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The social construction of the use of Artificial Intelligence (AI) in learning and character formation

by

Shasliani [1], Riko Septiantoko[2]
[1]Fakultas Ilmu Sosial dan Hukum, Universitas Negeri Makassar, Indonesia
shasliani@unm.ac.id

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Abstract

This study examines the social construction process of the use of Artificial Intelligence (AI) and its contribution to character building at SMAN 4 Makassar. Using a qualitative method with a phenomenological approach, this study dissects the essence of the subjective experiences of teachers, students, and policy makers as sources of data in this study. The research was conducted over a period of 3 months. Data collection was conducted through in-depth interviews, participatory observation, and documentation studies, with the credibility of the findings triangulated through sources and methods. The collected data were analyzed phenomenologically and interpreted using Berger and Luckmann's social construction theoretical framework. The main findings show that AI implementation takes place in three stages: externalization, objectification, and internalization. In addition, AI plays a role in shaping student character, especially in terms of discipline, responsibility, and independent learning. However, challenges were also found in the form of limited digital literacy, potential technology dependence, and the need for ethical regulation in its use.

Introduction

The rapid development of information technology has become a driving force for the application of artificial intelligence (AI) as a key innovation transforming the 21st-century educational landscape (Putri Supriadi et al., 2022). In Indonesia, the utilization of AI aligns with the national digital transformation agenda, actualized through various applications ranging from recommendation systems to learning analytics to create a personalized and adaptive learning ecosystem (Fentyrina & Mardi, 2025; Maola et al., 2024). The main appeal of AI lies in its remarkable ability to adapt to various learning styles, a flexibility that not only makes education more inclusive (Parn et al., 2025) but

also has a significant impact on character development and the sharpening of students' critical thinking skills (Tampubolon et al., 2024).

This condition naturally presents a double-edged sword—both an opportunity and a challenge—for secondary education institutions like SMAN 4 Makassar, which has reportedly begun integrating AI to support its teaching and learning processes as well as the character formation of its students (Alqadri, 2025). However, behind the conveniences offered, a number of fundamental obstacles are hidden. One of these is the potential erosion of the essential interaction between teachers and students, an element crucial for character education (Parjana, 2025; Yanuarsari et al., 2025). The success of AI integration ultimately depends on a complex ecosystem, encompassing infrastructure readiness, teachers' digital capabilities, and student literacy levels. Furthermore, socio-economic disparities risk widening the digital divide, which clearly contradicts the principle of educational equity. Another equally crucial issue arises from the inherently moral neutrality of AI itself; the value it generates depends entirely on who designs, manages, and uses it. In the context of SMAN 4 Makassar, school culture, student backgrounds, and internal policies become specific local variables. Although a culture of discipline and achievement can accelerate AI integration, neglecting the local context and learning habits increases the risk of resistance or even misuse—for example, using AI to complete assignments instantly without a deep understanding, which in turn undermines academic integrity.

To deconstruct this complexity, the social construction theory proposed by Berger and Luckmann offers a sharp analytical lens, where social reality is understood as a product formed through three dialectical processes: externalization, objectivation, and internalization (Berger & Luckmann, 1967). The application of AI at SMAN 4 Makassar can be dissected as a social reality actively constructed through a network of interactions among teachers, students, school policies, and technological infrastructure. It is important to note that this theory is not used as a hypothesis-testing tool but rather as a framework to understand how the meaning behind AI use is negotiated and shaped. This process begins with externalization, where the idea of utilizing AI is introduced by educators, which then undergoes objectivation as the idea is institutionalized into concrete systems, applications, or policies. The culmination is the internalization stage, a crucial moment where the technology is accepted and becomes an inseparable part of daily learning practices. It is this dynamic that ultimately determines the effectiveness of AI in learning and its contribution to character formation.

Upon review, the existing literature to date tends to be dominated by studies that highlight the technical and pedagogical aspects of AI, such as its effectiveness in boosting learning outcomes or accelerating material comprehension (Nurhayati et al., 2024; Putri et al., 2025; Syahputra et al., 2025). However, a significant gap in the literature emerges when we search for studies that specifically connect AI with character formation through the lens of social construction, especially at the secondary school level in Indonesia. Our understanding of how AI is actually received, interpreted, and ultimately internalized by the entire school community as a social reality remains very limited. It is here that the relevance of the social construction perspective becomes central, as it allows us to move beyond the questions of "what" and "how effective" to delve into "how" values, norms, and social interactions shape the use of AI and its impact on the identity and character of students.

