

Beyond the clock: the challenge of autonomy and time management in distance learning

Abstract

This article explores time as a multidimensional pedagogical condition, moving beyond its conventional treatment as a neutral framework for organizing learning. Drawing on philosophical, psychological and educational perspectives, the article proposes a holistic understanding of time as an existential, relational and formative element in the learning process. Time is not just something we measure; we also experience, negotiate and internalize it as learners. This shapes our autonomy, identity and ability to self-regulate.

The study focuses on distance learning environments, where the absence of physical and institutional structures amplifies the learner's responsibility to manage time independently. In these contexts, effective time management is crucial and is closely linked to emotional resilience, cognitive flexibility, and metacognitive awareness. The article examines how digital platforms and artificial intelligence systems influence students' temporal experience, either by supporting personalized pacing or by imposing algorithmic constraints that risk undermining autonomy.

Methodologically, this is a conceptual and literature-based study that synthesizes recent research in educational theory, learning analytics and existential pedagogy. The article argues for a dehumanized approach to time in education that respects learners' temporal rhythms and promotes reflective engagement with the learning process.

Ultimately, the article calls for educational designs that treat time not as a constraint to be optimized, but as a pedagogical opportunity to cultivate autonomy, presence and meaningful learning.

Keywords: time perception, self-regulated learning, artificial intelligence in education, distance learning, educational autonomy

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Introduction

The concept of time is one of the most complex and timeless concerns of human thought, permeating philosophy, mythology, science, economics and education. In ancient Greek mythology, Time is personified as the god Cronus, father of Zeus, symbolising the destructive but also creative power of time.¹ In Egyptian cosmology, time is associated with Khepri, the god of rebirth and the cyclical nature of existence.² Similarly, in Chinese mythology, time is inextricably linked to the concepts of Tao and Yin-Yang, which express the flow and balance of the universe.³

The philosophical approach to time stretches back from Plato and Aristotle to Heidegger, Habermas, Castoriadis, and Bitsakis. Heidegger⁴ emphasises the existential dimension of time as the foundation of human authenticity, while Habermas⁵ places it within the context of social action and communication. Castoriadis⁶ highlights time as a creative component of the imaginary institution of society, and Bitsakis⁷ considers it to be a natural and historical phenomenon.

In business, time is a critical factor in strategy, productivity and innovation. Organizational theory treats it as a resource that must be managed effectively, with an emphasis on time flexibility and adaptability.⁸ Time management is linked to organizational culture, leadership and technological development.

In education, time takes on pedagogical significance as it concerns the pace of learning, the organization of teaching and the development of critical thinking. Educational research shows that students' perception of time affects their self-regulation and learning effectiveness.⁹ Furthermore, a historical and philosophical

understanding of time reinforces an interdisciplinary approach and humanistic education.

Time is not just a measure or a physical dimension; it is a vehicle for meaning, conflict, creation and transformation. Studying it reveals the complexity of the human experience and the need for a holistic approach to understanding it.

In this paper, we will explore

How is the concept of time understood and experienced by students in distance education, and what are the implications of this for learning and teaching?

What is the role of artificial intelligence in the development of self-regulation and learning autonomy, and how can it be applied in these areas?

How does Artificial Intelligence contribute to time management? And how does it enhance learning autonomy in distance education?

Methodological approach

The paper's methodological approach is theoretical and interpretative, with the aim of exploring the concept of time as a pedagogical condition in distance education. The aim of this bibliographic analysis is to synthesize a holistic framework for understanding time as a learning experience and as a field for the development of student autonomy. It draws on philosophical, pedagogical, and technological sources.

The selection of sources was based on criteria of topicality (2020–2025). It was also based on theoretical relevance and interdisciplinary

scope. Emphasis was placed on projects that approach time existentially, pedagogically and technologically, in order to highlight the complexity of the temporal experience in the context of distance learning.

The analysis follows an interpretative logic, prioritizing depth over generalization. The objective is not to draw sweeping generalizations, but rather to emphasize the concepts, tensions and subtle dynamics that shape the educational experience. These elements, despite being often unheard, have the power to significantly enhance the design of distance education and strengthen deeper forms of student autonomy, self-regulation, and engagement. By taking the time to understand these underlying issues, educators can create learning environments that respond to the real-life experiences of learners.

