Research Journal in Advanced Humanities

RJAH

https://doi.org/10.58256/rjah.v4i4.1124

Research Article

Section: Education (General Humanities)

Published in Nairobi, Kenya by
Royallite Global

Volume 5, Issue 1, 2024

Article Information
Submitted: **27th April 2023**
Accepted: **30th August 2023**
Published: **9th January 2024**

ISSN: 2708-5945 (Print)
ISSN: 2708-5953 (Online)

Additional information is available at the end of the article:

To read the paper online, please scan this QR code:

How to Cite:
Vezhbovska, L., Boltenkov, A., Vaskialite, V., Lopukhova, N., & Dementovych, T. (2024). Global trends in educational environment design: From cultural dimensions to innovations. *Research Journal in Advanced Humanities, 5*(1). https://doi.org/10.58256/rjah.v4i4.1124

Global trends in educational environment design: From cultural dimensions to innovations

Liliana Vezhbovska*, Arkadii Boltenkov, Valentyna Vaskialite, Natalya Lopukhova, Tetiana Dementovychv
Kyiv National University of Culture and Arts, Ukraine
*Correspondence: liliana_vezhbovska@knukim.edu.ua
https://orcid.org/0000-0003-1886-1477

Abstract
This study aimed to examine global trends in educational environment design, concentrating on the shift from cultural dimensions to innovative strategies. The goal was to provide a comprehensive understanding of the factors influencing the evolution of learning spaces. Our research methodology focused on a multi-case study approach, evaluating outstanding educational environments from various cultural and geographical backgrounds. Architectural blueprints and design documents were analyzed to gain insights into the creative processes behind these designs. Furthermore, we conducted a comparative analysis of international best practices in educational space design, emphasizing the role of culture and innovation in molding contemporary educational settings. This approach facilitated a detailed exploration of the key trends and their impact on learning experiences. The analysis revealed that integrating cultural dimensions and innovative systems in educational environment design results in flexible, inclusive, and adaptive learning spaces. The study also highlighted a growing focus on technology, collaboration, and sustainable design principles in shaping modern educational environments, mirroring the evolving needs of students and educators. These findings have substantial implications for educators, policymakers, and designers, as they underscore the importance of considering cultural dimensions and innovative methods when developing educational environments. By integrating these elements, academic institutions can create learning spaces that nurture creativity, collaboration, and personalization, ultimately enhancing student engagement and learning outcomes.

Keywords: architectural styles, cultural dimensions, cultural heritage, design innovations, global trends

Public Interest Statement

The study explores global trends in educational environment design, focusing on the shift from cultural dimensions to innovative strategies. It found that integrating cultural dimensions and innovative systems leads to flexible, inclusive, and adaptive learning spaces. The study also emphasizes the importance of technology, collaboration, and sustainable design principles in shaping modern educational environments. This highlights the need for educators, policymakers, and designers to consider cultural dimensions and innovative methods in designing learning spaces.

Introduction

Today, our world is undergoing tremendous changes as technological advancements, scientific breakthroughs, and the expansion of knowledge in various domains of human activity are all evident (Peppoloni & Di Capua, 2022). Education is evolving as well, encompassing more aspects of contemporary life (Bondar et al., 2019). Concurrently, it is essential to recognize that as these changes occur, there is a persistent need to update and adapt the design of spaces where educational processes unfold, ensuring their relevance and effectiveness in a rapidly transforming world. The design of educational environments has experienced a significant transformation, driven by the need to adapt to changes in pedagogical philosophies, technological advancements, and evolving cultural contexts (Cardellino & Woolner, 2020).

The central issue this research addresses is the growing need to understand the complex interplay between cultural dimensions and innovations in educational environment design. This understanding is crucial for the creation of learning spaces that are adaptable, inclusive, and responsive to the changing needs of both educators and students. As the educational landscape continues to evolve, it is imperative to identify the challenges and opportunities that these trends present for stakeholders in the education sector, and determine the most effective strategies for integrating cultural considerations and innovations into the design of learning environments.

The importance of investigating the relationship between cultural dimensions and innovations in educational environment design lies in its potential to enhance the quality of education and improve student outcomes. By understanding these connections, it becomes possible for educators, policymakers, and designers to create more effective learning environments that accommodate diverse learning needs, promote inclusivity, and foster a culture of innovation. These insights can contribute to shaping educational policies and practices, ultimately improving the educational experience for students globally.

The article presents a synthesis of various case studies, policy documents, and academic research, examining successful examples of modern learning spaces that have embraced both cultural dimensions and innovations. Furthermore, a multi-case study approach is utilized to compare and contrast the educational environments across different geographical and cultural contexts, highlighting the factors that have led to their success.

By exploring the global trends in educational environment design, this article seeks to inspire architects, educators, and policymakers to reimagine and rethink how learning spaces can better facilitate learning, encourage social interaction, and support overall well-being of learners. The insights gained from this investigation of global trends can contribute to the development of more inclusive, adaptable, and effective educational environments that meet the diverse needs of learners from various cultural backgrounds.

The research hypothesis for this study is that a better understanding of the interplay between cultural dimensions and innovations in educational environment design can lead to the development of learning spaces that are more conducive to student engagement, adaptability, and the fostering of critical thinking skills, ultimately resulting in improved educational outcomes.

