International Journal of Professional Development, Learners and Learning
2025, 7(2), e2515
ISSN 2754-0618 (Online)
https://www.ijpdll.com/

Perspective Article

OPEN ACCESS

The interplay of instructional design with aesthetic, didactic, and technological functionalities for a learning landscape as an educational material

Silvia Saborío-Taylor [1]*

[1]Universidad Nacional de Costa Rica, Heredia, COSTA RICA
***Corresponding Author:** silvia.saborio.taylor@una.cr

Citation: Saborío-Taylor, S. (2025). The interplay of instructional design with aesthetic, didactic, and technological functionalities for a learning landscape as an educational material. *International Journal of Professional Development, Learners and Learning*, 7(2), e2515. https://doi.org/10.30935/ijpdll/16896

ABSTRACT

This article explores the interplay of instructional design with three key components—aesthetic, didactic, and technological functionalities—in the creation of a learning landscape as an innovative educational material. The study highlights how thoughtful integration of these elements enhances engagement, inclusivity, and the overall learning experience. Aesthetic functionalities, such as pedagogical metaphors, cohesive color palettes, and visual balance, foster emotional and cognitive connections, transforming materials into visually harmonious and impactful narratives. Didactic principles ensure the instructional content is logically structured, addressing diverse learning needs through a variety of methods and strategies that encourage active participation and critical thinking. Meanwhile, technological functionalities, exemplified through tools like *Genially*, bridge the digital divide by offering interactive and multimedia-rich environments that promote accessibility and engagement. The *Pedagogical Praxis* module from the Master's in Education program at Universidad Nacional serves as a model, showcasing the successful implementation of these components to create a dynamic, reflective, and learner-centered learning landscape as an educational material. This approach not only enhances knowledge retention and motivation but also serves as a guide for educators to design effective, adaptable, and transformative instructional resources in today's digital learning landscape.

Keywords: instructional design, aesthetics, didactic, technological, educational material

Received: 18 Dec. 2024 ◆ Accepted: 23 May 2025

INTRODUCTION

Creative instructional designers are individuals passionate about didactics, aesthetics, and technological functionalities that they apply to their productions (Trabaldo, n.d.). In the dynamic scenery of education, creative instructional designers emerge as visionary architects of transformative learning experiences. In the process of creating educational materials, they are driven by a commitment to maximize their creations with structured instructional approaches, visually compelling designs, and cutting-edge technological tools. These ideas set the stage to explore the intricate interplay between didactics, aesthetics, and technology within the realm of instructional design (ID), highlighting the holistic dedication that these individuals bring to their mission of enhancing the learning journey.

In the dynamic overview of education, the role of ID has transcended its traditional boundaries, emerging as a transformative force that intricately mixes together various elements to enhance the learning experience. Agudelo (2009) states that ID, as the backbone of planning for the creation and implementation of educational materials, benefits both teachers and students. In that sense, employing an ID model streamlines the material development process for those involved in its production. It also simplifies the management of the process for educators while enhancing its execution and accessibility for learners.

ID represents a process involving the planning of outcomes, selecting strategies for teaching and learning, choosing relevant technologies, identifying educational resources, among others (Avendaño-Cruz et al., 2024). It seeks to enhance the learning experience by strategically combining various elements to create effective educational materials and experiences.

In recent years, the educational landscape has undergone a significant transformation with the increasing integration of digital technologies, prompting a reassessment of ID practices. Despite the widespread availability of online learning platforms, student engagement remains a critical challenge. For instance, a study on cyber-universities in South Korea found that although enrollment in online courses is rising, student interaction with digital content remains notably low. This highlights the need for careful evaluation of ID elements in digital learning environments to determine their effectiveness. When these components are thoughtfully implemented

and actively support learner engagement, ID is considered highly effective. Conversely, if they are poorly structured or inadequately communicated, the ID is perceived as less effective (Costley et al., 2017).

The integration of aesthetic functionalities into educational materials has been identified as a crucial factor of ID in enhancing learner engagement. Research indicates that incorporating visual and interactive components not only makes learning more enjoyable but also fosters deeper cognitive connections. For instance, a study on the role of aesthetics in technology education highlighted how visually engaging learning experiences can significantly enhance students' motivation and appreciation for the subject matter (Andrée et al., 2024).

The role of didactic functionalities in ID is fundamental to ensuring structured, meaningful, and inclusive learning experiences. A well-developed instructional framework must align teaching strategies with learning outcomes, incorporating diverse methodologies to accommodate various learning styles and cognitive needs. Studies indicate that the strategic implementation of didactic principles ensures that instructional materials are well-structured, interactive, and adaptable across various educational contexts (Marius-Costel, 2010). By harnessing these principles, instructional designers can develop learning landscapes that not only enhance knowledge acquisition but also equip learners with the skills to apply their understanding in real-world scenarios, ultimately reinforcing the transformative power of education.

Moreover, the strategic incorporation of technology within established ID models has demonstrated positive outcomes in educational settings. In that sense, Abuhassna et al. (2024), through a comprehensive literature review, highlight how a dynamic collaboration between ID and technological functionalities fosters the development of immersive and effective learning environments. Additionally, the integration of technology enhances student engagement, supports personalized learning experiences, and cultivates essential 21st century skills, including digital literacy and problem-solving.

These findings collectively highlight the imperative for instructional designers to thoughtfully blend didactic, aesthetic, and technological functionalities. This integrated approach is essential to create engaging and effective learning landscapes that address the evolving needs of today's learners. As a consequence, this article serves as a guide on the interplay between ID and three essential components—aesthetic, didactic, and technological functionalities—for the creation of a learning landscape as an educational material. Exploring the convergence of these elements as a centrum for material design opens a door that not only engages learners but also leads to emerging educational methodologies, as education undergoes a paradigm shift towards digital integration. This is particularly essential since learner engagement is key to academic success, fostering motivation, active participation, and confidence in students. It promotes better learning outcomes and a lasting passion for education (Mduwile & Dulumoni, 2024).

This dynamic interaction of the previously mentioned functionalities has been effectively put into practice through the *Pedagogical Praxis* module within the Master's in Education program, at Universidad Nacional in Costa Rica, specifically for the English learning emphasis. Here, the fusion of didactic principles, aesthetic considerations, and technological innovations has given foundations for a proper ID in the creation of a digital learning landscape.

The design process of the learning landscape serves as a model for educators aiming to transition into successful instructional designers. By merging innovative practices with active, engaging educational materials, it highlights how thoughtful integration of didactics, aesthetics, and technology can create transformative learning experiences. The *Pedagogical Praxis* module exemplifies this approach, demonstrating how these elements collectively enhance student engagement and learning outcomes. Hopefully, by this modeling educators can design cohesive and meaningful educational materials, inspiring others to adopt similar practices to foster creativity, collaboration, and deeper learning.

LEARNING LANDSCAPE: PROVIDING AN ENGAGING EDUCATIONAL MATERIAL

A learning landscape is a pedagogical tool that enables the creation of immersive and personalized learning environments (González, 2020). It is an innovative educational material that organizes content into an interactive, visual, and multisensory environment designed to significantly engage learners. Based on the principles of active learning, a learning landscape integrates multiple modalities—visual, auditory, and kinesthetic—to create a dynamic space where students can engage themselves to explore, interact, and construct knowledge independently or collaboratively. By structuring this educational material into interconnected routes or paths, learning landscapes encourage users to navigate content in ways that align with their personal interests, learning styles, and paces, fostering deeper understanding and sustained engagement.

