

Before AI: The pedagogical relationship as a condition of the educational value of artificial intelligence in higher education

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ABSTRACT : Higher education is undergoing accelerated digital transformation, marked by the increasing integration of generative artificial intelligence (AI) and emerging educational technologies. However, debates on pedagogical innovation often focus primarily on the technical potential of these tools, paying less attention to the pedagogical and relational conditions that sustain meaningful learning experiences. In this context, this article proposes a relational conceptual framework for understanding how the quality of the pedagogical relationship shapes the educational value of artificial intelligence in higher education. Drawing on a theoretical-interpretative reflection supported by the fictional narrative vignette “A Student’s Letter to the Professor”, used as an interpretive lens, the article articulates contributions from Dialogic Pedagogy, the Person-Centred Approach, and Self-Determination Theory to make visible relational dimensions that are often underestimated in discussions about educational technology. The interpretive reading of the vignette leads to the identification of five relational dimensions—recognition and listening, guiding feedback, challenge with support, sense of belonging, and technology as support—which together constitute a relational model for understanding academic engagement in AI-mediated educational contexts. The article argues that the educational value of artificial intelligence tends to emerge when its use is framed within intentionally relational pedagogical practices capable of sustaining motivation, participation, and meaningful learning. In doing so, the paper contributes to repositioning the debate on artificial intelligence in higher education toward the pedagogical and relational conditions that structure the educational experience.

KEYWORDS - Academic Engagement, Generative AI, Higher Education, Pedagogical Relationship Separated

I. INTRODUCTION

Higher education is currently undergoing a process of rapid transformation, driven by digitalisation and the growing integration of emerging technologies, notably generative artificial intelligence (AI) [1, 2, 4]. Although these tools show potential for supporting personalised learning, pedagogical flexibility and educational innovation, their incorporation does not, in itself, guarantee pedagogically meaningful learning experiences. In this context, it is pertinent to ask under what conditions AI can effectively create educational value, particularly when technological mediation tends to shift the focus of the teaching–learning process towards the tool, to the detriment of the pedagogical and relational dynamics that underpin academic engagement [1, 2]

Recent literature has shown that academic engagement is strongly linked to the quality of the teacher-student relationship, particularly when students perceive support, recognition, constructive feedback and attention to their learning needs [3]. These conditions foster more consistent forms of participation, motivation and meaningful learning, including in digital or hybrid contexts [2, 1]. However, despite the growing interest in the use of AI in higher education, research has primarily focused on the technical and functional potential of these tools, devoting less attention to how pedagogical and relational conditions shape their educational value [4, 2, 1]. It is precisely this lack of critical examination that constitutes the gap this article seeks to address.

The central question guiding this discussion, therefore, is how the quality of the pedagogical relationship influences the educational value of generative artificial intelligence in higher education. More specifically, the starting point is the assumption that the pedagogical potential of AI does not depend solely on its technological characteristics, but on how its use is integrated into relationally grounded pedagogical practices [2, 18, 19] capable of fostering engagement, participation and meaningful learning.

Against this backdrop, this article aims to analyse how the quality of the teacher-student relationship influences the educational value of generative artificial intelligence in higher education, with a particular focus on the pedagogical and relational conditions that underpin students' academic engagement. To this end, the fictional narrative vignette 'Letter from a Student to the Teacher' is employed as a reflective and analytical-conceptual tool, designed to illustrate and highlight key dimensions of the pedagogical relationship in the context of AI-mediated teaching.

The article makes three key contributions to the debate on pedagogical innovation in higher education. Firstly, it proposes a conceptual framework that links the quality of the pedagogical relationship with the educational value of artificial intelligence, shifting the focus of the discussion from the technology itself to the pedagogical and relational conditions that underpin academic engagement. Secondly, it identifies five relational dimensions — recognition and listening, guiding feedback, supported challenge, a sense of belonging, and technology as a support — which enable us to understand how certain pedagogical practices can sustain student engagement in AI-mediated educational contexts. Thirdly, it sets out pedagogical implications for the integration of AI in higher education, arguing that its educational value depends on its articulation with intentionally relational practices.

