

Ana Nikezić, University of Belgrade - Faculty of Architecture, ana.nikezic@gmail.com

Milena Grbić, University of Novi Sad, mdelevic@gmail.com

Olivera Dulić, University of Novi Sad, olivera.dulic@gmail.com

## NEB VALUES IN THE CLASSROOM: CASE STUDY AT UNI BELGRADE – FACULTY OF ARCHITECTURE AND UNI NOVI SAD – FACULTY OF CIVIL ENGINEERING SUBOTICA

### *Abstract:*

This study examines how architectural design education addresses environmental and social responsibility. Using New European Bauhaus (NEB) categories as a value framework, design results from two architecture schools were compared. It questions how students express environmental awareness and social responsibility, and how disciplinary autonomy can adapt to interdisciplinary expectations. Results show that NEB category *Beautiful* is deeply embedded, *Together* needs stronger pedagogical support, and *Sustainability* is least integrated, requiring more explicit, systematic inclusion. It was concluded that place-based concepts grounded in historical, social, and cultural specificity yield the most coherent responses, encompassing all NEB values simultaneously.

*Keywords:* NEB (New European Bauhaus), Design studio pedagogy, Environmental responsibility

## НЕБ ВРЕДНОСТИ У УЧИОНИЦИ: СТУДИЈА СЛУЧАЈА НА АРХИТЕКТОНСКОМ ФАКУЛТЕТУ (УБ) И ГРАЂЕВИНСКОМ ФАКУЛТЕТУ СУБОТИЦА (УНС)

### *Сажетак:*

Ова студија испитује на који начин образовање у области архитектонског пројектовања адресира еколошку и друштвену одговорност. Применом категорија Новог Европског Баухауса (НЕБ) као вредносног оквира, упоређени су резултати пројектантског рада на две школе архитектуре. Истраживање проблематизује како студенти артикулишу еколошку свест и друштвену одговорност, као и на који начин се аутономија дисциплине може прилагодити интердисциплинарним очекивањима. Резултати показују да је НЕБ категорија *Лепо* дубоко уграђена у пројектантске приступе, да категорија *Заједно* захтева снажнију педагошку подршку, док је *Одрживост* најмање интегрисана и захтева експлицитније и систематичније укључивање у наставни процес. Закључено је да просторно утемељени (place-based) концепти засновани на историјској, друштвеној и културној специфичности контекста, дају најкохерентније одговоре, обухватајући истовремено све НЕБ вредности.

*Кључне речи:* НЕБ (Нови Европски Баухаус), Педагогија студио пројеката, одговорност ка животној средини

## 1. INTRODUCTION

Traditional architectural education often emphasizes form, authorship, and technical proficiency, while social and contextual aspects are marginalized. Within this framework, a student design is treated as a finished image, an authorial gesture, or an aesthetic artifact – a simulation of professional practice detached from real social consequences. In most Faculties of Architecture, architecture is taught as a self-contained formal system: the context is analyzed but rarely integrated into design decisions. This approach leads to a fragmentation of knowledge, where technical, aesthetic, and social issues are treated separately rather than being shaped into a holistic design process that empowers the architect as an agent of social change [1].

As a result, architectural education often produces spatially and programmatically competent draftsmen, rather than responsible spatial actors, creating architects who control form without a deep understanding of the social, environmental, and ethical consequences of their decisions. This limitation becomes particularly evident when architectural practice is confronted with wicked problems—complex, open-ended challenges that lack clear definitions and definitive solutions, and in which social, environmental, and political dimensions are deeply interwoven [2]. Instead of preparing students to engage with such conditions, architectural education typically frames design within an idealized and simplified version of professional practice that rarely exists. Students are typically insufficiently equipped to address real-world conditions and are usually prepared for an idealized practice that does not exist, often without a developed sense of sustainability, inclusiveness, or social responsibility.

Higher education carries the responsibility to continuously challenge existing ideas and engage future professionals in socio-scientific debates [3].

Architectural education, particularly when considered within the context of the architectural design studio, is gradually breaking the concept of architecture as an autonomous discipline, shifting the focus to the understanding that architecture depends on society, politics, economy and time [4]. Critiques of architectural education, as developed by authors such as Jeremy Till, Tatjana Schneider, and Nishat Awan, emphasize the need to understand architecture as socially situated and to embrace uncertainty, openness of the design process, and the impossibility of complete control [5]. Consequently, the architectural education process should not aim merely to produce projects that appear responsible but to educate architects capable of acting responsibly under complex and changing constraints.

Recognizing that education is the space where the values of future practitioners are formed, the New European Bauhaus (NEB) emerges as a potential response to this crisis – not as a pedagogical method, but as a value-based corrective for discipline. Using NEB values as a corrective for the fiction shifts the meaning of what constitutes a ‘good design’ in current educational conditions, signaling that a design is not good solely because it is aesthetically pleasing; it must also be socially responsible, environmentally conscious, and relevant to real people. NEB is particularly significant because it implicitly requires long-term thinking (climate, resources), collective processes (inclusion), adaptability rather than finality, and directly confronts visually oriented design traditions. In other words, integrating NEB into education has the potential to shift the focus from architecture as an object to architecture as a social practice across several key dimensions:

*NEB as a value framework.* In architectural education, this implies internalizing sustainability and inclusion rather than adding them to a design retrospectively. If these values are not integrated during studies, students may later perceive them in practice as externally imposed regulations rather than part of their professional identity.

*NEB connects architecture to broader societal processes.* NEB aligns directly with the European Green Deal, climate policies, social cohesion, and EU cultural policy. In education, this means students learn that architecture is not an isolated discipline but part of economic, political, and ecological decision-making, which is essential for understanding the real context of future practice.

*NEB legitimizes previously undervalued topics.* Issues such as community care, everyday user experience, beauty as a quality of life, and local identity are often considered secondary in current education compared to conceptual radicalism. NEB gives these themes institutional weight and restores them to the center of education.

*NEB changes the pedagogical relationship, not just the content.* In education, NEB implicitly calls for interdisciplinarity, collaboration, and engagement with the community, rather than a closed academic loop, opening space for critical and responsible design.