Based on Hernández-Silvera and Ghilardelli (2022), learning landscapes somehow resemble a journey through diverse environments filled with information, multimedia resources, activities aligned with the objectives, and tools for practical application throughout the week or session. Unlike disconnected activities, learning landscapes provide a coherent thematic structure that enhances attention and motivation. They not only guide engagement through well-structured activities but also incorporate varied materials, making tasks more appealing while fostering digital skills, which continue to evolve and grow in importance. This approach leverages interconnected content to create engaging learning experiences, allowing participants to interact with materials in innovative ways, and ultimately enriching their educational journey.

Empirical studies have backed up the positive impact of learning landscapes on educational settings. In this context, a comprehensive analysis by Watawat et al. (2023) examined factors influencing learning outcomes and teaching practices in digital education. The study emphasized the importance of teacher effectiveness and collaborative use noting that well-designed digital learning landscapes can enhance learner engagement and knowledge retention. These findings certainly reinforce the transformative potential of thoughtfully implemented learning landscapes in diverse educational contexts.

Likewise, García-Tudela and Rodríguez-Ferrán (2021) conducted a qualitative analysis of various didactic proposals that utilized learning landscapes to cater to student diversity. The findings indicate that these landscapes, when thoughtfully designed, can accommodate different learning styles and paces, thereby promoting inclusive and personalized learning experiences. For instance, by integrating multiple intelligences and Bloom's taxonomy into the learning landscape framework,

Figure 1. Learning landscape as a structured journey (Source: Author's own creation with Genially [virtual platform] and Freepik free resource [photograph], 2024).

educators can create activities that match with individual student strengths and preferences, leading to enhanced engagement and understanding.

As a result, the relevance of a learning landscape as an engaging educational material lies in its ability to transcend traditional linear teaching methods. Instead of presenting content sequentially, it promotes exploratory and integrative learning experiences. Through the use of multimedia resources such as videos, audios, collaborative boards, and interactive elements, these landscapes address diverse learner needs while maintaining coherence in ID. Learning landscapes in the classroom enhances student interest, motivation, and consequently, meaningful learning. This approach also addresses the diverse needs of students by incorporating multiple intelligences within a single material that integrates various activities tailored to the unique requirements of learners, promoting engagement and inclusivity (Reza et al., 2024).

As a matter of fact, learning landscapes have been effectively integrated into various educational settings, demonstrating their adaptability and impact. As a case in point, Saborío-Taylor (2025) explored the integration of multisensory strategies in digital learning landscapes to enhance autonomous language learning. Participants reported higher levels of engagement, improved comprehension, and increased motivation, highlighting the potential of such landscapes to support autonomous learning.

Learning landscapes provide a structured and interactive approach to education, fostering engagement, autonomy, and personalized learning experiences. By integrating diverse instructional strategies, multimedia resources, and sequentially organized content, they enhance motivation and facilitate deeper comprehension. **Figure 1** exemplifies how the learning landscape was designed as a structured journey through distinct weeks, offering relevant content, interactive multimedia elements, and activities closely aligned with the objectives. This approach ensures the material remains engaging and relevant, effectively guiding learners through an immersive and coherent educational experience.

Furthermore, **Figure 1** highlights the learning landscape implementation within the *Pedagogical Praxis* module, demonstrating how this design framework enhances the educational process by incorporating didactic, aesthetic, and technological functionalities in a cohesive and purposeful manner.

AESTHETIC FUNCTIONALITIES: CRAFTING VISUAL NARRATIVES

Aesthetics, based on the study of beauty and harmony, represents the creation of engaging visual narratives in ID. By integrating principles like pedagogical metaphors, color interplay and balance, educators can design materials that captivate learners and enhance their educational experience. This blend of beauty and purpose transforms instructional resources into impactful tools that effectively convey ideas while inspiring and engaging learners.

The term "aisthetikos", originating from Greek, signifies the ability "to hear" or "to discern" a refined sense of beauty, embodying the concept of aesthetics. Aesthetics, a branch of philosophy, explores the essence of beauty and its connection to the arts. In simpler terms, aesthetics constitutes the philosophical inquiry into the nature of beauty or the aesthetic qualities associated with various subjects, encompassing notions like good, ugly, pleasant, magnificent, or tragic (Nilüfer, 2020). Considering that, aesthetics play a pivotal role in shaping experiences, evoking emotions, and enhancing overall well-being.

In education, aesthetics is particularly relevant as it significantly influences the design and presentation of educational materials, impacting the learning experience. In that regard, it involves the principles and qualities tied to the perception and creation of beauty, harmony, and visual appeal in art, design, and creative expression. It reflects subjective preferences based on sensory and emotional experiences, shaped by elements like form, color, balance, and composition. While aesthetics vary across cultures and time, they center on what is visually or experientially pleasing and meaningful (Catya et al., 2023). Therefore, a well-designed learning environment, whether physical or digital, positively influences student engagement, motivation, and cognitive processes. Aesthetics fosters a sense of curiosity, encouraging active participation in the educational process. Thoughtful design enhances comprehension by providing clear layouts, visually appealing graphics, and well-organized content. Furthermore, aesthetics contributes to memory retention, creating a more memorable and impactful learning experience.

Hence, aesthetics play a pivotal role in shaping educational experiences, influencing both student engagement and learning outcomes. Research indicates that incorporating aesthetic elements into educational materials can enhance learner motivation, satisfaction, and comprehension. In this manner, an aesthetic experience extends beyond sensory enjoyment or artistic appreciation; it involves deep emotional and intellectual engagement with an object, event, or situation. This process heightens awareness, shapes perception, and fosters a continuous sense of anticipation. In learning, aesthetics help individuals establish meaningful connections, guiding them toward comprehension and a sense of closure (Andrée et al., 2024).

Indeed, aesthetics play a pivotal role in ID, shaping the visual and sensory aspects of learning materials to enhance engagement and comprehension. Far beyond mere visual appeal, aesthetic considerations create an environment that stimulates learners emotionally and cognitively. An engaging learning experience catches and fulfills a learner's curiosity or drive to gain new skills or knowledge. Whether the desire is pre-existing, dormant, or newly inspired by a teacher's challenge, the educator's role is to bring it to the forefront, fostering curiosity and motivation to learn (Parrish, 2021).