Against this backdrop, the article develops a relational perspective on academic engagement in AI-mediated contexts, outlines the analytical approach adopted, presents propositions for debate, and discusses pedagogical implications for higher education.

II. THEORETICAL BACKGROUND

2.1. The concept of academic engagement

Academic engagement is one of the central concepts in research on learning in higher education, and is widely used to understand how students participate, interact and engage with the educational process. In general terms, it is understood as a multidimensional construct, traditionally organised around cognitive, emotional and behavioural dimensions [5, 6]. More recent studies conducted in the context of higher education have, however, refined this conceptualisation, showing that engagement can also incorporate dimensions such as student agency and the social component, particularly in face-to-face, blended and online modes [7, 8].

In the cognitive dimension, academic engagement refers to the student's mental investment, self-regulation and the use of deep learning strategies. The emotional dimension relates to interest, identification with learning and the affective reactions associated with the educational experience. The behavioural dimension, meanwhile, is reflected in the participation, effort and persistence demonstrated in academic activities. Taken together, these dimensions demonstrate that academic engagement is not limited to mere attendance or the completion of tasks, but reflects the student's active involvement in the learning process, combining intellectual investment, affective experience and concrete action [5, 6, 7].

The literature has also linked academic engagement to key indicators of success in higher education, including learning, satisfaction, retention and academic performance. Furthermore, recent meta-analyses show

that student engagement is influenced by multiple contextual factors, notably the teacher-student relationship, positive teacher behaviours and the supportiveness of the learning environment [9, 7]. Thus, the relevance of the concept stems not only from its association with important educational outcomes, but also from its analytical value in understanding the quality of students' academic experience.

Academic engagement is also closely linked to the motivational processes that underpin learning. According to Self-Determination Theory, motivation tends to be stronger when the educational context supports the psychological needs for autonomy, competence and relatedness, thereby fostering more autonomous and sustained forms of participation in learning [10, 11]. Recent evidence shows, in fact, that interventions based on this perspective help to strengthen intrinsic motivation and the psychological conditions associated with academic engagement [11].

In the contemporary context of higher education, characterised by digitalisation and the growing integration of emerging technologies, including artificial intelligence, academic engagement takes on particular importance. Although technology-mediated learning environments can expand opportunities for interaction, personalisation and flexibility, these potential benefits do not automatically translate into meaningful participation. Recent research suggests that, in digital contexts, engagement depends heavily on the pedagogical mediations adopted and the quality of the educational relationships that frame the use of technology [8]. In this context, perceived teaching support, the pedagogical relationship and a sense of belonging emerge as decisive factors in sustaining student engagement in higher education [3, 12].

2.2. The teacher-student relationship in higher education

The pedagogical relationship constitutes a structuring dimension of the learning experience in higher education, insofar as it influences how students interpret the support they receive, attribute meaning to the educational process, and engage in academic activities. High-quality pedagogical relationships tend to foster more motivating, inclusive, and psychologically safe learning environments, particularly when grounded in dialogue, recognition, and support for the student [13, 3, 1]

This perspective aligns with dialogical pedagogical traditions, which emphasise listening, interaction, and the shared construction of meaning between lecturers and students [14]. However, recent literature allows for a deeper understanding of this approach by highlighting that practices based on dialogic feedback, co-creation, and active participation strengthen students' voice, agency, and engagement in the learning process [15, 16]. Learning, therefore, does not occur solely through the transmission of content, but also through the quality of pedagogical interactions that sustain meaningful participation.

Similarly, student-centred approaches underscore the importance of empathy, authenticity, and pedagogical support in creating educational environments conducive to development, well-being, and participation [17]. In this regard, the quality of the pedagogical relationship depends not only on the organisation of teaching, but also on the lecturer's ability to create a relational climate in which students feel recognised, respected, and validated in their learning experience [3, 12].

