A Transversal Pedagogical Model for Integrating Artificial Intelligence and Digital Technologies in Active Learning

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Abstract. The integration of digital technologies and artificial intelligence applications in education highlights the need for coherent pedagogical models capable of moving beyond the fragmented use of digital tools and supporting active and transferable learning scenarios across different disciplines. This paper proposes a transversal pedagogical model for integrating AI-supported environments into active learning activities, developed through the generalization of pedagogical structures and instructional approaches implemented in various educational contexts. The model incorporates pedagogical mechanisms such as activation, exploration, sequencing, application, collaboration, reflection, and feedback, emphasizing the role of digital technologies and AI-assisted applications in supporting and structuring the learning process. Within this framework, technology is approached as a pedagogical support for exploration, creative expression, collaboration, and the adaptation of learning situations, without diminishing the teacher's role in mediating educational experiences. The paper also highlights the importance of accessibility and adaptive learning through multimodal support, sequential organization of activities, and flexible learning pathways in digital and blended-learning environments.

Keywords: artificial intelligence, active learning, digital technologies, pedagogical integration, blended learning.

1 Introduction

The growing integration of digital technologies and artificial intelligence applications in education highlights the need for pedagogical models capable of moving beyond the fragmented use of digital tools. Across different disciplines, AI-supported environments can support active learning processes centered on exploration, reflection, collaboration, and feedback. Their educational value depends on integration within a coherent pedagogical approach. The educational value of AI-assisted applications does not depend exclusively on technological capabilities. It also depends on how these tools are integrated into learning activities that support participation, reflection, and adaptation to students' needs.

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This paper proposes a transversal pedagogical model for integrating artificial intelligence and digital technologies into active learning scenarios. The model was developed through the generalization of instructional approaches designed and applied in different educational contexts. It incorporates instructional structures such as activation, sequencing, guided exploration, application, and reflection, emphasizing their transferability across disciplinary contexts and blended-learning environments. Within the proposed framework, digital technologies and AI-assisted applications support learning organization and student engagement. They also contribute to adapting instructional activities to different educational contexts.

The main contribution of the paper is the conceptualization of a transversal pedagogical model that enables the transfer of instructional and organizational mechanisms for active learning across different disciplinary and digital contexts. The model was developed through the comparative analysis and generalization of teaching scenarios designed in the fields of music education, visual arts education, and geography, with the aim of identifying common organizational principles transferable to digitally supported learning activities.

The paper is organized into six sections. The first section introduces the educational context of AI and digital technology integration and outlines the need for a transversal pedagogical model. The second section discusses the theoretical foundations of AI integration in active learning. The third section examines the transversal structure of the instructional scenario and the learning processes that support classroom interactions in digital learning environments. The fourth section presents the implementation framework of the transversal pedagogical approach. The fifth section discusses practical applications of AI-supported digital platforms in educational activities. The final section presents the conclusions.

The proposed framework has a conceptual and transferable character. It draws on the comparative analysis of instructional scenarios from geography, music education, and visual arts education, focusing on the identification of transferable pedagogical mechanisms and recurring instructional structures.

2 Theoretical Foundations of AI Integration in Active Learning

The integration of digital technologies and artificial intelligence-assisted applications in education requires reference to pedagogical perspectives that support active learning, the staged organization of instructional processes, and the adaptation of instruction in digitally supported educational contexts.

2.1 Active Learning in Digital Educational Environments

In digital learning contexts, active learning involves students' engagement in activities based on exploration, reflection, application, and collaboration, shifting the focus from the simple reception of information toward active participation in knowledge construction. Digital technologies become pedagogically relevant when they support activities that encourage students to express opinions, formulate questions, establish connections,

and apply knowledge in different contexts. This approach is supported both by Lev Vygotsky's social constructivist perspectives on learning [10] and by the active learning approaches developed by Charles Bonwell and James Eison [1], which emphasize the role of participation and reflection in the learning process.