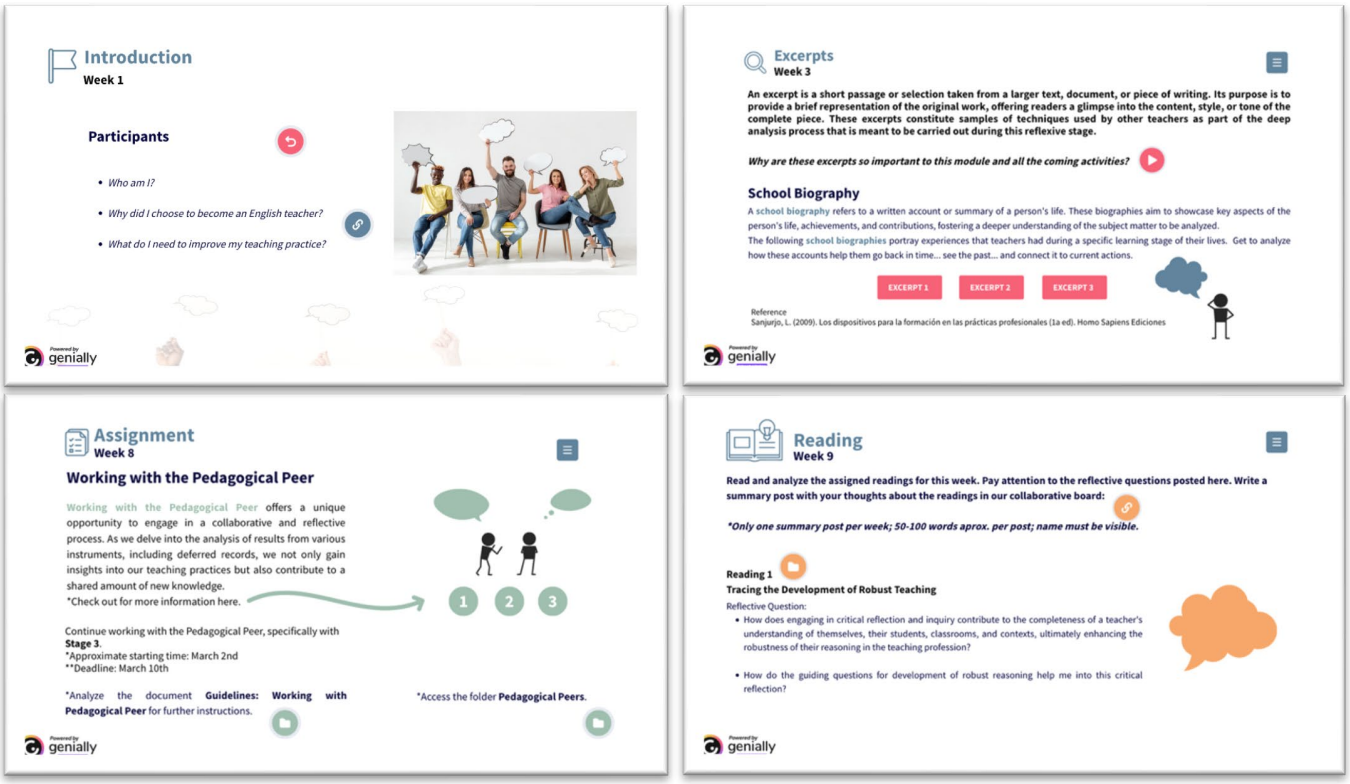

Figure 2. Pedagogical metaphor as an aesthetic element in the learning landscape (Source: Author's own creation with Genially [virtual platform] and Freepik free resource [photograph], 2024).

As a consequence, the thoughtful choice of colors, graphics, and layouts of a learning landscape can evoke feelings of calm, reflection, or energy, depending on the goals of the instructional material. These elements help establish a harmonious and engaging experience, making the content not only more appealing but also more meaningful and impactful for learners.

Barraza (2021) notes how the creation of learning landscapes rely heavily on intentional classroom design and the strategic use of aesthetics to enhance student engagement and comprehension. By incorporating elements such as color, contrast, shape, and texture, learning landscapes create visually stimulating environments that guide learners through structured educational experiences. Additionally, the integration of cross-modal audiovisual cues strengthens cognitive processing, making content more memorable and accessible. The use of multimedia devices within learning landscapes further supports multisensory engagement, ensuring that diverse learning styles are accommodated. By thoughtfully combining these aesthetic and technological elements, learning landscapes foster immersive and dynamic educational experiences that promote deeper understanding and retention.

In the design of the learning landscape for the *Pedagogical Praxis* module, aesthetics were meticulously integrated to align with the module's reflective and transformative nature. A pedagogical metaphor was chosen, featuring images of diverse individuals holding speech bubbles. Despite variations in the photos, the consistent style unified the visuals, reinforcing the module's theme of dialogic reflection and praxis transformation. The speech bubbles symbolized the continuous reflective dialogue required of participants, encapsulating the module's core idea of fostering deep, critical thinking leading to actionable changes in teaching practices. It is imperative to highlight that the pedagogical metaphor, as a communicative resource, often visual and occasionally animated, serves to succinctly and consistently convey the central educational message of instructional materials. Its value lies in reinforcing learning and promoting the internalization of knowledge, values, and behaviors through repeated exposure, complementing other semantic forms (Díaz et al., 2008). **Figure 2** illustrates these concepts, highlighting the deliberate use of the speech bubbles resembling the pedagogical metaphor as an aesthetic element in the learning landscape.

The color palette (HEX: #f55d74, #9dbba8, #5c849c, #f4a464) was carefully selected to match the tones in the chosen photographs, creating a cohesive and harmonious visual experience. This is especially important due to the fact that, when applied thoughtfully, selecting the right color to represent a material can significantly influence perception, as it involves the brain's process of organizing and interpreting sensory information from the environment to derive meaning (Cunningham, 2017).

These warm colors were intentionally used throughout the learning landscape to evoke calmness and reflection, reinforcing the module's contemplative nature. Each of the four colors served a distinct purpose, with one assigned to backgrounds and the others representing the module's three core content areas. This consistency not only maintained visual balance but also provided a subtle, structured flow that guided learners through the material.

Figure 3 demonstrates the strategic application of a cohesive color palette as an aesthetic element that enhances visual harmony and aligns with the educational objectives of the design of the learning landscape.

Visual balance also played a main role in the aesthetic design of the learning landscape, ensuring an experience that was both visually appealing and functional. Balance enables the human eye to move