In line with the theoretical framework, which considers the NEB as a value-based and critical instrument for examining the relationship between the autonomy of architecture and its

understanding as a dependent discipline, the research was operationalized through a case study. The analysis included 28 student architectural design proposals developed at the Faculty of Architecture, University of Belgrade (AFUB in further text) and the Faculty of Civil Engineering Subotica, University of Novi Sad (GFSUNS in further text). Selected courses are representative across architecture schools, independent of program-specific developments. Their common denominator is the focus on family housing, not as an isolated typology but as a building component within a broader spatial structure, exploring new models of aggregation and organizational variants. The design briefs and the curricula were deliberately not NEB-oriented; instead, NEB was used exclusively as an ex post evaluative tool, allowing for a more objective assessment of the extent to which NEB values are implicitly present across different pedagogical contexts.

The design proposals, developed in the second year of undergraduate studies in the courses Family and Multi-family Housing – Design Studio 1, Design of Multi Family Housing, and Design of Single Family Housing, were examined through the lens of their alignment with NEB categories – Beautiful, Sustainable, Together – as an analytical tool for assessing the degree to which these values are integrated into the logic and outcomes of the design process. As design proposals free from market pressures, investors, or regulatory compromises, they were considered ideal sites for examining how deeply NEB values are embedded in education, versus being merely declarative.

The AFUB and GFSUNS were selected as case study sites to examine how NEB values are reflected in different institutional and pedagogical contexts within the same national education system. This choice allows for a comparison of educational practices operating under the same legislative and accreditation framework.

The AFUB is significant as the central and most influential institution of architectural education in Serbia, largely shaping the professional and academic discourse nationally. As such, it can be seen as a site of (re)production of the dominant canon of architectural practice, including its engagement with contemporary European initiatives such as the NEB. In contrast, GFSUNS operates in a smaller, regional, and border context, occupying a distinct institutional position. Located near the EU border, it functions within a specific cultural and spatial environment closely linked to Central Europe, with more immediate exposure to European educational, cultural, and spatial practices, while simultaneously facing more limited institutional resources and visibility compared to central academic centers.

In this context, the selection of these two faculties enables an analysis of architectural education along a center–periphery axis in institutional and discursive terms. Comparing student designs from these faculties does not aim to evaluate educational quality normatively but to analyze how different educational contexts articulate the relationship between architectural autonomy and its understanding as socially, ecologically, and politically dependent. This perspective allows for examining whether NEB values are internalized consistently within the education system or whether their interpretation and application depend on institutional power, educational tradition, and local context.

Accordingly, the degree of alignment of student projects with NEB values and its categories serves as an indicator positioning the cases between two pedagogical extremes: on one side, an autonomous model, where architecture's dependency is recognized primarily rhetorically, with high formal sophistication but low integration of social and ecological concerns; and on the other side, a dependent model, where these dimensions are embedded in the very logic of the project, opening space for instability, uncertainty, and responsible action in education. When student projects neglect NEB values, this cannot be interpreted as an individual failure but as a symptom of an educational framework that continues to reproduce the myth of architectural autonomy rather than systematically training architects capable of operating under complex and changing social conditions [6].

Grounded in the established theoretical framework and the value potential of the NEB, the presented research focuses on an empirical analysis of the educational process outcomes, with an emphasis on assessing their alignment with NEB categories, as well as on the comparative discussion of the results obtained.

## 2. THEORETICAL AND METHODOLOGICAL FRAMEWORK

The methodological framework of this research is based on a comparative analysis of student design proposals, combining structured evaluation with quantitative interpretation. An interpretive approach was adopted, whereby selected designs were understood as outcomes of educational processes and pedagogical approaches, rather than solely as formal architectural solutions. The NEB categories Beautiful, Sustainable and Together were employed as evaluative lenses, rather than as prescriptive criteria, and were operationalized through a set of spatial, programmatic, and social

subcategories relevant to contemporary architectural practice and education. The comparative analysis examined how NEB values were integrated into design decisions, with particular focus on the role of communal spaces, the degree of social inclusivity, and the ecological and spatial strategies applied in the design proposals. The results were analyzed through quantitative comparison, allowing for the identification of similarities and differences in pedagogical approaches, as well as an assessment of the potential and limitations of implementing NEB values within contemporary architectural education.

## 2.1. LITERATURE REVIEW

Across the previously published works, the NEB is framed less as a fixed 'style' and more as a value-based operational framework that connects design quality with ecological responsibility and social inclusion. The Practical Guide to the NEB [7] translates the initiative into actionable design logic by foregrounding the three core categories – Beautiful, Sustainable, Together, and emphasizing that alignment should be evidenced through explicit design decisions, narratives, and process choices rather than declarative claims. In a more theoretical register, A New European Bauhaus for a Culture of Transversality and Sustainability [8] argues that NEB requires transversal thinking: crossing disciplinary boundaries (architecture, ecology, arts, policy, social sciences) and treating sustainability as a cultural and relational transformation, not merely a technical performance target. This conceptual grounding is directly taken up in the two education-focused papers [9-10]. Taraszkiewicz A. and Taraszkiewicz K. position design studio pedagogy as a particularly suitable environment for NEB because it can integrate aesthetics, ethics, and societal questions into one iterative workflow [9], while Sadowski [10] shows how NEB can be embedded through studio briefs, learning outcomes, and assessment rubrics that intentionally combine environmental strategies with experiential quality and participation. Together, these works justify an evaluative approach that looks for observable correspondence between design outputs (and their narratives) and NEB values.

Complementing the educational perspective, two studies operationalize NEB beyond design discourse by translating its ambitions into an evaluative language suitable for spatial planning. The first proposes sets of urban indicators that allow local plans to be read in a more systematic and comparable way, effectively bridging qualitative NEB goals with measurable proxies [5]. The second applies an indicator-based approach through land-use occurrence to examine how NEB-related intentions are embedded in urban plans, showing that some values are structurally present while others remain weakly articulated or unevenly represented across planning content [6]. Together, these contributions support treating NEB alignment as an empirical construct—i.e., as a structured mapping of where NEB values are present or absent—which conceptually parallels the checklist-based assessment of student projects used in this study.

## 2.2. METHODOLOGY

This study applied the NEB checklist as a standardized instrument to examine the extent to which student design align with the NEB values. The instrument is structured around three main categories – *Beautiful, Sustainable, Together* – each operationalized through three sub-categories (1.1–1.3; 2.1–2.3; 3.1–3.3). The fourth category – *Working Principles*, was not applied, as it cannot be meaningfully assessed based on student project outputs. For this reason, an overall, comprehensive alignment with the full set of NEB values was not calculated.

