

“Best friend or worst enemy”: A psychological needs perspective of generative AI and postgraduate international students’ engagement in UK higher education

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Summary

In this developmental paper, we aim to examine how generative AI shapes postgraduate international students’ engagement through a psychological needs perspective. Adopting an interpretive qualitative approach, we seek to illuminate the subjective experiences of postgraduate international students’ usage of generative AI and its impact on their need for autonomy, competence, and relatedness. Data collection will be facilitated through semi-structured interviews and analysed using thematic analysis.

Word Count: 2085

Introduction

The increasing integration of technology into higher education has transformed the learning landscape, with generative AI emerging as a powerful learning tool (Crawford et al., 2023; Essien et al., 2024). A recent survey of over 1200 UK students revealed that more than half utilised generative AI to assist with academic assessments, suggesting that the technology has become normalised in higher education (HEPI, 2024). Generative AI is a technology that employs deep learning models to produce content that closely mimics human expression and existing datasets when presented with complex and varied prompts (Chan & Hu, 2023; Weng, 2023). Research has shown that students use generative AI for various academic purposes, including generating new ideas, providing task outlines, assistance in research, language editing and proofreading, among others (Essien et al., 2024). Nevertheless, the adoption of generative AI has also raised ethical concerns and sparked debates among educators regarding potential issues such as plagiarism, academic integrity, superficial learning, and a perceived decline in critical thinking and creative skills (Kramm & McKenna, 2023; Lim et al., 2023; Johnston et al., 2024).

Generative AI has the potential to enhance student engagement and motivation by providing personalised learning support, tailored feedback and interactive learning experiences (R. Yilmaz & F. G. K. Yilmaz, 2023; Chiu, 2024a). Student engagement, a key predictor of academic success, is defined as a student's active involvement, commitment, and dedication to learning activities (Wilson et al., 2019), which is essential for achieving learning outcomes and fostering knowledge acquisition (Kahu, 2013). Regardless of the divergent perspectives on integrating generative AI into higher education, strategically incorporating it into student-centred learning can significantly enhance student engagement by providing a tailored platform to accommodate diverse learning needs and preferences (Ivanov et al., 2024).

Despite the growing body of research on the impact of technology on student engagement, in the context of generative AI, limited attention has been paid to the experiences of 'postgraduate' international students, particularly Black and Asian – the most populous and disadvantaged international student population within the UK higher education (Woodfield, 2017; Stevenson et al., 2019; Universities UK, 2019). Given the relative novelty of generative AI, there is a paucity of research specifically investigating its impact on the engagement of postgraduate international students. Existing studies (e.g. Johnston et al., 2024; Nartey, 2024) often generalise findings to the broader student population, overlooking the unique challenges and experiences faced by this minoritised demographic of international students, including cultural adaptation, unfamiliar assessment methods, curriculum differences, limited technological awareness, language barriers, financial constraints, and academic expectations (Gbadamosi, 2018; Adisa et al., 2019; Deuchar, 2022). The additional pressures on postgraduate international students to succeed make them particularly vulnerable in the context of emerging technologies (Sharma & Gupta, 2023; Zhao & Xue, 2023).

Furthermore, previous research has highlighted the importance of psychological needs in student engagement (Karimi & Sotoodeh, 2020; Benlahcene et al., 2021). However, only a few studies have examined how the use of generative AI influences these needs (Chiu, 2024b), and even fewer within the context of postgraduate international students, particularly in the UK – the second-best host country for international students worldwide (Statista, 2023). Therefore, there is a pressing need for more research in this area. Drawing on the self-determination theory

(Deci & Ryan, 2000) and using qualitative data from semi-structured interviews, this study aims to contribute to the student engagement literature by examining how generative AI shapes postgraduate international students' engagement through a psychological needs perspective. The study addresses the following research questions:

1. How does using generative AI impact postgraduate international students' psychological needs (autonomy, competence, and relatedness) in UK higher education?
2. What are the implications of using generative AI on postgraduate international students' engagement?

Literature Review

Generative AI and Student Engagement

Generative AI has recently drawn significant attention in global higher education as a potential technology-enhanced learning tool. Studies have shown that generative AI can support personalised and adaptive learning, automate students' process of completing assessments and provide interactive content generation (Ali et al., 2023; Chan & Hu, 2023). It can also offer tailored feedback and adapt learning pathways to individual student needs, promoting a more inclusive learning environment.