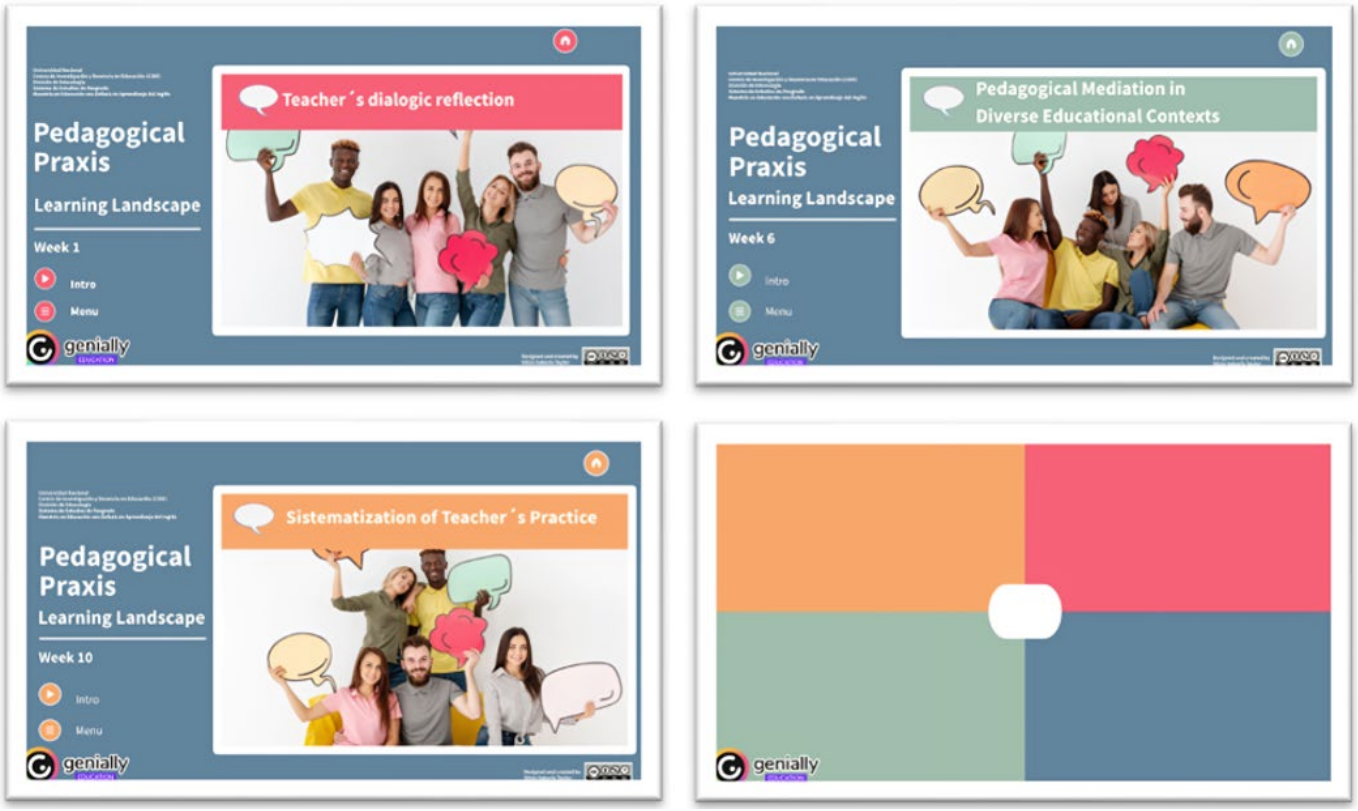

Figure 3. Color palette as an aesthetic element in the learning landscape (Source: Author's own creation with Genially [virtual platform] and Freepik free resource [photograph], 2024).

seamlessly across a space, allowing for continual refocusing and creating a sense of calm and relaxation. In contrast, an unbalanced composition can feel disorienting and leave the viewer uneasy. A well-balanced composition ensures that every part captures some level of attention, effectively keeping viewers engaged and connected to the overall design (Alharbi, 2016).

Each screen in the learning landscape layout was attentively structured to provide a sense of harmony, using white spaces strategically to create breathing room between elements. According to Campbell (2024), when effectively utilized, white space significantly improves user experience, readability, and visual appeal. Its strategic application serves both aesthetic and functional roles, especially in digital design. For instance, clear margins define content sections without the need for explicit dividers, while adequate spacing around interactive elements ensures usability by highlighting their functionality and preventing accidental clicks. This approach not only reduced visual clutter but also enhanced the clarity and focus of the content, allowing learners to navigate and engage with ease.

Also, by fully balancing text and images in the learning landscape, the layout maintained a cohesive flow that supported the overall instructional goals. This arrangement ensured that no single element overwhelmed the others, fostering a visually organized and professional appearance. This is specially imperative, since in order to create a coherent, complete, and perceptibly satisfying design, the visual weight of each element must be harmoniously balanced within the layout (DesignDiscourse, 2022).

For this learning landscape, this interplay of white space, text, and imagery was particularly significant in creating an engaging material. Text was presented in manageable chunks, paired with complementary

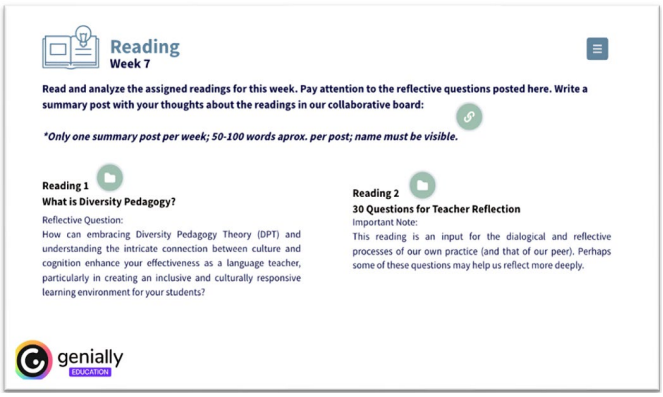

Figure 4. Balance as an aesthetic element in the learning landscape (Source: Author's own creation with Genially [virtual platform], 2024).

visuals that reinforced key concepts without overwhelming the learner. Images were purposefully positioned, while maintaining consistency with the chosen aesthetic theme, "by adding meaning and invoking connections, as well as assisting the reader make a connection with the text" (DesignDiscourse, 2022). In addition, the white spaces provided a clean and modern look, emphasizing important elements and avoiding distractions. This careful balance of design components not only can enhance the user experience but also reflects the underlying ID objectives of clarity, engagement, and functionality.

Figure 4 exemplifies these concepts by showcasing the strategic use of balance through carefully designated white spaces, thoughtfully arranged text, and well-placed images, creating a cohesive aesthetic element within the learning landscape.

In summary, aesthetics holds multifaceted relevance in life and education. Recognizing its importance allows instructional designers and educators to leverage its potential for improving student engagement, comprehension, and overall satisfaction with the learning process. When these aesthetic functionalities are thoughtfully integrated, the process of crafting visual narratives becomes a powerful tool for delivering meaningful and impactful learning experiences.

Yet, when designing educational materials, it is essential to account for cultural differences in aesthetic preferences to ensure inclusivity and effectiveness. For instance, Wang (2023) indicates that cultural factors significantly influence learning styles, and acknowledging these differences is essential for fostering inclusive learning environments. For that reason, Sharif and Gisbert (2015) emphasize that cultural differences affect instructional designers' perspectives on quality in online environments, suggesting that understanding diverse cultural contexts can lead to more effective educational designs.

Cross-cultural design involves understanding and integrating diverse cultural perspectives, which can significantly impact user satisfaction and engagement. Lee (2026) highlights the importance of exploring cultural differences and celebrating diversity through design, suggesting that culturally sensitive design promotes inclusivity and enhances user experience.

ID and aesthetics require constant adaptation of educational design patterns across cultures, taking into account the need for culturally aware design approaches to ensure the relevance and effectiveness of educational materials, such as a learning landscape, in diverse settings (Vallis et al., 2024).

DIDACTIC FUNCTIONALITIES: DESIGNING MEANINGFUL LEARNING EXPERIENCES

Didactics is recognized as a branch of pedagogy that provides a scientific foundation for the content, methods, and organizational structures of teaching. It ś key principle emphasizes the importance of addressing individual differences among students within the educational process, structuring the teaching process to accommodate the unique characteristics and needs of each learner (Riskulova & Yuldashova, 2020).

The application of didactics is crucial for shaping instructional methods and strategies to optimize the learning experience. It provides a structured framework for organizing educational content, ensuring logical and progressive presentation to facilitate comprehension and retention. These methods and strategies play a crucial role in guiding students toward achieving their learning objectives. They facilitate mastery of course content and its practical application in specific contexts. Hence, to ensure their effectiveness, instructors must align the chosen teaching strategies with the intended learning outcomes. This requires a thoughtful consideration of the objectives, the diverse needs of students, and the dynamics of the learning environment to select the most suitable approach for fostering engagement and comprehension (University at Buffalo, n.d.).

In addition, didactics acknowledges the diversity of learners and their individual preferences, promoting the adaptation of instructional methods to accommodate various learning styles. Incorporating a variety of teaching strategies engages students with different learning preferences, enhancing inclusivity and effectiveness. Here, according to Zúñiga and Alvarado (2023), teachers play a pivotal role by employing a variety of methods, strategies, and activities that allows the adaptation of their instruction to suit the diverse needs of their students. Classes can range from theoretical discussions to practical applications, and it is within this diversity that teachers must creatively engage students. By aligning their strategies with students' preferred learning styles, educators can capture attention and foster active participation, ensuring a more engaging and effective learning experience.