Each project was independently assessed by two raters using the same set of criteria and rating scale. The resulting values were then transformed into normalized scores (0–1) to ensure comparability across dimensions. For analysis, composite scores were calculated for each project as arithmetic means of the items within each sub-dimension, followed by aggregated scores for the three main dimensions, and an overall index computed as the mean of the three main dimension scores. In addition to numerical scores, the instrument provides a qualitative classification (threshold) that assigns projects to performance levels (exceptional (70–100%), good (50–70%), acceptable (30–50%), and insufficient (0–30%)), enabling further interpretation of the results. This paper reports descriptive statistics only (means, standard deviations, and ranges), without inferential testing of differences.

### 2.3. CASE-STUDY SELECTION

In accordance with this methodological framework, the analysis was carried out on a sample of 28 student design proposals, developed within three different courses during the period 2019–2024. All analyzed designs represent high-performing student work, having received the highest evaluation grades and having satisfied all mandatory elements of the design brief. Projects were selected to reflect diversity in programmatic and spatial concepts, while maintaining comparability through similar quantitative parameters, particularly regarding housing unit size (approximately 50–120 m<sup>2</sup>). At the AFUB, the course Family and Multi-family Housing – Studio Design 1 was analyzed. The course was led by Professor Vladimir Lojanica, PhD, with a total of twelve teaching staff participating. For this research, the focus was placed on the studio supervised by Professor Ana Nikezić, PhD. The course focused on the design of single-family housing units as the fundamental typological element, which were further developed and combined to form various spatial and residential systems. The sample consists of 18 works.

At the GFSUNS, Architecture Engineering module, two courses conducted as separate teaching units within the same academic year were analyzed: Design of Multi-family Housing and Design of Single-family Housing. The course Design of Multi-family Housing and the studio whose design proposals were analyzed were led by Associate Professor Milena Grbić, PhD. The course emphasized the design of multi-family housing systems, with the central design task being the achievement of single-family housing quality through the development of series of housing units, which were then integrated into complex multi-family structures. The sample consists of 5 works.

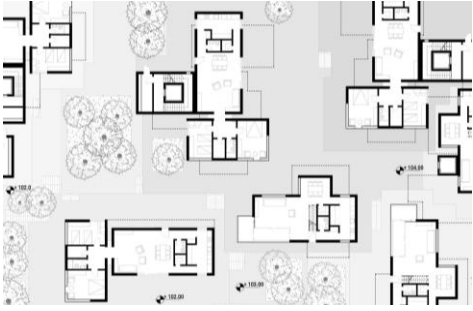
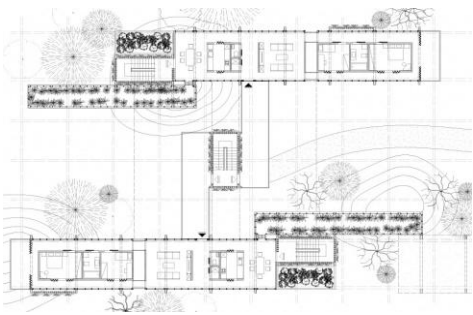
The course Design of Single-family Housing and the studio whose design proposals were analyzed were led by Assistant Professor Olivera Dulić, PhD. The course focused on the design of single-family housing, using the design process as a method to explore different concepts and values of housing within individual residential typologies. The sample consists of 5 works.

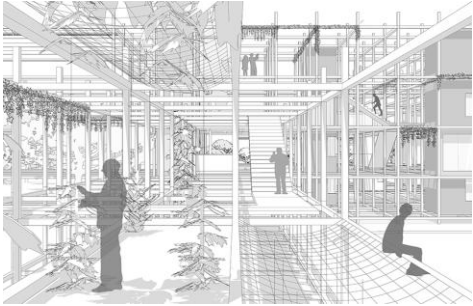
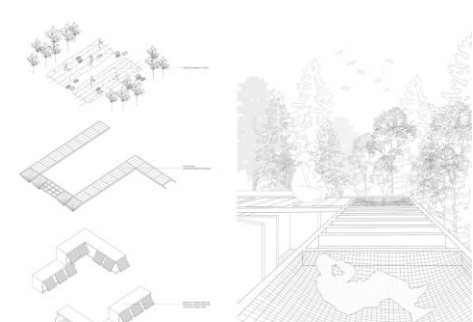
### 3. REPRESENTATIVE DESIGN PROPOSALS

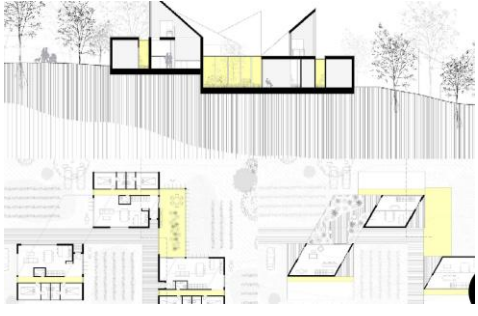
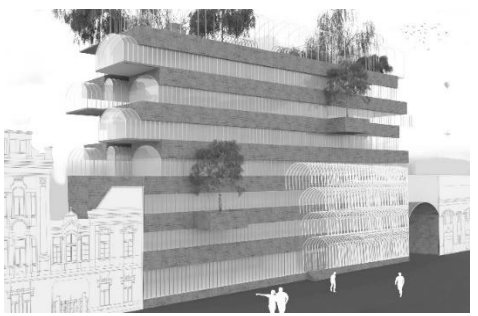
In this chapter, the representative design proposals analyzed in the paper are presented in a tabular format (Table 1), including key identification data (author, year, institution), project title, and location. For each proposal, the table also summarizes the main spatial and programmatic parameters (urban context, scope, number and size of units) together with a concise description of the design concept and spatial organization. Due to space limitations, the table presents a selection of projects identified as most representative based on evaluation scores and consistency with the NEB questionnaire results.

