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My Ideal University: Physical and Non-Physical Components of the Environment in Student Presentations

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The article addresses the issue of identifying the needs of modern students in relation to the university educational environment. The study involved 48 architecture students aged 18 to 27 years (M=19.81; Mo=19; SD= .82), including 83.33% girls (n=40) and 16.67% boys (n=8). The aim was to identify the most significant categories of the university educational environment. The research, which utilized a projective method — an essay titled “My Ideal University” — and content analysis of the responses, revealed that students consider non-physical categories to be the most important for effective and comfortable study. These categories include the organization of the educational process, the quality of the teaching staff, the curriculum, and opportunities for personal development. To confirm these results, a chi-square test was conducted, showing that non-physical categories of the educational environment were significantly more important than physical ones ($\chi 2$=14.812, df=1, p=0.001). The most prominent physical environment categories mentioned by students included the equipment of offices and classrooms, the aesthetic qualities of the space, well-organized university grounds, coworking spaces, and rest areas in the interior. The data obtained can provide practical recommendations for designing new campuses or renovating and reconstructing existing universities. Precisely determining the optimal conditions for an effective and comfortable educational process will help avoid excessive financial investments in improving the physical environment.

Keywords: student perceptions of the university environment; university physical environment; non-physical environmental categories; co-design.

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Мой идеальный университет: физические и нефизические категории среды в представлениях студентов

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Представленные в статье материалы посвящены проблеме выявления запросов современных студентов в отношении образовательной среды высшей школы. Целью исследования, в котором приняли участие 48 студентов-архитекторов в возрасте от 18 до 27 лет (M=19,81; M_o=19; SD=1,82, из них: девушки — 83,33% (n=40) и юноши 16,66% (n=8)), стало выявление наиболее значимых категорий образовательной среды университета. В результате исследования, выполненного с помощью проективной методики — сочинения-эссе «Мой идеальный университет», контент-анализ ответов показал, что наиболее важными для эффективной и комфортной учебы студенты считают нефизические категории — организацию учебного процесса, преподавательский состав, учебную программу, возможности для развития (для подтверждения полученного результата был использован критерий хи-квадрат, который показал большую значимость нефизических категорий образовательной среды по сравнению с физическими: $\chi 2$=14,812, df=1, p=0,001). Показано, что наиболее выраженные категории физической среды в ответах студентов — это оснащение кабинетов и аудиторий, эстетические качества пространства, правильно организованная территория при университете, коворкинг и места для отдыха в интерьере. Полученные данные могут служить практическими рекомендациями при проектировании новых кампусов или реновации и реконструкции уже функционирующего вуза. Точное определение оптимальных условий для эффективного и комфортного учебного процесса поможет избежать чрезмерных финансовых вложений в совершенствование физической среды.

Ключевые слова: представления студентов о среде университета; физическая среда университета; нефизические категории среды университета; соучастное проектирование.

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Introduction

A number of new campus projects are currently being implemented in Russia[1]. However, modern university campuses do not meet the requirements for comfortable student accommodation [12]. The aging of university infrastructure and the discrepancy between the physical environment and the needs of students are also observed in many European higher schools [22]. According to the classification of living environments based on their level of compliance with the subject, an environment without the necessary functionality is not safe [6].

Despite the positive dynamics of implementing new projects, students and teachers are rarely involved in the co-design of educational spaces. The needs of both students and teachers, their ideas about the ideal educational environment, and the nature of interactions remain scarcely studied.

Studying the most significant categories of the university environment (from the students' and teachers' perspective) will help increase the level of involvement in the educational process, create optimal conditions for an effective and comfortable educational process, and avoid excessive financial investments in improving the physical environment.

The educational environment is defined as a set of psychological and pedagogical conditions created to develop the abilities and interests of students [7]. There are four basic types of educational environment: dogmatic, career, serene, and creative. They form the foundation of the ecological-personal model of educational environment [17]. According to the theory of ecological systems of Urie Bronfenbrenner, development proceeds within several interconnected systems (levels) of the environment: microsystems, mesosystems, exosystems and macrosystems [18]. The educational environment model also includes the following main components: physical, organizational-managerial, psychodidactic, socio-psychological and subject components of the educational environment [1]. The physical environment is one of the components of the educational environment [16].