The didactic functionalities within the learning landscape were purposefully designed to create meaningful and engaging educational experiences tailored to diverse learning styles. The ID maintained coherence through a consistent organizational pattern across all stages, ensuring that learners could navigate and interact with the content seamlessly. This intentional structure supported clarity and continuity, enhancing the overall learning journey. This is particularly essential since, according to Saborío-Taylor and Rojas Ramírez (2023), a teacher-designer must thoughtfully plan the instructional steps that transform an educational material [a learning landscape] from a basic concept into one characterized by logic and coherence, particularly tailored to meet the didactic needs of its intended audience.

Consequently, to address the diverse preferences of learners, the design incorporated a variety of methods and strategies. Communicative and constructivist approaches were emphasized, fostering active participation and collaboration. Strategies included the use of subtitled videos for visual learners, audio support auditory learners, and multimedia case studies that integrated both formats. Collaborative boards encouraged interaction and idea-sharing, while oral and written forums provided opportunities for reflection and dialogue. Interactive quizzes, guided problem-solving activities and realia exercises to be implemented in educational settings catered to kinesthetic learners, further enhancing engagement. By integrating these diverse tools and strategies, the landscape not only delivered content effectively but also fostered a rich, multisensory learning environment that promoted critical thinking, collaboration, and practical application. **Figure 5** demonstrates the integration of didactic functionalities in different sections within the learning landscape, showing how the design addressed varied learning styles through the use of videos, audio support, multimedia case studies, etc., creating a meaningful learning experience.

The integration of diverse methods and strategies exemplifies how ID can move beyond content delivery to create transformative learning environments. Didactic functionalities in educational materials, a learning landscape in this case, ensure that the educational experience is not only coherent and inclusive but also deeply meaningful.

However, implementing didactic functionalities within ID for learning landscapes presents challenges such as maintaining student engagement and accommodating diverse learning styles. To this effect, effective scaffolding is essential to ensure structured yet engaging navigation through the material. Scaffolding, as a pedagogical strategy, supports student learning by shifting cognitive engagement from the teacher to the student, fostering autonomy and deeper understanding (Castagno-Dysart et al., 2019). Therefore, integrating these techniques within ID is crucial for creating effective learning landscapes that promote student engagement and accommodate various learning preferences.

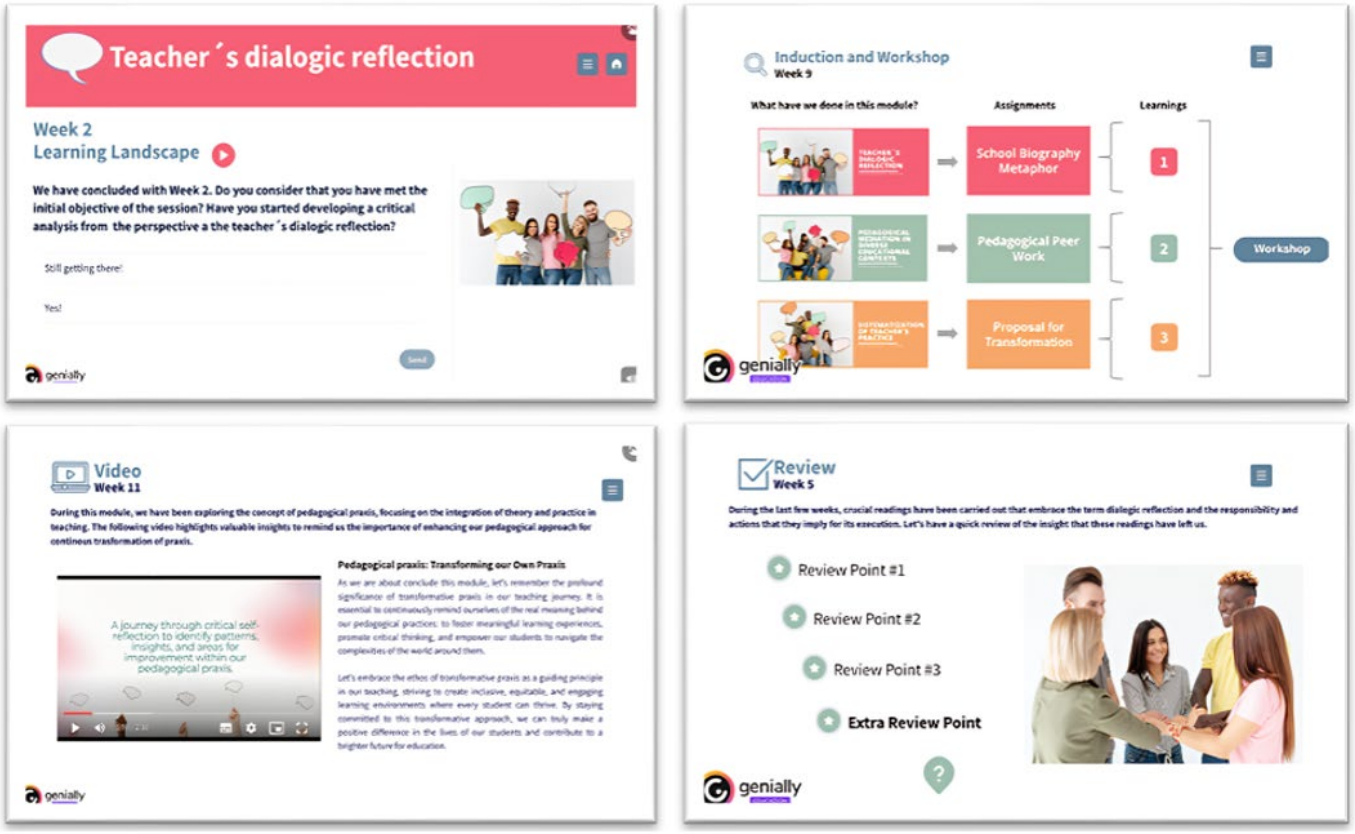

Figure 5. Didactic as an aesthetic element in the learning landscape (Source: Author's own creation with Genially [virtual platform] and Freepik free resource [photograph], 2024).

TECHNOLOGICAL FUNCTIONALITIES: BRIDGING THE DIGITAL DIVIDE

Technological functionalities in education refer to the integration and application of technology to enhance the teaching and learning processes. This encompasses the use of various digital tools, software, and platforms designed to improve educational experiences, foster engagement, and facilitate effective knowledge transfer. This integration of technology not only transforms traditional teaching methods but also bridges divided into educational access, ensuring that learners from diverse needs can engage with and benefit from innovative learning experiences. Thereby, technology fosters innovation and empowers educators to implement learner-focused pedagogies tailored to diverse needs and abilities; digital tools, multimedia resources, and interactive platforms promote active engagement, critical thinking, and problem-solving skills among students (Kumar, 2024).

España (2024) points up how the integration of technology in education offers numerous advantages, such as fostering collaborative work and transforming classroom management into a shared responsibility among all participants. This collaborative approach enhances the overall learning experience by involving teachers, students, and other participants in the educational process. Additionally, technology facilitates more efficient knowledge sharing and acquisition through modern tools like videos, reading, audio materials, and images. These resources enable easy access to new information, streamlining research and enriching the learning journey.

In this digital age, technology plays an important role in ID, providing tools and platforms that enhance accessibility, interactivity, and engagement in educational settings. Taking the advantage of how it can ensure a broader access to resources and materials, the learning landscape represents a clear exemplification of this benefit. For this reason, authoring tools, multimedia elements, and interactive simulations are among the technological functionalities that instructional designers leverage to create dynamic learning experiences.