From a motivational perspective, the pedagogical relationship may also be understood as a key condition for the satisfaction of basic psychological needs—autonomy, competence, and relatedness—widely recognised as determinants of motivation and academic engagement. Pedagogical environments that support these needs tend to promote more autonomous, persistent, and meaningful forms of engagement in learning [10, 11]. In this way, the pedagogical relationship is not merely an interpersonal context, but also a motivational condition with implications for students' cognitive, emotional, and behavioural engagement.

Within this framework, the pedagogical relationship should not be regarded as a peripheral element of the educational process, but rather as a central condition for the quality of the learning experience in higher education. By influencing how students feel supported, recognised, and challenged, it contributes to the creation of conditions that foster motivation, a sense of belonging, and academic engagement. Its relevance becomes even more evident in contexts of increasing technological mediation, where the educational value of digital tools continues to depend, to a large extent, on the pedagogical and relational conditions that frame their use [1, 2, 12].

2.3. The teacher-student relationship and engagement in digital contexts

Recent empirical evidence suggests that students' perceptions of lecturer support constitute a relevant factor in academic engagement within higher education. When students perceive availability, guidance, and genuine interest from lecturers, they tend to demonstrate higher levels of participation, persistence, and investment in learning activities. However, the literature indicates that this relationship should not be understood in a linear manner, as the impact of lecturer support on engagement is often mediated by factors such as self-efficacy, sense of belonging, and the quality of the pedagogical environment. In this sense, the pedagogical relationship retains a central role in promoting academic engagement, although its effect also depends on the contextual conditions in which the educational experience takes place [3, 12].

From a motivational perspective, the literature continues to emphasise that sustained student engagement is strongly associated with the satisfaction of basic psychological needs—autonomy, competence, and relatedness—which foster more autonomous and enduring forms of motivation. At this point, the theoretical framework proposed by Ryan and Deci [10] allows for an updated reference to the classical model, preserving its conceptual foundations while providing a more contemporary grounding. Accordingly, the pedagogical relationship becomes relevant not only as an interpersonal dimension, but also as a motivational condition for engagement, insofar as it contributes to the creation of contexts in which students feel supported, competent, and relationally integrated [10].

In digital or hybrid contexts, these relational dimensions become particularly significant. Although educational technologies and AI tools can expand access to information, support the personalisation of learning, and introduce greater flexibility into educational processes, their pedagogical effects are not automatic. In the case of generative AI in particular, its contribution tends to be more consistent when it supports functions such as the clarification of criteria, the generation of examples, preliminary feedback, or assistance with self-regulation, without replacing meaningful interaction between lecturers and students [2]. This perspective moves away from a technocentric view of pedagogical innovation and reinforces the idea that technology, in itself, does not guarantee academic engagement.

In recent years, the literature on artificial intelligence in education has highlighted the potential of these technologies to support more personalised learning processes, provide more immediate feedback, and enhance students' self-regulation. However, research also suggests that the impact of AI on student engagement depends largely on the teaching methods and pedagogical strategies adopted. In higher education and online learning contexts, technological mediation tends to foster engagement when accompanied by pedagogical relationships characterised by support, guidance, and meaningful communication between lecturers and students [2, 1]. In a similar vein, studies on digital learning environments emphasise that the quality of the educational experience depends not only on the presence of technology, but also on how it is integrated into pedagogical practices that preserve lecturer mediation, empathy, and relational support [1].

More broadly, research on AI and learning analytics in education has increasingly emphasised that the potential of these technologies does not lie solely in task automation or algorithmic personalisation, but rather in how they are pedagogically integrated into learning contexts. In this regard, several authors argue that data, feedback, and personalisation only generate consistent educational value when aligned with clear pedagogical objectives, stakeholder participation, and intentional practices that support learning [18, 19]. This perspective introduces an important conceptual tension: while AI promises efficiency and personalisation, its uncritical adoption may reduce learning to instrumental logics, thereby weakening the relational dimension of the educational process.