Some studies show that the professionalism of teachers is of paramount importance [2, c. 117]. The quality of teaching and the overall reputation of a university have a much stronger influence on applicants' choice of institution than the design of the campus, the quality of the physical environment and facilities [23]. The sense of belonging to the university has an indirect positive effect on the quality of students' lives: the sense of identity with the university is in turn formed by the feeling of security in the building and satisfaction with the physical and social conditions at the university [20]. Another pressing issue is satisfaction with conditions in a dormitory: spacious rooms, proper storage organization, lighting, good ventilation, and the possibility of privacy ultimately shape the students' level of perception of their university [19].

Another research area is exploring satisfaction with the public spaces of the university building, where the majority of the students is concentrated. A study based on 248 questionnaires collected at Isfahan University of Arts (Isfahan, Iran) showed that students value the potential for multifunctionality in the physical environment: opportunities for individual and group study, relaxation, communication and interaction in public spaces [21].

The spaces that students prefer or reject depend on the nature of the exterior and interior of the university campus. For a building embedded in a natural environment, parks, alleys, artificial water areas are ranked high by the students, while for a building located in a dense historical urban area, the preferred spaces are so-called

[1] Far Eastern Federal University on Russky Island, Skolkovo Institute of Science and Technology Skoltech, Skolkolo Moscow School of Management campus, development of the territory of the construction facilities V.I. Vernadsky Crimean Federal University, Innopolis University in Tatarstan, restoration of the main building of Graduate School of Management of St. Petersburg University, new building of MSU named after M.V. Lomonosov on Vorobyovy Gory, development of the territory of Bauman Moscow State University.

individual places (buffets, canteens, cafes) provided that the interior has been renovated [9].

Researchers often focus on analyzing interpretive design, which is a system of place meaning, or on a system of preferred and rejected spaces [8]. To determine the characteristics of the subject's perception of the environment of everyday life (among university students), the following methods are used: an associative experiment based on which a thesaurus of places-situations and definitions is compiled to assess these places; a procedure of subjective scaling (based on the material of contrasting photographs of places-situations); ordering of the initial data using factor analysis; interpretation of the identified factor structures; a two-stage questionnaire (with open and closed questions) [5; 11].

Empirical research, sampling and instruments

The perception of the educational environment was analyzed among student teachers, lecturers [2; 3; 4]; student architects [14—16]; students of agricultural and economic universities [10; 13].

Although the interaction of individual components of the educational environment and the participants of the educational process is regularly studied both in Russia and abroad, there is still a dearth of knowledge about the impact of the physical component on students in higher education. Furthermore, previous studies were conducted using standardized methods or game exercises. In this study, we pose the following question: is it possible to improve the effectiveness of the educational process, increase the motivation of students and teachers in architectural and architectural and construction universities only by improving the physical component of the educational environment? To achieve this, during the first step we determined whether the importance of the physical environment for the participants in the educational process in modern conditions.

Research hypothesis: the idea of the ideal university environment among students majoring in Architecture focus on the physical component due to their professional specifics.

Research instruments: we used a projective technique — an essay (short composition) on the topic "My ideal university" (the online survey was anonymous and was sent out in a Google form).

Results and Discussion

Content analysis of the essay responses showed that 62.6% of the analysis units described the so-called non-physical categories of the educational environment, while 23 out of 48 responses did not contain a single analysis unit describing any categories of the physical environment. Only 5 essays out of 48 did not touch upon non-physical categories of the university environment. To confirm the obtained result, the chi-square criterion was used, which showed a greater significance of non-physical categories of the educational environment for architecture students compared to the physical ones ($\chi 2$=14,812, df=1, p=0,001).