One such undercurrent is time, which has both pedagogical and existential dimensions. In distance education, time is not just an organizational factor; it becomes a condition of learning. It affects how students engage. It affects how students plan. It affects how students commit. It affects how students reflect. It affects how students persevere. It is not simply a schedule to be followed, but a rhythm to be experienced. These temporal conditions are woven into the very fabric of distance learning, often in subtle but profoundly meaningful ways.

Historically, time functioned as the silent infrastructure of education, with its rhythms and schedules shaping the learning process and establishing a foundation that was often overlooked. It was responsible for the organization of the day, the structuring of the lesson, and the regulation of its progression. Yet it remained invisible — it was not named, but it was felt. We experienced it in the ringing of the bell. We also experienced it in the predictable rhythm of the timetable. The pace of learning was set, at least formally, by external definitions of the beginning and end of each lesson, and these definitions also marked transitions. This traditional conception of time was stable, linear and universal. It was imposed from outside and taken for granted by everyone. Time was always in short supply and felt like it was suffocating.

The classroom embodied this perception, and the atmosphere within it was one of anticipation and excitement. It was a confined space, both physically and temporally. Students were physically present within its walls, but their inner mood, thoughts, feelings, energy levels and readiness to learn did not always keep pace with the predetermined schedule. In fact, they often found it difficult to do so. The structure of time in the classroom remained unaffected by these fluctuations. It required synchronization, regardless of individual differences.

In distance learning, this dimension of time is different. So is the perception of common organization. Time flexibility is introduced, allowing for asynchronous engagement, pausing and restarting, and learning in bursts or in prolonged immersion. While this flexibility can be liberating, it necessitates conscious planning, self-regulation, and personal commitment. Without external cues such as bells and boundaries, students must develop new strategies for pacing, motivation, self-regulation and autonomy. Time becomes a personal resource that must be managed and respected.

We are invited to redefine how we plan distance learning when we recognize time as a pedagogical and existential condition. It challenges us to think not only about what students learn, but also about when, how and under what time circumstances they learn it. In this way, we are moving towards an education that honors the complexity of the

human experience — an education that is not simply programmed, but experienced qualitatively and certainly differently.

Within this framework, time functioned as an externally imposed mechanism, as reflected in timetables and schedules. However, distance learning has overturned this relationship. Here, time is not imposed. It is experienced. Students must manage it as a personal experience and internal condition that requires awareness and responsibility, rather than as an objective unit of measurement. ... At this point, Heidegger's phenomenological approach in *Being and Time* (1962) becomes particularly significant. Time is not something we "have"; it is something in which we exist. Authentic existence presupposes a conscious relationship with the past, present and future. When freed from external constraints, the educational process becomes an existential experience in which students are called upon to give meaning to their time and make it their own.

The challenge of self-regulation and autonomy is precisely where this comes into play, and this is something that must be taken into account. Time management in distance learning is not just a technical skill; it is an act of internal discipline, self-awareness and personal responsibility. While distance education provides flexibility and accessibility, it underscores the significance of effective time management, as Zimmerman and Schunk⁹ emphasize. This can be achieved through goal setting, self-monitoring and personal control.

Garrison¹⁰ emphasizes that successful participation in digital learning environments depends on students' ability to organize their time consciously. Academic performance is directly linked to time management behaviors, as demonstrated by George, George and Van Horn.¹¹ However, Zimmerman⁹ contends that autonomy cannot be achieved through standard teaching practices. Instead, it is a deep pedagogical and psychological process that requires emotional maturity and intrinsic motivation.

Emotional difficulties are often the reason why people procrastinate when they are studying away from home, as Pychyl and Sirois¹² show. This is not just a lack of organization. Furthermore, while technology can be useful, it can also reinforce isolation and weaken the sense of time as a shared experience.¹³

In this context, autonomy is not a given and this is something that must be considered. It is a dynamic skill built through reflection, pedagogical guidance, and supportive learning environments. Time, as an internal experience and existential challenge, is not merely a tool for organization; it plays a key role in shaping the student's educational identity.

