



Exploring Students' Experiences of Learning Analytics Personalization and Identity Transformation in Higher Education

Nurkamisah ^{1*}, Toto Purbiyanto ²

¹Universitas Panca Sakti Bekasi, Indonesia

²Universitas Pendidikan Indonesia, Indonesia

[* ¹noor_chinaral@yahoo.com](mailto:anoor_chinaral@yahoo.com), [* ²toto.purbiyanto1@gmail.com](mailto:toto.purbiyanto1@gmail.com)

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ABSTRACT

Digital technologies have become integral to higher education, reshaping how students engage with knowledge, instructors, and peers. Within this domain, Learning Analytics (LA) has emerged as a tool for personalizing learning, yet little is known about how students experience and interpret such personalization in their educational journeys. Existing research has primarily focused on quantifiable outcomes, leaving unanswered questions about how learners make sense of personalization and how these experiences transform their learning identities. This study addresses this gap by offering a novel qualitative perspective that foregrounds students' subjective meaning-making, thereby extending the current discourse beyond data-driven performance measures to include identity and emotional dimensions often neglected in prior studies. This study adopts a phenomenological approach, specifically Interpretative Phenomenological Analysis (IPA), to uncover the lived experiences of students engaging with LA-based personalization. Through in-depth semi-structured interviews with undergraduate students, the study explores how learners interpret and negotiate the meaning of personalized digital feedback. The analysis reveals four major themes: the awakening of self-awareness through data-driven insights, negotiation of control and autonomy, transformation of learning identity, and emotional ambivalence in personalized learning contexts. By identifying these themes, the research contributes an original interpretive framework that conceptualizes personalization as both a cognitive and affective process, positioning it within broader conversations on learner agency and identity formation. By situating personalization as a lived phenomenon, this study expands our understanding of LA beyond predictive models and performance metrics. Unlike previous studies that primarily evaluate technological effectiveness, this research emphasizes the phenomenological depth of learners' encounters with personalization, thereby introducing a human-centered paradigm to LA scholarship. The findings highlight the importance of designing educational technologies that support identity development and emotional resilience, rather than reducing learners to data points. This original contribution not only deepens theoretical understanding of personalization in digital learning but also provides actionable implications for educational technology design and policy. Future research should build on these insights through longitudinal and cross-cultural studies to capture the evolving nature of identity transformation in digital learning environments.



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INTRODUCTION

The integration of digital technologies into higher education has transformed how students engage with knowledge, instructors, and their peers. Online learning platforms and data-driven tools have become central features of contemporary education, providing unprecedented opportunities for personalization, efficiency, and scalability (Agbo et al., 2021). Among these innovations, Learning Analytics (LA) has emerged as a significant development, offering mechanisms to monitor, analyze, and adapt learning processes based on students' digital traces (Alamri et al., 2021). These tools not

only aim to improve academic performance but also reshape the broader learning environment, influencing the way learners perceive their roles and responsibilities within it.

The relevance of such a phenomenon extends beyond technical outcomes, as it touches upon the deeply human dimension of learning (Asad et al., 2023). Personalized digital learning environments do not merely present information; they mediate students' sense of self, identity, and agency in the educational process. For many learners, the experience of engaging with data-driven feedback introduces new forms of reflection and self-awareness, while for others it may provoke anxiety, resistance, or a reevaluation of their role as students (Mukhlis et al. 2023). This highlights the significance of examining personalization in digital education not only as a pedagogical intervention but as a lived experience situated in social and cultural contexts.

Given the rapid expansion of LA in higher education, there is a pressing need to explore how students experience and interpret this phenomenon from a first-person perspective (Cavanagh et al., 2020). While existing studies have often emphasized the predictive and performance-related dimensions of LA, less is understood about how learners subjectively make sense of these tools in ways that affect their identities and participation in learning communities (Chen et al., 2023). A phenomenological approach is particularly relevant here, as it prioritizes the exploration of meaning as lived and described by participants themselves. Through this perspective, the focus shifts from technological functionality to the human experiences that underlie and give shape to digital learning practices.

Research that explores learners' experiences with digital education has become an increasingly significant field, as scholars recognize that the effectiveness of technology cannot be fully understood without attention to the subjective meanings learners attach to it. In the context of Learning Analytics (LA), studies have demonstrated how data-driven systems provide performance monitoring and predictive insights (Cosentino & Giannakos, 2023). Yet, what remains less visible in much of the literature is how students personally experience these systems and the ways in which such experiences shape their identities as learners (Mukhlis & Saidah, 2025). This makes phenomenology particularly valuable, as it allows for an in-depth investigation of lived experience that extends beyond surface-level outcomes.