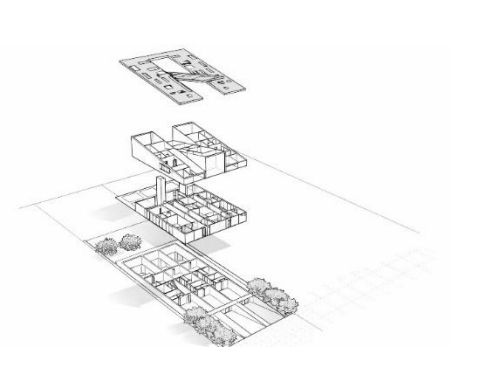
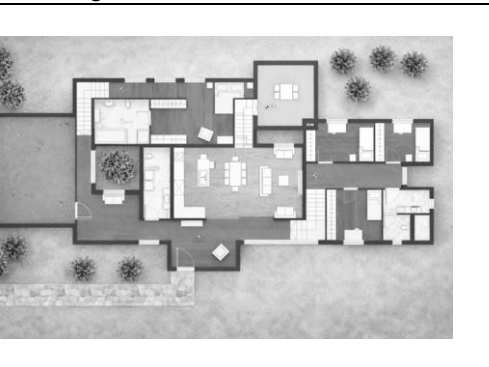
*Table 1. Sample Overview: Student Design Proposals Included in the Study (N = 28)*

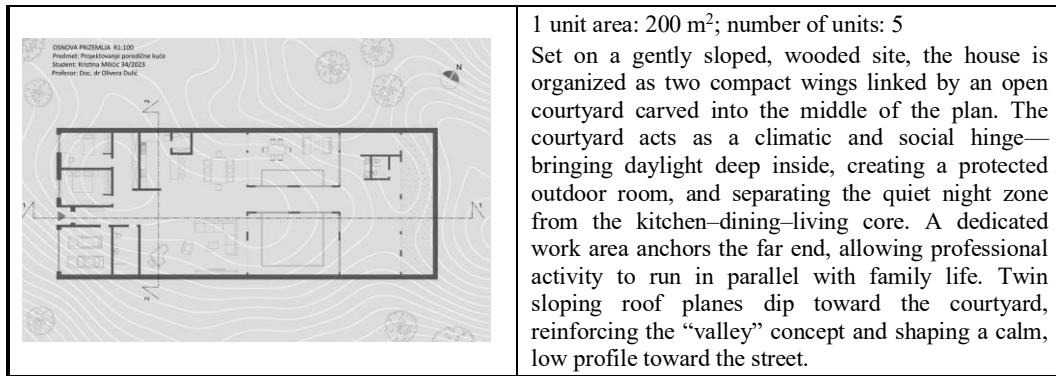
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| Una Žarković; 2023; AFUB                                                            | Layers of Green, Inner-city Area, Belgrade, Serbia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|  | 1 unit area: 120 m <sup>2</sup> ; number of units: 12<br>A small urban community gathered around gardening as a lifestyle. A cluster of finely dense structures has been formed, determined through a cohousing system of layered privacy, from the ground floor, intended for the integration of visitors and residents (spontaneous market and festival gatherings, craft shops, small event spaces and craftsman support system is intended) through the mezzanine floor, which is intended for the inhabitants and their socialization at the neighborhood level, to the last, highest layer intended for intimate life but also work in the form of gardening. |
| Mina Kovačević; 2023; AFUB                                                          | Living among threes, Inner-city Area, Belgrade, Serbia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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|    | <p>1 unit area: 45 m<sup>2</sup>; number of units: 30</p> <p>A student-centered community that presupposes a particular lifestyle cherishing individuality on one side, and community sharing in spatial and program circularity on the other. Specific arrangement of individual units (made modular out of recyclable materials) enables a variety of intercommunity distance and adaptability to individual time-consuming preferences, enforcing a kind of translucent bordering towards surrounding area, intertwining units into the urban wood with unrecognizable entrances nor fixed paths. A structure is built as a kind of infrastructure envisioning growth and densification through living.</p>                                                                                  |
| Luka Petrović; 2023; AFUB                                                           | New Urban Milieu, <sup>2</sup> Inner-city Area, Belgrade, Serbia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|   | <p>1 unit area: 75-120 m<sup>2</sup>; number of units: 18</p> <p>Highly granulated structure that allows for unexpected encounters, unusual interweaving of spatial sequences with the idea of enabling a feeling of urban vitality in a relatively small spatial framework. Each unit has the possibility to provide a working or service space to enable a connection with the previous understanding of the environment, enable integration with the immediate surrounding and ensuring a full-day use of the spatial framework. The units are designed in such a way as to enable adaptability over a longer period, ensuring the change of generations and the change of living styles., encourages cooperation and the exchange of services and products, enhancing spatial vibrancy.</p> |
| Anđela Miladinović; 2022; AFUB                                                      | Verticality, Outskirts of Belgrade, Krnjača, Vojvodina                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  | <p>1 unit area: 140 m<sup>2</sup>; number of units: 14</p> <p>The alluvial soil of the former Pannonian Sea represents an exceptionally fertile soil which, in the post-war YU, Third Belgrade was developed as an agricultural enterprise PKB. The heritage of agricultural landscape is a conceptual starting point for the design of the Residential Neighborhood in which life is permeated with agricultural activities, and everyday life is built in the coexistence of plants and people. The housing units are just elements of endless superimpositions of greenhouses that sometimes inside or outside complement the basic structure formed by the interweaving of vertical aquaponics, agricultural farming and its intangible heritage.</p>                                       |
| Milos Blagojević; 2022; AFUB                                                        | Above the ground and into the clouds, Vojvodina                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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|    | <p>1 unit area: 4x24; number of units: 42</p> <p>Using the fact that Pannonian Plain is a flat landscape, that the soil is marshy and highly fertile, and that there is no established typology of housing in the immediate vicinity, the project examines conceptual designing boundaries by nurturing the inherited properties of the space. It is a relatively dense grid structure of columns and beams on piles in which a small community is created through the system of three-story high chat-walk paths. By contrasting placement of a large number of individualized but modular units, a series of intertwining and random overlaps is formed in which each individual finds his/her own way and social pattern of existence.</p>                                                                                |
| <p>Branislav Dimitrijević; 2022; AFUB</p>                                           | <p>Fishermans village, Krnjača, Vojvodina</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|   | <p>1 unit area: 24-36 m<sup>2</sup>; number of units: around 50</p> <p>The concept follows a legacy of alas –fisherman. As the territory is near the Danube-Tisa-Danube canal, it is envisaged as the network of canals that simultaneously provides a working and living environment but also controls ecologically acceptable conditions for fish farming and processing. Built entirely as a modular structure, it provides min social standard for residence but also a max requirement for fish breeding. The space nurtures the ecological niche it has found, uses the benefits of migratory birds that temporarily inhabit the space and builds a specific human construct in which man and other living beings live in coexistence, nurturing spatial homeostasis.</p>                                              |
| <p>Dušica Mečanin; 2021; AFUB</p>                                                   | <p>Waving stage, Padina Avale, Belgrade, Serbia</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  | <p>1 unit area: 36-45 m<sup>2</sup>; number of units: around 30</p> <p>Temporary residence of artists assumes a place where everyone will be able to feel both free and as if he/she belongs to a community. The program assumes a series of individual units in which all functions of the residence are reduced to an optimal min., while facilitating free time, as relaxation, contemplation, individual creative stay, as well as occasional chance encounters is set as the backbone and a spine of the project. That is why the space is created above, below, next to and between individual units that can be completely opened or closed as needed. There are neither classic windows nor doors, only panels that slide, turn, open or lift, building an unobstructed, disordered harmony - always a new form.</p> |
| <p>Jelena Maric; 2021; AFUB</p>                                                     | <p>Slopping roofs, Padina Avale, Belgrade, Serbia</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