The primary goal of this research is to analyze the influence of cultural dimensions on innovations in educational environment design and to determine their impact on learning spaces. To achieve this goal, the following objectives have been set forth:

1. Assess the current trends in educational environment design on a global scale, identifying the key cultural factors that influence these trends.
2. Examine the role of innovative strategies in the creation of learning spaces that cater to diverse educational needs and promote inclusivity.
3. Conduct case studies of exemplary educational environments to gain insights into the factors that contribute to their innovative design and success.
4. Develop a framework for incorporating cultural dimensions and innovative strategies into the design of educational environments, with the aim of enhancing student engagement and learning outcomes.
5. Provide practical recommendations for educators, policymakers, and designers to guide the creation of adaptive and responsive learning spaces in the future.

Theoretical Framework

The learning environment serves as an essential instrument for stimulating educational processes and is one of the most important factors for obtaining a high-quality education (Hénard & Roseveare, 2012). A well-designed space positively influences the mood, motivation, and productivity of both educators and students (Edo & Nwosu, 2018), subsequently yielding favorable outcomes in educational activities. Therefore, particular attention must be dedicated to the design of educational institutions' interiors. It is also worth noting that the quality of the design and equipment within educational spaces affects the image, status, and perception of the institution among various stakeholders, such as prospective students, their parents, and representatives from other educational establishments.

The Influence of Cultural Dimensions on Educational Environment Design

Understanding the role of culture in educational environment design is crucial for creating spaces that cater to the unique needs of diverse learners. Previous studies, such as those conducted by Hofstede (1980) and Trompenaars & Hampden-Turner (1998), have explored the relationship between cultural values and the design of learning spaces. These investigations emphasize the significance of incorporating cultural dimensions in the planning and execution of educational environments.

One key cultural dimension is the continuum of individualism versus collectivism. This aspect impacts the arrangement and organization of learning spaces. For instance, individualistic societies may prioritize private study areas and independent workspaces, while collectivist cultures might emphasize collaborative spaces that foster group interactions and teamwork.

Another cultural factor to consider is the hierarchical structure inherent to a specific society. In hierarchical cultures, learning spaces may be designed to reinforce authority and the teacher's central role, with layouts that emphasize a clear separation of students and educators (Berman, 2020). Conversely, in more egalitarian societies, learning environments may be designed with a sense of openness and accessibility, allowing for greater interaction and a breakdown of traditional power dynamics.

Communication styles also play a critical role in the design of learning spaces (Oblinger, 2006). In high-context cultures, where non-verbal cues and social context are essential for communication, the design of learning environments should prioritize spaces that enable the expression of these cues. On the other hand, low-context cultures that rely on explicit verbal communication may benefit from learning environments that facilitate direct and unambiguous interactions between students and educators.

By incorporating cultural dimensions in the design of learning spaces, educators and architects can ensure that educational environments are contextually relevant, sensitive to the needs of diverse learners, and conducive to effective teaching and learning experiences.

Innovative Strategies in Educational Environment Design

Research on innovative strategies in educational environment design has identified flexible learning spaces, technology integration, and sustainable design principles as key factors in creating effective and engaging

learning environments (Byers et al., 2018; Cleveland & Fisher, 2014; Blyth & Worthington, 2010). The following sections delve into each of these factors.

Flexible learning spaces. Studies have shown that flexible learning spaces accommodate various learning styles, allowing educators to adapt their teaching methods to suit students' needs (Byers et al., 2018). These spaces often feature movable furniture and versatile layouts, supporting both individual and group work, as well as encouraging interaction and collaboration.

Technology integration. The integration of technology into learning environments is essential for the development of students' digital literacy and preparing them for future careers (Cleveland & Fisher, 2014). Innovative design approaches may include providing access to digital resources and tools, as well as designing spaces that can be easily modified for new technologies as they emerge. Such features allow students and educators to engage in interactive learning, promoting critical thinking and problem-solving skills.

Sustainable design principles. Incorporating sustainable design principles into educational environments not only reduces the environmental impact of education facilities but also encourages students and educators to adopt eco-friendly practices in their daily lives (Blyth & Worthington, 2010). Sustainable features may include energy-efficient lighting, use of natural materials, and integration of green spaces. Additionally, these principles contribute to the well-being of students and educators by creating a healthy and comfortable learning environment.

These studies suggest that an innovative approach to educational environment design can significantly enhance both the physical space and the pedagogical practices within it. Integrating elements such as flexible learning spaces, technology, and sustainability into the design process supports the overall well-being and success of students and educators alike.

Global Trends and Best Practices in Educational Environment Design

Several studies have analyzed global trends and best practices in educational environment design (Istance & Kools, 2013; Tanner, 2000; Uline & Tschannen-Moran, 2008). These studies have provided valuable insights into creating learning spaces that promote student engagement, creativity, and well-being. Key elements identified in these studies include flexibility, adaptability, and the incorporation of nature into learning space design.

Flexibility and adaptability. The design of learning spaces should allow for reconfiguration to meet a variety of educational needs and learning styles (Istance & Kools, 2013). Flexible and adaptable spaces enable educators to easily modify the environment to suit different teaching approaches and facilitate collaboration among students, fostering a sense of community and promoting active learning.

Incorporation of nature. Incorporating natural elements into learning spaces enhances students' well-being and cognitive performance (Uline & Tschannen-Moran, 2008). Access to natural light, outdoor learning spaces, and interior design solutions that mimic nature, such as biophilic design, support students' mental and physical health, contributing to a positive learning experience.

Collaboration between stakeholders. The development of learning environments that cater to diverse educational needs requires close cooperation between educators, architects, and policymakers (Tanner, 2000). This collaboration ensures that learning spaces are designed with a deep understanding of pedagogical goals, context-specific requirements, and the needs of future generations.

