

THE ARCHITECTURAL ENVIRONMENT AS A FACTOR IN THE DEVELOPMENT OF THE STUDENT'S PERSONALITY IN THE CONTEXT OF THE FORMATION OF NEW UZBEKISTAN

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Abstract

This article examines the architectural environment as an active factor in the intellectual, cultural, emotional, and artistic-aesthetic development of university students in Uzbekistan. Drawing on the historical and architectural development of Samarkand, Bukhara, Khiva, Tashkent, and other centres, the study traces the evolution of educational space from traditional urban culture and madrasas to the mass educational architecture of the twentieth century and contemporary digital university environments. Particular attention is devoted to the concept of architecture as a “non-verbal educator,” which, through scale, light, colour, composition, materials, public spaces, and cultural symbols, shapes students’ attitudes towards knowledge, history, and their own educational institution.

Keywords: Architectural environment, student, New Uzbekistan, educational architecture, historical heritage, artistic and aesthetic culture, madrasa, university, cultural identity, digital environment, Uzbekistan 2030.

Introduction

In the present study, the educational building is considered not only as the material infrastructure of the learning process, but also as a spatial system capable of organising movement, communication, independent work, and students’ everyday visual perception. It establishes patterns of movement, interaction, and privacy; regulates access to light and nature; determines the visual richness of the everyday environment; and creates a symbolic image of knowledge. In the source material of the study, this relationship is formulated as the sequence “architecture, organisation of activity, social interaction, intellectual development, formation of consciousness,” while educational architecture is regarded as an environment that exerts a daily influence on the student. [22–25]

For Uzbekistan, this line of inquiry is particularly productive: archaeological and historic cities, madrasas and observatories, standardised Soviet-era buildings, structures from the independence period, and new university complexes coexist within the same territory. Young people’s attitudes towards architecture can therefore be studied not only in terms of “beautiful–unattractive,” but also through the categories of cultural memory, comfort, technological



capacity, openness, environmental sustainability, identity, and willingness to participate in transforming the environment. [5; 11; 12]

The aim of the article is to systematise the historical and pedagogical trajectory of the development of educational architecture in Uzbekistan and to propose empirical tools for studying how students perceive the buildings and spaces in which they learn.

Methods: historical-comparative analysis; analysis of architectural and spatial characteristics; interdisciplinary comparison of data from architecture, pedagogy, and environmental psychology; Likert-scale survey; and comparative analysis of generations and types of educational buildings. [18–25]

The relationship between architecture and consciousness manifests itself in two ways: architecture records the characteristics of the social development of a particular era and, at the same time, establishes the conditions of people's everyday activity. Different planning solutions create different scenarios of movement and communication: a corridor-based structure, open recreational spaces, a courtyard, gallery, library, laboratory, or coworking space organise educational and social interaction in different ways. The influence of space should therefore be considered through the practical experience of its everyday use. [23; 25]

From a pedagogical perspective, the mediated, non-verbal influence of the educational environment is significant. During their daily presence at the university, students perceive the proportions and scale of spaces, lighting, colour and material solutions, the degree of accessibility, the quality of amenities, and the overall human-centred orientation of the environment. Taken together, these characteristics can support aesthetic sensitivity, a sense of belonging to the university, and a motivational attitude towards learning. At the same time, architecture does not replace the pedagogical process: its potential is realised in interaction with educational content, cultural activities, project-based work, and the student's own active engagement. [18–25]

Architectural factor	Mechanism of perception	Potential pedagogical outcome
Natural lighting	Visual comfort, orientation in time	Support for attention and a positive attitude towards the environment
Colour and materials	Emotional tone, tactility, recognisability	Aesthetic sensitivity
Courtyard and landscaping	Contact with nature, recreation, microclimate	Restoration and social interaction
Lobbies and coworking spaces	Informal communication	Independent and collaborative work
Historical elements	Connection with the past and cultural codes	Cultural identity
Laboratories and digital infrastructure	Access to research practices	Scientific and project-based motivation
Barrier-free environment	Equal access and user dignity	Inclusive culture

Source: compiled by the author on the basis of the research materials.