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|    | <p>1 unit area: 120 m<sup>2</sup>; number of units: 4x3=12</p> <p>The use of elements such as a sloping roof, an atrium, and the division into a living and sleeping area in the concept of this house satisfy all layers of private-public, individual-communal relationships, building a system of individual yet inclusive spaces valuing traditional house layouts. Through a simple play with a limited number of elements, an interesting structure has been formed at the level of the whole. While each house unit has its own access and its own piece of land, they all act as a unique whole open and accessible for togetherness. The balance between individual and communal is created. Architecture regulates and but also generates life.</p> |
| Amina Bero; 2023; GFSUNS                                                            | Family Within, Subotica, Serbia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|   | <p>1 unit area: 75+105m<sup>2</sup>; number of units: 32</p> <p>The concept develops a model of single-family quality living within a multi-family structure. The layout is expansive, featuring shared vertical circulation, while apartment access is open and oriented toward fostering interaction among residents. The design balances privacy and community engagement, allowing individual dwellings to maintain a sense of autonomy while encouraging social connection within the larger structure.</p>                                                                                                                                                                                                                                              |
| Adela Mujčić; 2023; GFSUNS                                                          | Rooftop Resonance, Subotica, Serbia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|  | <p>1 unit area: 140m<sup>2</sup>; number of units: 12</p> <p>The concept develops a compact residential form with carefully arranged dwelling units, while the rooftop areas remain expansive and multifunctional. These shared rooftop spaces serve a triple purpose: socially, they provide opportunities for communal living and resident interaction; visually, they reinterpret and remodel elements of the authentic surrounding context in the spirit of Art Nouveau; and thirdly, they form a vast rooftop urban garden that contributes to reducing pollution, improving microclimate, and creating additional space for relaxation, recreation, and urban gardening.</p>                                                                            |
| Milena Simić; 2022; GFSUNS                                                          | Connected Retreats, Subotica, Serbia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|  | <p>1 unit area: 55-85m<sup>2</sup>; number of units: 20</p> <p>The concept develops a dynamic and expansive architectural structure, composed of numerous private units each with individual access, while maintaining a strong visual connection both among residents and with the surrounding context. The design balances seclusion and openness, creating a network of interconnected spaces that allow residents to engage with one another while remaining in control of their personal domains. This interplay between privacy and permeability enhances spatial experience, fostering a sense of community without compromising individuality.</p>                                                                                                    |
| Milica Nedić; 2019; GFSUNS                                                          | The Commons, Subotica, Serbia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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|    | <p>1 unit area: 60-120m<sup>2</sup>; number of units: 12-18</p> <p>The concept proposes a collective living environment for multiple younger age groups, organized around shared communal spaces as the core of daily life. A series of interconnected structures has been developed, programmatically defined through a cohousing approach and spatially articulated via a gradient of privacy, from ground-level areas designed for community interaction and spontaneous gatherings, to intermediate zones fostering socialization among residents, up to upper levels dedicated to private living and individual activities within the shared environment.</p>                                                                                                                              |
| Aleksa Vuković; 2019; GFSUNS                                                        | The Green Ridge, City center area, Subotica, Serbia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|   | <p>1 unit area: 200 m<sup>2</sup>; number of units: 3</p> <p>The concept envisions a multi-family structure that preserves the quality of single-family living. Between the individual units, small, intimate communal courtyards are formed, serving as shared social spaces for all residents while maintaining a sense of personal retreat. The structure is arranged to draw in the public urban space, opening toward it and establishing a dialogue between the neighborhood and the city. Open access to apartments and vertical circulation connect these courtyards, creating a dynamic network where privacy, interaction, and community coexist seamlessly, and each dwelling participates in the collective rhythm of neighborhood life.</p>                                        |
| Katarina Nikolić; 2022; GFSUNS                                                      | Modular House 3x3x3, location not specified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|  | <p>1 unit area: 210 m<sup>2</sup>; number of units: 10</p> <p>The project explores a compact family house generated through a 3×3×3 modular system, where cubic volumes are assembled as a small pavilion cluster in a natural setting. The plan is structured around a central open courtyard with a water element, conceived as the spatial “core” that improves daylight, creates visual depth, and supports everyday indoor–outdoor living. The day zone is organized as an open living–kitchen–dining module connected to terraces, while the night zone is distributed into three-bedroom modules, including a master unit with its own bathroom/laundry. A restrained architectural language—flat roofs, clean façades, and timber pergola elements—emphasizes calmness and clarity.</p> |
| Aurora Uglik; 2023; GFSUNS                                                          | The Dispersed House, Riverside plot, Novi Banovci                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  | <p>1 unit area: 250 m<sup>2</sup>; number of units: 5</p> <p>Set on a long riverside parcel toward the Danube, the house is conceived as a low, green “ribbon” anchored near the access edge. A compact central living core (living–kitchen–dining) acts as the hinge between two quieter wings: a bedroom cluster for family life and a work-oriented atelier volume. The plan introduces short level shifts and protected terraces to choreograph views, privacy, and outdoor use. With 250 m<sup>2</sup> net (295 m<sup>2</sup> gross) including a garage, the project blends a calm horizontal silhouette with warm timber accents and a glazed studio tower that marks the home’s creative heart.</p>                                                                                      |
| Kristina Miličić; 2024; GFSUNS                                                      | Infill Courtyard House, City center area, Subotica                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |



## 4. RESULTS

Based on the review of the selected student projects presented in the previous section, the analysis continued with a systematic assessment of the entire sample. This step translates the observed characteristics of design solutions into comparable values, enabling an integrated assessment of their alignment with the NEB principles.