In line with these perspectives, the analyzed instructional scenarios aim to engage students in exploration and interpretation activities developed through interactive digital contexts. In the analyzed lessons, students express opinions, compare perspectives, and create individual or collaborative learning artifacts using digital resources functionally integrated into the learning process.

In digitalized educational environments, digital technologies facilitate flexible and interactive learning activities. These activities support a flexible learning pace and the diversification of participation modes. From this perspective, technology integration does not simply involve the use of digital tools, but the reconfiguration of learning pathways and the progressive development of instructional activities. OECD [7] research on education in digital environments highlights the importance of interaction, reflection, and active participation in developing competencies and creating meaningful educational experiences for students. Similarly, the European DigCompEdu framework [8] emphasizes the teacher's role in designing and coordinating digitally supported learning scenarios within a student-centered approach focused on developing learner autonomy.

In this context, active learning functions as a pedagogical reference point for the integration of digital technologies and AI-assisted applications through situations that value exploration, dialogue, collaboration, and reflection on one's own learning process.

2.2 Artificial Intelligence and Digital Technologies as Pedagogical Support

The integration of AI-assisted applications in education becomes pedagogically relevant when these contribute to the organization of exploration activities, feedback, and the adaptation of learning pathways. In this sense, digital technologies and AI applications are not intended to substitute the teacher. Instead, they support the coordination and organization of learning activities in relation to pedagogical objectives. Similar perspectives are highlighted by Rose Luckin and Wayne Holmes [4,6], who emphasize that the educational value of artificial intelligence depends on the ways in which it is integrated into instructional scenarios and on the teacher's ability to mediate the learning process.

In this context, the teacher's role remains essential in mediating classroom interactions and ensuring the functional integration of digital technologies in relation to pedagogical objectives.

In the analyzed instructional scenarios related to music education, visual arts education, and geography, the use of digital technologies aims to facilitate active participation and the progressive organization of learning situations. The digital tools integrated into the instructional scenarios support content exploration, provide immediate feedback, and create opportunities for expression and collaboration. For example, interac-

tive applications used in polling or reflection activities allow the use of students' responses in real time, supporting dialogue, collaborative interaction, and reflection during the lesson.

Conversational AI applications can support inquiry-based activities by facilitating reflection and exploratory dialogue. In creative learning contexts, generative AI tools may encourage visual experimentation and idea development. Adaptive systems can also contribute to differentiated learning pathways through immediate feedback and flexible guidance.

At the same time, the integration of applications with AI-assisted functionalities highlights the possibility of using AI as support for exploration and creative expression without substituting students' involvement. In digital drawing activities, for instance, the application generates graphic suggestions based on students' sketches, supporting visual experimentation and the development of artistic expressiveness within a flexible digital environment.

From a pedagogical perspective, the effectiveness of digital technologies and AI applications depends on their functional integration into the structure of the lesson. The use of technology exclusively as technical or decorative enhancement reduces the pedagogical impact of learning activities and limits students' active participation. UNESCO documents on AI [9] in education emphasize the need for a human-centered approach in which technology supports learning processes without diminishing the teacher's role in guiding and coordinating instructional activities.

AI-assisted applications can support teachers in organizing and adapting instructional processes, facilitating more flexible lessons and responding to students' various needs while maintaining the teacher's central role in guiding and mediating the educational process.

2.3 Pedagogical Design in Blended-Learning Environments

In blended-learning contexts, pedagogical design involves the coherent organization of activities developed in digital environments and face-to-face settings so that they function complementarily in facilitating active learning. In this framework, the digital lesson does not represent a simple transfer of content into an online environment, but a progressively structured learning scenario integrating activation, exploration, application, reflection, and feedback activities.