A major challenge in this area lies in methodological limitations. The majority of studies have relied heavily on quantitative approaches, such as statistical modeling of usage data, or large-scale surveys to capture student perceptions (El Aachak, 2020). While such approaches provide measurable indicators of engagement and achievement, they fail to capture the richness of students' inner experiences, including the emotional, reflective, and identity-related dimensions of engaging with personalized learning systems (Feng & Law, 2021). As a result, these methods often reduce complex human experiences to numerical trends, overlooking the nuanced processes through which learners construct meaning in response to LA-driven personalization.

This reliance on reductive methodologies has left important questions unanswered about the essence of the phenomenon (Hamal et al., 2022). Without a focus on subjective interpretation, previous studies risk portraying students merely as data points within a system rather than as meaning-making individuals. Consequently, there is a critical need for approaches that can more effectively capture the depth and complexity of students' lived experiences (Mukhlis, 2025). A phenomenological perspective provides this opportunity by prioritizing the voices of learners, enabling an exploration of how personalization through LA is interpreted, internalized, and integrated into the broader trajectory of their learning identities.

Much of the existing scholarship on Learning Analytics (LA) has approached the phenomenon through practical and outcome-oriented solutions, such as predictive modeling, dashboards, and adaptive systems designed to improve academic performance (J. Han et al., 2021). These approaches have contributed valuable insights into patterns of student engagement and institutional efficiency (Hwang & Fu, 2020). However, they primarily frame students as users or data points within technological systems, thereby limiting the depth of understanding about how personalization is actually experienced in the lives of learners.

The reliance on such methods has significant limitations. Quantitative approaches can reveal trends and correlations but remain insufficient in capturing the nuanced and deeply personal meanings that students attach to their interactions with LA-driven platforms (Joseph et al., 2022). For instance, feelings of empowerment, anxiety, or shifts in identity are often invisible in numerical data, despite being central to the way learners interpret their educational journeys (Mukhlis & Abdullah, 2025). As a result, the current body of literature offers only a partial picture, overlooking the lived realities that accompany technological personalization in digital learning environments.

To address these gaps, a phenomenological approach becomes essential. By focusing on students' lived experiences, phenomenology makes it possible to uncover the essence of how personalization through LA is understood, internalized, and negotiated by learners (Karaoglan Yilmaz & Yilmaz, 2020). This perspective not only enriches theoretical understanding but also offers practical implications for the design of educational technologies that are more attuned to the subjective dimensions of learning (Kew & Tasir, 2022). Thus, exploring this phenomenon phenomenologically is not simply an alternative method but a necessary step toward achieving a holistic understanding of how digital personalization transforms students' identities and experiences in higher education.

Previous research on Learning Analytics (LA) has highlighted its capacity to predict student performance, enhance engagement, and support academic decision-making (Kleinman et al., 2022). Studies have also explored how learners perceive adaptive systems, but these works often focus on surface-level perceptions rather than the deeper meanings of the experience. Literature in higher education technology demonstrates a growing interest in subjective perspectives, yet methodological reliance on surveys and quantitative measures restricts insight into students' lived realities (Mukhlis et al. 2025). Theories of identity formation in education suggest that personalization influences how students view themselves as learners, but this connection remains underexplored in LA contexts. These gaps emphasize the need for research that prioritizes subjective voices and personal meaning.

To address this gap, this study adopts a phenomenological approach, specifically Interpretative Phenomenological Analysis (IPA). This method allows for the exploration of how students internalize, negotiate, and make sense of personalization in digital learning platforms (Barboza et al., 2022). Phenomenology was chosen because it goes beyond external measures to focus on lived experience and the meanings students construct (Cowley et al., 2020). By centering attention on subjective narratives, this study provides a richer understanding of the identity transformations provoked by LA-based personalization. In doing so, it responds directly to the limitations identified in previous research.

This article is structured into several sections to guide the reader through the research process and its outcomes. The introduction situates the phenomenon in the broader field of educational technology and identifies the knowledge gap. The methods section describes the phenomenological approach, participant selection, and processes of data collection and analysis. The results section presents themes that emerged from participants' narratives, with direct quotations illustrating lived experiences. Finally, the discussion connects these findings to existing literature, highlights their theoretical and practical significance, and concludes with reflections on implications for digital learning and future research.

