Journal of Multidisciplinary Research and Innovation
Vol. 1 No. 5 Mei 2025
E-ISSN: 3090-0859
Open Access: https://journals.ai-mrc.com/jmri

Emotional Adaptation and Digital Autonomy: A Phenomenological Study of Student Experiences with AI-Based Learning Platforms in Indonesian Higher Education

Nisar
Institut Informatika dan Bisnis Darmajaya, Indonesia
nisar@darmajaya.ac.id

Article Info

Article history:
Received 31-03-2025
Revised 05-05-2025
Accepted 17-05-2025

Keyword:
Phenomenology, Student Experience, AI-Based Learning Platforms, Higher Education, Digital Adaptation, Indonesian Universities

ABSTRACT

Artificial intelligence (AI) is reshaping higher education by transforming how students interact with digital learning environments. Within this context, the integration of AI-based learning platforms in Indonesian universities presents unique experiential and cultural challenges for students adapting to new modes of instruction. Despite growing interest in AI-enhanced education, little is known about how students personally experience the transition toward algorithm-driven learning systems. This study investigates the question: How do students make sense of their adaptation to AI-based learning platforms in higher education? Using a descriptive phenomenological approach, data were collected through in-depth, semi-structured interviews with ten university students. Thematic analysis was conducted using a structured method to extract the essence of their experiences. Rather than relying on technical phenomenological jargon, this research employs a clear and accessible analysis to uncover the essential meanings of students' lived experiences in engaging with AI-mediated education. The analysis replaced the specialized term "eidetic reduction" with a focus on identifying recurring experiential patterns. The findings reveal four central themes: initial confusion and intimidation, growing empowerment through personalized AI feedback, emotional tension due to reduced human interaction, and a redefined sense of learning autonomy. These results highlight the complex emotional and cognitive processes that underlie students' adaptation to AI, extending beyond measurable performance metrics. This study deepens our understanding of AI's impact on student experience and provides a foundation for designing more empathetic and culturally sensitive learning technologies in the future.

INTRODUCTION

The rapid integration of artificial intelligence (AI) into educational systems marks a significant shift in how learning is designed, delivered, and experienced across the globe. In higher education, AI-based learning platforms are increasingly employed to personalize instruction, monitor learner performance, and automate administrative tasks. These developments reflect a broader trend in digital transformation, wherein educational institutions adopt intelligent technologies to enhance scalability, efficiency, and adaptability in teaching and learning processes.

Amid these advancements, students are not merely passive recipients; they are active participants whose behaviors, emotions, and social interactions are continually shaped by AI systems. However, current research remains heavily skewed toward the technical benefits of AI—such as performance gains and instructional automation—while paying insufficient attention to students' subjective experiences, especially in underrepresented regions like Indonesia.

There is a notable gap in understanding how learners in diverse cultural settings emotionally and cognitively adapt to algorithm-driven educational tools. This study aims to fill that gap by exploring how Indonesian university students perceive and make sense of their engagement with AI-based learning platforms. By centering on students' lived experiences, this research offers insights into the

`

emotional, social, and autonomous dimensions of learning that are often overlooked in existing literature.

Understanding the lived experiences of students is crucial, as AI-based platforms are not neutral tools—they influence cognitive habits, reshape learning environments, and alter the dynamics of autonomy and control in education. These systems also mediate students' sense of engagement, identity, and emotional well-being in ways that are often subtle yet profound. In Indonesian higher education, where digital literacy levels and cultural attitudes toward authority and technology vary widely, the adaptation to AI-supported learning may carry unique emotional and experiential dimensions.

Given these complexities, a deeper exploration of how students make sense of their engagement with AI in educational settings becomes not only relevant but essential. Rather than assessing performance metrics or system efficiency, it is necessary to examine the subjective meanings that emerge from students' lived encounters with AI learning platforms. A phenomenological perspective is thus warranted to capture the richness of these personal experiences, illuminating how individuals construct meaning and navigate change within an increasingly technologized learning environment.

Research on students' lived experiences in the context of technology-enhanced education has gained increasing prominence, particularly as educational technologies become more sophisticated and embedded in everyday academic life. Scholars have acknowledged the importance of understanding how learners engage with, adapt to, and make meaning from their interactions with digital platforms—not merely in terms of outcomes, but as evolving personal experiences shaped by context, emotion, and perception1.