Current blended-learning models highlight the importance of the staged development of learning situations and the coordination of resources and interactions across different environments. The concept of pedagogical orchestration, developed by Pierre Dillenbourg [2], emphasizes the teacher's role in designing and guiding instructional processes through the management of interactions, resources, and learning pace. Similarly, the *Community of Inquiry model* proposed by Randy Garrison [3] highlights the relationship between pedagogical presence, social interaction, and cognitive reflection in blended-learning environments.

In the analyzed instructional scenarios, the organization of activities aims to progressively structure learning pathways and coherently integrate digital resources in relation to lesson objectives. Activities are organized modularly and include distinct stages of

activation, exploration, practice, application, and reflection, developed through sequencing and guidance mechanisms. The selected examples highlight the transferable character of the pedagogical model across different disciplinary scenarios, valuing auditory exploration and creativity in music, visual expressiveness in visual arts education, and spatial exploration and cause–effect analysis in geography. Within this framework, integrative platforms and digital applications contribute to the coherent development of learning pathways and the coordination of activities in blended-learning contexts.

3 The Transversal Model for Instructional Scenario Design

The proposed model was developed through the comparative analysis and generalization of instructional scenarios designed in different disciplinary contexts, with the aim of identifying recurrent pedagogical mechanisms transferable to digitally supported learning activities.

In this paper, the transversal pedagogical model represents the conceptual structure guiding AI-supported learning activities, while instructional scenarios illustrate its implementation across different disciplinary contexts.

3.1 Principles of the Transversal Model

The proposed transversal model aims to support the coherent integration of digital technologies and artificial intelligence-assisted applications into active learning scenarios adaptable to different disciplinary activities. The model was developed through the generalization of instructional structures designed and adapted in various educational and disciplinary contexts, highlighting the existence of common organizational principles that can support learning processes in digital and blended-learning environments.

The transversal model draws on the principles of active learning and socio-constructivist approaches by developing activities centered on exploration, collaboration, reflection, and the progressive application of knowledge [1,10]. Within this framework, digital technologies and AI-assisted applications are functionally integrated in relation to pedagogical objectives and the specific nature of learning activities, without substituting the teacher's role in organizing and mediating the educational process [4,6].

Within the transversal model, digital technologies and AI-assisted applications do not function independently of teacher intervention. Instead, they are integrated as support for coordinating instructional processes, guiding learning pathways, and sustaining student participation. The teacher maintains the role of pedagogical mediator of interactions and learning experiences, adapting activities to students' characteristics and instructional objectives.

The transversal model is based on five main principles:

- the staged organization of learning activities;
- the functional integration of digital technologies and AI applications;
- students' active and collaborative participation;
- reflection and continuous feedback;
- accessibility and the adaptation of classroom interactions.

The staged development of learning activities allows the coherent coordination of learning pathways and the integration of different types of activities and digital resources in relation to pedagogical objectives. From this perspective, the model incorporates the principles of pedagogical orchestration through the development and adaptation of learning activities in digital and blended-learning environments [2].

Within the model, digital technologies and AI-assisted applications support activities focused on exploration, analysis, creative expression, and collaboration, adaptable to different disciplinary situations. The analyzed examples highlight the transferability of these pedagogical mechanisms across activities that value musical expressiveness, visual representation, or spatial exploration, without limiting the model to these contexts.

A central element of the model is the integration of accessibility and learning adaptation. Within the proposed framework, accessibility is approached as a mechanism that supports participation and understanding for diverse categories of students through multimodal support, flexible learning resources, the possibility of revisiting learning stages, and the adaptation of learning pace. Accessibility is therefore not limited to special educational contexts. More broadly, it refers to the design of flexible learning experiences capable of supporting different levels of understanding and participation.

Within the transversal model, digital technologies support exploration, collaboration, and feedback activities. AI-assisted applications may facilitate adaptive instructional processes and creative tasks. Their educational value depends on pedagogical integration and instructional coherence.

From this perspective, the model aims not only to ensure the functional integration of digital technologies and AI applications, but also to support students' active and visible participation in the learning process.