In summary, the conceptual framework adopted in this article suggests that the quality of the pedagogical relationship—expressed through dimensions such as recognition and listening, dialogic feedback, supported challenge, and sense of belonging—supports the satisfaction of basic psychological needs of autonomy, competence, and relatedness [10]. Through this pathway, these relational conditions tend to sustain more consistent forms of motivation and academic engagement, in line with the literature that associates lecturer support, belonging, and pedagogical mediation with improved learning experiences in higher education [3, 12]. Within this framework, the pedagogical value of artificial intelligence in higher education depends less on the

technology itself than on how its use is framed by pedagogical practices capable of reinforcing lecturer mediation, supporting self-regulation, and sustaining meaningful educational interactions [2, 1].

Even in educational contexts increasingly mediated by technology and AI tools, meaningful interaction between lecturers and students therefore remains a key condition for fostering motivation, participation, and meaningful learning [3, 1]. Within this framework, it becomes pertinent to identify and discuss the relational dimensions that, in higher education, can sustain academic engagement in AI mediated contexts, an issue that guides the analysis developed in the following sections.

III. METHODOLOGICAL APPROACH AND INTERPRETATIVE FRAMEWORK

3.1. Approach

The approach adopted in this article is theoretical-reflective in nature, focusing on the analysis of the role of relational dimensions in academic engagement within higher education contexts that are increasingly mediated by technology and artificial intelligence tools. The analysis developed follows an interpretative and deductive orientation, insofar as it is guided by previously defined theoretical frameworks, which structure the reading of the narrative vignette and the identification of analytical dimensions.

To this end, a narrative vignette is employed as a heuristic, illustrative, and interpretative resource, intended to render visible experiences and relational dynamics that are often implicit in educational practices. In educational research, vignettes have been recognised as a valuable methodological tool for exploring complex pedagogical situations, enabling the illustration of educational phenomena and stimulating processes of critical reflection on teaching and learning practices [20, 21, 22].

Within this framework, the vignette presented does not aim to represent a specific empirical case nor does it function as empirical evidence of the proposed model. Rather, it seeks to condense plausible and recognisable experiences within the context of contemporary higher education, making analytically visible relational dimensions that frequently remain implicit in pedagogical practices. The vignette should therefore be understood as a conceptual and heuristic resource, used to illustrate and analytically foreground theoretical dimensions; it does not constitute empirical evidence, nor does it allow for statistical or representative generalisations.

The interpretative reading of the vignette is guided by three complementary theoretical frameworks. Dialogical Pedagogy emphasises the role of dialogue, listening, and the shared construction of meaning within the educational relationship [14]. The Person-Centred Approach highlights the importance of empathy, authenticity, and acceptance in creating meaningful learning environments, and, in the contemporary context of digital higher education, aligns with perspectives that reinforce the centrality of relational pedagogy and the quality of educational interaction [17]. Self-Determination Theory, in turn, underscores the role of satisfying the basic psychological needs of autonomy, competence, and relatedness in fostering student motivation and engagement [10].

The integration of these frameworks enables the structuring of the analysis around relational dimensions likely to influence academic engagement, contributing to the identification of pedagogical practices capable of critically and meaningfully integrating digital technologies and artificial intelligence tools in higher education. Rather than describing a specific situation, this approach seeks to offer an interpretative lens through which to understand the relational conditions that may sustain the pedagogical value of technological innovation.

It is also important to acknowledge that the use of narrative vignettes entails limitations inherent to their fictional nature, particularly with regard to the impossibility of direct empirical validation. Nevertheless, as an interpretative resource, the vignette allows for the structuring of theoretical reflection, the explicit articulation of conceptual relationships, and the analytical problematisation of complex educational phenomena, which may subsequently be explored in empirical studies.

It should further be noted that the use of narrative vignettes involves limitations associated with their fictional character, especially concerning the lack of direct empirical validation. However, as an interpretative

device, the vignette enables the organisation of theoretical reflection and the clarification of conceptual relationships that may later be examined in empirical research.