The urgency of this research is further amplified by the reality of young people's lives today, who grow and develop amidst an unstoppable and instantaneous flow of information. AI is an incredibly accessible source of information, but without guidance and a strong character foundation, students risk getting lost in an information jungle without a moral compass. Therefore, integrating character education into AI-based learning becomes a necessity to equip them with critical thinking skills, digital literacy, and ethical awareness. With such an approach, AI can be transformed from a mere learning technology into a strategic instrument for shaping a generation that is not only intellectually smart but also emotionally mature and morally dignified.

Stemming from the foundational assumption that the adoption of AI at SMAN 4 Makassar is not merely a technical process but a dynamic arena of social construction—involving teachers, students, the principal, and policymakers, each bringing their own values and interests—this research highlights how the interactions among them generate a negotiation of meaning that determines the direction of this technology's use. This leads to the fundamental research question: how does the social construction process of AI use in learning at SMAN 4 Makassar unfold, and to what extent does this process contribute to the character formation of students? Accordingly, this study aims to dissect this social construction process while analyzing its contribution to the development of students' character in cognitive, affective, and ethical dimensions. This approach is expected to present a complete and profound understanding of the symbiotic interaction between AI technology and character development in the school environment.

Method

To conduct an in-depth examination of this phenomenon, this study adopts a qualitative method with a phenomenological approach. This approach was chosen for its ability to move beyond mere description to genuinely delve into the essence or nature of subjective experience. Its focus is to understand how the reality of AI usage is experienced, felt, and consciously interpreted by the individuals directly involved, thereby revealing the core meaning behind their experiences.

The data sources in this study were obtained directly from three teachers, five students, and the school management at SMAN 4 Makassar through in-depth interviews and observations. The research lasted for 3 months, from January to March 2025. To capture reality holistically, data collection was carried out using a combination of three main techniques: in-depth interviews to explore personal perspectives, participatory observation to understand practices in their natural context, and documentation studies to analyze policies and related artifacts. To ensure the credibility of the findings, this study applied triangulation of methods and sources, in which data from the three techniques and the three participant groups were mutually verified and compared.

The collected data were analyzed using a systematic phenomenological analysis procedure. This process began with *epoche*, a disciplined step in which the researcher suspends or temporarily sets aside prior assumptions and knowledge about the topic to approach the data with an open mind (Nugraheni et al., 2023). Subsequently, interview transcripts and field notes were deconstructed to identify significant statements, which were then grouped into coherent units of meaning. These units were then synthesized to formulate essential themes that represent the essence of the participants' experiences. As the culminating analytical step, these core themes were interpreted through the theoretical framework of Berger and Luckmann's social construction to explain how these individual experiences undergo the processes of externalization, objectivation, and internalization to form a complete social reality of AI within the school environment.

Result and Discussion

Firstly, the externalization. The emergence of the idea to utilize artificial intelligence (AI) at SMAN 4 Makassar is a reflection of the externalization stage, a moment when an abstract idea is expressed until it becomes a collective practice (Jalil & Hasanah, 2025). This initiative did not emerge in a vacuum but originated from a dialectic among

educators, the principal, and stakeholders. This dialogue was driven by the urgent need to align teaching methods with technological advancements and the characteristics of the new generation of students. Teachers sought to make learning materials more interactive and adaptive to each individual's learning pace, which demonstrates how an initial concept was communicated until it found common ground within the school community.

The realization of this concept then took the form of concrete institutional actions. The principal played a central role by facilitating the necessary digital infrastructure, from computer units and strengthened internet networks to licenses for educational platforms. Moreover, the school formulated internal guidelines that not only contained technical protocols but also integrated principles of character education. The existence of these guidelines and the availability of technological devices became material evidence of a conceptual idea that had been realized through collective agreement.

At the student level, externalization was manifested in the adoption of these platforms in daily learning activities. Field observations recorded how they actively accessed interactive modules, worked on adaptive practice questions, and even discussed topics with an academic chatbot. Many students reported being greatly helped in understanding complex material thanks to the step-by-step explanations provided by the system. This process of mass adoption became a valid indicator that the idea of utilizing technology had been successfully translated into tangible action, which in turn shaped new academic relational patterns within the school environment.

It is important to note that the application of AI at SMAN 4 Makassar cannot be separated from the school's culture, which is deeply rooted in the values of discipline, responsibility, and collaboration. Educators intelligently utilized AI not merely as a tool, but as a medium to forge character. For example, an automated feedback system was designed to appreciate persistence and honesty, while continuously encouraging intellectual independence rather than a dependency on technology. This phenomenon aligns with the theoretical view that every act of externalization always carries the values held by its social actors.

This concept was not static; it was continuously negotiated and evolved through a vibrant social dialogue. Teacher coordination meetings became an arena for building consensus on the most effective implementation methods, while feedback from students regarding needed features provided an essential practical dimension. This dynamic exchange proves that the realization of AI is contextual and constantly being adjusted. This dynamic process was not without its challenges, particularly concerning the digital

competency gap. In response, the school implemented adaptive strategies in the form of intensive mentoring programs to ensure this initiative was inclusive for all members of the school community.