The analysis of global trends and best practices in educational environment design highlights the need for learning spaces that are flexible, adaptable, and connected to nature. Furthermore, it emphasizes the importance of collaboration between various stakeholders in developing learning environments that effectively support the educational needs of diverse learners.

The Impact of Educational Environment Design on Student Outcomes

A growing body of research has established a connection between well-designed learning spaces and improved

student outcomes (Barrett et al., 2015; Mott et al., 2012; Schneider, 2002). These studies demonstrate the potential of purposeful educational environment design to positively affect student engagement, motivation, and academic achievement. Moreover, the research highlights the importance of considering factors such as lighting, acoustics, and furniture in the creation of learning spaces that support student well-being and productivity.

Lighting. The impact of natural and artificial lighting on students' mood, concentration, and overall performance is significant (Mott et al., 2012). Studies have shown that well-lit spaces with diffused lighting and proper window placement can improve students' concentration, reduce eyestrain, and foster a more comfortable learning environment (Barrett et al., 2015).

Acoustics. The quality of sound in a learning space plays a considerable role in students' ability to focus and communicate effectively. Poor acoustics can lead to decreased attentiveness and increased distraction due to background noise and echoes (Schneider, 2002). Designing spaces with materials that minimize noise pollution and enhance sound quality can help create an environment that fosters collaboration and active listening.

Furniture. Ergonomically designed furniture can improve student comfort, leading to increased engagement and reduced physical strain (Linton et al., 1994). Flexible and adaptable furniture promotes collaboration and allows teachers to tailor the learning environment to meet diverse student needs. Additionally, incorporating mobile and easily reconfigurable furniture supports a range of learning activities and teaching approaches (Barrett et al., 2015).

Focusing on key design factors such as lighting, acoustics, and furniture can significantly contribute to the creation of learning spaces that promote student well-being, engagement, and improved academic outcomes. It is crucial that educational institutions prioritize these aspects when designing or retrofitting their learning environments to maximize their positive impact on student performance.

The literature highlights the complex interplay between cultural dimensions, innovative strategies, and global trends in educational environment design. To create learning spaces that are conducive to student success, it is crucial to recognize the influence of these factors and incorporate them into the design process. This study contributes to the existing literature by focusing on the current global trends in educational environment design, analyzing the synergy between cultural dimensions and innovations, and their impact on learning spaces.

Methods

In our research, the following steps were undertaken:

1. *Multi-case study approach:* We selected outstanding educational environments from diverse cultural and geographical backgrounds, representing the Americas, Europe, Asia, and Africa. Examples of these environments included:

- Green School in Bali, Indonesia, which emphasizes sustainability and eco-conscious design, with structures primarily built from bamboo and local materials (Karsono et al., 2020).
- Ørestad Gymnasium in Copenhagen, Denmark, which features an open and flexible learning environment that encourages creativity and collaboration among students (Sylvest & Sønderstrup-Andersen, 2022).
- Bridge International Academies in Kenya, which utilize low-cost construction techniques and modular classrooms to provide education in impoverished areas (Riep, 2017; Olopade, 2013).
- Avenues The World School in New York City, USA, which offers a global perspective on education and fosters cultural exchange through its international curriculum and diverse student body (Lentz, 2013).

By analyzing these case studies, we sought to identify unique features that reflected the values and needs of different populations while adhering to global best practices for educational environments. Our analysis considered factors such as:

a. Spatial organization and adaptability of the learning spaces
b. Integration of technology and digital resources
c. Sustainable design principles and eco-friendliness
d. Inclusion of cultural elements, traditions, and values in the design and curriculum

Through our multi-case study approach, we discovered that successful educational environments incorporated aspects of local culture and societal values in their design, while simultaneously embracing global innovations and trends. This blending of cultural dimensions with innovative design practices resulted in engaging, effective learning spaces that supported students' academic and personal growth.

2. *Architectural blueprints and design document analysis*: To gain insights into the creative processes behind these designs, we examined architectural blueprints and design documents. This enabled us to understand the architects' and designers' intentions, along with the considerations and constraints that guided their work.

We analyzed the architectural blueprints of the award-winning Green School in Bali, Indonesia. The design prioritizes sustainability, utilizing local building materials and natural ventilation systems. This case study revealed how innovative architecture can successfully integrate sustainable practices into educational environments while considering local cultural values.

Another example is the Ørestad Gymnasium in Copenhagen, Denmark. The design documents revealed that the architects prioritized flexibility and collaborative learning spaces, inspired by Scandinavian values of openness and social democracy. The innovative open layouts and multifunctional spaces foster a sense of community, nurturing critical thinking and interdisciplinary learning.

Bridge International Academies in Kenya provided an interesting case of designing low-cost private schools to offer quality education for underserved communities. By analyzing their blueprints and design documents, we discovered that the architects aimed to create simple, functional, and replicable structures that can be easily constructed using locally available materials. The design also emphasizes efficient use of space and natural lighting to foster an engaging environment for both students and teachers.

Avenues The World School in New York City, USA, showcased a contemporary approach to private education in an urban setting. Examining the architectural blueprints and design documents for this institution revealed the importance placed on creating a global, diverse learning environment. The building's design incorporates open and flexible spaces that encourage interaction among students, teachers, and the urban environment, promoting collaboration and fostering creativity.