3.2. Narrative vignette: “A Student’s Letter to the Teacher”

The vignette presented below takes the form of a fictional letter and is used as a reflective, interpretative and analytical tool, encapsulating plausible and recognisable pedagogical situations in both face-to-face and technology-mediated contexts. It should be understood as a resource intended to illustrate plausible experiences in contemporary higher education, bringing to light relational dimensions that are often implicit in the educational experience and serving as a basis for the analysis developed in the following sections.

A Student’s Letter to a Teacher

Dear Teacher,

Throughout my academic journey, I have had many teachers. Some taught me subject matter. Others taught me how to think. Few, however, taught me to believe that I was capable of learning.

I don’t remember all the theories I studied. But I do remember how I felt in certain classrooms. I remember lessons where making mistakes was part of the process — and others where making a mistake meant being exposed. I remember when questions were welcomed — and when they were hastily cut short.

Teacher, the difference wasn’t always in the methodology. It was in the relationship. When I realised that my contributions were listened to with genuine attention, I began to participate more. When feedback came with clear guidance, I started to try harder, not just harder. When I felt high expectations, but accompanied by support, I stopped studying out of obligation and started studying out of commitment.

Technology organised my journey. The materials helped. Even generative AI can be useful. But what most shaped my engagement was not the sophistication of the resources, but the quality of the pedagogical relationship that gave them meaning. It was feeling that there was listening, guidance, high standards with support, and a legitimate place for my presence in the learning process. Technology supported this process; it did not replace it.

Because when I feel recognised, I get involved. And when I get involved, I learn deeply.

With gratitude and reflection,

A student

3.3. Interpretative reading and analytical organization

The interpretative reading of the vignette, deductive in nature and guided by the frameworks of Dialogical Pedagogy [14], the Person-Centred Approach [17], and Self-Determination Theory [23], seeks to identify narrative elements that reveal relational dynamics associated with academic engagement. The analysis focuses on situations, emotions, and actions attributed to the student within the narrative, interpreted in light of these theoretical frameworks.

From this reading, five analytical dimensions are identified, enabling an understanding of how the quality of the pedagogical relationship may influence students’ motivation, participation, and engagement in the learning process. These dimensions result from the articulation between the theoretical frameworks employed and the narrative features of the vignette; they are not exclusively emergent from the data, but are interpretatively constructed within this framework. They are organised around recognition and listening, dialogic feedback, supported challenge, sense of belonging, and technology as support. These should not be understood as rigid or mutually exclusive categories, but rather as interdependent analytical axes that allow for a structured discussion of the relational conditions that foster academic engagement in contemporary, technology-mediated educational contexts.

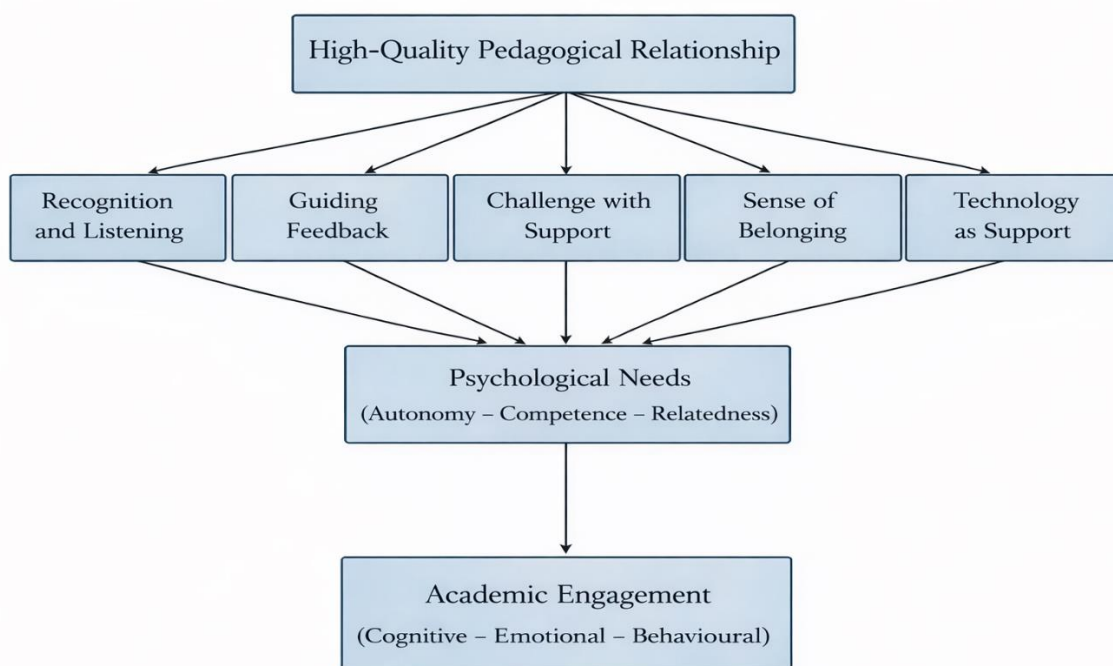
The identified dimensions derive from specific narrative features present in the vignette. For example, the expression “my participation was listened to with genuine attention” relates to the dimension of recognition and listening; the reference to “feedback accompanied by clear guidance” points to the dimension of dialogic feedback; and the formulation “high expectations, but accompanied by support” makes visible the dimension of supported challenge. Similarly, the reference to a “legitimate place” in the learning process suggests a sense of