### 4.1. SAMPLE AND DATA STRUCTURE

The descriptive analysis included  $N = 28$  student projects, grouped by institution into AFUB ( $n = 18$ ) and GFSNS ( $n = 10$ ). Projects covered the period 2019–2024, with the largest share originating from 2022 ( $n = 8$ ) and 2023 ( $n = 7$ ), followed by 2021 ( $n = 6$ ); 2019 ( $n = 3$ ), 2020 ( $n = 2$ ), and 2024 ( $n = 2$ ) were less represented. Projects were examined in terms of the extent to which their design solutions aligned with the NEB checklist, organized into three main categories—*Beautiful*, *Sustainable*, and *Together*—and nine sub-categories (1.1–1.3; 2.1–2.3; 3.1–3.3). Summary scores were reported on a 0–1 scale, where higher values indicate greater alignment. The following sections present overall results (entire sample), results by dimensions/sub-dimensions, and a descriptive comparison between institutions.

### 4.2. OVERALL SCORES ACROSS THE MAIN NEB VALUES (ENTIRE SAMPLE)

Across the full sample ( $N = 28$ ), descriptive statistics indicate an uneven representation of NEB values (Table 2). Overall, *Beautiful* and *Together* show higher central tendency, whereas *Sustainable* displays the lowest central tendency and the greatest dispersion, pointing to substantial variability in how sustainability-related criteria are addressed.

Table 2. Descriptive statistics for the main NEB values ( $N = 28$ )

| NEB value          | Mean (M) | Standard deviation (SD) | Median (Md) | Range     |
|--------------------|----------|-------------------------|-------------|-----------|
| <b>Beautiful</b>   | 0.713    | 0.127                   | 0.725       | 0.40–0.90 |
| <b>Sustainable</b> | 0.390    | 0.248                   | 0.330       | 0.05–0.90 |
| <b>Together</b>    | 0.676    | 0.207                   | 0.705       | 0.29–0.98 |

### 4.3. STRUCTURE OF RESULTS WITHIN THE BEAUTIFUL CATEGORY (1.1–1.3)

Within category *Beautiful*, sub-categories show a consistent pattern: high alignment for 1.1 *Integration to the built and natural environment* ( $M = 0.813$ ,  $SD = 0.136$ , range = 0.55–1.00) and 1.2 *Quality of experience* ( $M = 0.810$ ,  $SD = 0.149$ , range = 0.35–1.00), while 1.3 *Identity and purpose* is notably lower ( $M = 0.479$ ,  $SD = 0.180$ , range = 0.15–0.80). This suggests that most projects convincingly relate to site/context and articulate experiential qualities, whereas identity- and purpose-related criteria are less consistently addressed. Threshold classifications support the robustness of this category: exceptional was assigned to 53.6% of projects ( $n=15/28$ ), good to 42.9% ( $n=12/28$ ), and acceptable to 3.6% ( $n=1/28$ ), confirming that *Beautiful* is the most consistently represented category across the sample.

#### 4.4. STRUCTURE OF RESULTS WITHIN THE SUSTAINABLE CATEGORY (2.1–2.3)

The *Sustainable* dimension received the lowest scores and showed the greatest heterogeneity. 2.1 *Circularity* yielded  $M = 0.380$  ( $SD = 0.261$ ; 0.00–0.90), indicating that circularity is absent or not explicit in some projects ( $\min = 0.00$ ), while others reach very high alignment. 2.2 *Climate change adaptation and mitigation* was the lowest sub-category within *Sustainable* ( $M = 0.352$ ;  $SD = 0.274$ ; 0.05–0.91), yet the upper end of the range suggests a small subset of projects integrates climate strategies very successfully. 2.3 *Other environmental aspects* was slightly higher ( $M = 0.443$ ;  $SD = 0.267$ ; 0.00–0.90), again with substantial variability and instances where these aspects are not addressed at all. Thresholds further reflect dispersion: acceptable is most frequent (39.3%,  $n=11/28$ ), followed by insufficient (28.6%,  $n=8/28$ ), while exceptional (17.9%,  $n=5/28$ ) and good (14.3%,  $n=4/28$ ) occur less often, indicating that Sustainability is often partial or underdeveloped, alongside a smaller number of strong cases.

#### 4.5. STRUCTURE OF RESULTS WITHIN THE TOGETHER CATEGORY (3.1–3.3)

The *Together* category achieved relatively high mean values, but with pronounced sub-categories differences. 3.1 *Physical inclusion* ( $M = 0.646$ ;  $SD = 0.271$ ; 0.00–1.00) spans the full range, suggesting large variability in how explicitly accessibility and physical inclusion are addressed. 3.2 *Social inclusion* ( $M = 0.659$ ;  $SD = 0.286$ ; 0.19–1.00) shows the greatest variability within *Together*, indicating that social inclusion is central in some projects but only partially present in others. 3.3 *Creation of vibrant communities* is the highest-rated *Together* sub-category ( $M = 0.720$ ;  $SD = 0.224$ ; 0.20–1.00), suggesting a relatively strong capacity to embed community and social vitality at the level of design intent and programmatic logic. Thresholds are correspondingly high: exceptional (50.0%, 14/28), good (28.6%, 8/28), and acceptable (21.4%, 6/28).

#### 4.6. DESCRIPTIVE COMPARISON BETWEEN INSTITUTIONS (AFUB VS. GFSNS)

No inferential tests are conducted in this study; however, a comparison of basic descriptive indicators given in Table 3 provides a clear picture of the two institutional profiles. In the following section, descriptive statistics are presented for AFUB and GFSNS to outline similarities and differences in score distributions across the main NEB categories and related sub-categories.

Table 3. Descriptive statistics by institution for the main NEB categories (AFUB  $n = 18$ ; GFSNS  $n = 10$ )

| NEB category | AFUB M | AFUB SD | AFUB Md | AFUB Min–Max | GFSNS M | GFSNS SD | GFSNS Md | GFSNS Min–Max |
|--------------|--------|---------|---------|--------------|---------|----------|----------|---------------|
| Beautiful    | 0.741  | 0.138   | 0.785   | 0.40–0.91    | 0.664   | 0.092    | 0.690    | 0.40–0.79     |
| Sustainable  | 0.501  | 0.241   | 0.490   | 0.11–0.90    | 0.190   | 0.071    | 0.205    | 0.05–0.28     |
| Together     | 0.732  | 0.224   | 0.820   | 0.29–0.98    | 0.574   | 0.125    | 0.570    | 0.33–0.71     |

Note. M = mean; SD = standard deviation; Md = median; Min–Max = range (minimum–maximum).