Notably, when the respondents were asked to describe their ideal university, the majority of responses were based on the existing negative (according to students) indicators of the university they are studying at.

Non-physical categories of the educational environment in the perceptions of university students (table 1). Based on the results of the content analysis of the essay responses, we identified three essential components of the educational environment from the university students' perspective: "various criteria, requirements for the university and the organization of the educational process" (interesting concepts for each area, expansion of international relations, lack of a grading system, free attendance, formation of student groups based on the number of points received upon admission, etc. — 30 units of text analysis), "teachers" (19 units of text analysis), and "curriculum" (15 units of text analysis).

The data obtained confirm the results of pertinent research: the teaching staff is the most significant component of the educational environment [3; 5]. At the same time, there are some differences: student teachers most often mentioned other students as a condition for effective education at the university, while

students majoring in Architecture proposed a variety of criteria for improving the organization of university activities (30 units of text analysis) [4]. We identified only 4 units of text analysis that touched upon certain qualities of fellow students in the architecture students' essay responses.

We assume that this is a manifestation of the professional specifics of student architects — interaction of the type of person-"artistic image", as well as the individuality of creativity: students complete educational assignments independently, consulting with the teacher at each stage.

All answers from the students' essays that touched on non-physical parameters were classified by the author into 20 categories (table 1).

Notably, the main vectors of the ideal university curriculum from the students' perspective are more complex material and assignments in general, compliance with modern professional requirements, focus on practice and freedom in choosing disciplines and areas of study.

Based on the essay responses, the ideal teacher is competent, knowledgeable, a master of their craft, interested in their subject, in their activities, in teaching students, the teacher understand and loves their subject, able to devise a program related to other disciplines, interacts with colleagues, communicates knowledge in an

Table 1

Rating of text analysis units in students' essays "My ideal university" (non-physical environment)

	Categories of non-physical environment of the university	**Number of text analysis units**	**Share in the total number of analysis units (%)**
1.	Various criteria, requirements for the university and the organization of the educational process	30	12,8
2.	University teachers	19	8
3.	Curriculum	15	6,4
4.	Extracurricular activities (scientific and creative events, conferences, etc.)	9	3,8
5.	Development	8	3,4
6.	Competencies of the Future	8	3,4
7.	Feeling of comfort	7	3
8.	Practice	7	3
9.	Attitude towards students	7	3
10.	Social Security	6	2,6
11.	Canteen (catering)	6	2,6
12.	Freedom	5	2,1
13.	Schedule	5	2,1
14.	Security	4	1,7
15.	Students about students	4	1,7
16.	Library (as a database)	2	0,9
17.	Fair assessment of skills	2	0,9
18.	Stable Internet	1	0,4
19.	Fair entrance examinations	1	0,4
20.	Psychological assistance to students (in the context of the essay answer as a service, not a room)	1	0,4
Total:		147	62,6

interesting way and has a burning desire to help, teach and graduate excellent specialists.

7 units of text analysis of students' essays contained the concept of "comfort", these data are consistent with those obtained earlier [15]: more than half of the students indicate the comfort of being at the university [2]. A fairly pronounced category is extracurricular activities (creative, scientific and sporting events).

Physical environment in the responses of university students (Table 2). **Equipment for classrooms and lecture halls** was the most significant component of the physical environment (24 units of analysis). The respondents' responses were extremely specific: students know exactly what rooms, tools, and environmental parameters they need for successful and comfortable study. Thus, students consider pragmatism the most important characteristic of the physical environment, which means that classrooms and study rooms should be the most functional. The specific nature of training in creative fields increases students' anxiety about the results of their work, which in turn encourages respondents to specify the requirements for the learning environment more accurately: additional large drawing and painting studios, updating the necessary tools for graphic disciplines, and optimal lighting in the classrooms. The data obtained confirm earlier studies, which identified specialized workshops as the preferred places for architecture students. Notably, at SPbGASU, where the aforementioned study was conducted, the workshops are not locked and are freely used by the students [14]. 15 units of text analysis touch upon various characteristics of the university interior design, aesthetic qualities, and subjective perception of the educational environment. This category of answers was the most "fuzzy" and implied an intuitive perception of the university environment as pleasant, comfortable, convenient, and beautiful.