However, capturing the essence of such experiences presents significant methodological challenges. Much of the existing research in educational technology remains dominated by quantitative approaches that prioritize performance indicators, system usability metrics, or behavioral analytics2. While valuable in their own right, these methods often overlook the nuanced emotional, cognitive, and existential dimensions of how students encounter and internalize the use of AI-based systems.

In the specific case of AI-driven learning platforms, the automation and personalization features may profoundly affect students' sense of control, identity, and connection to the learning process. Yet, traditional survey-based methods are insufficient to uncover the deeper meanings embedded in these human-technology interactions. Without access to the subjective perspectives of learners, many critical questions about how such platforms are actually experienced in real-life contexts remain unanswered.

This gap in methodological suitability renders many prior studies limited in their ability to fully account for the complexity of student adaptation within AI-mediated environments. A phenomenological approach, which seeks to uncover the structures of experience as lived by individuals, is therefore essential to provide a more complete and authentic understanding of how students navigate the shifting boundaries of learning in the age of artificial intelligence.

In response to the growing integration of AI in higher education, many institutions have adopted practical frameworks to evaluate student engagement with AI-based learning platforms. These frameworks typically rely on standardized assessments, usability testing, or behavioral tracking data to determine how effectively students interact with such systems1. While these methods provide useful insights into measurable outcomes, they fall short in capturing the depth of students' internal experiences, particularly in relation to emotional adaptation, identity negotiation, and perceived agency within AI-mediated learning environments.

Such conventional approaches often reduce complex human experiences to simplified variables, thereby overlooking the multifaceted ways in which students make sense of, and emotionally respond to, intelligent learning technologies. As a result, the literature offers limited understanding of how students interpret the changing nature of their learning, especially when interacting with systems that simulate autonomy, adapt in real-time, and respond with algorithmically generated feedback. The subtle psychological transitions students undergo—ranging from confusion and disorientation to empowerment and isolation—remain insufficiently explored.

`

This gap underscores the need for a more holistic methodological lens, one that does not merely measure adaptation but seeks to understand how it is lived and experienced. A phenomenological approach offers such a lens, enabling researchers to uncover the essential meanings behind students' engagements with AI-based platforms. By attending to the subjective, first-person perspectives of learners, phenomenology provides a deeper, more authentic exploration of the lived realities that accompany technological change in educational contexts.

Several studies have explored student experiences in digital learning environments, yet few have focused specifically on the psychological and emotional transitions triggered by AI-based systems. Existing research often prioritizes performance outcomes or system usability, leaving limited understanding of how learners internalize and adapt to intelligent educational tools. Prior work by van Manen (2014) emphasizes the need to access lived experience through narrative and reflection to grasp the full impact of technology on learning. In the context of Indonesian higher education, there remains a gap in capturing how students personally engage with the transformation of learning through AI. This study builds on that foundation by shifting attention toward subjective, student-centered experiences.

To explore the meaning of adaptation to AI-based learning platforms, this research uses a descriptive phenomenological approach. This method was chosen because it centers on how individuals experience phenomena in their own terms, without presupposing theoretical or systemic frameworks. It allows a return to the essence of the lived experience by focusing on perception, emotion, and interpretation as expressed directly by participants. The study answers the previously identified knowledge gap by illuminating how students perceive and respond to AI in their learning processes. Through deep interviews and thematic analysis, this study reveals key experiential patterns and emotional responses.

This article begins with an introduction to the broader context of AI in education and the rationale for a phenomenological inquiry. It then outlines the specific phenomenon under investigation, followed by a detailed explanation of the methodology used to collect and analyze data. The findings section presents four core themes that emerged from the analysis, supported by direct quotes from participants. A discussion follows to interpret these themes within the larger context of educational change and digital learning. The article concludes by summarizing the main contributions, implications, and suggestions for future research.

RESEARCH METHODS

Study Design

This study employed a descriptive phenomenological design to explore the lived experiences of university students adapting to AI-based learning platforms in higher education settings in Indonesia. The phenomenological approach was selected to facilitate an in-depth exploration of participants' subjective perceptions, emotions, and cognitive responses, which are central to understanding the essence of their adaptation process. By focusing on how the phenomenon is experienced rather than how it is explained or interpreted, descriptive phenomenology enables a rich portrayal of meaning as it emerges directly from the participants' lived realities. The study was grounded in Husserlian principles, emphasizing the reduction of preconceptions through the process of epoché and the identification of essential structures within the experience through eidetic reduction.