Student engagement is a critical factor in educational success, and the use of generative AI and other educational technologies has been shown to positively impact student engagement (Chiu, 2024a; Ivanov et al., 2024). Although various definitions of student engagement exist (Trowler & Trowler, 2010), this study adopts Trowler's (2010, 6) definition:

Student engagement is the investment of time, effort and other relevant resources by both students and their institutions intended to optimise the student experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution.

While research has identified several dimensions of student engagement, we focus on five dimensions, including behavioural, affective, cognitive, social and agentic. Behavioural engagement refers to students' active participation in learning activities, display of positive conduct and adherence to classroom norms, and proactive pursuit of knowledge (Fredricks et al., 2004; Kahu, 2013; Benlahcene et al., 2021). Behaviourally engaged students are compliant and actively contribute to their learning environment, demonstrating resilience to challenging tasks, helpfulness and support to their peers and a strong commitment to their studies (Trowler, 2010; Chiu, 2021). Research suggests that generative AI can create a more dynamic and supportive learning environment that encourages students to actively participate, take ownership of their learning, and contribute positively to their academic community (Strzelecki & ElArabawy, 2024).

Affective or emotional engagement is characterised by students' emotional reactions and experiences within the learning environment. It encompasses positive emotions like joy, enthusiasm, and interest, as well as negative emotions like boredom and anxiety (Bowden et al., 2021). Emotionally engaged students are more likely to be intrinsically motivated and actively participate in their learning (Kahu, 2013; Karimi & Sotoodeh, 2020). Therefore, students who feel empowered and connected to their learning due to the technological

affordances associated with generative AI to provide personalised feedback and adaptive learning experiences are likely to express positive emotional reactions (Ng et al., 2024; Wang et al., 2024).

Cognitive engagement reflects students' deep, self-regulated, and strategic approach to learning (Chiu, 2021; Benlahcene et al., 2021). Cognitively engaged students are intrinsically motivated to learn and demonstrate an increased understanding of the value and importance of academic work through their perceptions, beliefs, and thought processing, allowing them to exhibit higher-order thinking skills, such as problem-solving and critical analysis (Pepple, 2022; Reschly & Christenson, 2022). Existing research has shown that generative AI, when used effectively to scaffold complex tasks, develop a wider contextual understanding of a topic and instructional materials, and generate alternative explanations of concepts, can support cognitive engagement by helping students develop cognitive skills (Liang et al., 2023; Jaboo et al., 2024).

Social engagement is characterised by bonding, networking, a sense of belonging, and participation in the academic community, involving both in-class interactions (e.g. cooperation and a balanced power structure) and out-of-class involvement in student groups and communities (Bowden et al., 2021; Pepple, 2022). It fosters a sense of achievement, inclusivity and well-being, countering feelings of isolation (McIntyre et al., 2018; Bowden et al., 2021). While research suggests that increased usage of digital technology may deplete social engagement (Whelan et al., 2022), studies also suggest that when used effectively, generative AI can enhance social engagement by providing tools for collaboration, fostering a sense of community through shared projects, and facilitating engaging learning environment and communication among students (Chan & Lee, 2023; Boguslawski et al., 2024).

Agentic engagement involves students' proactive efforts to influence and shape their learning experiences (Reeve & Tseng, 2011). It captures student-initiated, proactive, intentional, collaborative, and constructive action, including seeking clarification, providing feedback, offering suggestions or contributions, and expressing preferences. Therefore, by engaging in such agentic behaviours, students actively contribute to the instructional process, fostering a more personalised and meaningful learning environment (Reeve, 2013). Agentially engaged students are more likely to leverage generative AI's capabilities, empowering them to take ownership of their learning, engage more deeply in their learning process, and foster a more personalised and effective learning experience (Boguslawski et al., 2024; Yang et al., 2024).

While existing research has generalised the findings to the broader demographic of students, it is important to undertake further investigations that will provide a more contextualised understanding of the experiences of postgraduate international students. In the next section, we present our theoretical framework.