As previous studies show, historical university buildings are perceived positively by the students, provided that the interior and exterior of the buildings are renovated [9].

Table 2

Rating of units of text analysis of students' essays "My Ideal University" (physical environment)

	Categories of the physical environment of the university	Number of text analysis units	Share in total number of text analysis units (%)
1.	Equipment for classrooms and for educational activities	24	10,2
2.	University interior design, aesthetic qualities of the environment	12	5,1
3.	Places (spaces) for rest	11	4,7
4.	University territory	9	3,8
5.	Coworking	7	3
6.	Canteen	5	2,1
7.	University environment safety (restricted access and evacuation in case of fire)	5	2,1
8.	Ventilation of classrooms and corridors	4	1,7
9.	Dormitory	3	1,3
10.	Location of the building in the city	2	0,9
11.	Lighting	2	0,9
12.	Library	2	0,9
13.	Bathrooms	1	0,4
14.	Lift	1	0,4
Total:		88	37,4

Spaces (places) for rest and, possibly, work (outside the classrooms) were also prominent in the students' essay responses (11 text analysis units).

In addition to this priority, there is an interest in creating an environment that will facilitate dialogue and collaboration by giving priority to the acquisition of competences such as teamwork, communication skills and critical thinking.

Extracurricular free closed and semi-open spaces have the potential to develop students' competencies such as teamwork, communication skills, and critical thinking. This is the conclusion reached by the authors of a study on the influence of physical space on the institution of mentoring in higher education [22].

Co-working has become an important category of the ideal university in the students' perception. In the context of the physical environment, co-working spaces are the centers of collaboration that bring people together for communication and creative interaction (7 units of text analysis). Importantly, this category was the most clearly identified by students.

Another significant characteristic of a university for the students is its exterior — the territory around the university (9 units of analysis). The results obtained correlate with the data of modern studies: parks and alleyways in the immediate vicinity of the university were ranked high by the students [9]. In another study of how the environment of a pedagogical university is perceived, students and teachers did not mention any exterior components at all; all responses were focused on the internal physical environment — the interior [3].

Conclusion

The pilot study, conducted for the first time using a project-based method on a Moscow sample of architecture students, allowed us to determine that, despite their professional specifics, architecture students identify various non-physical categories of the educational environment as the most significant for an ideal university: the organization of the educational process, the teaching staff, the curriculum, quite clearly identifying the criteria for these parameters. At the same time, the most pronounced category of the physical environment is the equipment of classrooms and lecture halls as a resource for improving the quality of the educational process. Therefore, future architects place responsibility for their education not only on the university administration and teachers, but also consider the development potential of the physical environment highlighting the aesthetic qualities of space, a properly organized territory at the university, co-working and places for relaxation in the interior.

The identified qualities of the physical environment specific to the students of creative professions can serve as practical recommendations for designing a new campus of Moscow State University of Civil Engineering.

The main components of the physical environment identified in this study are important for most higher education institutions; therefore, the obtained results can be applied in new design or renovation and reconstruction of an already functioning university.

Limitations of the study: the projective method — an essay on the topic "My ideal…" is suitable for small groups, mainly senior students, master students and postgraduates who already have the skills to analyze the educational environment and have relevant educational experience. For a certain number of students, writing an essay seems like an extremely difficult task; it is much more convenient for them to fill out an online questionnaire with closed questions.

This type of research should be combined with an expert assessment of the university building, since certain issues can be identified at the stage of a field survey. Importantly, teachers and students are able to get used to certain inconveniences of the environment and therefore not reflect them in their answers or transfer their dissatisfaction with the environment to its other components.

Research prospects include studying students' perception of the physical environment of the university using the standardized research methods on a larger sample and studying teachers' perception of the ideal university environment.

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