RESEARCH METHODS

Study Design

This study was conducted within the framework of phenomenological research, with a focus on uncovering the lived experiences and meanings constructed by participants in relation to personalized learning through Learning Analytics (LA) (Creaney, 2020). A phenomenological approach was selected because it emphasizes the exploration of subjective interpretations, allowing for a deeper understanding of how individuals perceive and make sense of specific phenomena. Within this study, the interpretative phenomenological perspective was employed, drawing on hermeneutic principles, which view human experience as inherently interpretive and situated. This

design was particularly suitable for addressing the research question, as it enabled the illumination of identity transformation processes as expressed by students in the context of digital learning environments.

Participants

Participants were drawn from undergraduate students actively engaged in digital learning platforms incorporating Learning Analytics features (Grethel et al., 2023). A purposive sampling strategy was employed to ensure the inclusion of individuals with direct and sustained experiences of personalized learning environments. The inclusion criteria specified that participants must have used Learning Analytics dashboards or feedback systems for at least one academic semester, while exclusion criteria eliminated individuals with no prior exposure to adaptive or personalized digital platforms.

A total of 15 participants contributed to the study, consisting of both male and female students aged between 19 and 24 years, with an average age of 21. Their disciplinary backgrounds included education, computer science, and social sciences, representing diverse academic contexts in which digital platforms were applied. This demographic variety enriched the interpretive scope of the study by capturing a wide range of experiences with LA-based personalization.

Data Collection

Data were collected through in-depth, semi-structured interviews designed to elicit detailed accounts of participants' experiences and interpretations (Hoskins & Cobbina-Dungy, 2020). An interview protocol was developed to guide the conversations, incorporating open-ended questions that encouraged reflection on personal experiences, perceptions, and emotional responses related to personalized learning. The interviews were conducted in quiet, private settings to ensure comfort and confidentiality, with each session lasting between 60 and 90 minutes.

Interviews were audio-recorded with participants' consent and subsequently transcribed verbatim for analysis. Throughout the data collection process, participants were reminded that their contributions would remain confidential and anonymized. Probing questions were occasionally used to clarify or deepen descriptions of meaning units emerging from participants' narratives.

Data Analysis

Data were analyzed using Interpretative Phenomenological Analysis (IPA), which involves a systematic process of identifying and interpreting patterns of meaning across participants' accounts (Huang & Wang, 2024). The analysis proceeded through several steps: first, transcripts were read repeatedly to ensure immersion in the data; second, meaning units were highlighted and coded to capture essential expressions of lived experience; third, codes were clustered into preliminary categories; fourth, categories were refined into higher-order themes that represented shared experiential patterns.

NVivo software was utilized as an organizational tool to manage data coding and theme development, while interpretative depth was ensured through iterative reading and thematic refinement. The final themes were synthesized into a narrative structure that captured the essence of students' experiences with LA and their evolving learning identities.

RESULTS

Awakening Self-Awareness through Data-Driven Insights

Students consistently described how the personalized feedback generated by LA tools heightened their awareness of their own learning patterns. Many participants indicated that they became more conscious of their study habits and performance trajectories once confronted with the system's visualizations and progress indicators.

Participants were selected through purposive sampling, focusing on undergraduate students who had used LA-based feedback tools for at least one semester. Data were collected through semi-

structured interviews lasting 45–60 minutes, allowing participants to reflect deeply on their experiences with digital personalization.

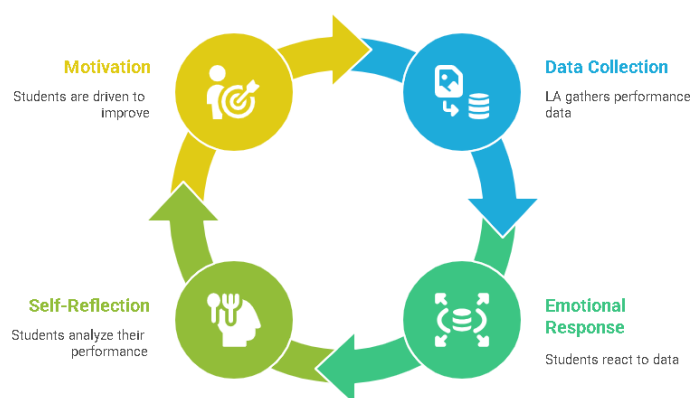
One participant explained:

“When I saw the dashboard showing how much time I spent on tasks compared to others, it was like a mirror. It made me reflect on whether I was really engaging enough.”

This sense of awareness often provoked emotional responses, ranging from anxiety over underperformance to motivation for improvement. The phenomenon highlights how LA can function not merely as a technical instrument but as a reflective tool shaping students’ self-perception.

These findings echo previous studies emphasizing the role of self-tracking technologies in fostering metacognitive reflection (e.g., Buckingham Shum & Deakin Crick, 2016), yet extend this discussion by showing how students emotionally interpret their performance data as a form of self-dialogue.