belonging, while the idea that “technology supported this process; it did not replace it” corresponds to the dimension of technology as support.

The identification of these five relational dimensions also enables an understanding of how artificial intelligence can be integrated in a pedagogically meaningful way within higher education. AI tools may support practices of dialogic feedback, generate additional examples that reinforce supported challenge, and assist students in clarifying criteria or organising their study [2, 18, 19]. However, dimensions such as recognition and listening or sense of belonging depend fundamentally on pedagogical mediation and the quality of interaction between lecturers and students, and cannot be reduced to the technical functionality of the tool [17, 1]. In this sense, AI does not replace the pedagogical relationship, but may enhance certain pedagogical functions when used as support for teaching practices intentionally oriented towards academic engagement.

Figure 1 synthesises the conceptual framework proposed in this article, visually organising the relational dimensions that guide the analysis and underpin the propositions presented in the following section. Rather than a merely descriptive representation, the figure seeks to make explicit the conceptual logic through which the quality of the pedagogical relationship may influence the satisfaction of basic psychological needs and, through this pathway, sustain academic engagement in technology-mediated educational contexts

Figure 1 - Conceptual framework of the relational dimensions of academic engagement in technology-mediated contexts (Relational Model of AI-Mediated Academic Engagement)



Source: compiled by the authors based on [14], [23], [17] and [3]

IV. PROPOSALS FOR DISCUSSION

Based on the theoretical and analytical framework developed, a set of conceptual propositions of a theoretical nature, without empirical testing, is presented below, concerning relational dimensions likely to influence academic engagement in higher education contexts mediated by technology and AI tools.

P1. Pedagogical practices grounded in the recognition of and attentive listening to students tend to foster academic engagement, insofar as they reinforce perceptions of being valued, supported, and legitimised in the learning process. However, this effect is not automatic: it depends on the authenticity, consistency, and

pedagogical translation of such practices into concrete forms of guidance, response, and support. When listening does not produce visible consequences in the learning experience, or when recognition is perceived as generic or merely formal, its potential to promote engagement may be limited [14, 3, 13].

P2. Pedagogically oriented feedback, particularly when formative, specific, and timely, tends to enhance academic engagement, as it reinforces perceptions of competence, supports self-regulation of learning, and sustains continued investment in academic tasks. In technology-mediated contexts, immediate or preliminary feedback generated by AI may strengthen this effect, provided that it remains articulated with lecturer mediation and is integrated into pedagogical practices that ensure interpretation, validation, and relational support throughout the learning process [10, 5, 17, 2].

P3. Pedagogical practices that combine academic challenge with appropriate support tend to stimulate persistence, cognitive effort, and deep learning, particularly when students are provided with clear guidance, understandable criteria, and support aligned with task demands. Under such conditions, academic challenge may be perceived not as a barrier, but as an opportunity for progression, fostering more autonomous and meaningful forms of engagement in learning [10, 5, 6, 11].