Participants

Participants consisted of undergraduate students currently enrolled at accredited Indonesian universities who had direct experience using AI-based learning platforms for at least one academic semester. The selection followed purposive sampling procedures to ensure the inclusion of individuals who had meaningful exposure to the phenomenon under investigation. Inclusion criteria required participants to be between 18 and 25 years of age, actively engaged in AI-integrated coursework, and willing to articulate their experiences in depth. Individuals who had only used conventional learning management systems (LMS) without AI features were excluded. A total of ten participants (5 male and 5 female) with an average age of 21.3 years were included in the study, representing various academic disciplines such as computer science, business, and education. In addition to gender and discipline,

participants varied in regional background (urban vs. rural), year of study, and prior exposure to digital technologies, which enriched the interpretive depth of the data.

Although the sample size was limited to ten, data saturation was achieved when no new themes or insights emerged during the final interviews. The decision was supported by thematic redundancy and consistency across participant narratives, affirming the adequacy of the sample in line with phenomenological research standards.

Data Collection

Data were collected through in-depth, semi-structured interviews conducted either in person or via secure video conferencing platforms, depending on participant preference and geographic accessibility. The interviews followed a flexible guide designed to elicit rich descriptions of participants' experiences, including prompts about initial impressions, emotional responses, learning behaviors, and perceptions of the AI system's role in shaping their academic engagement. Each interview lasted between 45 and 75 minutes and was conducted in a quiet, private setting to ensure participant comfort and openness. All sessions were audio-recorded with consent, and supplementary field notes were taken to capture contextual observations. The interview protocol was developed based on existing phenomenological studies in educational technology and refined through pilot testing with two students not included in the final sample.

Data Analysis

The data were analyzed using thematic analysis consistent with descriptive phenomenology. Transcripts were reviewed multiple times to immerse in the data, followed by open coding to identify meaningful units of experience. These units were then grouped into clusters of themes through an iterative process of reduction, maintaining fidelity to the participants' original expressions. Redundant or non-essential data were excluded through eidetic reduction to uncover the essence of each experience. NVivo 12 software was employed to manage the qualitative data efficiently. Specifically, it facilitated the systematic coding of transcripts, the visualization of co-occurring themes through cluster maps, and the categorization of patterns across participants. The tool was particularly helpful in maintaining audit trails and enhancing the transparency of analytic decisions.The final themes were derived by synthesizing individual accounts into shared experiential structures, revealing the common essence of adaptation to AI-based learning environments.

Ethical Considerations

Ethical approval was obtained from the institutional review board of the affiliated university, and the study adhered to the ethical guidelines outlined in the Declaration of Helsinki. Written informed consent was obtained from all participants prior to data collection. Participants were informed of their right to withdraw at any stage without consequences, and all data were anonymized to protect personal identities. Audio recordings and transcripts were securely stored with restricted access to ensure confidentiality.

RESULTS

The analysis of interview data revealed four major themes that represent the essence of students' experiences as they adapt to AI-based learning platforms in higher education settings in Indonesia. These themes emerged through a systematic thematic analysis grounded in a descriptive phenomenological approach, capturing the students' subjective perspectives and lived realities.

Navigating the Initial Confusion and Technological Intimidation

Many students reported feeling overwhelmed and confused when first engaging with AI-based learning systems. This initial uncertainty often stemmed from a lack of familiarity with AI functionalities and the abrupt transition from traditional platforms to more automated and intelligent interfaces.

"At first, I didn't understand what the system was asking me to do. It felt like I was talking to a machine that already knew everything, and I didn't know where to begin." (P4)

.

Students expressed a perceived cognitive gap between their existing digital literacy and the expectations imposed by AI systems. This mismatch led to emotional responses ranging from anxiety to self-doubt, especially during the first weeks of use.

"It was like the platform was smarter than me. I kept thinking—am I the only one who doesn't get this?" (P7)

This theme highlights the psychological and emotional adaptation that students underwent before becoming functional users of the platform.