The pedagogical principles presented above are reflected in the transversal organization of learning activities and in the integration of digital technologies and AI-assisted applications into instructional scenarios. Beyond disciplinary specificity, the model incorporates common organizational principles adaptable to different educational scenarios and various types of learning activities.

Table 1 summarizes the relationship between the pedagogical principles underlying the transversal model, their functions in organizing instructional activities, and examples of implementation in digitalized educational environments.

Table 1. Pedagogical principles and operationalization mechanisms within the transversal model.

Pedagogical principle	**Function within the transversal model**	**Examples of implementation across different disciplinary contexts**
Active exploration	Activating prior experience and stimulating curiosity	Auditory exploration, visual exploration, spatial exploration

Discovery learning	Progressive construction of knowledge	Identifying relationships, formulating conclusions, interpreting information
Active learning	Engaging students in applied tasks	Interactive activities, product creation, task-solving activities
Experiential learning	Learning through action and experimentation	Manipulation of digital resources, simulation, experimentation
Collaborative learning	Knowledge construction through interaction	Collaborative activities, peer feedback, collective reflection
Reflection and feedback	Reflection and awareness of the learning process	Self-assessment, immediate feedback, reflection on activities
Formative assessment	Monitoring progress and adapting activities	Interactive quizzes, digital feedback, consolidation activities
Accessibility and adaptation	Supporting participation and flexible learning	Self-paced learning, multimodal support, revisiting learning stages

The relationships summarized in the table highlight the flexible and transferable character of the transversal model through the possibility of adapting the same pedagogical mechanisms across different disciplinary and educational contexts.

The integration of AI in education becomes pedagogically relevant when technology contributes to supporting engagement, reflection, and the flexibilization of learning activities without diminishing the teacher's responsibility in guiding and coordinating the educational process.

3.2 The Transversal Structure of the Instructional Scenario

The transversal structure of the instructional scenario is organized around an integrative platform that functions as a digital learning environment and as a framework for coordinating the learning process. Within the proposed model, the platform supports resource management, the integration of digital and AI-assisted applications, the coordination of lesson stages, and the facilitation of interaction between students and teachers. From this perspective, the role of technology is not limited to content delivery, but contributes to structuring and coordinating learning pathways in blended-learning environments [3,5].

In this context, integrated digital platforms may support the coordination and sequencing of learning activities within blended-learning environments.

Platforms such as LIVRESQ may support the sequencing of learning activities, the integration of multimodal resources, and the coordination of AI-assisted and interactive applications within a coherent instructional pathway.

Current trends highlight the progressive integration of AI-assisted functionalities into digital educational platforms, supporting resource organization, content generation, feedback, and the adaptation of learning activities.

Figure 1 illustrates the transversal organization of the model and the relationship between the main stages of the instructional scenario, accessibility mechanisms, and the competencies targeted through learning activities.

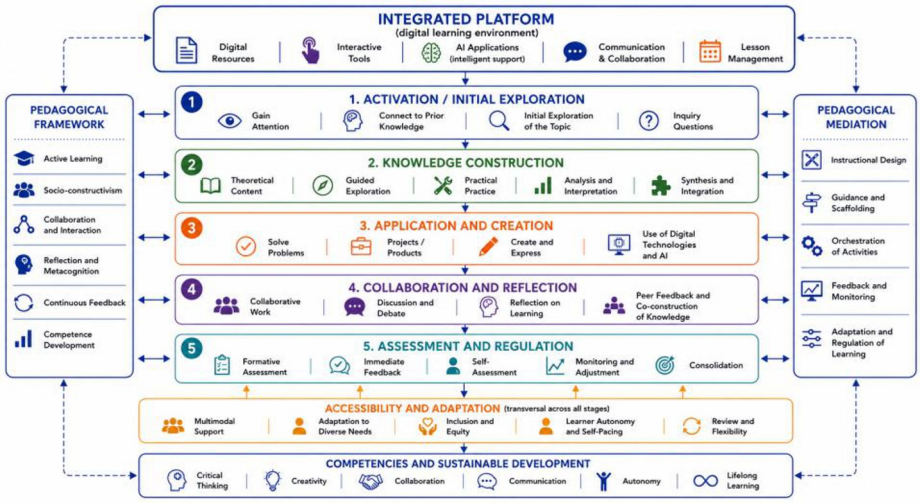

Fig. 1. Transversal model for instructional scenario design in digitalized and AI-assisted contexts.