Building on the descriptive statistics presented in Table 3, AFUB shows higher central tendency across all three main NEB categories as well as the overall index when compared to GFSNS. The difference is most pronounced for *Sustainable*, where AFUB achieves substantially higher average values and a markedly wider min–max span, whereas GFSNS remains low and tightly bounded within a narrow interval. A similar, though less extreme, pattern is visible for *Together* and *Beautiful*, where AFUB again reaches higher mean values and a broader spread, while GFSNS scores are more compact.

These patterns are further illustrated in Figure 1, where AFUB shows higher medians across all three categories. The institutional gap is visually most pronounced for *Sustainable*, where GFSNS exhibits low, tightly clustered values, while AFUB displays both higher central tendency and a much wider spread, indicating the coexistence of very strong and relatively weak sustainability performance within the AFUB cohort. A similar profile – higher median paired with broader dispersion, is also visible for *Together* within AFUB, whereas GFSNS's *Together* scores are more compact and centered at a moderate level. For *Beautiful*, both institutions reach relatively high scores overall; however, AFUB again shows a slightly higher median and greater variability, while GFSNS remains more concentrated around mid-to-high values.

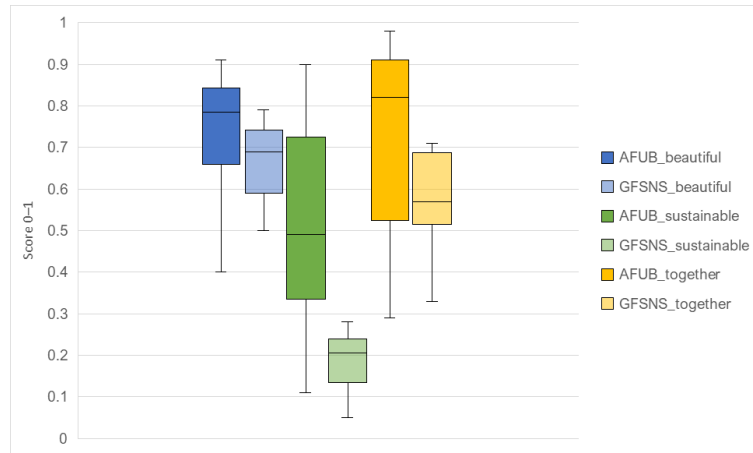


Figure 1. Boxplot distributions of NEB core-value scores by institution (AFUB vs. GFSNS)

At the sub-category level, Figure 2 highlights that the largest mean differences occur in 3.2 *Social inclusion* (+0.41) and 2.2 *Climate change adaptation/mitigation* (+0.37), followed by 2.3 *Other environmental aspects* (+0.32) and 2.1 *Circularity* (+0.25), indicating that the institutional gap is driven mainly by sustainability-related criteria and social inclusion within *Together*. Smaller advantages for AFUB are also observed in 3.1 *Physical inclusion* (+0.18) and in *Beautiful* (1.3 *Identity and purpose* +0.16; 1.2 *Quality of experience* +0.11). By contrast, GFSNS shows slightly higher values in 1.1 *Integration* (−0.04) and 3.3 *Vibrant communities* (−0.06), consistent with its marginal strengths in contextual integration and community-oriented design intent.

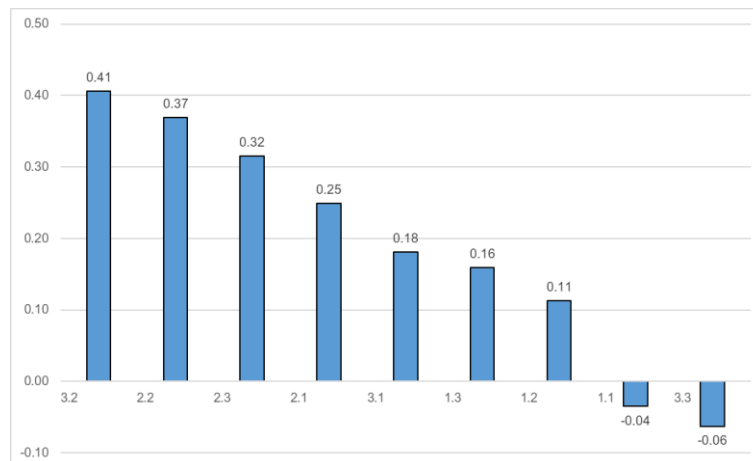


Figure 2. Differences in mean scores across NEB sub-dimensions (AFUB vs. GFSNS)

Threshold distributions further support these profiles: AFUB is more frequently classified as exceptional in *Beautiful* (61.1%) and *Together* (66.7%), whereas GFSNS is more often good in both dimensions (60%). The sharpest contrast appears in *Sustainable* category, where GFSNS projects fall only into acceptable (50%) and insufficient (50%), while AFUB spans all four categories. Taken together, these results suggest stronger overall alignment for AFUB, primarily due to sustainability and inclusion, while GFSNS's relative strengths are concentrated in integration and vibrant communities.

#### 4.7. SUMMARY OF DESCRIPTIVE FINDINGS

Across the full sample, the results indicate that student projects perform best, on average, in the *Beautiful* and *Together* domains, whereas the *Sustainable* category is the least developed and the most variable. Within *Beautiful*, the highest mean values are observed for *Integration into the built and natural environment* (1.1) and *Quality of experience* (1.2), while *Identity and purpose* (1.3) is consistently lower. Within *Together*, *Creation of vibrant communities* (3.3) is the highest-rated segment, whereas *Physical and social inclusion* (3.1 and 3.2) show greater heterogeneity. In *Sustainable*, all three sub-categories (2.1–2.3) display lower values, with particularly frequent low scores in circularity and climate-related strategies.

The descriptive comparison between institutions shows that AFUB achieves higher mean scores across all main categories and the overall index, while GFSNS exhibits a marked drop in sustainability but a relatively strong performance in creation of vibrant communities (3.3), pointing to different profile strengths of the two groups within the NEB framework.

## 5. DISCUSSION

A close examination of the descriptive findings reveals three significant discussion frames that merit emphasis in this context.