In essence, the implementation of AI at SMAN 4 Makassar is not an automatic technical phenomenon, but rather a complex social construct involving negotiation, principle adjustment, and continuous communication between actors. Externalization in the interview quotes of several teachers said that AI is a place to express ideas, actions, and innovations into social reality. Teachers use AI to compile teaching materials, provide adaptive questions, and speed up the correction process. Students express their learning needs through the use of AI as a medium for searching for information, practicing questions, and completing school assignments. The school expresses its commitment to innovation by providing digital facilities and encouraging the integration of AI in learning. The realization of this idea serves a dual purpose: as an instrument of innovative learning and as a means of strengthening the integrity and character of students. This entire structured sequence—from the dialectic of ideas, the materialization of policies, adoption by users, to the internalization of values—builds a solid foundation for the next stage of social reality construction.

Entering the objectivation stage, the AI utilization initiative at SMAN 4 Makassar transformed from a mere idea into a collectively observable institutional reality (Fanani & Al Ahsani, 2025). According to (Berger & Luckmann, 1967), this stage is the moment when social practices harden into standalone facts. At this school, the process took tangible form through the institutionalization of concrete systems and policies. AI-based learning platforms, interactive modules, and adaptive assessment mechanisms are no longer just discourse but have become an integral part of the teaching and learning routine. This institutionalization is reinforced by internal policies that establish ethical standards and usage protocols, solidifying AI's status as an established and formal reality within the school environment.

This AI integration transcends the mere availability of hardware and software; it has permeated into pedagogical practices and the curriculum. Classroom observations show how teachers actively utilize AI to map student learning progress, differentiate materials, and provide personalized remedial recommendations. Thus, AI has evolved into a social structure that tangibly shapes daily interactions at the school. The technology is no longer viewed as an external aid but has become an accepted social fact—a valid educational practice with measurable impacts.

Furthermore, the objectivation of AI directly influences and is influenced by the culture and values upheld at SMAN 4 Makassar. Its implementation is consciously aligned to support the school culture that emphasizes discipline, academic integrity, and independence. For example, the material recommendation system is designed not only for academic purposes but also to encourage students to complete tasks incrementally and evaluate their mistakes independently. In the perspective of (Berger & Luckmann, 1967), this objectivated social structure provides a normative framework for individuals to shape their behavior. AI becomes a medium for the internalization of character values, where teachers play the role of key facilitators to ensure the technology remains aligned with holistic educational goals.

Of course, an inclusive objectivation process demands adaptive strategies to overcome emerging challenges, particularly regarding gaps in digital access and competency. Recognizing the diversity in student backgrounds, the school did not stop at providing infrastructure. Training programs for teachers and intensive mentoring sessions for students are held regularly. This step ensures that the objectivation of AI is not elitist in nature but is also equitable, transforming technological devices into functional and responsible digital competencies for the entire school community.

Ultimately, the objectivation stage at SMAN 4 Makassar demonstrates how an initially conceptual idea was successfully embodied into a living, functioning social structure. This process involves multi-layered integration: from pedagogical practices, formal policies, and the instilling of usage norms, to the formation of new interaction patterns. The resulting social reality not only facilitates more effective learning but also actively functions as an instrument for forming the character traits of independence, discipline, and responsibility. The success of this objectivation becomes the essential foundation that allows AI to serve as a framework for the internalization of values by the students.

At its culmination, the social construction process at SMAN 4 Makassar reaches the internalization stage, where the objectivated reality of AI is absorbed into the subjective consciousness of individuals. This stage, according to Berger and Luckmann (1966), is the moment when the established social world becomes part of a person's personal world. This is manifested when students no longer view AI as an external tool but as an integral component of their learning practices and academic identity. In-depth interviews captured this phenomenon, as seen in a student's statement: “AI helps me understand the material step-by-step, and I feel accustomed to using it every day.” This

expression signifies that the structured experience through AI has been personally interpreted and has shaped how they see themselves as learners in the digital era.

This internalization transcends cognitive and technical aspects; it deeply touches upon the affective and ethical dimensions of character formation. The AI system, designed to provide instant feedback, for instance, indirectly instills the values of self-reflection and intellectual honesty. When students are encouraged to understand the process behind an answer, they learn that achievement must be aligned with persistent effort. Routine interaction with this system has been shown to increase self-confidence and learning motivation, as they can regulate their own learning pace and independently evaluate their progress. Thus, the internalization of AI serves as a vehicle for cultivating crucial values such as responsibility, discipline, and academic integrity in daily practice.