An authoring tool is a must for any instructional designer or teacher who wants to optimize the results of their daily practice. It is a software for creating visual and interactive online content with no need for coding skills; and also, the term is often used in connection with the creation of educational content in educational organizations (De la Peña Frade, 2023). As a result, *Genially* was chosen as the cloud-based authoring tool for building the interactive content of the learning landscape.

The integration of *Genially* in the creation of the learning landscape exemplifies how technology can bridge the digital divide by offering an inclusive and interactive educational experience. The platform enabled the design of a virtual space with multiple navigable routes, allowing students to explore diverse topics at their own pace. The tool's flexibility supported the embedding of multimedia resources, such as videos, audio clips, interactive visuals, and quizzes catering to various learning preferences and styles. **Figure 6** portrays how this multimedia tool seeked to enhance student engagement and help to address the diverse needs of learners in the learning landscape.

By utilizing *Genially*, the learning landscape became a dynamic site where interactivity promoted deeper engagement, and created

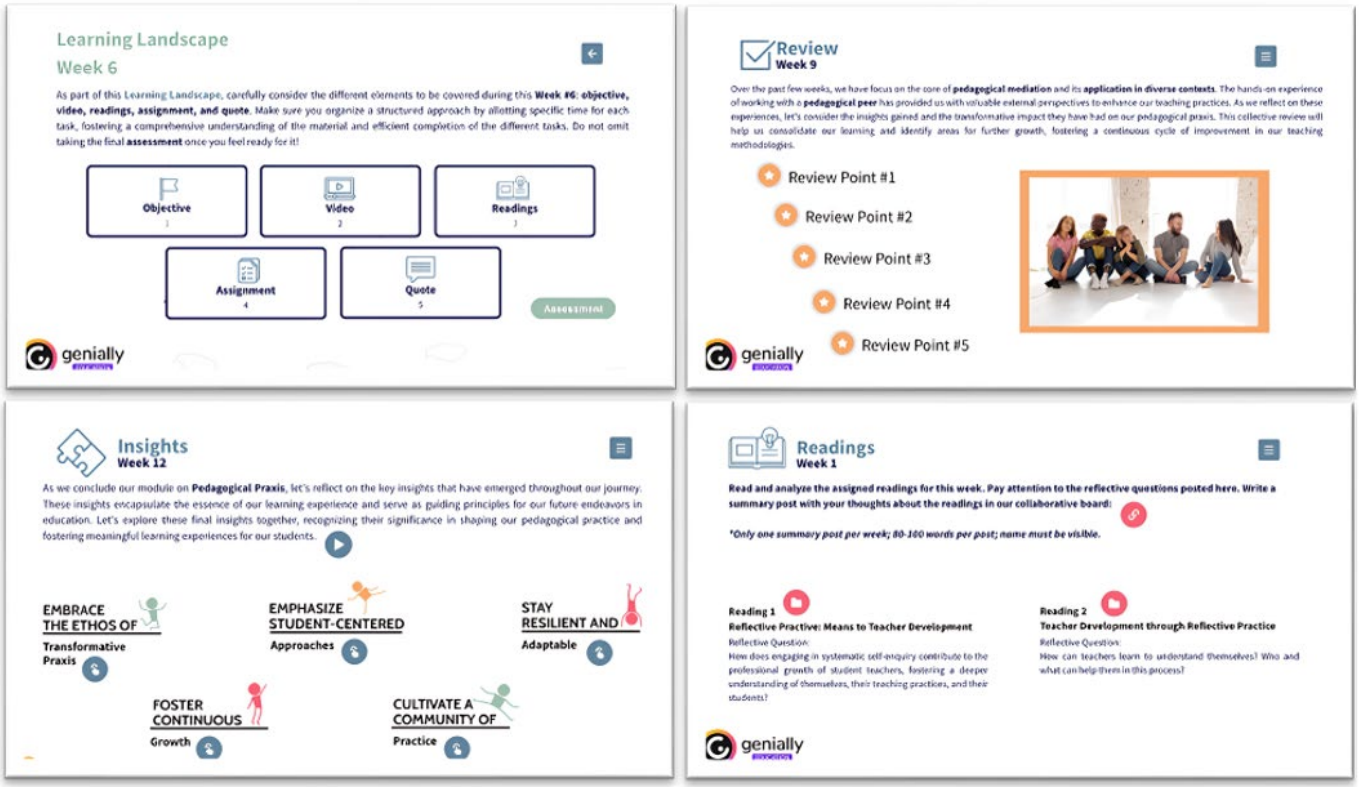

Figure 6. *Genially* as an essential technological element in the learning landscape (Source: Author's own creation with Genially [virtual platform] and Freepik free resource [photograph], 2024).

opportunities for active participation, critical thinking, and creativity. The platform not only enriched the learning experience but also proved the potential of digital tools to make high-quality, personalized educational materials accessible, demonstrating how technology can bridge gaps in engagement and access to resources.

Despite the benefits of authoring tools for the design of educational resources, it is also important to note that emerging technologies (ETs) are transforming ID by enhancing flexibility and engagement, allowing students to develop essential skills such as spatial visualization, innovative thinking, problem-solving, and critical analysis. This approach fosters a dynamic learning environment that supports both creativity and cognitive growth (Criollo-C et al., 2024). As an example, artificial intelligence (AI) plays a crucial role in automating content creation of the learning landscape, and personalizing learning experiences to meet individual student needs. Similarly, virtual reality (VR) and augmented reality (AR) introduce immersive educational experiences, allowing learners to engage with simulated environments that deepen comprehension and connection within the landscape.

Among the benefits of the technological functionalities, selecting the right tools is essential for optimizing learning landscapes. Instructional designers and educators should start by aligning technology choices with clearly defined learning objectives, ensuring that each tool effectively supports educational goals. Additionally, it is important to assess whether free or paid versions best suit institutional or individual constraints, selecting the most viable option based on available resources. Furthermore, evaluating the tool's usability and accessibility for both designers and learners, is key to accommodating diverse learning styles and ensuring an inclusive and engaging educational experience.

From an ID perspective, considering data privacy policies and security measures are essential when selecting technological tools for designing and implementing a learning landscape. Educators must ensure that the chosen platforms comply with data protection regulations, safeguard student information, and provide secure user authentication. Likewise, avoid incorporating sensitive data—information that, if exposed, could negatively impact the individuals or institutions involved. Instead, prioritize the use of publicly available data, which can be freely accessed, used, and shared without restrictions (Djeki et al., 2024). Given its nature as a personalized environment with multiple elements and activities, a learning landscape should not require any form of sensitive data for navigation or interaction, ensuring both user privacy and ethical compliance.

CONCLUSIONS

The interplay of ID with aesthetic, didactic, and technological functionalities demonstrates the dynamic nature of education in the digital age. This article has explored how these components converge to create an engaging, effective, and learner-centric educational material. By understanding the intricate relationships of these elements, teachers, in a role as instructional designers, can shape the future of learning, ensuring it remains adaptable, innovative, and inclusive.

Learning landscapes serve as a bridge between theory and practice, enabling learners to apply acquired knowledge in meaningful contexts. By offering structured yet adaptable routes, they provide opportunities for reflective and experiential learning, ensuring that educational content is not only retained but also internalized. In doing so, learning landscapes exemplify the potential of modern ID to craft enriching and transformative educational experiences, aligning with the goals of

lifelong learning and pedagogical innovation, because, when applied in the classroom, they guide students through an engaging educational journey that supports them in developing the skills and attitudes needed to face future challenges with confidence (Ruiz, 2024).

