disrupt focused study habits. Literature supports this observation, linking excessive digital engagement with reduced attention span and cognitive fatigue among learners (Keles et al., 2020; Twenge, 2017).

The study reveals that artificial intelligence has deeply transformed online education through social

media by enhancing accessibility, personalization, and engagement. However, these benefits are accompanied by significant challenges, including reduced independent thinking, misinformation risks, digital inequality, ethical concerns, and psychological strain. The findings suggest that AI supported educational transformation is not purely technological but also deeply social, ethical, and behavioral in nature. Therefore, effective integration of AI in higher education requires balanced strategies that promote digital literacy, critical thinking, ethical awareness, and equitable access for BS students in public universities.

Qualitative Coding Framework

Main Theme	Sub Theme	Code	Description	Indicators (Interview Data Examples)
Transformation of Learning	AI-based learning shift	T1	Change from traditional to AI-supported learning	"We learn more from YouTube AI suggestions than class notes"
Transformation of Learning	Social media as classroom	T2	Social media used for academic learning	WhatsApp groups, Facebook study pages, YouTube lectures
Learning Experience	Personalized learning	T3	AI provides tailored content	"YouTube shows videos according to my subject"
Learning Experience	Easy access to knowledge	T4	Quick access to study material	Instant summaries, explanations via AI tools
Digital Engagement	Continuous engagement	T5	Constant online academic activity	"I keep checking study content daily"
Digital Engagement	Fragmented attention	T6	Switching between platforms	Multitasking, scrolling, short attention span
AI Dependence	Over-reliance on AI tools	T7	Dependence on AI for assignments	ChatGPT, summaries, automatic answers
AI Dependence	Reduced critical thinking	T8	Less independent analysis	Copying AI-generated answers
Information Quality	Misinformation risk	T9	Fake or incorrect academic content	Wrong summaries, unreliable sources
Information Quality	Credibility confusion	T10	Difficulty verifying content	"I don't know which info is correct"
Digital Inequality	Lack of access	T11	Poor internet/device availability	Slow internet, no laptop
Digital Inequality	Financial barriers	T12	Economic limitations	Cannot afford paid AI tools
Ethical Issues	Privacy concerns	T13	Data misuse fear	Tracking, data collection worries
Ethical Issues	Algorithm transparency	T14	Not understanding AI systems	"I don't know how content is suggested"
Communication Change	Reduced face-to-face interaction	T15	Less classroom interaction	Fewer discussions with teachers
Communication	Digital dependency	T16	Communication mainly	WhatsApp, LMS

Change			via online platforms	dependence
Psychological Effects	Information overload	T17	Too much content exposure	Confusion, too many notifications
Psychological Effects	Reduced focus	T18	Attention problems	Distraction during study