The first stage of the model consists of activation and initial exploration, aimed at capturing students' attention, stimulating curiosity, and connecting learning activities with prior experiences. Initial exploration activities support the formulation of inquiry questions and introduce students to the lesson topic through interactive activities and digital resources adapted to the disciplinary context.

The staged organization and sequencing of learning activities contribute to the progressive guidance of students and to the adaptation of activities to different participation rhythms. In digital and blended-learning environments, this structure allows the revisiting of learning stages, the review of content, and the monitoring of progress within a coherent learning framework.

The second stage focuses on knowledge construction through the integration of theoretical content with guided exploration, analysis, interpretation, and practical activities. At this stage, digital technologies and interactive applications support the progressive development of learning activities and diversify access to information through textual, visual, audio, and interactive resources.

The application and creation stage emphasizes students' engagement in task-solving activities, product development, and creative expression. Depending on the disciplinary context, activities may include musical exploration, visual creation, spatial interpretation, or the development of individual and collaborative digital products. Within this framework, digital applications and AI-assisted tools function as support for exploration, expression, and the organization of practical activities [6].

For example, in visual arts activities, applications such as AutoDraw may support creative experimentation by generating graphic suggestions based on students' sketches. In this context, AI supports visual exploration and expression, while the teacher guides the learning process and the interpretation of creative outcomes.

Collaboration and reflection represent a transversal stage of the model, oriented toward dialogue, the exchange of ideas, and the analysis of students' own learning processes. Collaborative activities and feedback mechanisms facilitate the co-construction of knowledge and the development of reflection on both learning activities and the products created, in accordance with the principles of collaborative learning and metacognitive reflection.

The final stage of the model focuses on the evaluation and adaptation of learning activities through formative assessment, immediate feedback, self-assessment, and consolidation activities. Digital technologies contribute to monitoring progress and adapting learning activities in relation to students' pace and learning needs.

A transversal component of the entire model is represented by the accessibility and adaptation of learning activities. Multimodal support, flexible learning resources, the possibility of revisiting learning stages, and the differentiated organization of activities contribute to fostering autonomy and creating inclusive and adaptable learning situations [8,9].

Figure 2 highlights the dimension of teacher guidance and the teacher's role in the implementation of the transversal model. From this perspective, the teacher designs and sequences learning activities, coordinates interactions, and adapts the instructional pathway according to the evolution of activities and students' needs. Thus, the effectiveness of integrating digital technologies and AI-assisted applications depends on the coherence of pedagogical design and on the teacher's ability to organize and coordinate learning experiences in diverse educational contexts [2,5].