Aesthetics in ID extend beyond individual materials to shape the overall learning atmosphere, fostering environments that encourage engagement and collaboration. Thoughtfully integrating aesthetic elements, particularly in digital platforms, elevates the educational experience by creating emotionally and cognitively engaging interfaces. These elements transform learning tools into immersive spaces that not only deliver content but also inspire reflection and retention. For instructional designers, prioritizing visual harmony and meaningful design ensures an experience that captures attention, sparks curiosity, and enhances knowledge retention. Well-crafted interfaces enhance not only ease of use but also foster deeper emotional and cognitive engagement, creating an environment where visual coherence and user-centered design help immerse learners (Kumar et al., 2018).

Didactic functionalities are essential for designing inclusive and engaging learning experiences that address diverse learner needs. It is important to denote that when applied in educational settings, the design quality and complexity of multimedia, like a learning landscape, applications must be sufficiently advanced to integrate various cognitive processes, effectively replicating the role of the teacher (Abdulrahaman et al., 2020). By aligning instructional methods with learning outcomes and incorporating diverse strategies such as multimedia tools and collaborative activities, educators foster environments that encourage critical thinking and active participation. This approach ensures coherence in ID while enhancing the practical and multisensory aspects of learning, transforming educational materials into dynamic and adaptive landscapes.

Technological elements are essential for bridging the digital divide and enhancing educational experiences through innovative and inclusive approaches. Certainly, multimedia technology simplifies abstract concepts, accommodates individual differences, and facilitates the integration of diverse representations from varying perspectives (Abdulrahaman et al., 2020). As a result, the integration of tools like *Genially* demonstrates how technology can empower learners by providing accessible, interactive, and multisensory platforms that cater to diverse learning preferences. Also, ETs create interactive scenarios where students can apply theoretical knowledge in practical settings, improving both engagement and learning outcomes. By integrating AI, VR, AR, instructional designers can create more dynamic and effective learning landscapes that cater to various learning styles, ultimately enhancing the overall educational experience. Technology not only transforms traditional pedagogy but also ensures equitable access to educational resources, enabling students to navigate and explore content at their own pace. This strategic use of digital tools underscores the importance of technology in creating dynamic learning landscapes.

As ID evolves, it is imperative to anticipate emerging trends and adapt to the changing needs of learners, ensuring they experience the most effective and engaging learning opportunities (Oakley, 2024). This requires embracing innovations in technology and integrating pedagogical strategies that foster adaptability and lifelong learning skills. Future-oriented ID must address global challenges, such as the increasing reliance on digital learning platforms and the demand for personalized, learner-centered experiences. Also, by staying tuned to advancements in AI, learning environments, and risen methodologies, educators and designers can craft flexible, inclusive, and impactful educational materials that meet the dynamic expectations of future learners.

Funding: The author received no financial support for the research and/or authorship of this article.

Ethics declaration: This study involved students from the Pedagogical Praxis module of the Master's in Education program at Universidad Nacional, Costa Rica. Data were collected anonymously, without any sensitive or personally identifiable information, and used exclusively for research purposes. In line with institutional guidelines, formal ethics approval was not required.

AI statement: Generative AI tools were not used to create the intellectual content of this article. Their use was limited to academic assistance tasks such as refining wording, paraphrasing citations, and polishing the abstract. All ideas, analysis, and conclusions are my own.

Declaration of interest: The author declares no competing interest.

Data availability: Data generated or analyzed during this study are available from the author on request.

REFERENCES

Abdulrahaman, M. D., Faruk, N., Oloyede A. A, Surajudeen-Bakinde, N. T., Olawoyin, L. A., Mejabi, O. V., Imam-Fulani, Y. O., Fahm, A. O., & Azeez, A. L. (2020). Multimedia tools in the teaching and learning processes: A systematic review. *Heliyon, 6*(11), Article e05312. https://doi.org/10.1016/j.heliyon.2020.e05312

Abuhassna, H., Alnawajha, S., Awae, F., Mohamed Adnan, M. A. B., & Iyiade Edwards, B. (2024). Synthesizing technology integration within the Addie model for instructional design: A comprehensive systematic literature review. *Journal of Autonomous Intelligence, 7*(5), 1–28. https://doi.org/10.32629/jai.v7i5.1546

Agudelo, M. (2009). Importancia del diseño instruccional en ambientes virtuales de aprendizaje [Importance of instructional design in virtual learning environments]. In J. Sánchez (Ed.), *Nuevas ideas en informática educativa* (pp. 118–127). Universidad de Chile. https://www.tise.cl/volumen5/TISE2009/Documento15.pdf

Alharbi, A. (2016). Balance as a principle of interior design. *International Journal of Scientific & Engineering Research, 7*(4), 325–326.

Andrée, M., Anderhag, P., Björnhammer, S. & Salomonsson, N. (2024). Aesthetic experience in technology education–The role of aesthetics for learning in lower secondary school robotic programming. *Frontiers in Education, 9*. https://doi.org/10.3389/feduc.2024.1291070

Avendaño-Cruz, W. A., del Carmen Herrera-Sánchez, S., Cajigal-Molina, E., & Jiménez-Izquierdo, S. (2024). Diseño instruccional ADDIE en el aprendizaje de vocabulario en inglés en estudiantes de nivel primaria [ADDIE instructional design for English vocabulary learning among primary school students]. *Revista Eduscientia. Divulgación de la Ciencia Educativa, 7*(14), 93–110. https://eduscientia.com/index.php/journal/article/view/499

Barraza, G. (2021). *The role of aesthetics in classroom design: Implications for engagement and equity* (Publication No. 1385) [Master's thesis, The University of San Francisco]. https://repository.usfca.edu/thes/1385

Campbell, P. (2024). The power of white space: Creating visual harmony through negative space. *Artversion*. https://artversion.com/blog/the-power-of-white-space-creating-visual-harmony-through-negative-space/

Castagno-Dysart, D., Matera, B., & Traver, J. (2012). The importance of instructional scaffolding. *Teacher Magazine*. https://www.teachermagazine.com/au_en/articles/the-importance-of-instructional-scaffolding

Catya, K., Marsudi, M., Kusumandyoko, T. C., & Ratyaningrum, F. (2023). The importance of aesthetics in design education. In A. Mustofa et al. (Eds.), *Proceedings of the International Joint Conference on Arts and Humanities 2023 (IJCAH 2023)* (pp. 535–541). Atlantis Press. https://doi.org/10.2991/978-2-38476-152-4_50

Costley, J., Hughes, C., & Lange, C. (2017). The effects of instructional design on student engagement with video lectures at cyber universities. *Journal of Information Technology Education: Research, 16*, 189–207. https://doi.org/10.28945/3728

Criollo-C, S., González-Rodríguez, M., Guerrero-Arias, A., Urquiza-Aguiar, L. F., & Luján-Mora, S. (2024). A review of emerging technologies and their acceptance in higher education. *Education Sciences, 14*(1), Article 10. https://doi.org/10.3390/educsci14010010

Cunningham, M. (2017). The value of color research in brand strategy. *Open Journal of Social Sciences, 5*, 186–196. https://doi.org/10.4236/jss.2017.512014

De la Peña Frade, N. (2023). Yep, Genially really is an authoring tool. *Genially Blog*. https://blog.genially.com/en/authoring-tool/

DesignDiscourse. (2022). How to balance text and graphics for the greatest impact. *Themewagon*. https://themewagon.com/blog/how-to-balance-text-and-graphics-for-the-greatest-impact/