Self-Determination Theory: A Psychological Needs Perspective of Student Engagement

Student engagement is mainly influenced by motivational processes, and different motivating styles can encourage students to participate in learning activities that meet their psychological needs (Reeve, 2013). Motivation acts as the driving force behind goal achievement (Dörnyei, 2000), so while students may experience teacher-driven motivation to enhance engagement, they can also engage in self-motivation to improve their learning experience (Balan et al., 2015). From an international student's perspective, maintaining high levels of engagement is

important because they mostly pursue education in the UK for a variety of motives, including better education and living standards, opportunities for employment and career growth (Fakunle, 2021; Lee, 2022). Therefore, SDT, as a motivational theory of personality, development and social processes, explores how social factors and individual characteristics influence various types of motivation, particularly autonomous and controlled motivation, and posits that these motivational factors, in turn, predict learning outcomes, performance, experiences, and psychological well-being (Deci & Ryan, 2008).

Furthermore, SDT, grounded in the principles of intrinsic and extrinsic motivation, offers a theoretical framework for understanding the motivational processes underlying students' fulfilment of psychological needs, such as academic achievement and well-being (Ryan & Deci, 2020), and is associated with the dimensions of student engagement (Reeve, 2013). On the one hand, SDT posits that intrinsic motivation, rooted in curiosity, personal interest and satisfaction, is a key driver of student engagement (Ryan & Deci, 2020). Intrinsic motivation serves as a catalyst for both behavioural and emotional engagement (Skinner et al., 2009), fosters a deeper, more sophisticated level of cognitive engagement, as opposed to superficial learning (Vansteenkiste et al., 2005), and stimulates agentically engaged students, who develop a higher level of curiosity and willingness to proactively shape their learning experience (Reeve, 2013). On the other hand, SDT also acknowledges the role of extrinsic motivation, which can range from external regulation and introjected regulation – where motivation is controlled by external rewards or pressures – to identified regulation and integrated regulation – where external goals are internalised and aligned with personal values (Guay, 2022; Chiu, 2024). For example, an international student might initially study for a good grade (external regulation), but over time, they may come to appreciate the subject matter and find it intrinsically motivating (integrated regulation). This understanding of intrinsic and extrinsic motivation is crucial for comprehending the complex dynamics of student engagement and developing effective educational strategies (Ryan & Deci, 2020).

SDT establishes that three psychological needs, including autonomy, competence, and relatedness, are required for optimal human development (Deci & Ryan, 2008). Moreover, for students to be motivated in their learning, they must fulfil some level of autonomy, competence, and relatedness, as these are crucial for engagement (Ryan & Deci, 2020). From the SDT perspective of student engagement, autonomy is characterised by a sense of agency, control and self-direction in one's actions that is fostered by experiences of intrinsic interest and perceived value, but can be undermined by external control mechanisms, such as rewards or punishments (Reeve, 2013, Chui, 2022). In the context of generative AI, students may experience autonomy when using generative AI results in a perceived sense of control in their learning process (e.g. personalised and self-directed learning), enhancing their engagement (Gao et al., 2024). Furthermore, competence, characterised by a sense of mastery and self-efficacy, is optimally fulfilled within structured environments that offer appropriate challenges, positive feedback, and avenues for development (Ryan & Deci, 2020). In the context of generative AI, studies have shown that generative AI can satisfy students' need for competence when effectively leveraged (e.g. to provide instant personalised and informative feedback), resulting in increased confidence, favourable academic outcomes and progression (Boguslawski et al., 2024; Chiu, 2024b; Gao et al., 2024). Lastly, relatedness, denoted by a sense of belonging and connection fostered through respect and care, reflects the desire for authentic, emotionally involved relationships, and is realised through genuine, caring, and

reciprocal interactions (Guay, 2022; Reschly & Christenson, 2022). Therefore, students who experience feelings of involvement, closeness, approval and care in their learning process or activities are more likely to be engaged (Chiu, 2021). In the context of generative AI, while the need for relatedness has been shown to be limited when using generative AI, user-friendly generative AI tools can foster an environment where students feel supported by others (Boguslawski et al., 2024; Chui, 2024b).

Notably, the social contexts and individual differences, such as those experienced by UK postgraduate international students, can significantly influence their engagement with generative AI and, by implication, foster the fulfilment of these psychological needs to facilitate or hinder intrinsically motivated behaviours and extrinsic motivations that drive student engagement (Deci & Ryan, 2000; Chiu, 2022).

Further Development of this Paper

Prior to the BAM conference, the researchers would have collected the data and possibly analysed the data. We shall also welcome comments from the reviewers and participants during the conference.

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