Thematic Map

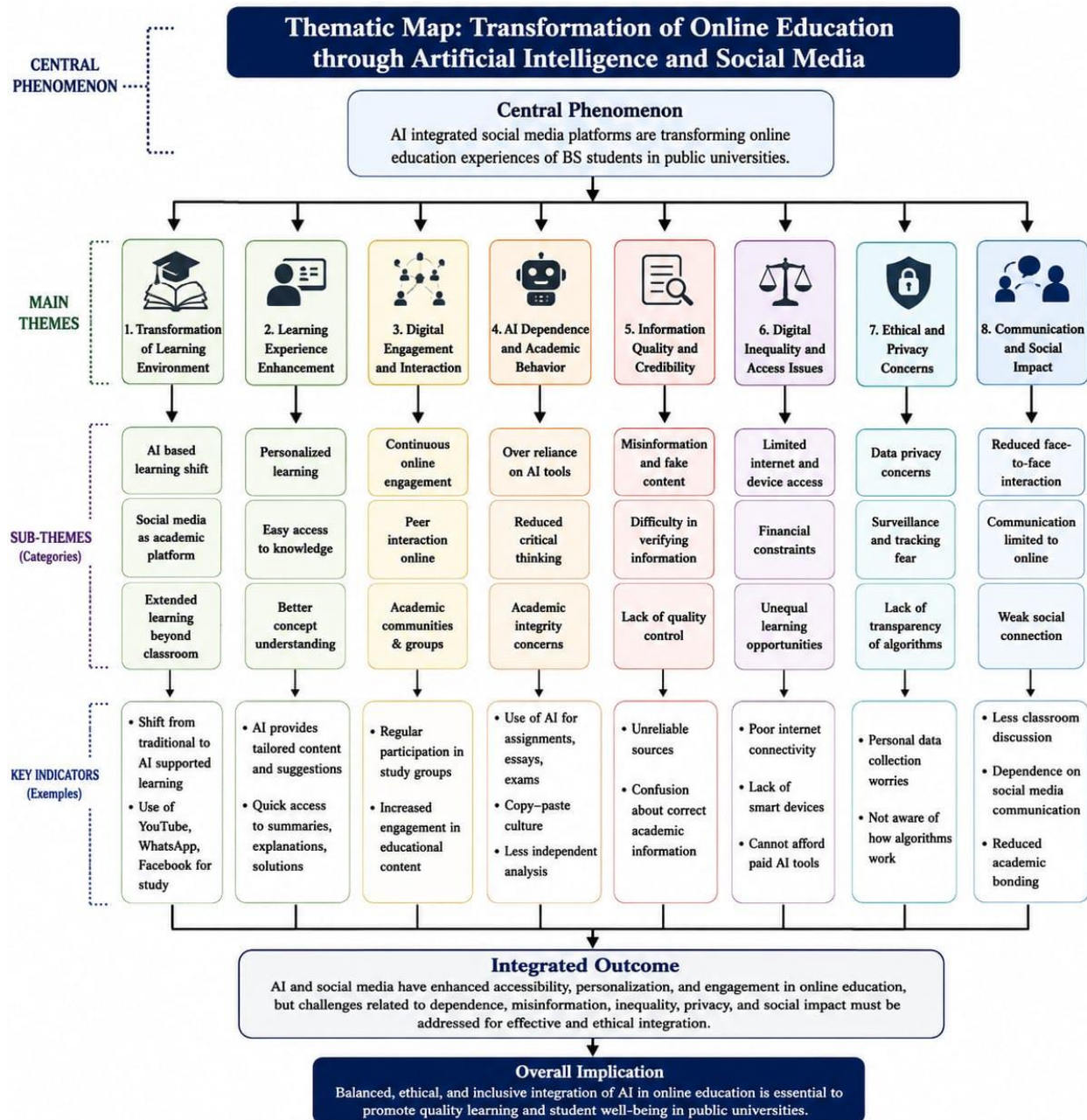


Figure 1. Thematic map of students' experiences on the transformation of online education through artificial intelligence and social media.

Conclusion

This study examined the transformation of online education through artificial intelligence and social media among BS enrolled students in public universities. The findings indicate that AI has significantly

reshaped learning environments by making education more flexible, personalized, and accessible. Social media platforms, supported by AI algorithms, have expanded learning beyond traditional classrooms and enabled continuous academic engagement, peer interaction, and easy access to educational resources. However, the study also highlights important challenges associated with this transformation. Students reported issues such as overdependence on AI tools, reduced independent thinking, misinformation, and difficulty in verifying the credibility of online content. In addition, concerns regarding data privacy, digital inequality, and limited institutional support were identified as key barriers in effective AI based learning. Psychological effects such as information overload, distraction, and reduced concentration were also observed among students. Overall, the study concludes that while artificial intelligence and social media have positively contributed to the modernization of online education, their benefits are accompanied by significant academic, ethical, and social challenges. A balanced and well regulated approach is necessary to ensure that AI enhances learning without compromising critical thinking, academic integrity, and student wellbeing.

Recommendations

- Universities should introduce structured digital literacy programs to help students critically evaluate AI generated content and distinguish between reliable and unreliable information.
- Clear guidelines should be developed for the ethical use of AI tools in academic work to prevent misuse, plagiarism, and overdependence on automated systems.
- Teachers should be trained to integrate AI tools effectively into teaching practices and guide students in using social media platforms for academic purposes.
- Public universities should invest in strong digital infrastructure, including internet access, smart classrooms, and access to AI based educational resources.
- Students should be encouraged to use social media for academic purposes in a controlled and purposeful manner to avoid distraction and information overload.
- Awareness programs should be introduced to educate students about data privacy, algorithmic tracking, and safe use of digital platforms.
- Policy makers should address digital inequality by providing financial and technological support to students from underprivileged backgrounds.
- Teaching strategies should focus on developing critical thinking, problem solving, and independent learning skills rather than over reliance on AI tools.

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