The role of time perception in the development of self-regulation and learning autonomy

The way in which time is perceived is a key factor in the development of self-regulation and learning autonomy, especially in the context of distance learning, where the absence of physical presence and predetermined time frames shifts the responsibility for learning to the student themselves. Time perception refers to the subjective experience or awareness of the flow of time. It also refers to the duration of events. In an educational setting, it relates to how students perceive, organize and interpret the time they dedicate to learning. This is not merely a matter of measuring or monitoring time; it is an internal process influenced by cognitive, emotional, and environmental factors. The Encyclopaedia¹⁴ Britannica states that time perception is the experience of the succession and duration of events and is a fundamental element of human consciousness. At the same

time, Fraisse¹⁵ argues that time perception is a psychological dimension shaped by the interaction between internal cognitive mechanisms and external stimuli. The perception of time is not constant, but varies depending on the environment, activity and psychological state of the individual. Time management is not just an organizational skill, but an existential act requiring self-awareness, internal discipline and the ability to make meaning of the learning experience. The flexibility offered by distance learning, although attractive, comes with the challenge of autonomy, as students are called upon to take an active role in managing their time and organizing their learning path.¹⁶

The development of metacognitive skills, such as self-monitoring and self-assessment of progress based on goal setting,⁹ is essential for autonomy in learning, which is a complex and dynamic process. Time perception is an internal regulator that affects two things. First, it determines when and how learning will take place. Second, it determines whether the student is able to respond consistently and responsibly to the demands of the educational environment. The flexibility of distance learning allows you to juggle studies with other commitments, but it's crucial to stay on top of your game. The absence of structured time constraints can result in delays or even dropping out.¹⁷

Time perception directly affects academic performance. Research has demonstrated that students who implement effective time management strategies, such as creating schedules and setting priorities, tend to achieve higher grades and complete their assignments within the specified.¹⁸ Conversely, procrastination, exacerbated by the absence of social pressure and isolation, has been documented as a negative factor that reduces study time and increases stress levels.¹²

The quality of interaction between students and instructors is also affected by the time dimension. Asynchronous communication is flexible, but it can cause delays in information exchange and reduce the sense of belonging. Synchronous interaction via video calls provides immediate feedback and enhances social connection, but it is not always feasible for all students due to time constraints.¹⁰

Garrison's¹⁰ theoretical framework of Teaching Presence offers useful guidelines for enhancing time perception and self-regulation. In order to support the development of autonomy and reduce procrastination, the educational process should be designed to include structured timelines, clear instructions and regular feedback. Time perception is not just a cognitive function; it is also a pedagogical and psychological condition that influences how students relate to learning, themselves, and time as an experience.

Artificial intelligence is integrated as a pedagogical presence in the temporal autonomy of distance education

Time in the educational experience has always been an invisible but decisive condition, and this is something that should always be considered. In traditional teaching, it was embodied through bells, timetables and common time frames, acting as an external regulator of the learning process. Distance education, however, breaks down this externality and changes time into an internal experience. This existential challenge requires awareness, responsibility and self-regulation. As previously mentioned, Heidegger's⁴ approach, which is based on the idea of phenomenology, is a useful way of understanding time. This is because it sees time not as an objective unit, but as a field of existence and meaning.

In this changing landscape, the perception of time plays a central role. The sense of duration is not the only factor at play; the

conscious organization of the learning experience is also important. Time perception is an internal regulator that affects how responsible and consistent a student is when interacting with the educational environment, as well as the quality of that interaction. The flexibility offered by distance learning comes with a caveat: self-regulation. The absence of external time constraints can lead to procrastination, isolation, and ultimately, dropping out.

This is where Artificial Intelligence (AI) comes in, not as a technological supervisor but as an educational companion. Modern AI applications, such as adaptive learning environments and intelligent tutoring systems, provide personalized guidance, increased metacognitive awareness and flexible time management. AI uses learning analytics dashboards to mirror students' time behavior, enhancing self-monitoring and internal discipline. Rather than imposing time, these systems analyse it, predict it and re-propose it based on what the students need and are capable of.

The contribution of AI to enhancing learning autonomy is multidimensional, with many different factors involved. From providing personalized feedback to predicting the risk of dropping out, AI acts as an embodied teaching presence, fostering a sense of belonging and reducing procrastination. However, integration of these technologies requires careful consideration to ensure it does not result in cognitive overload or a diminution of the human aspect of learning.

When integrated with respect for the student's educational identity, technology does not replace autonomy — it cultivates it. It does not impose time, but rather transforms it into a tool for meaning-making. It does not function as an external mechanism, but rather as an internal companion in the existential experience of learning.