1. Historical and Cultural Preconditions for the Formation of Educational Architecture in Uzbekistan

The historical trajectory of the study begins with the ancient centres of Khorezm, Sogdiana, Bactria, and Kesh. The urban environment combined craft production, governance, religious, and public functions; the accumulation of knowledge in construction, geometry, water management, and decorative practices formed the cultural foundation of subsequent periods. In the present study, I maintain that it would be methodologically incorrect to attribute an educational function in its modern sense to every ancient architectural structure. A more substantiated approach is to regard the historic city as an integrated sociocultural environment in which professional skills, artistic traditions, social norms, and accumulated cultural experience were transmitted from one generation to another. [11–14]

The ninth to fifteenth centuries—a period of flourishing science and educational culture—are of fundamental importance to the history of education in the region. The scholarly tradition associated with al-Khwarizmi, al-Farghani, Abu Rayhan al-Biruni, Ibn Sina, and Mirzo Ulugh Beg developed within a system of urban centres, libraries, madrasas, and scholarly practices. Samarkand in the era of Ulugh Beg is particularly illustrative: the madrasa organised a space for systematic learning, while the observatory transformed an architectural structure into an instrument of observation and measurement. [9–12]



Fig. 1. Architectural environment of Registan, Samarkand. Photograph by the author (2024).

In Samarkand, the interrelationship between architecture, education, science, and culture acquired a visible spatial expression. Educational structures performed more than the utilitarian function of accommodating classes: their composition organised the educational community, visually emphasised the value of knowledge, and reinforced the high social status of scholarship. [9; 11; 12]

2. The Madrasa as an Architectural and Pedagogical Environment

The traditional madrasa constituted an integrated environment in which teaching rooms, hujras (student cells), an internal courtyard, prayer spaces, and communication zones formed a unified spatial system. The courtyard facilitated orientation, microclimatic regulation, and

compositional coherence, while the portal, ornament, calligraphy, proportions, and light created an expressive visual image of the institution. Owing to this unity, the madrasa can be interpreted as a historical type of educational space in which learning, everyday life, communication, and aesthetic perception were closely interconnected. [8; 11–14]

3. Educational Architecture of Uzbekistan in the Twentieth Century

In the twentieth century, the educational architecture of Uzbekistan became part of mass modernisation: the network of schools, technical colleges, institutes, universities, libraries, and research institutions expanded. Standardisation made it possible to provide broad access to education rapidly, but it often intensified spatial uniformity. An important contradiction thus emerged: functional efficiency and mass accessibility were not always accompanied by individual architectural expressiveness and users' emotional attachment to the building. [8; 11; 12]



Fig. 2. Fragment of the architectural and decorative environment of Gur-e Amir: geometry, colour, and scale as elements of visual education. Photograph by the author (2024).

For the study of students, this period is important as a point of comparison. Whereas for the generation of the 1960s–1980s the central requirements may have been heating, lighting, a library, classrooms, and laboratories, these were later supplemented by computerisation, Internet access, digital services, flexible spaces, design quality, environmental sustainability, and opportunities for informal work.

4. The Architectural Environment of the Independence Period and Cultural Identity

During the independence period, the architectural environment of Uzbekistan began to develop simultaneously in two interrelated directions: modernisation and the renewed actualisation of historical and cultural memory. For students, contact with historical architecture can strengthen a sense of continuity and cultural belonging, whereas contemporary architecture is associated with technological development, mobility, and future prospects. The research significance therefore lies not in the contrast between old and new as such, but in the ways in which they interact meaningfully and spatially. [4; 5; 11; 12]

Mechanical reproduction of historical forms in a contemporary university is not a prerequisite for national expressiveness. A more productive principle is creative reinterpretation: the courtyard as a climatic and social centre, solar shading, local materials, geometric principles, water and landscaping, contemporary interpretations of ornament, and a clear hierarchy of public spaces. [8; 13; 14]



Fig. 3. Architectural and decorative organisation of the interior space of a historical complex in Samarkand. Photograph by the author, 2024.