P4. The development of a sense of belonging and psychological safety within the educational context tends to promote participation, persistence, and meaningful learning, by creating conditions in which error, doubt, and challenge are integrated as legitimate components of the learning process [13, 17, 6].

P5. The integration of generative artificial intelligence tends to produce greater educational value when used as support for pedagogically framed cognitive and organisational tasks, such as the clarification of criteria, the generation of examples, support for the initial understanding of content, preliminary feedback, and study organisation. However, this value reveals limitations when processes requiring contextualised pedagogical judgement, critical evaluation, knowledge validation, relational support, and meaningful formative interaction are involved. In such cases, AI may function as a complementary resource, but not as a substitute for lecturer mediation [2, 1, 14].

Taken together, these propositions suggest that the integration of digital technologies and AI in higher education tends to yield more pedagogically meaningful outcomes when aligned with intentionally relational practices capable of supporting the satisfaction of students' basic psychological needs and, through this pathway, enhancing motivation, engagement, and active participation in the learning process.

V. DISCUSSION

The vignette suggests that academic engagement is, to a large extent, experienced as a relational phenomenon: students tend to participate more actively when they feel listened to, guided, and supported, without a reduction in academic challenge. This interpretation is consistent with approaches that place dialogue and the shared construction of meaning at the centre of learning [14], as well as with person-centred perspectives, which emphasise the role of empathy, acceptance, and authenticity in promoting participation and meaningful learning [17]. From a motivational standpoint, the relevance of lecturer support may be understood in terms of its contribution to the satisfaction of basic psychological needs—autonomy, competence, and relatedness—with implications for students' motivation and sustained engagement [10].

Within this framework, AI may function as an amplifier of effective pedagogical practices, for example by supporting the clarification of criteria, the generation of examples, the simulation of scenarios, the organisation of study, or the provision of feedback, provided that it is integrated into intentionally relational practices rather than used as a substitute for lecturer support and pedagogical dialogue [2]. The dimensions identified from the vignette—recognition and listening, dialogic feedback, supported challenge, sense of belonging, and technology as support—help to explain why technology alone rarely guarantees active participation and deep learning [3, 13].

However, it is important to acknowledge that the integration of AI in higher education may also generate significant pedagogical tensions. Among these are the risk of excessive automation of educational tasks, the potential weakening of interaction between lecturers and students, and the illusion of personalisation, when responses that appear tailored to the student do not correspond to genuinely relational pedagogical support [4, 19]. There is also the risk that intensive use of such tools may encourage a logic of rapid response and immediate problem-solving, at the expense of more demanding processes of reflection, uncertainty, and deep learning. In this sense, the pedagogical value of AI cannot be inferred from the technical sophistication of the tool itself, but

rather from how its use is framed within practices that preserve dialogue, listening, and lecturer mediation [18, 4].

Beyond the classroom, these issues also point to broader institutional implications. The pedagogically meaningful integration of AI in higher education requires investment in the pedagogical development of lecturers, not only in the technical use of tools, but also in their critical and relational application. It also requires institutional policies that frame the use of AI in an ethical and pedagogically oriented manner, avoiding purely instrumental or technocentric approaches. Finally, it entails rethinking curricular and organisational design in order to preserve spaces for human support, meaningful feedback, and pedagogical interaction, without which the innovative potential of technology is likely to lose its educational value [4, 18, 19].

The practical implications for teaching with AI may be synthesised into five pedagogical action axes, presented in Table 1.