Time is not just an organizational tool in distance education; it is also existential and pedagogical. This means it requires internal discipline, self-awareness and meaning-making. Transitioning from the externally imposed temporality of the traditional classroom to an experiential perception of time transforms students from passive recipients into active regulators of their learning journey. The way in which time is perceived as an internal regulator affects consistency, responsibility and the quality of learning. Distance learning, because it is asynchronous, makes it important to self-regulate and manage your time strategically.

In this context, AI does not function as an external supervisor, but as an embodied pedagogical presence that converses with the student's internal temporality. AI can offer personalized guidance, dynamic feedback and self-monitoring tools through applications such as intelligent tutoring systems and adaptive learning environments.¹⁹ Learning Analytics (LA) dashboards improve visibility of the learning process, enabling students to reflect on their decisions and adapt their approach.²⁰ LA does not dictate how long a student should study; it adapts to each individual's needs and abilities by analyzing and redefining time accordingly.

At the same time, LA helps reduce procrastination, which can be beneficial for those who struggle to focus on tasks in a timely manner. The identification of patterns of delay is the key to achieving this. It also suggests targeted interventions. LA promotes a sense of belonging through personalized interaction, mitigating the isolation often experienced by distance learners. It is essential for fostering autonomy in learning, particularly in developing metacognitive abilities such as setting goals and assessing progress.

However, integrating artificial intelligence into the educational process requires pedagogical sensitivity. Technology should serve to

enhance the human presence. It should not replace it. Autonomy is not innate, but a dynamic ability developed through human–machine interaction and recognition of each unique learning path.

In summary, artificial intelligence can serve as a companion in the existential experience of learning, enhancing time management and the development of autonomy in learning. When respectfully integrated into the learner's pedagogical identity, AI cultivates internal discipline rather than replacing it.

This is achieved by identifying patterns of delay and suggesting targeted interventions. It fosters a sense of belonging through personalized interaction, alleviating the isolation frequently experienced in distance learning. Its contribution to the development of metacognitive skills, such as goal setting and progress assessment, is vital for enhancing learning autonomy.

However, integrating AI into the educational process requires sensitivity to pedagogical approaches. Technology should enhance, not replace, human presence. Autonomy is not innate, but rather a dynamic ability that develops through human–machine interaction and recognition of the uniqueness of each learning path.

In summary, AI can serve as a companion in the existential experience of learning, enhancing time self-regulation and autonomy in learning development.

Conclusion

Time is not just a measure; it is an experience. In distance education, this experience takes on an existential and pedagogical dimension, which makes it a unique learning environment. Students are not merely required to attend a Programme; they must also manage their time as part of their identity. When educational processes are not subject to external time constraints, they transform into realms of significance, accountability and self-restraint.

Time perception — the internal sense of duration and flow — serves as the foundation for self-regulation. It is not a neutral cognitive function, but a psychological and pedagogical condition that influences academic performance, psychological resilience and the quality of learning. Autonomy is not something that just happens; it is built through metacognitive skills such as goal setting, self-monitoring, and progress evaluation, but also through emotional maturity and reflection.

Distance learning offers flexibility, but this comes with the challenge of self-management. Students must juggle their studies with other commitments and make their learning experience meaningful by being consistent and responsible. The absence of external time constraints can reinforce procrastination and isolation, making internal discipline imperative.

In this context, AI does not appear as a technological supervisor, but rather as an educational companion. Through applications such as intelligent tutoring systems and adaptive learning environments, AI can provide personalized guidance, dynamic feedback and self-monitoring tools.¹⁹ Dashboards that provide insight into learning analytics make the learning process easier to see, enabling students to think about their choices and change their.²⁰

AI does not impose time; it mirrors, analyzes, and redefines it based on the student's needs and capabilities. It helps reduce procrastination () by identifying patterns of delay and suggesting targeted interventions. It enhances the sense of belonging through personalized interaction, reducing the isolation that often accompanies distance learning. Its

contribution to the development of metacognitive skills is crucial for enhancing learning autonomy.

However, integrating AI into the educational process requires a sensitive approach to pedagogy. Technology is not neutral; it is pedagogically charged. The way it is integrated will determine whether it enhances or weakens the educational experience. Finding the right balance between technological support and human guidance is critical to fostering autonomy.

To sum up, AI can be a partner in the process of learning, improving time management skills and the growth of independent learning. When integrated with respect for the student's pedagogical identity, it cultivates internal discipline rather than replacing it.

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Conflicts of interest

There is no conflicts of interest.

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