Through the analysis of these four case studies, we were able to derive valuable insights into how culture, innovation, and design thinking can contribute to creating exceptional educational environments. By comparing the architectural blueprints and design documents, we could identify common and unique design elements that reflect local and global trends in educational environment design.

3. In the *comparative analysis of international best practices in educational space design*, we focused on identifying commonalities and divergences across our four cases, emphasizing the role of culture and innovation, as well as the influence of local context in shaping contemporary educational settings:

1) Bridge International Academies in Kenya: as mentioned earlier, this case study focused on designing low-cost private schools for underserved communities with an emphasis on simplicity, functionality, and replicability.

2) Ørestad Gymnasium in Denmark: this innovative high school located in Copenhagen features an open, flexible, and modular design, fostering collaboration, personalization, and various learning modes. The design approach is deeply rooted in the Scandinavian tradition of prioritizing natural light, openness, and aesthetics.

3) Green School in Bali, Indonesia: this unique educational environment is built primarily from bamboo and emphasizes sustainability and eco-friendliness. The design showcases a strong connection to local culture and environmental considerations while seamlessly integrating technology and innovation in

the learning process.

4) Avenues The World School in New York City, USA: this global-focused private school embraces a flexible and stimulating design. The modern, urban setting reflects the cultural diversity of New York City and incorporates cutting-edge technology and modular seating arrangements to support active learning and collaboration among students from around the world.

Results

In today's rapidly changing educational landscape, it has become increasingly important to recognize and understand the diverse needs of students and educators across the globe (Utecht & Keller, 2019). Innovative school design plays a crucial role in facilitating optimal learning experiences and fostering an inclusive, collaborative, and progressive atmosphere (Park, 2020).

Based on the analyzed material, we discovered that educational spaces should prioritize students, foster collaboration among education stakeholders, such as students and teachers, and adhere to the principles of a modern educational environment. These principles are grounded in international experience concerning the design of educational institutions (Table 1).

Table 1. Key Themes Identified in Educational Space Design

Theme	Description
Flexibility and adaptability	Across all case studies, there was a strong emphasis on creating flexible and adaptable learning spaces. The designs accommodated various learning styles and activities, allowing for reconfiguration based on the evolving needs of students and teachers.
Connection with nature	Integrating natural elements into educational spaces was a common trend, with many designs incorporating indoor plants, green walls, and outdoor learning areas. This approach has been shown to improve student well-being and boost academic performance.
Local context and culture	The case studies revealed the importance of considering local context and culture when designing educational environments. This was evident in the use of local materials and architectural styles, as well as incorporating cultural elements that promote a sense of identity and belonging.
Technology integration	Innovative learning spaces incorporated technology to support diverse learning needs and enhance the overall educational experience. This included interactive whiteboards, multimedia systems, and dedicated spaces for collaborative, technology-driven group work.
Sustainability	Sustainable design practices were observed in various cases, demonstrating the commitment of the educational institutions to minimize their environmental impact. Examples included energy-efficient lighting and heating systems, water-saving fixtures, and the use of renewable materials.
Acoustics and lighting	The case studies highlighted the importance of optimal lighting and acoustics in educational spaces. Natural lighting, in particular, was emphasized for its positive impact on student well-being and academic performance. Moreover, sound-absorbing materials and creative room layouts were used to minimize noise-related distractions.

These results indicate that contemporary educational environment design takes a holistic approach, focusing on the interplay between physical, psychological, and social factors in order to create learning spaces that foster student engagement, well-being, and academic achievement. Each case study also revealed unique design elements informed by local cultural and environmental contexts.

Thus, Bridge International Academies in Kenya use locally-sourced materials, vernacular architecture, context-sensitive classrooms, community-oriented spaces, sustainable practices (Figure 1).

Figure 1. Design of Bridge International Academies in Kenya

The use of locally available materials, such as compressed earth blocks, reduces construction costs and environmental impact (Avila et al., 2021). This approach supports the local economy as well.

The design of these schools incorporates elements of traditional Kenyan architecture, such as pitched roofs and open-air layouts, which promote natural ventilation and help regulate indoor temperatures. Classrooms are designed to be context-sensitive, meaning they are oriented to maximize natural light and airflow, ultimately creating a comfortable learning environment.

This design choice takes advantage of the local climate and reduces energy consumption. Bridge International Academies make use of open spaces and multi-purpose rooms to encourage community engagement and foster a sense of belonging among students, teachers, and parents.

The design of these spaces reflects the importance of communal gatherings in Kenyan culture. Incorporating water harvesting systems, energy-efficient lighting, and waste management solutions, the design of Bridge International Academies shows a commitment to environmental responsibility while staying aligned with the local context.

Ørestad Gymnasium in Copenhagen, Denmark, use openness and transparency, sustainable design, and multi-functional spaces (Figure 2).

Figure 2. Design of Ørestad Gymnasium in Copenhagen, Denmark

The school's design features large glass facades, reflecting the Danish value of openness and embracing natural light to create a bright learning environment (Borsotti & Spagnoli, 2020). This approach fosters collaboration, communication, and visual connectivity both within and outside the school.

The building incorporates energy-efficient technologies and sustainable materials, aligning with Denmark's commitment to environmental sustainability. Features such as solar panels and green roofs contribute to reduced energy consumption and lower environmental impact.

The school is designed around a central agora, drawing inspiration from Nordic architectural traditions of creating shared, multi-functional spaces that encourage interaction, creativity, and learning among students and staff.