This value absorption process certainly does not occur individually but is reinforced by social interaction and a supportive school culture. Teachers act as primary facilitators who consistently frame the use of AI within an ethical and pedagogical corridor, ensuring the technology becomes a medium for deep understanding, not a shortcut. This environment is enriched by a school culture that values collaboration and academic achievement, encouraging students to proactively develop independent learning strategies using AI. It is this combination of teacher guidance and a conducive culture that accelerates the internalization process, transforming external norms into personal beliefs.

However, the success of a widespread and inclusive internalization depends on addressing existing obstacles, especially variations in digital skills. Recognizing this, SMAN 4 Makassar implemented a multi-layered support strategy that includes technical tutorials, teacher guidance, and a peer learning scheme. This approach ensures that the social reality of AI can be accessed and accepted by all students without exception, preventing the emergence of a digital divide and strengthening the foundation for comprehensive internalization, in line with Berger and Luckmann's view on the importance of social support in this process.

Ultimately, the internalization stage at SMAN 4 Makassar serves as evidence of the completion of a social construction cycle. AI has been successfully accepted not just as a device in a learning toolkit, but has been integrated into the mindset, behavior, and identity of the students. The technology ultimately functions as an effective medium for instilling key character values—responsibility, discipline, and integrity—with teachers and the school culture as its catalysts. This process clearly demonstrates how an objectivated

social reality can be subjectively accepted and interpreted, bridging the cognitive, affective, and ethical dimensions within a holistic educational ecosystem.

As the culmination of the social construction process, character formation at SMAN 4 Makassar reflects how an internalized reality shapes individual behavior. The utilization of artificial intelligence (AI), within the framework of (Berger & Luckmann, 1967), is not positioned as a replacement but as a powerful mediator of values within a holistic educational ecosystem. Its contribution is multidimensional, targeting a series of interconnected character traits that can be grouped into personal agency and collaborative virtues.

At the individual level, AI becomes an effective instrument for instilling values centered on personal agency, such as responsibility, integrity, discipline, and critical thinking. The instant feedback mechanism from the adaptive system, for example, accustoms students to reflecting on their mistakes and taking responsibility for their learning process. At the same time, academic integrity is forged when AI is designed to guide conceptual understanding rather than providing instant answers. Coupled with the flexibility of modules that demand independent time management, this technology simultaneously encourages students to become disciplined, honest, and critical learners—the main pillars of intellectual independence.

On the other hand, AI also functions to expand and reconstruct the space for social interaction, which serves as a vessel for cultivating collaborative virtues. Virtual group work platforms facilitated by teachers allow students to practice problem-solving together, provide mutual feedback, and hone their emotional intelligence and communication skills. In this structured digital space, norms of cooperation and empathy are formed and reinforced through routine practice, reflecting the essence of social construction where community values are absorbed through meaningful interaction.

However, the effectiveness of AI as a character instrument is not inherent but is highly dependent on the nexus between teacher facilitation and the school's cultural context. The role of the teacher as a “curator of values” becomes crucial; they are the ones who ensure the technology remains aligned with pedagogical and ethical goals. This success is also supported by the culture of SMAN 4 Makassar, which has long been rooted in achievement and integrity, so AI is adopted as a tool to strengthen existing values, not to oppose them. Adaptive strategies such as student mentoring and teacher training serve as a safety net to ensure this process is inclusive, overcoming the challenges of the digital divide.

Ultimately, AI's contribution to character formation at SMAN 4 Makassar is a clear illustration of social construction theory in practice. The technology successfully functions as an effective mediator for instilling cognitive, affective, and ethical values because it is consciously integrated into a living social framework. The case at this school shows that when technology, pedagogy, and humanistic values are intertwined, AI can become a powerful catalyst, not only for intellectual development but also for shaping individuals of integrity and responsibility.

Conclusion

The implementation of Artificial Intelligence (AI) at SMAN 4 Makassar is a complete social construction process, not merely a technical adoption. This process clearly unfolds through the three stages of Berger and Luckmann's theory. The first stage is externalization, where the idea of using AI was introduced through the dialogue of educators and manifested in school policies and infrastructure. Subsequently, the process entered the objectivation stage, where AI was institutionalized into the curriculum and daily learning practices, thereby becoming an established reality within the school environment. The culmination is the internalization stage, the moment when students absorb and accept AI as an inseparable part of their consciousness and academic identity.

The primary finding of this research is the dual role of AI, which functions not only as a learning instrument but also as a mediator for character formation. Specifically, AI was found to contribute to instilling crucial values such as responsibility, integrity, and discipline. The success of this entire process fundamentally depends on the active role of teachers as facilitators who consciously align technological potential with humanistic values and holistic educational goals.

Future research could conduct comparative studies in other schools to generalize these findings. Additionally, a long-term quantitative measurement of AI's impact on student character and achievement is needed.

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