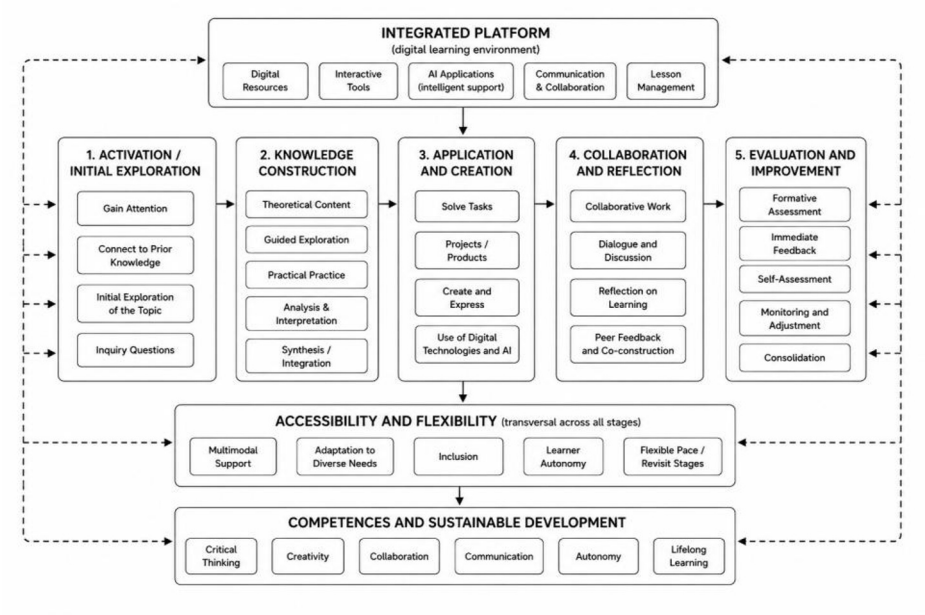

Fig. 2. Pedagogical mediation in the implementation of the transversal model.

Within the transversal model, the teacher does not function exclusively as a provider of information, but as a pedagogical mediator of learning experiences. Through the organization and sequencing of activities, the coordination of interactions, and the use of feedback, the teacher contributes to supporting student participation and to creating a safe and participatory educational climate in digital and blended-learning environments.

The organization of collaborative activities and feedback mechanisms aims to create an educational climate that encourages student participation and expression in a safe and non-evaluative environment. The teacher's role is to mediate interactions and organize activities that encourage students to express opinions, explore ideas, and engage in creative expression without fear of error or negative exposure. The use of interactive digital tools can contribute to varied forms of participation modes and support the involvement of students with different levels of confidence and experience.

From this perspective, the proposed transversal model can be adapted and implemented across different disciplinary contexts through the functional integration of digital technologies and AI-assisted applications in relation to pedagogical objectives. The following section analyzes ways of applying the model in learning activities developed for different educational situations.

4 Implementation of the Model through Digital Learning Environments

The implementation of the transversal model focuses on the functional integration of digital technologies and AI-assisted applications into activities centered on exploration, practical application, collaboration, and reflection. Figure 3 summarizes the relationship between these mechanisms across different learning situations.

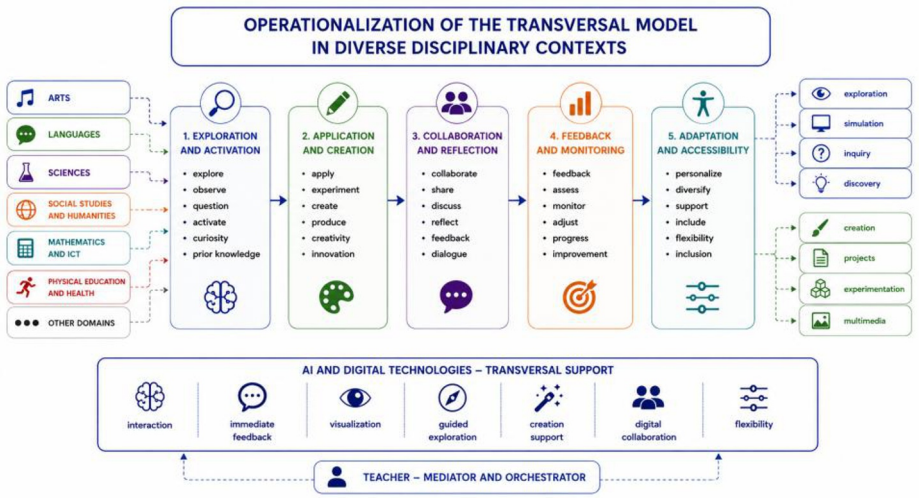

Fig. 3. Implementation of the transversal model across different disciplinary contexts.