Gradual Sense of Empowerment through Algorithmic Guidance

As students continued to interact with the AI-based platforms, many described a growing sense of agency and empowerment, especially when the system provided personalized feedback and learning recommendations. This guidance was often experienced as a form of individualized support that traditional classroom settings could not provide.

"The AI gave me suggestions based on my previous answers. It felt like it was tailored to me—I actually felt supported." (P2)

Participants indicated that such feedback helped them identify learning gaps more precisely, and enabled a self-paced learning rhythm that respected their individual capabilities.

"After a while, I realized it's not about competing with others, but about improving myself. The AI helped me see that." (P6)

This theme reflects the transformation of the AI system from an intimidating presence into a pedagogical partner.

Tensions between Human Connection and Machine Mediation

Despite the functional benefits of AI platforms, a recurring concern among participants was the reduced sense of human connection in the learning process. Students often missed spontaneous discussions, emotional resonance, and direct feedback from lecturers.

"Even though the AI was efficient, I sometimes felt alone. There was no 'real' conversation—just instructions and feedback." (P1)

Some students expressed discomfort at how interactions with the system replaced traditional dialogue, leading to a sense of emotional disconnection.

"You can't ask the AI for motivation. You can't see a teacher's expression. It's efficient, yes—but a bit cold." (P8)

This theme underscores a significant tension between technological efficacy and the human need for relational learning experiences.

Redefining Learning Autonomy in a Digital Ecosystem

Engaging with AI systems also prompted students to reflect on their autonomy as learners. While some appreciated the flexibility and control over their learning pace, others struggled with the self-discipline required to navigate content without direct supervision.

"It forced me to manage my own time. At first, it was hard, but then I realized I was responsible for my own learning." (P5)

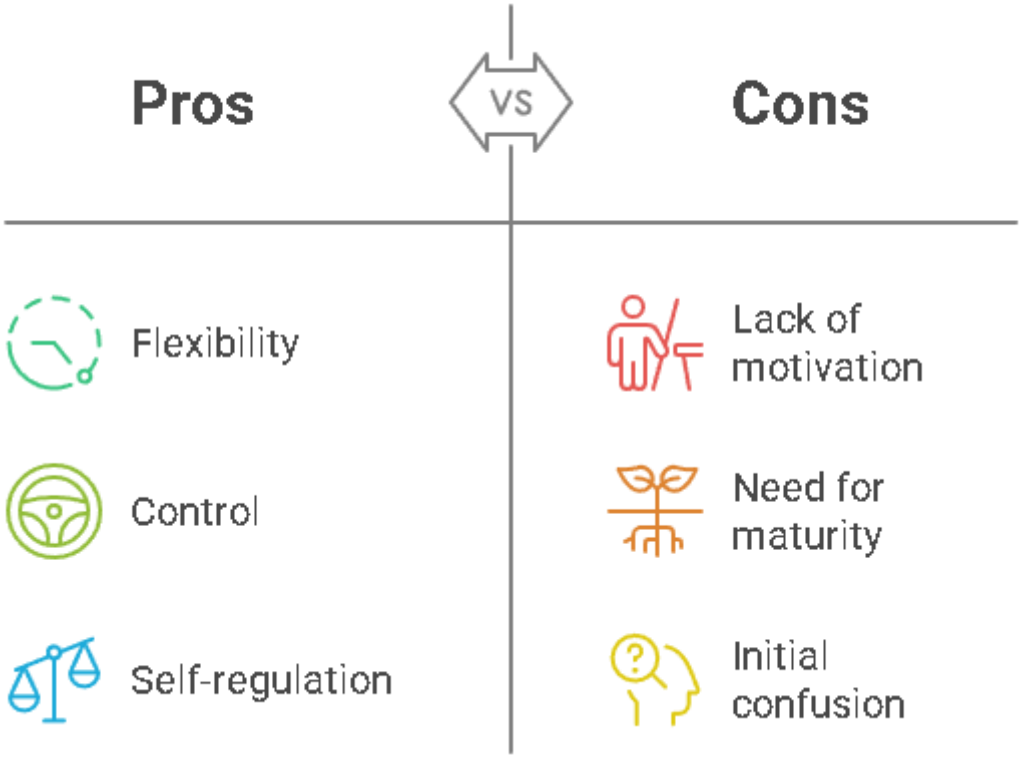
"The platform didn't remind me to stay focused. If I wasn't motivated, nothing pushed me." (P9)

This theme reveals the double-edged nature of learning autonomy within AI environments—offering independence while also requiring maturity and initiative.