The first refers to the results indicated in Figure 1. NEB values *Beautiful* (blue) and *Together* (orange) show higher scores than *Sustainability* (green) value. This indicates that architecture, as a discipline, remains distant from other bordering disciplines within the framework of education. It is focused on fundamental principles of abstract form and program articulation, which determine its autonomy but also distinguish it from other disciplines. Therefore, results uncover that figuration obtained through both spatial experience and integration into the formal context has the strongest presence in the overall value score of student achievements. It is well worth noticing that *Identity and purpose* as a sub-category of *Beautiful* has much lower scores which might also indicate the absence of real contextual understanding in terms of its history, culture and society. While *Beautiful* has always been embedded in architecture, *Together* has been traditionally perceived, particularly in low-density housing program, as an integral part of the thematic framework and as a standardized part of the basic housing design program. However, it was noticed that the range of results obtained is diverse and depends, primarily on individual preferences and initial concepts outlined by designs. Unlike previous categories, *Sustainability* is heterogeneous and indicates an inconsistent and partial orientation of results towards it. The results demonstrate an absolute absence of integral observation of the environment, and obvious lack of awareness about the impact architecture can and has toward it. Systematic approach towards the environment in terms of both ecology, energy and circularity is missing. As these values are not present as a part of initial design framework, they are bound only to those results where individual sensibilities or approaches are open to such questions becoming an integral part of the overall design concept. It is not that students do not understand on the importance of *Sustainable* values, nor have adequate knowledge geared towards sustainability, but rather it is unclear how to integrate these values and tools into the very idea for design. It seems hard to balance between abstract beauty and tangible contextually relevant identity. This means that integrating this aspect is possible but has not been consistently implemented in the educational program of architectural design. It is interesting that thematic framework that includes some aspects of sustainability in their basic concept — first and foremost as part of an environmentally friendly approach — can produce equally beautiful, high-quality results that satisfy all values. Therefore, students can integrally observe all aspects and satisfy all values to a certain extent but to be better equipped with relevant systemic procedures relevant to *Sustainability* category.

In conclusion, *Together* and particularly *Sustainable* categories are relatively new topics that emerged from the current societal situation, from the popularization of sustainability agenda and socially engaged policies and need to be integrated into the core of design education primarily through thematic framework and in-depth contextual analyses that targets place history, culture and society on one side and environmental aspects on the other focusing on microclimate, ecological awareness, as well as on local energy and material circularity.

Another salient issue pertains to the observation that when individual results are examined, a discernible pattern emerges. Specifically, students who attain high scores in the *Together* category tend to exhibit lower scores in the *Sustainable* category, and vice versa. It is noteworthy that sub-category 3.2 *Social inclusion* aligns with sub-category 2.3 *Other environmental aspects*. This phenomenon underscores the heightened awareness among the upcoming generations concerning pressing issues of social inclusion and environmental well-being, which are inextricably linked and can be addressed through architectural design. In contrast to the previous ones, which addressed sub-categories of circularity and climate change, 2.1 and 2.2 appear to lack tangible outcomes or sufficient technological determination. Furthermore, design projects appear to distance themselves from these issues. It is noteworthy that the concepts of *Physical inclusion* (3.1) and *Vibrancy* (3.3) do not directly imply *Social inclusion* (3.2). While aspects of beauty are associated with physical inclusion, vibrancy and social inclusion are more closely linked to sustainable sub-category concerning environmental issues.

This prompts us to examine the third piece of evidence in the discussion, which pertains to the intriguing discrepancy between social inclusion and vibrant communities. The Belgrade School (AFUB) aligns more closely with the former, while the Subotica School (GFSNS) aligns more

closely with the latter. This underscores the notion that the theme of local vibrancy is indigenous to smaller environments and is cultivated as a value that students how were born and understand the value of the place incorporate it more clearly into their immediate living spaces. In contrast, in the case of Belgrade, the connection with the context is less personal, and vibrancy is absent. Consequently, the concept of social well-being is reinforced, which is a salient problem in larger urban areas. This underscores the notion that the acquisition of knowledge of design in an academic setting must be transferred both tangible and intangible aspect the real environment offers. Students must develop familiarity with the context, its strengths and limitations, its historical background and cultural heritage, and the various layers that contribute to its formation. They must also grasp the potential and constraints offered by space. This comprehensive understanding enables them to incorporate a wide range of values into the conceptual framework of the program and the space. Finally, findings also suggest that concepts with a robust environmental connection attained a higher number of required values, while those that exhibited greater richness in formal design elements, yet a more abstract relationship with the environment, received lower average ratings.

## 6. CONCLUSION

The preliminary research suggests that a reexamination of design education is necessary. Firstly, there is a necessity to incorporate a more comprehensive understanding of the microclimate into the overall framework. To facilitate comprehension of the manner in which climate conditions could be altered through adaptability and flexibility, it is imperative to enhance the integration of environmental awareness and responsibility into the educational program and the design task. Furthermore, it is imperative to emphasize individual thematicization and to facilitate the transition of their engagement from paper toward real space. This process entails the identification of traces and strands of initial continuity and authenticity within the tangible and intangible spatial framework. Lastly, understanding the impact of architectural actions in space and the consequences of inappropriate design are not the subject of architectural education. This aspect of understanding the power of one's own actions must be incorporated to a certain extent into the body of learning in the field of architectural design.

Though this preliminary research brought us knowledge on how education in the domain of architectural design should be developed and should follow other disciplines, it has its limitations which must be considered when interpreting the results. First, the tasks given in Belgrade and Subotica schools were not identical, results were taken from various generations, and the analyses were conducted retroactively. Not all works were considered, but the most representative ones in a positive and negative sense were selected. It is important to acknowledge that the discrepancy between the schools in the *Beautiful* category likely stemmed from the greater student population and the selection of papers that led to more pronounced outcomes.

This research suggests that education in the field of architectural design must adapt to evolving societal trends—such as the integration sustainability imperatives, and community-engaged practice—while also preserving the discipline's intellectual autonomy and critical foundations. Contemporary pedagogical discourse underscores the necessity of a responsive curriculum that equips students to address real-world wicked problems like climate change, social equity, and ethical design, often through participatory and problem-based learning models that bridge theory and practice. Scholars argue that the traditional design studio—long regarded as the core of architectural education—must evolve to embrace collaborative, interdisciplinary, and socially engaged modes of learning without undermining its role in cultivating reflective practitioners capable of independent judgment. NEB values illustrate that architectural education can integrate clarity and creativity with critical inquiry and cultural awareness. In doing so, architectural programs can uphold autonomy in nurturing unique intellectual identities, even as they prepare students to engage responsibly and innovatively with the complex demands of contemporary environments.

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All illustrations presented in the paper are derived from student projects archived in the AFUB and GFSUNS collections.

All diagrams presented in the paper were produced by the author using Microsoft Excel