Díaz, L. F., Sandoval, A. M., Hernández, D., & Badilla, M. (2008). Metáfora pedagógica [Pedagogical metaphor]. *Observatorio de Tecnología en Educación a Distancia*. https://observatoriotecedu.uned.ac.cr/metafora-pedagogica/

Djeki, E., Dégila, J., Bondiombouy, C., & Alhassan, M. H. (2024). Data protection in digital learning space: An overview. *AIP Conference Proceedings 3109*(1), Article 030007. https://doi.org/10.1063/5.0204895

España, O. (2024). Aplicación del diseño instruccional en el aprendizaje activo para el nivel superior [Application of instructional design in active learning for higher education]. *Revista Guatemalteca de Educación Superior, 7*(2), 23–39. https://doi.org/10.46954/revistages.v7i2.134

Freepik. (2024). *Multicultural and interrratial community. Amigos de ángulo bajo en sillas con burbujas de chat* [photograph]. https://www.freepik.es/serie/5965437/2

García-Tudela, P., & Rodríguez-Ferrán, M. (2021). Los paisajes de aprendizaje como una herramienta para atender a la diversidad: Análisis cualitativo de propuestas didácticas [Learning landscapes as a tool to address diversity: Qualitative analysis of teaching proposals]. In A. B. B. Martín, M. del Mar Molero Jurado, Á. M. Martínez, M. del Mar Simón Márquez, J. J. G. Linares, & M. del Carmen Pérez-Fuentes (Eds.), *Innovación docente e investigación en educación: Nuevos enfoques en la metodología docente* (pp. 549-558). Dykinson, S.L. https://doi.org/10.2307/j.ctv2gz3vbd

González, M. (2020). Guía para crear paisajes de aprendizaje digitales [Guide to creating digital learning landscapes]. *Instituto para el Futuro de la Educación*. https://observatorio.tec.mx/edu-bits-blog/guia-para-crear-paisajes-de-aprendizaje-digitales/

Hernández-Silvera, D. I., & Ghilardelli, M. A. (2022). Paisajes digitales de aprendizaje en la universidad huellas vivenciales e inserción comunitaria [Digital learning landscapes at the university: experiential traces and community integration]. *Revista Panamericana de Pedagogía*, (35), 135–151. https://doi.org/10.21555/rpp.vi35.2727

Kumar, J. A., Muniandy, B., & Yahaya, W. A. J. W. (2018). Exploring the effects of visual aesthetics in e-learning for engineering students. *Knowledge Management & E-Learning, 10*(3), 250–264. https://doi.org/10.34105/j.kmel.2018.10.015

Kumar, L. (2024). The role of technology in education: Enhancing learning outcomes and 21st century skills. *International Journal of Scientific Research in Modern Science and Technology, 3*(4), 5–10. https://doi.org/10.59828/ijsrmst.v3i4.199

Lee, D. Y. (2016). *Cross-cultural design (CCD) learning model: The development and implementation of CCD design education in South Korean higher education* [Doctoral Thesis, University of London]. https://research.gold.ac.uk/id/eprint/19468/6/DES_thesisappendix_LeeDY_2016.pdf

Marius-Costel, E. (2010). The didactic principles and their applications in the didactic activity. *Sino-US English Teaching, 7*(9), 24–34. https://files.eric.ed.gov/fulltext/ED514739.pdf

Mduwile, P., & Dulumoni, G. (2024). Enhancing student engagement: Effective strategies for active learning in the classroom in secondary schools. *MULTIPLE: Journal of Global and Multidisciplinary, 2*(5), 1746–1757. https://journal.institercom-edu.org/index.php/multiple/article/view/350

Nilüfer, H. (2020). Art and aesthetics in higher education. *European Journal of Education Studies, 7*(6), 335–350. https://oapub.org/edu/index.php/ejes/article/view/3156

Oakley, J. (2024). 5 new instructional design trends of 2024. *Evolve Solution Group*. https://evolve-sg.com/5-new-instructional-design-trends-of-2024/

Parrish, P. (2021). The role of beauty in learning. *World Meteorological Organization*. https://etrp.wmo.int/mod/page/view.php?id=16809

Reza, A. R., Paucar, E. I., Tapia, M., & Sánchez, V. (2024). Uso de paisajes de aprendizaje como recursos de enseñanza de reglas ortográficas en estudiantes de básica superior [Using learning landscapes as teaching resources for spelling rules in upper elementary students]. *AlfaPublicaciones, 6*(4), 24–40. https://doi.org/10.33262/ap.v6i4.541

Riskulova, K., & Yuldashova, U. (2020). The role of didactics in teaching process. *Theoretical & Applied Science, 5*(85), 786–792. https://doi.org/10.15863/TAS.2020.05.85.146

Ruiz, S. (2024). Paisajes de aprendizaje II: Cómo diseñar una aventura digital en 5 pasos [Learning landscapes II: How to design a digital adventure in 5 steps]. *Universidad Isabel I*. https://www.ui1.es/blog-ui1/paisajes-de-aprendizaje-ii-como-disenar-una-aventura-digital-en-5-pasos

Saborío-Taylor, S. (2025). Multisensory strategies to foster autonomous language learning through digital landscapes. *European Journal of Interactive Multimedia and Education, 6*(1), Article e02503. https://doi.org/10.30935/ejimed/16045

Saborío-Taylor, S., & Rojas Ramírez, F. (2023). Methodological guide for the creation of educational materials based on patterns of needs and design. *International Journal of Professional Development, Learners and Learning, 5*(2), Article ep2313. https://doi.org/10.30935/ijpdll/13686

Sharif, A., & Gisbert, M. (2015). The impact of culture on instructional design and quality. *International Journal of Instruction, 8*(1), 143–156. https://doi.org/10.12973/iji.2015.8111a

Trabaldo. S. (n.d.). Los diseñadores instruccionales creativos son personas apasionadas por la didáctica, la estética y las funcionalidades tecnológicas que aplican a sus producciones [Creative instructional designers are people who are passionate about teaching, aesthetics, and the technological functionalities that they apply to their productions]. *LinkedIn.* https://www.linkedin.com/posts/net-learning_creatividad-innovacion-innovaci%C3%B3n-activity-7029829861611298816-JFrs/?originalSubdomain=uy

University at Buffalo. (n.d.). Teaching methods. *University at Buffalo.* https://www.buffalo.edu/catt/teach/develop/design/teaching-methods.html

Vallis, C. J., Nguyen, H. T., & Norman, A. (2024). Cross-cultural adaptation of educational design patterns at scale. *Journal of Work-Applied Management, 16*(2), 253–268. https://doi.org/10.1108/JWAM-10-2023-0106

Wang, Y. (2024). The influence of cultural factors on learning styles. *Journal of Education, Humanities, and Social Research, 1*(1), 1–9. https://doi.org/10.70088/ra42wn16

Watawat, M. V., Labbot, V. R., Villasi, B., & Valdez, R. J. T. (2023). Navigating the digital landscape in education: A comprehensive analysis of factors influencing learning outcomes and teaching practices. *International Journal of Research in Engineering, Science and Management, 6*(12), 63–67. https://journal.ijresm.com/index.php/ijresm/article/view/2882

Zúñiga, M. P., & Alvarado, J. P. (2023). The importance of considering the different learning styles in students of English as a foreign language. *Revista Ensayos Pedagógicos, 18*(2), 1–14. https://doi.org/10.15359/rep.18-2.16