Direct experience of Uzbekistan's historical and architectural environment complements the theoretical study of heritage with sensory and spatial experience. The scale of portals, relationships between architectural volumes, rhythm of details, colour of ceramic decoration, calligraphic compositions, and organisation of courtyards make it possible to perceive a monument as an integrated artistic phenomenon. In this understanding, the architectural environment performs an indirect educational function: it develops powers of observation, the ability to analyse the artistic qualities of space, and awareness of the value of national heritage. [7; 11–14]

Type of environment	Strength	Limitation	Pedagogical potential
Historical	Cultural memory, ensemble integrity, symbolic richness	Limitations on adaptation, engineering modernisation, and accessibility	Historical and cultural identity
Standardised Soviet-era	Functionality, mass accessibility, clear organisation	Uniformity and outdated infrastructure in some facilities	Discipline, collective organisation
Contemporary	Technological capacity, flexibility, open spaces	Risk of an impersonal global aesthetic	Project-based activity, communication, innovation
Synthetic model	Tradition + contemporary function + climatic adaptation	Requires high-quality design rather than stylisation	Integrated perception of “past – present – future”

Source: compiled by the author on the basis of the research materials.

5. Contemporary University Environment and Student Perception

Contemporary young people perceive architecture within two complementary spaces—physical and digital. Their image of a building is formed not only through direct experience of it, but also through photographs, digital maps, video materials, virtual tours, and 3D models. As a result, the architectural image of a university becomes part of its public and visual reputation. When evaluating the learning environment, students consider the quality of lighting and interiors, ease of navigation, availability of spaces for independent and collaborative work, digital infrastructure, landscaping, accessibility, and the individuality of the architectural solution. [22–25]

When interpreting such relationships, it is important to avoid assuming a direct causal relationship between the aesthetic expressiveness of a building and learning outcomes. Space primarily creates the conditions in which educational activity takes place. Its potential influence is realised together with the quality of teaching, programme content, safety culture, organisation of the learning process, and the degree of the student’s own activity. [22–25]

Student evaluation criterion	What to measure	Example indicator
Aesthetics	Facade, interior, colour, materials	“I like the appearance of my educational building”
Comfort	Temperature, acoustics, furniture, density	“I feel comfortable in the building throughout the academic day”
Lighting	Natural and artificial lighting	“The lighting helps me concentrate”
Social interaction	Lobbies, courtyards, communication areas	“There are places for social interaction without disrupting the learning process”
Independent work	Library, coworking spaces, quiet zones	“I can work comfortably between classes”
Technological capacity	Wi-Fi, multimedia, digital services	“The digital infrastructure meets my learning needs”
Identity	Connection with the culture of Uzbekistan	“The architecture expresses cultural belonging without directly copying the past”
Prestige and pride	Emotional connection with the university	“I am proud to show my university building to others”

Source: compiled by the author on the basis of the research materials.

6. Periodisation of Students' Requirements for Educational Infrastructure

The periodisation presented below is an analytical model. It does not imply that all educational institutions in Uzbekistan within a given period possessed identical infrastructure. Its purpose is to establish comparable historical groups for interviews with graduates and contemporary students.