Figure 3 highlights the relationship between recurrent learning processes adaptable to different disciplines and learning situations. The first stage focuses on cognitive activation and initial exploration through inquiry-based and guided exploration activities. At this stage, digital technologies support cognitive mediation and active participation. AI chat-based systems may guide exploratory activities through questioning and reflective prompts. Generative applications can support multimodal expression and creative experimentation.

The application and creation stage emphasizes students' engagement in practical and collaborative activities oriented toward expression, experimentation, and the development of their own products. Beyond disciplinary specificity, the model supports the development of representation, application, and the use of knowledge in diverse learning situations.

The collaboration and reflection component encourages the exchange of ideas, feedback, and the analysis of completed activities. Within this framework, digital platforms enable student participation and the visibility of both individual and collaborative contributions, supporting reflection on the learning process and valuing active participation. AI-assisted feedback systems may support self-assessment through immediate responses and reflective prompts.

In this context, immediate feedback and the visibility of progress contribute to coordinating learning activities and sustaining students' active participation.

Furthermore, the dimension of adaptation and accessibility contributes to supporting flexible learning pathways through multimodal support, self-paced learning, and the possibility of revisiting learning stages. The modular and staged organization of activities, together with self-assessment mechanisms, allows the adaptation of instructional pathways to different levels and rhythms of participation. It also supports students' progressive guidance throughout learning activities [8,9].

Within this framework, digital technologies and AI-assisted applications function as support for coordinating learning activities without diminishing the teacher's role in the pedagogical mediation of the educational process.

In creative learning contexts, AI-assisted applications may support visual exploration, experimentation, and multimodal expression by providing adaptive suggestions and facilitating students' engagement in creative activities.

The practical implementation of these transversal pedagogical structures can be illustrated through AI-supported digital platforms integrated into interdisciplinary learning activities.

5 Practical Applications of AI-Supported Learning Activities

5.1 Integration of AI into educational resources

In recent years, the integration of AI into educational and productivity applications has grown significantly, having a major impact on the way users create, process, and distribute information. Applications such as LIVRESQ, Canva, Kahoot! and Google Workspace (Docs, Sheets and Slides) are just a few that use various forms of AI to automate processes, generate content, and improve the user experience [11,12].

LIVRESQ is an educational platform used for creating interactive digital lessons and e-learning resources. It supports digital lesson creators with AI features such as:

- automatic organization of content,
- suggestions for structuring lessons,
- adaptation of materials based on user behavior (learning analytics), and integration with multimedia content.

The AI used is less generative and more oriented toward Learning Analytics (analysis of user behavior), as well as algorithms trained for content structuring.

More specifically, the integration of AI in LIVRESQ is reflected in: writing an entire project using a guidance assistant, generating multimedia content (audio and video) and generating specific content tailored to the proposed lesson.

The integration of AI through LIVRESQ supports the development of interactive digital learning resources and streamlines the creation of educational materials. However, its AI functionalities are limited compared to other platforms, largely due to a strong dependence on user input.

Canva is a graphic design platform that integrates AI for generating visual and textual content. Its AI features include:

- creating interactive applications,
- automatic image generation (text-to-image),
- generation of texts and presentations,
- automatic image editing (background remover),
- design suggestions.

The use of AI through Canva reduces the time required to create educational materials, improves accessibility for users without prior experience, and enhances creativity.

Kahoot! is an educational platform based on gamification, used for creating interactive quizzes. The AI features implemented within the application include:

- automatic question generation,
- transforming documents into quizzes,
- automatic translation,
- text recognition from images,
- answer suggestions through the use of assessment-generation algorithms.

The presence of AI in Kahoot! brings notable advantages, such as:

- increasing student engagement,
- reducing teachers' time,
- providing rapid feedback.