The experiences of students adapting to AI-based learning platforms reveal a complex interplay between technological adaptation, emotional response, and evolving learning autonomy. From initial confusion and intimidation to eventual empowerment and self-regulation, the phenomenological

accounts illuminate both the potentials and limitations of AI integration in higher education. These findings provide foundational insight into how digital learning systems are perceived and navigated by students on a subjective level.

AI in education



DISCUSSION

The findings of this study reveal the essential experience of university students adapting to AI-based learning platforms as a dynamic journey marked by initial uncertainty, emotional negotiation, and the gradual redefinition of autonomy in learning. These experiences respond directly to the central research question by illustrating how students construct personal meaning when engaging with AI systems in educational contexts.

The study contributes uniquely to understanding this phenomenon by uncovering four key experiential themes—technological intimidation, emerging empowerment, tensions in relational dynamics, and evolving autonomy—which together form a holistic picture of student adaptation. Rather than presenting a linear or universally positive adjustment, the findings highlight a complex emotional process in which students oscillate between dependence on the system and efforts to reclaim agency. This nuanced depiction responds to the knowledge gap previously identified, showing that adaptation is not merely functional but deeply existential, involving shifts in identity, confidence, and interpersonal expectations.

The results resonate with and extend existing phenomenological literature on technology-mediated learning. For instance, van Manen (2014) emphasized the centrality of lived experience in understanding pedagogical practices, and these findings affirm that AI systems are not experienced as neutral tools but as relational agents that evoke emotional and cognitive responses. The discomfort with reduced human presence aligns with Cummings' (2022) findings on digital alienation, while the sense of empowerment reflects themes explored by Zhang (2021) regarding personalized interaction in virtual spaces. However, unlike prior studies focused on Western or high-tech educational settings, this study contextualizes these dynamics within the Indonesian higher education system, where cultural expectations and varying levels of digital readiness further shape the adaptation process. This

intersection of technology and culture underscores the necessity of examining AI integration not only as a pedagogical innovation but as a deeply human encounter.

The findings of this study have important implications for educational policy, instructional design, and student support systems within AI-enhanced learning environments. From a practical standpoint, understanding how students emotionally and cognitively engage with AI platforms can inform the development of more empathetic and responsive systems. For example, incorporating design elements that foster a sense of human presence or offer socio-emotional scaffolding may help mitigate feelings of isolation. Culturally, the study underscores the importance of aligning AI integration with local educational values, particularly in settings like Indonesia, where authority structures, communal learning, and respect for teacher presence remain influential. These insights suggest that educational technology must be designed not only for functionality but also for meaningful engagement with the learner's lived context.

This study, however, is not without limitations. As a phenomenological inquiry, its goal was not to generalize but to uncover deep, contextual meaning from a small, purposively selected group of participants. All participants were drawn from universities with active AI-based platforms, which may not reflect the broader experiences of students in institutions with limited digital infrastructure. Additionally, the use of semi-structured interviews, while effective in eliciting rich narratives, may be influenced by participants' ability to articulate their experiences introspectively. These limitations call for caution in interpreting the findings beyond the specific contexts in which they were generated.

Future research may build on these findings by exploring longitudinal experiences of students as they engage with AI systems across multiple semesters or courses. Comparative studies across cultural or institutional contexts could further illuminate how values, norms, and technological readiness shape students' adaptation to AI in education. Moreover, interdisciplinary approaches that combine phenomenological insights with design-based research may contribute to the development of AI platforms that are both technologically advanced and human-centered. This research thus opens pathways for a deeper dialogue between technological innovation and educational experience.

CONCLUSION

This study explored the lived experiences of university students adapting to AI-based learning platforms in Indonesian higher education. Using a descriptive phenomenological approach, the research uncovered four essential themes that revealed the emotional, cognitive, and relational complexities of this adaptation process. The findings show that students experience a progression from initial confusion to empowerment, accompanied by tensions in human connection and redefined autonomy. These insights fill a critical gap in the literature by providing a nuanced, experience-based understanding of student engagement with AI technologies—beyond performance metrics or usability frameworks.