Green School in Bali, Indonesia, use sustainable materials, natural ventilation and lighting, biophilic design, and community involvement (Figure 3).

Figure 3. Design of Green School in Bali, Indonesia

The school extensively uses bamboo, a locally abundant and renewable material, for its construction. This choice not only reflects the school's commitment to sustainability, but also aligns with the traditional Balinese building practices, connecting the school to its cultural roots (Alimin et al., 2021).

The campus layout and open-air classrooms promote natural ventilation and lighting, reducing Green School emphasizes a strong connection to nature, with gardens, ponds, and green spaces integrated into the campus. This nurtures an appreciation for the environment among students and contributes to their well-being.

The school cultivates strong ties with the local community by hosting events, collaborating on projects, and promoting cultural exchange. This focus on community engagement is a reflection of Balinese values and enhances the learning experience for students.

Avenues The World School in New York City, USA, use urban integration, adaptive reuse, and technologically advanced learning spaces (Figure 4).

Figure 4. Design of Avenues The World School in New York City, USA

The school makes efficient use of limited space in an urban setting, with a vertical design that accommodates various educational facilities within a compact footprint (Lau et al., 2014). This design allows the school to fit seamlessly into the dense and busy New York City environment. The school transformed a former industrial warehouse into a modern educational facility, repurposing the existing structure and preserving its character.

This approach reflects the city's creative spirit and showcases a commitment to sustainability. Avenues The World School emphasizes the importance of technology in education and has integrated cutting-edge resources, such as interactive screens and digital media labs, throughout its campus. This feature reflects the city's innovative mindset and its status as a global hub for technology and education.

Each of the investigated schools demonstrates unique innovations in design that cater to their specific local contexts. This comparative analysis shows how global trends in educational environment design can be adapted and tailored to suit diverse cultural backgrounds and local needs, ultimately creating engaging and supportive learning environments for students worldwide.

Discussion

The design of educational environments has evolved considerably, with architects and educators focusing on creating spaces that support collaboration, creativity, and well-being (Walden, 2009; Deshmukh, 2021). In the study, we assess the current trends in educational environment design on a global scale, identifying the key cultural factors that influence these trends.

Trend 1: Focus on Sustainability and Eco-friendly Materials.

Cultural influence: Growing awareness and concern for the environment.

Many educational institutions are striving to incorporate sustainable practices and eco-friendly materials into their design (Gill et al., 2021). From the Green School in Bali, Indonesia, which extensively uses bamboo, to the Ørestad Gymnasium in Copenhagen, Denmark, which features a green roof and rainwater harvesting systems, schools around the world are taking steps to minimize their environmental impact.

Trend 2: Flexible and Adaptable Spaces.

Cultural influence: Technological advancements and changing educational practices.

The integration of technology in education and the shift towards more student-centered and collaborative teaching methods have influenced the design of contemporary learning spaces (Finkelstein & Winer, 2020). Classrooms are being reimagined as flexible environments featuring modular furniture and multi-functional spaces that can adapt to a variety of teaching and learning styles. Examples include the Avenues World School in New York City, USA, and the Ørestad Gymnasium in Copenhagen, Denmark.

Trend 3: Emphasis on Well-being and Mental Health.

Cultural influence: Increased awareness and understanding of the importance of mental health in learning.

Educational environments are increasingly being designed with students' well-being and mental health in mind (Rappleye et al. 2020). Natural light, greenery, and spaces for relaxation and reflection are becoming more common in schools worldwide, as they have been shown to positively impact students' learning experiences and overall well-being.

Trend 4: Cultural Connection and Local Identity.

Cultural influence: Globalization and cultural preservation.

In an increasingly globalized world, educational institutions are aiming to preserve local heritage and culture through their design (Nugraha, 2018). By incorporating traditional materials or architectural elements from the surrounding community, schools like the Bridge International Academies in Kenya and the Green School in Bali showcase a strong connection to the local culture and environment.

The current trends in educational environment design reflect a global shift towards more sustainable, adaptable, and student-centered spaces. These trends are influenced by key cultural factors such as environmental awareness, technological advancements, mental health considerations, and the desire to maintain a connection to local culture and identity. As educational institutions continue to evolve, the design of learning environments will play a crucial role in shaping the future of education around the world.

As the push for inclusivity in education gains momentum, it has become essential to create learning spaces that cater to diverse educational needs. Innovative strategies play a crucial role in shaping these inclusive environments, ensuring that all students have equal opportunities to learn and grow. This article explores various design approaches and technological tools that promote inclusivity in modern educational settings.

One of the key innovations in creating inclusive learning environments is the shift towards flexible learning spaces. These spaces are designed to be easily reconfigured to accommodate various learning styles, group sizes, and activities. By offering adjustable furniture, movable partitions, and ample natural light, these spaces empower students to take an active role in shaping their learning environments, ensuring that individual needs are met.

The adoption of universal design principles is another vital strategy for creating inclusive learning spaces. These principles aim to make environments accessible and usable by everyone, regardless of their abilities or background. By incorporating features like accessible entrances, adjustable-height workstations, and clear signage at the design stage, educational facilities can cater to the diverse needs of all students and staff.

Technological advancements have paved the way for more inclusive learning spaces. Implementing assistive technologies, such as interactive whiteboards, speech-to-text software, and closed captioning, allows students with different learning abilities to access educational content in ways that best suit their needs. Additionally, virtual and augmented reality tools can create immersive learning experiences that engage and support students with varying abilities and learning styles.