The Cycle of LA and Self-Perception



Negotiating Control and Autonomy in the Learning Process

A recurring experience shared by students involved negotiating the tension between system-driven personalization and their own sense of agency. Some students welcomed the adaptive recommendations, viewing them as supportive guides, while others felt constrained, perceiving the system as prescribing their learning path.

As one student stated:

“Sometimes I feel the system knows me too well—it tells me what I should do next. But part of me wants to choose differently, to prove that I can decide my own way.”

Another participant emphasized this ambivalence, saying:

“I appreciate the suggestions, but when I don’t follow them, I get alerts that I’m off-track. It feels like I’m being monitored rather than supported.”

This theme underscores the ambivalence of personalized digital learning: while it can empower learners by providing direction, it may simultaneously challenge their autonomy and identity as self-regulated learners.

This finding aligns with prior research highlighting tensions between personalization algorithms and learner autonomy (Ifenthaler & Yau, 2020), yet contributes new insights by illustrating how this negotiation is emotionally charged and identity-relevant rather than purely behavioral.

Experiencing Transformation of Learning Identity

Students reported a gradual shift in how they viewed themselves as learners. Several participants articulated a transition from passive knowledge recipients to active co-creators of their

learning journey. This transformation was linked to the interpretive process of engaging with LA outputs, where students internalized data not as external metrics but as personal narratives of growth.

One participant reflected:

“Before, I just followed the assignments. Now, when I see the patterns in the analytics, I feel like I am part of designing my own study plan. It makes me think of myself more as an independent learner.”

Another participant remarked:

“When the analytics showed improvement over time, I felt proud—it wasn’t just numbers, it was my effort being recognized.”

This transformative process reveals how LA can foster identity re-construction, aligning students’ self-perceptions with roles of responsibility, agency, and ownership in the digital learning environment.

In line with Järvelä and Hadwin’s (2013) framework on self-regulated learning, these results extend the conversation by emphasizing identity transformation as an outcome of engaging with data-driven feedback—an area underexplored in current LA literature.

Emotional Ambivalence in Personalized Learning

Emotions emerged as a pervasive aspect of students’ encounters with LA-driven personalization. While some students experienced empowerment and confidence, others expressed frustration and vulnerability when the data highlighted weaknesses.

A student noted:

“It’s encouraging when the system shows progress, but when it points out what I’m lacking, I sometimes feel judged—as if I’m failing.”

Another expressed similar mixed feelings:

“When I’m doing well, I trust the system. But when it tells me I’m behind, I start to question whether I’m capable at all.”

This duality demonstrates that the emotional dimension is inseparable from the interpretive process, shaping how students engage with and make meaning of their personalized learning experiences.

These findings resonate with recent scholarship emphasizing the affective dimensions of learning analytics (e.g., Roberts et al., 2021) but contribute original insight by demonstrating how emotions mediate identity reconstruction and self-awareness within personalized learning environments.

DISCUSSION

This study revealed that students’ engagement with personalized Learning Analytics (LA) systems was experienced as both a reflective and transformative process (Liu & Bachman, 2021). Central to this experience was the negotiation between self-awareness, autonomy, and emotional ambivalence, ultimately shaping shifts in students’ learning identities. These findings directly address the research question by uncovering how learners make sense of personalization beyond measurable academic outcomes.

Contribution of Findings to the Research Question

The findings provide evidence that LA-based personalization is not only a technical intervention but a lived phenomenon that alters how students perceive themselves as learners (Nixon, 2020). The emergence of self-awareness through data feedback suggests that students interpret dashboards and progress indicators as more than tools; they become mirrors through which learners reconstruct their understanding of effort, responsibility, and growth (Blumenstein, 2020). The negotiation of autonomy further illustrates that personalization does not merely guide academic

behavior but provokes reflection on independence and self-determination (Mukhlis, Janwari, et al., 2023). Finally, the identity transformation observed highlights that LA contributes to a deeper shift in how learners situate themselves within educational spaces—transitioning from passive recipients to active agents in their learning trajectories. These insights emphasize that the essence of personalization lies in the lived experiences of students rather than the predictive capacity of data systems.