Period of study	Typical environment	Key infrastructure requirement	Dominant image of quality
1960s–1970s	Soviet schools and institutes	Lighting, heating, library, gymnasium	Functionality
1980s	Standardised educational complexes	Laboratories, equipment, convenience	Level of equipment
1990s	Transition period	Building condition, computers, access to information	Adaptation
2000s–2010s	Modernisation	Computer classrooms, Internet, multimedia	Modernity
2010s–2020s	Digitalisation	Wi-Fi, interactive equipment, laboratories	Technology + comfort
2020–2026	Flexible digital environment	Coworking, services, design, public spaces	Integrated user experience
2026–2030	Prospective model	Smart + Green + Digital + cultural identity	Human-centred environment

Source: compiled by the author on the basis of the research materials.

The proposed hypothesis is based not on the assertion that younger generations are more demanding, but on the assumption that the system of criteria used to evaluate educational space has expanded. The importance of basic characteristics—safety, lighting, and physical comfort—remains, while contemporary assessment additionally includes digital connectivity, spatial flexibility, aesthetic qualities, environmental sustainability, inclusivity, and opportunities for users to participate in transforming the environment. [22–25]

7. The Uzbekistan 2030 Strategy and the Role of the Student

The Uzbekistan 2030 Strategy, approved by Decree No. UP-158 of the President of the Republic of Uzbekistan dated 11 September 2023, includes a policy direction aimed at creating decent conditions for realising the potential of every person and reforming the education system. In the context of this article, educational architecture is regarded as the spatial infrastructure of human capital: it should support learning, research, creativity, communication, accessibility, and cultural continuity. [5]

Within this model, the student is regarded not only as a user of already established infrastructure, but also as a source of evidence-based feedback and a potential co-author of its development. Such participation may be implemented through surveys, post-occupancy evaluation of buildings, design workshops, digital modelling, improvement competitions,

analysis of wayfinding and accessibility, as well as initiatives in landscaping and energy efficiency. [2; 4; 5; 18–25]

Level of student participation	Action	Outcome for the educational environment
Observes	Identifies problems and strengths	Conscious perception
Evaluates	Participates in surveys and post-occupancy evaluation	Evidence-based feedback
Proposes	Develops design ideas	Development of creative thinking
Designs	Creates diagrams, models, and 3D models	Connection between learning and the real environment
Participates in implementation	Improvement, wayfinding, landscaping	Responsibility and sense of belonging
Investigates the outcome	Compares conditions before/after	Culture of evidence-based design

Source: compiled by the author on the basis of the research materials.

Conclusion

The historical material of Uzbekistan makes it possible to trace a stable relationship between cultural and scientific development and the emergence of specialised spaces of knowledge. Madrasas, libraries, observatories, and urban ensembles not only provided the necessary functions, but also organised forms of interaction, visually reinforced the social value of knowledge, and incorporated educational practices into the structure of everyday urban culture. [9–14]

During the twentieth and twenty-first centuries, requirements for educational buildings became considerably more complex. Alongside safety and functional adequacy, increasing importance is attached to technological equipment, spatial adaptability, environmental solutions, inclusivity, the quality of communication areas, and the expressiveness of the architectural image. For the contemporary student, the university building combines the functions of a place of learning, a space for social interaction, a carrier of digital infrastructure, and a visual representation of the educational institution. [22–25]

From a scholarly perspective, it is more productive to reject a direct formula linking the aesthetic attractiveness of a building with an automatic improvement in learning outcomes. The model proposed in this article assumes a sequential influence: spatial characteristics affect perception and everyday behavioural scenarios and may support or hinder comfort and interaction, whereas the actual pedagogical outcome is formed only in combination with educational content, the organisation of the learning process, and the student's own activity. [22–25]

For the conditions of New Uzbekistan, a promising approach is one in which contemporary educational architecture does not reproduce historical forms literally, but reinterprets their underlying spatial, climatic, and cultural principles. Within such an approach, the student may



act not only as a user, but also as a participant in analysing and transforming the environment. This creates an opportunity to integrate the objectives of heritage preservation, artistic and aesthetic development, digital transformation, and implementation of the priorities of the Uzbekistan 2030 Strategy within a unified architectural and pedagogical framework. [4; 5; 7; 11–14]

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