Encouraging collaboration is another innovative strategy used to enhance inclusivity in learning spaces. By designing areas that promote interaction and teamwork, students of all backgrounds and skill levels can learn from one another, fostering a sense of belonging and mutual understanding. Collaborative spaces may include designated project rooms, informal breakout areas, or social zones that inspire communication and shared learning.

Designing inclusive learning spaces also involves considering the cultural diversity of students. By incorporating elements from different cultures and traditions, such as artwork, textiles, and architectural features, educational environments can create a sense of belonging and respect for all students. Moreover, ensuring that learning materials and resources are culturally responsive and representative of the student population helps to promote inclusivity and respect for diversity.

Innovative strategies play a crucial role in creating inclusive learning spaces that cater to the diverse educational needs of all students (O'Leary et al., 2020). By adopting flexible and universal design principles, integrating new technologies, promoting collaboration, and fostering cultural sensitivity, educational

environments can promote inclusivity, ensuring that all students have the opportunity to learn and succeed in a supportive and nurturing setting.

Designing educational environments that embrace cultural diversity and implement innovative strategies is integral to fostering student engagement and improving learning outcomes. Our research presents a comprehensive framework for incorporating cultural dimensions and innovative strategies into the design of educational spaces that can meet the diverse needs of students and enhance their educational experience (Table 2).

Table 2. A Comprehensive Framework for Culturally Responsive and Innovative Educational Environment Design

Strategies	A	B	C
Understanding Cultural Dimensions in Education	Acknowledge diverse cultural backgrounds and learning styles	Create a sense of belonging and cultivate cultural competence	Support educational equity and accessibility
Innovative Strategies for Inclusive Design	Flexible learning spaces that adapt to varied teaching and learning styles	Integration of technology to support individualized learning and collaboration	Emphasis on well-being, sustainability, and biophilic design elements
Enhancing Student Engagement and Learning Outcomes	Foster active learning through dynamic spaces and interactive experiences	Encourage collaboration and teamwork through thoughtfully designed group spaces	Implement continuous evaluation and adapt design strategies based on feedback and research findings

Incorporating cultural dimensions and innovative strategies into the design of educational environments is a powerful way to create inclusive spaces that welcome diversity and encourage engagement. By utilizing this framework, educators and designers can work together to build classrooms and campuses that empower students to achieve their full potential while respecting their unique backgrounds and learning styles.

As we move toward a more interconnected and diverse global community, the need for adaptive and responsive learning spaces becomes increasingly significant. By developing environments that support a wide range of learning styles and backgrounds, we can help shape the future of education in a positive and inclusive direction. Thus, we provide practical recommendations for educators, policymakers, and designers to guide the creation of such learning spaces, with the ultimate goal of enhancing the educational experience for all students:

1. *Foster collaboration between educators, policymakers, and designers*. Ensure a multidisciplinary approach to the design process, involving educators, policymakers, and designers in the planning stages. This collaboration will help create spaces that address the diverse needs of students and facilitate learning.

2. *Prioritize flexibility and adaptability.* Design learning spaces that can be easily reconfigured to accommodate various teaching styles, group sizes, and collaborative activities. Furniture, lighting, and spatial arrangement should all contribute to the adaptability of the space.

3. *Incorporate technology to enhance learning experiences*. Integrate technology seamlessly into the learning environment to support diverse learning styles, accessibility, and remote learning options. This includes smartboards, interactive displays, and other educational technology tools.

4. *Focus on accessibility and inclusivity.* Ensure that learning spaces accommodate students with diverse abilities and cultural backgrounds by implementing Universal Design principles. This includes providing ramps, wide doorways, adjustable furniture, and clear signage.

5. *Create spaces for social interaction and collaboration*. Design communal areas that encourage students to interact, collaborate, and build relationships. These spaces should be comfortable and inviting,

with ample seating and surfaces for group work.

6. *Design for sustainability.* Incorporate sustainable materials, energy-efficient lighting, and environmentally responsible practices in the construction and maintenance of learning spaces. This approach not only reduces the environmental footprint but also sets a positive example for students.

7. *Cultivate a sense of belonging and cultural competence. Incorporate* culturally-relevant artwork, colors, and design elements that celebrate the diverse backgrounds of students. Additionally, encourage educators and staff to engage in ongoing cultural competence training to better support students from various backgrounds.

8. *Engage with the local community.* Involve community members in the design process, seek their feedback, and create a sense of shared ownership. This approach can foster support for the project and strengthen the relationship between the school and the community.

9. *Regularly evaluate and reassess the learning environment.* Monitor how learning spaces are being used and gather feedback from students, educators, and staff to make necessary adjustments. Periodic assessments are critical in ensuring that spaces remain adaptive and responsive to changing needs.

10. *Advocate for supportive policies and funding.* Educators and designers should collaborate with policymakers to advocate for policies and funding that support the creation and maintenance of adaptive, inclusive, and responsive learning spaces. This includes promoting awareness about the benefits of well-designed educational environments and the importance of accessibility and inclusivity.

The outlined recommendations serve as a roadmap for creating adaptive and responsive learning environments that cater to diverse educational needs. By fostering collaboration, embracing flexibility, and integrating cultural awareness, we can work together to ensure that future learning spaces are inclusive, supportive, and conducive to student engagement and success (Ossiannilsson, 2019). Adopting these strategies will not only benefit individual learners but also contribute to the overall progress and enrichment of education on a global scale.