Table 1 - Relational dimensions, contributions to academic engagement and pedagogical implications in AI-mediated higher education

Relational dimension	Contribution to academic engagement	Pedagogical implications for AI-mediated teaching
Recognition and listening	Encourages participation, trust and the student's sense of being valued	Promote active listening, openness to questions and attention to learning needs
Guiding feedback	Strengthens the perception of competence, self-regulation and continuous improvement	Provide clear criteria, actionable feedback and use AI to support clarification and revision
Challenge with support	Stimulates persistence, cognitive investment and deep learning	Propose demanding tasks with scaffolding, checkpoints and opportunities for revision or re-attempt
Sense of belonging	Reduces avoidance, reinforces psychological safety and sustains engagement	Create inclusive environments, normalise mistakes and promote safe conditions for participation
Technology as support	Expands pedagogical practices without replacing teacher mediation	Use AI for examples, simulations, drafts and process support, with human validation and mediation

Source: Compiled by the authors

Taken together, these themes suggest that the pedagogical integration of AI tends to be most effective when combined with practices that foster active listening, guidance, support in the face of challenges, and a sense of belonging. From this perspective, technology does not replace the pedagogical relationship, but can broaden its scope when used critically, intentionally and in a pedagogically situated manner. Without this relationship, technology scales tasks; it does not scale engagement.

VI. Conclusions

This article argues that the educational value of artificial intelligence in higher education depends not only on its technical capabilities, but above all on the relational conditions within which its use is pedagogically framed. Drawing on a theoretical and reflective analysis supported by a narrative vignette and linked to Dialogic Pedagogy, the Person-Centred Approach and Self-Determination Theory, it is argued that students' academic engagement is profoundly influenced by the quality of the pedagogical relationship. In this context, dimensions such as recognition and active listening, guiding feedback, supported challenge and a sense of belonging emerge as central conditions for meaningful learning, even in contexts increasingly mediated by technology.

The main contribution of this work lies in proposing a conceptual framework that places the pedagogical relationship at the centre of the debate on educational innovation involving artificial intelligence. Rather than discussing the adoption of tools, the article seeks to highlight that the educational value of technology depends on the pedagogical and relational conditions within which it is used. From this perspective, artificial intelligence can enhance certain pedagogical functions, but it does not replace teacher mediation or the relational dynamics that underpin academic engagement. By refocusing the debate on AI in higher education on the relational conditions

of learning, the article helps to shift the focus from technological innovation to the quality of the educational practices that frame its use.

It is important, however, to recognise that the growing integration of artificial intelligence into higher education also creates a significant tension: the potential to strengthen, but also to undermine, the relational conditions that underpin students' academic engagement. This tension justifies a deeper empirical exploration of the conceptual framework proposed here, by more systematically investigating the effects of AI use across different institutional contexts, modes of teaching and pedagogical practices. A promising avenue for such an in-depth exploration lies in the empirical operationalisation of the model proposed here, through the development of instruments that enable the assessment of dimensions such as recognition and listening, guiding feedback, supported challenge, a sense of belonging and the pedagogical use of AI, and analyse how these relate to students' academic engagement. Such development would enable the transformation of the present conceptual framework into an empirically testable line of research on the relational conditions of the educational value of artificial intelligence in higher education.

This article has certain limitations that should be acknowledged. As this is a theoretical-reflective study rather than an empirical investigation, the text does not aim to empirically test the proposed conceptual framework. Similarly, the fictional narrative vignette used throughout the article should be understood as an interpretative and heuristic device, intended to highlight relational dimensions that are often underestimated in the debate on AI in higher education, rather than as empirical evidence. In this sense, the propositions put forward should be read as conceptual guidelines to be explored in greater depth in future studies, using empirical strategies capable of exploring their relevance in different institutional contexts, modes of teaching and pedagogical practices.

Future studies may, in this regard, help to provide a clearer understanding of how technological innovation can be integrated with relational quality, whilst preserving the human dimension of the educational experience in an era of rapid digital transformation. The conceptual framework proposed here thus offers an analytical lens for understanding how the integration of artificial intelligence can be pedagogically guided by relational conditions capable of sustaining academic engagement in higher education. Beyond its theoretical contribution, it also serves as a useful reference for teachers and institutions seeking to integrate artificial intelligence in a pedagogically oriented manner, refocusing technological innovation on the relational conditions that underpin academic engagement. In the context of AI, the relationship is not merely a pedagogical option, but the condition that renders innovation pedagogically valuable.

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