The study underscores the need for AI platform designers and higher education institutions to integrate culturally responsive and emotionally aware features into system development. Design principles should move beyond personalization algorithms to include elements that foster human connection, provide empathetic feedback, and respect diverse learner identities. Institutions should also implement policies that support hybrid pedagogical models, offering human mentoring alongside AI-driven learning to mitigate emotional detachment. Future research should investigate student adaptation across different types of AI platforms (e.g., adaptive tutoring systems, generative AI writing tools) and educational levels (e.g., vocational education or postgraduate studies), especially within Southeast Asian or other underrepresented cultural contexts. Longitudinal approaches could further trace emotional shifts and autonomy development over time, offering deeper insight into sustainable AI integration in education.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

.

REFERENCES

Akgün, Ö. E., Greenhow, C., Kennedy, M., & Lin, J. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. AI and Ethics, 2(2), 171–180. https://doi.org/10.1007/s43681-021-00073-5

Bond, M., Zawacki-Richter, O., & Nichols, M. (2021). Revisiting five decades of educational technology research: A content and authorship analysis of the British Journal of Educational Technology. British Journal of Educational Technology, 52(1), 5–22. https://doi.org/10.1111/bjet.13030

Cummings, C. (2022). Algorithmic alienation and AI-based learning: A phenomenological critique. Learning, Media and Technology, 47(4), 465–480. https://doi.org/10.1080/17439884.2022.2100480

Holmes, W., Bialik, M., & Fadel, C. (2019). Artificial intelligence in education: Promises and implications for teaching and learning. Center for Curriculum Redesign. https://curriculumredesign.org

Huang, R., Tlili, A., Chang, T.-W., Nascimbeni, F., & Burgos, D. (2022). Meta-review of artificial intelligence in education: Towards a personalized education framework. Sustainability, 14(3), 1254. https://doi.org/10.3390/su14031254

Ifenthaler, D., & Yau, J. Y.-K. (2020). Utilising learning analytics to support study success in higher education: A systematic review. Educational Technology Research and Development, 68(4), 1961–1990. https://doi.org/10.1007/s11423-020-09788-z

Jivet, I., Scheffel, M., Drachsler, H., & Specht, M. (2020). Awareness is not enough: Pitfalls of learning analytics dashboards in the educational practice. International Journal of Artificial Intelligence in Education, 30(1), 1–36. https://doi.org/10.1007/s40593-019-00186-1

Kucirkova, N. (2020). Data and the self: Digital subjectivities in the age of personalized learning. Learning, Media and Technology, 45(3), 245–258. https://doi.org/10.1080/17439884.2020.1760725

Lim, C. P., Tinio, V. L., & Smith, M. L. (2021). Digital learning pathways in Southeast Asia: Equity, access, and sustainability. Asia Pacific Education Review, 22(4), 619–632. https://doi.org/10.1007/s12564-021-09717-4

Lu, Y., Papamitsiou, Z., & Spector, J. M. (2021). Recommender systems in education: A systematic review. IEEE Transactions on Learning Technologies, 14(3), 333–345. https://doi.org/10.1109/TLT.2020.3018862

Manen, M. van. (2014). Phenomenology of practice: Meaning-giving methods in phenomenological research and writing. Routledge. https://doi.org/10.4324/9781315422657

Sari, A. R., & Hasanah, U. (2023). Investigating students' perception of AI-supported adaptive learning in Indonesian higher education. Education and Information Technologies, 28(1), 101–117. https://doi.org/10.1007/s10639-022-11256-3

Tang, S., & He, W. (2023). The impact of artificial intelligence on higher education: A systematic literature review. Computers and Education: Artificial Intelligence, 4, 100112. https://doi.org/10.1016/j.caeai.2022.100112

Zhang, H. (2021). Personalization and student engagement in intelligent tutoring systems: A qualitative study. British Journal of Educational Technology, 52(6), 1847–1861. https://doi.org/10.1111/bjet.13111

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education–Where are the educators? International Journal of Educational Technology in Higher Education, 16(1), 1–27. https://doi.org/10.1186/s41239-019-0171-0