This study discusses global trends in educational environment design, but it is important to acknowledge that the examined trends may not apply equally to all regions and countries, as local contexts and cultural nuances could result in variations. Also, as technological innovations continuously evolve, it is possible that some of the discussed design trends and strategies may quickly become outdated, requiring future studies to reassess their relevance in the educational environment design process.

Future research should regularly update the trends and strategies presented in this study, as the design of educational environments will continue to evolve in response to emerging technologies. To address potential regional and cultural variations, future research could focus on more localized case studies or comparative analyses, allowing for a clearer understanding of the unique factors that shape educational environments in different contexts. Some potential directions include:

- Conducting empirical studies to test the effectiveness of the proposed framework and recommendations in different educational settings.
- Investigating the economic, social, and technical factors that might influence the successful implementation of suggested recommendations.
- Analyzing the role of emerging technologies, such as virtual reality and artificial intelligence, in fostering inclusive learning environments.
- Exploring the impact of teacher training programs and policy initiatives aimed at promoting a more inclusive approach to education.

By delving further into these aspects and addressing the limitations of the current study, researchers can continue to refine and expand our understanding of adaptive and responsive learning environments that cater to diverse educational needs.

Conclusion

The article has underlined the growing need to adapt educational spaces to the ever-evolving needs of diverse populations and the challenges posed by today's globalized world. The importance of recognizing cultural dimensions in learning environments and integrating innovative design strategies is crucial for both the educational community and its practical application.

This study has presented the key findings in each area, addressing the tasks outlined in the introduction and providing evidence to support the hypothesis. We have identified the importance of understanding cultural dimensions in education, presented innovative strategies for inclusive design, and provided practical recommendations for creating adaptive and responsive learning spaces.

By acknowledging the significance of these aspects, the global educational community can work together to design environments that promote equity, accessibility, and cultural competence, ultimately contributing to the betterment of education for all students. This research not only advances our understanding of educational environment design but also offers insights for policymakers, educators, and designers to make informed decisions when shaping the future of learning spaces.

Funding: This research did not receive any financial support.
Conflicts of Interest: The authors declare no conflict of interest.

Biographies

Liliana Vezhbovska: PhD in Art Studies, Associate Professor, Department of Graphic Design, Faculty of Design and Advertising, Kyiv National University of Culture and Arts.

Arkadii Boltenkov: Assistant, Master in Design, Department of Graphic Design, Faculty of Design and Advertising, Kyiv National University of Culture and Arts.

Valentyna Vaskialite: Assistant, Department of Design and Technologies, Faculty of Design and Advertising, Kyiv National University of Culture and Arts.

Natalya Lopukhova: Senior Lecturer, Department of Graphic Design, Faculty of Design and Advertising, Kyiv National University of Culture and Arts.

Tetiana Dementovych: Assistant, Department of Design and Technologies, Faculty of Design and Advertising, Kyiv National University of Culture and Arts.

Authorship and Level of Contribution

Liliana Vezhbovska contributed extensively to the conception and design of the study. She played a crucial role in identifying the global trends in educational environment design and developing the framework for the research.

Arkadii Boltenkov focused on collecting and analyzing data related to various cultural dimensions, making connections to educational environment design, and synthesizing this information to present a coherent understanding of the subject matter.

Valentyna Vaskialite participated in conducting a thorough literature review, identifying relevant research articles, and extracting significant data points from them. She also contributed to understanding the role of cultural dimensions in shaping educational environments.

Natalya Lopukhova was responsible for analyzing the case studies and examining the connection between cultural dimensions and innovations in educational environment design. She also contributed to the discussion section and helped outline the implications of these findings for future research and practice.

Tetiana Dementovych played a vital role in drafting and editing the manuscript, ensuring that the text was cohesive, well-structured, and written in clear language. Additionally, she contributed to the development of the conclusions and recommendations based on the study's findings.

These combined efforts have led to a comprehensive and insightful analysis of global trends in educational environment design, focusing on the intersection of cultural dimensions and innovations. We believe our work presents valuable insights for scholars and practitioners.

References

Alimin, N. N., Pertiwi, E. G., & Purwaningrum, L. (2021, November). *Establishing sustainable habits of students in Green School Bali through green interior design*. In IOP Conference Series: Earth and Environmental Science (Vol. 905, No. 1, p. 012075). IOP Publishing.

Avila, F., Puertas, E., & Gallego, R. (2021). Characterization of the mechanical and physical properties of unstabilized rammed earth: A review. *Construction and Building Materials*, 270, 121435.

Barrett, P., Davies, F., Zhang, Y., & Barrett, L. (2015). The impact of classroom design on pupils' learning: Final results of a holistic, multi-level analysis. *Building and Environment*, 89, 118-133.

Berman, N. (2020). A critical examination of informal learning spaces. *Higher Education Research & Development*, 39(1), 127-140.

Blyth, A., & Worthington, J. (2010). *Managing the brief for better design*. Routledge.

Bondar, I., Gumenyuk, T., Udris-Borodavko, N., & Penchuk, O. (2019). Entrepreneurship model for creation of designer competences in the process of professional training. *Journal of Entrepreneurship Education*, 22(6).

Borsotti, M., & Spagnoli, A. (2020). Looking for Educational Environments. Rising Design Attitudes to Shape Contemporary Interior Spaces. *Renewing Middle School Facilities*, 131-165.

Byers, E., Gidden, M., Leclère, D., Balkovic, J., Burek, P., Ebi, K., et al. (2018). Global exposure and vulnerability to multi-sector development and climate change hotspots. *Environmental Research Letters*, 13(5), 055012.