Relationship with Previous Literature and Theoretical Perspectives

These results extend earlier studies that identified LA as a tool for performance monitoring and feedback, by showing that learners interpret such feedback as a personal narrative of growth and challenge (Zhao & Zhu, 2021). Consistent with Karaoglan Yilmaz (2022), who highlighted ambivalent student responses, this study demonstrates that emotions such as empowerment and anxiety are inseparable from the interpretive process of personalization (Mukhlis, 2025a). However, the present findings go further by linking these responses to shifts in learning identity, a dimension often overlooked in previous research (Fernández-Morante et al., 2022). The results also align with hermeneutic perspectives, which argue that human beings interpret their existence through lived experiences situated in specific contexts. In this way, phenomenology provides not only a methodological contribution but also a theoretical lens that reveals the hidden dynamics of learning identity formation in digital environments.

Implications of the Findings

The findings of this study hold important implications for both educational practice and broader social contexts. From a pedagogical perspective, the results suggest that personalization through Learning Analytics (LA) extends beyond academic performance and operates as a catalyst for students' identity formation (F. Han & Ellis, 2020). This implies that institutions designing and implementing LA systems should account for the interpretive and emotional dimensions of student engagement, not merely their measurable outcomes (Kustitskaya et al., 2023). Socially and culturally, the findings highlight how digital education environments shape learners' sense of agency and belonging, reflecting broader transformations in how individuals interact with knowledge and institutions in a data-driven society (Mukhlis, Arifin, Ridwan, Zulbaidah, et al., 2025). For professionals in higher education, this emphasizes the importance of cultivating environments that balance personalization with respect for learners' autonomy and emotional well-being, ensuring that technology supports rather than undermines the development of resilient and self-aware learners.

Limitations of the Study

Despite these contributions, several limitations should be acknowledged. First, the study was conducted within a specific higher education context, which may limit the transferability of findings to other institutional or cultural settings (Wu, 2023). Second, the use of Interpretive Phenomenological Analysis (IPA), while powerful for uncovering meaning, necessarily relies on a relatively small sample size, which restricts broad generalization. Third, the focus on self-reported experiences may introduce biases related to memory, reflection, or participants' willingness to disclose personal perspectives (Mukhlis, Maryam, et al., 2023). These limitations do not diminish the value of the findings but instead frame them as situated insights that provide depth rather than universality. Future studies may benefit from expanding the participant pool, exploring diverse institutional contexts, or incorporating complementary qualitative methods to enrich the phenomenological account.

Prospective Directions for Future Research

Building on these findings, future research could further investigate how personalized feedback influences learning identity across different cultural or disciplinary contexts, offering a comparative understanding of the phenomenon. Longitudinal designs may also be valuable in tracing how identity transformation unfolds over extended periods of engagement with LA systems (Mukhlis et al., 2024). Additionally, integrating phenomenological inquiry with other interpretive approaches, such as narrative analysis, could provide further insights into the ways students construct meaning over time. Such extensions would not only deepen theoretical understanding but also inform the

development of learning technologies that are more responsive to the lived realities of learners. Ultimately, this line of inquiry has the potential to reshape how personalization is conceptualized in digital learning environments—shifting the focus from prediction and control to meaning, agency, and growth.

CONCLUSION

This study explored how students experience and interpret personalization in digital learning environments mediated by Learning Analytics (LA). The findings revealed that personalization was lived not only as a technical support system but also as a reflective and transformative process that shaped learners' awareness, autonomy, and identity. By uncovering themes of self-awareness, negotiation of control, identity transformation, and emotional ambivalence, the study addressed the knowledge gap left by prior research that emphasized outcomes over lived experiences. These results contribute a richer understanding of how LA influences students' roles as learners, offering insights that respond to the limitations of earlier quantitative or surface-level studies.

In practical terms, the findings suggest that educational institutions and system developers should design LA tools that go beyond performance dashboards to include reflective prompts, narrative feedback, and emotional support mechanisms. For instance, integrating features that encourage students to interpret their data through guided reflection or peer discussion can enhance metacognitive awareness while reducing anxiety associated with data comparisons. Additionally, educators should be trained to mediate LA feedback in ways that empower student agency rather than reinforce dependency on algorithmic recommendations. The study also underscores the importance of designing educational technologies that account for the subjective and emotional dimensions of learning, ensuring that personalization fosters growth rather than dependency.

For future research, several directions are recommended. Longitudinal studies should investigate how sustained exposure to LA-based personalization shapes learners' identity trajectories over time. Cross-cultural research is needed to explore how cultural norms and educational values influence the emotional and interpretive responses to personalization. Furthermore, mixed-method studies could integrate phenomenological insights with behavioral analytics to provide a holistic understanding of how personalization operates both experientially and empirically. Finally, exploring the ethical dimensions of data-driven personalization—such as issues of trust, transparency, and learner consent—would advance both theoretical and practical discourse in the field.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this article. The research was conducted independently, and the funding sponsor had no involvement in the design, execution, analysis, or interpretation of the study.

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