However, there are also some limitations imposed by the integration of AI into the platform, including the generation of questions that may sometimes seem superficial and the need for human validation.

Google Workspace, represented by the suite Google Docs, Sheets and Slides, consists of cloud-based applications for word processing, spreadsheets, and presentations that integrate artificial intelligence functionalities to assist users in creation, analysis, and collaboration.

Among the most important AI features are:

- content generation ("Help me write," "Help me organize," "Help me visualize"),
- grammar correction and stylistic suggestions,
- automatic translation and text rephrasing,
- automatic document summarization,
- data analysis and interpretation (in Sheets),
- generation of presentation structures (in Slides).

For the purpose of integrating the AI component, Google Workspace uses:

- conversational AI (Gemini),
- Transformer-based models,
- Natural Language Processing (NLP),
- contextual analysis and probabilistic content prediction.

The advantages of using AI are notable: it increases user productivity, it facilitates writing, data analysis, and information presentation and it enables real-time collaboration assisted by AI.

The main limitations include issues related to data privacy and the risk of excessive dependence on automation.

In conclusion, the integration of artificial intelligence into applications such as LIVRESQ, Canva, Kahoot! and Google Docs demonstrates the digital transformation of education. AI enables the automation of repetitive tasks, content generation, and the personalization of the user experience.

However, the use of AI also involves challenges, such as the accuracy of information, ethical considerations, and dependence on technology. Therefore, the role of the user remains essential in validating and interpreting the results generated by AI.

5.2 Using AI in the assessment process

From the perspective of AI integration in the assessment process, a comparison was conducted between several widely used educational platforms. Table 2 summarizes the main assessment functionalities and AI-supported features identified across these platforms.

Table 2. AI in the assessment process.

Feature	LIVRESQ	Google Forms	Quizizz (Wayground)
Assessment method	Assessment based on teacher-created items, with structured feedback integrated into interactive lessons	Automated assessment based on predefined correct answers (quiz scoring)	Gamified assessment through interactive quizzes with real-time scoring
Use of AI	Mainly learning analytics (tracking user progress and interaction) – it is Limited	Automation of grading and data organization, without direct generative AI – it is Low	AI used for question generation, content suggestions, and performance analysis – it is Moderate–high
Feedback provided	Predefined feedback integrated into lesson structure, customizable by the author	Basic feedback (only correct/incorrect and the final score)	Immediate and engaging feedback through explanations, scores, and leaderboards
Results analysis	Reports on user progress and activity	Automatic statistics on responses, averages, and distributions	Detailed performance analysis per question and user, with real-time visualization

In conclusion, the use of AI in assessment evolves from predominantly static, rule-based approaches (LIVRESQ, Google Forms) to dynamic, adaptive, and interactive

systems, where automation and advanced performance analysis (Quizizz) play a central role.

6 Conclusions

The proposed model has a conceptual and transferable character, grounded in the comparative analysis of instructional scenarios developed in different educational contexts. Through the integration of organizational principles such as activation, exploration, collaboration, reflection, and feedback, the model highlights the possibility of coherently adapting digital technologies and AI-assisted applications to diverse learning situations and disciplinary contexts.

The analysis emphasizes that the educational relevance of digital technologies and artificial intelligence depends on their pedagogical integration within learning activities centered on participation, exploration, expression, and reflection. Within the transversal model, technology functions as support for structuring and coordinating learning experiences, while the teacher maintains the role of pedagogical mediator of classroom interactions and instructional processes.

The examples presented through AI-supported digital platforms demonstrate the adaptability and transferability of the proposed pedagogical framework across diverse educational contexts.

An important dimension of the model is represented by accessibility and the adaptation of learning activities through multimodal support, flexible sequencing, and differentiated participation opportunities. Through its transversal and flexible structure, the proposed framework highlights the possibility of coherently integrating digital technologies and AI-assisted applications into active learning scenarios focused on student participation, creative engagement, and teacher guidance.

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