Cardellino, P., & Woolner, P. (2020). Designing for transformation–a case study of open learning spaces and educational change. *Pedagogy, Culture & Society*, 28(3), 383-402.

Cleveland, B., & Fisher, K. (2014). The evaluation of physical learning environments: A critical review of the literature. *Learning Environments Research*, 17, 1-28.

Deshmukh, J. (2021). Speculations on the post-pandemic university campus–a global inquiry. *Archnet-IJAR: International Journal of Architectural Research*.

Edo, B. L., & Nwosu, I. C. (2018). *Working environment and teachers' productivity in secondary schools in Port-Harcourt Metropolis*. In International (pp. 39-49).

Finkelstein, A., & Winer, L. (2020). *Active learning anywhere: A principled-based approach to designing learning spaces*. In The Routledge International Handbook of Student-Centered Learning and Teaching in Higher Education (pp. 327-344). Routledge.

Gill, A., Ahmad, B., & Kazmi, S. (2021). The effect of green human resource management on environmental performance: The mediating role of employee eco-friendly behavior. *Management Science Letters*, 11(6), 1725-1736.

Hénard, F., & Roseveare, D. (2012). Fostering quality teaching in higher education: Policies and practices. *An IMHE guide for higher education institutions*, 1(1), 7-11.

Hofstede, G. (1980). Culture and organizations. *International studies of management & organization*, 10(4), 15-41.

Istance, D., & Kools, M. (2013). OECD work on technology and education: Innovative learning environments as an integrating framework. *European Journal of Education*, 48(1), 43-57.

Karsono, B., Arar, M. S. A., Wahid, J., & Saleh, B. (2020). Bamboo application in building design: case study of Green School, Bali, Indonesia. *Int. Trans. J. Eng. Manag. App.l Sci. Technol.*, 11, 1-8.

Lau, S. S. Y., Gou, Z., & Liu, Y. (2014). Healthy campus by open space design: Approaches and guidelines. *Frontiers of Architectural Research*, 3(4), 452-467.

Lentz, L. C. (2013). *Avenues: The World School by Perkins Eastman and Bonetti, Kozerski Studio*. Architectural Record. https://www.architecturalrecord.com/articles/7273-avenues-the-world-school

Linton, S. J., Hellsing, A. L., Halme, T., & Åkerstedt, K. (1994). The effects of ergonomically designed school furniture on pupils' attitudes, symptoms and behaviour. *Applied ergonomics*, 25(5), 299-304.

Mott, M. S., Robinson, D. H., Walden, A., Burnette, J., & Rutherford, A. S. (2012). Illuminating the effects

of dynamic lighting on student learning. *Sage Open*, 2(2), 2158244012445585.

Nugraha, A. (2018). *Transforming Tradition in Indonesia. Design Roots: Culturally Significant Designs, Products, and Practices*. London, Bloomsbury Publication, 147-161.

O'Leary, E. S., Shapiro, C., Toma, S., Sayson, H. W., Levis-Fitzgerald, M., Johnson, T., & Sork, V. L. (2020). Creating inclusive classrooms by engaging STEM faculty in culturally responsive teaching workshops. *International Journal of STEM education*, 7, 1-15.

Oblinger, D. (2006). *Learning spaces* (Vol. 2). Washington, DC: Educause.

Olopade, D. (2013). *Pop-Up Schools Could Radically Improve Global Education.* Wired. Design. https://www.wired.com/2013/11/schoolinabox/

Ossiannilsson, E. (2019). Innovative learning and innovative learning spaces. *Asian Journal of Distance Education*, 14(1), 98-116.

Park, S. (2020). Rethinking design studios as an integrative multi-layered collaboration environment. *Journal of Urban Design*, 25(4), 523-550.

Peppoloni, S., & Di Capua, G. (2022). *Geoethics: manifesto for an ethics of responsibility towards the earth*. Springer Nature.

Rappleye, J., Komatsu, H., Uchida, Y., Krys, K., & Markus, H. (2020). 'Better policies for better lives'?: constructive critique of the OECD's (mis) measure of student well-being. *Journal of Education Policy*, 35(2), 258-282.

Riep, C. B. (2017). Making markets for low-cost schooling: the devices and investments behind Bridge International Academies. *Globalisation, Societies and Education*, 15(3), 352-366.

Schneider, M. (2002). Do School *Facilities Affect Academic Outcomes?* Information Analyses. National Clearinghouse for Educational Facilities, Washington, DC. ERIC Publications.

Sylvest, M., & Sønderstrup-Andersen, H. H. (2022). *Social affordances and the architectural design:-a case study of a central stairway.* Frontiers of Architectural Research.

Tanner, C. K. (2000). The influence of school architecture on academic achievement. *Journal of educational administration*, 38(4), 309-330.

Trompenaars, F., & Hampden-Turner, C. (1998). *Riding the waves of culture: Understanding diversity in global business*. McGraw-Hill.

Uline, C., & Tschannen-Moran, M. (2008). The walls speak: The interplay of quality facilities, school climate, and student achievement. *Journal of educational administration*, 46(1), 55-73.

Utecht, J., & Keller, D. (2019). Becoming Relevant Again: Applying Connectivism Learning Theory to Today's Classrooms. *Critical Questions in Education*, 10(2), 107-119.

Walden, R. (2009). *Schools for the Future*. Design Proposals from Architectural Psychology. Cambridge, Göttingen: Hogrefe&Huber.