Visual symbols as a tool of transport logistics in university environment

E Pozdeeva¹, L Evseeva¹, A Tanova¹ and A Kobicheva¹

¹ Peter the Great St.Petersburg Polytechnic University, Polytechnicheskaya, 29, St. Petersburg, 195251, Russia

E-mail: tanovaann@mail.ru

Abstract. The development trends of the educational space in the direction of the increasing introduction of intellectual technologies actualize the study of visual symbols being used as transport logistics tools in management of educational trajectories of students. Visual symbols serve as markers indicating space and help students’ navigation by forming their identity, including professional one. The article analyzes the data of a sociological study of the visual elements of the educational environment of Peter the Great St. Petersburg Polytechnic University, conducted among students. The conclusion is made about the importance for students of the prestige of the university, traditional symbols, virtual attributes, as well as elements of everyday learning life as important components of the educational environment, which allows us to raise the question of the possibility of using these tools to improve their logistics on their way to developing professional competencies.

1. Introduction

The image characteristics of the universities’ activities, the development of channels and the space of university representation in the Internet environment are becoming key indicators and, at the same time, factors of their development. The university’s activities in the virtual space are taken into account when constructing indicators that are significant for ranking. Megacities, in which leading universities and educational centers are concentrated, participating and regulating the offer of educational services, become centers of creation and dissemination of a new sociality, saturated with cyberphysical experience and existing in augmented reality mode [1]. The transition to a smart university as a new model of an educational organization that meets modern requirements puts emphasis in a virtual space where it is important to understand the dynamic boundaries of a university as a system and visualize its value-semantic contribution to the environment [2]. In the conditions of mobility dynamics, the university becomes an active mediator of various social realities (cultural, communicative, technical, media, economic, everyday life, etc.), the role of which is also realized in facilitating their trans-dialogue.

The obvious point is the understanding that a new dimension in the life and work of the university is an electronic-communicative dimension, which is based on the creation of its virtual image in the network space of the Internet. Therefore, the role of the image and tools for creating the visual environment of the university are especially in demand in the context of changing educational models [3] and development strategies for the education sector, focused on the widespread use of design methods and information technology [4] [5]. A special role in this process is played by obtaining feedback from students [6] who are the main subjects of the educational process, assess the quality of
the educational environment, and, along with other active actors (employers, representatives of the business environment, heads of educational organizations), determine the request for changes and future universities’ prospects [7].

The problem statement of studying the visual tools for the modern university development is related to the fact that the university’s image is formed in a visual perspective and is subordinated to the action of “current fluid modernity” [8], is transformed under the influence of variability of structures, mobility of institutions and the general process of complicating social space. This requires a synthesis of a quantitative and qualitative research approach. The educational environment of the university is a multidimensional phenomenon, including real systems, structures and processes, as well as figurative systems that unfold their lives in virtual space, based on values, social types and roles. This duality determines the need to study new opportunities and contradictions, new facets that are important for strategic programs of university activities.

2. Theoretical base

The theoretical and methodological foundations of the research approach accumulate the problematization of the educational environment of the university in the context of videoeccology and visual sociology. Videoeccology [9] makes it possible to actualize the specifics of perceiving university attributes on material and virtual media as organic for ecosystems, of which universities are part. Visual sociology [10] equips researchers with a variety of tools to identify socially significant role and behavioral characteristics of participants in relationships in the educational environment. Sociological aspects of the study of spaces [11] allow us to consider the educational environment of a university as dynamically changing under the influence of the conflicting aspirations of the participating agents, with emerging structural consequences and an influence on the perception matrix. Convergent processes that are in line with the development of a culture of participation are emphasized by G. Jackins as the main and determining transformation of modern institutions, and one of them, among the first ones undergoing fundamental changes, is the university. Jackins emphasizes the process of creating an aesthetic that presents new demands on consumers, being directly dependent on the active participation of knowledge communities [12].

Visual symbols of university environment serve as markers indicating space and help students’ navigation by forming their identity. The educational environment that provides a high level of activity and the use of full potential of students acts as a developmental educational environment. It is focused on the development of students’ skills and brings them to a higher level. The developmental educational environment provides the systemic development of a student’s personality, the growth of his intellectual, creative, psycho-physiological abilities, communication and self-development skills [13].

There is a set of visual spaces in university which demonstrates connection between internal space (personality oriented places) and external space (buildings, university campus territory, places for leisure and interaction). At the same time, elements of the internal visual space turn out to be the most significant in groups of students and teachers [14].

Among the important differences in the perception of the university environment by students and teachers, it is important that places of status-role interactions are important for students; as well as places indicating membership of the institution. And for university teachers, places related to human behavior as a subject of professional activity (classrooms, libraries) are more important [15].

Supporting the position that the subjective activity of students develops due to the university environment, the efforts of researchers are aimed at identifying the potential of the educational environment of the university. Analysis of the main parameters of the university environment is carried out in the plane of several modalities: activity / passivity; addiction / freedom; openness / closeness. L.E. Nagornova notes that modern students focus on indicators of environment mobility, and also, becoming senior university students, they are paying more attention to the opportunities created by the university environment for creativity and realization of career aspirations [16].
The aim of the study is to analyze how the visual characteristics of the university, reflected in the ideas and opinions of students about its image help them in forming their logistics and personal trajectories. Analysis of student assessments of the university’s visual characteristics is considered as a tool for identifying their connection with traditions and values, as well as a factor contributing to the strategic vector of the university’s development.

3. Methods and Results

The integrated use of quantitative and qualitative methods of study makes it possible to establish its relevance in the economic strategy for the development of the educational environment and the expansion of the communicative space of the university. Using of integrated methods for sociological research of educational environment promotes development of social technology of its engineering.

The most relevant method for collecting high-quality information in order to study visual characteristics and image parameters is the focus group method. It broadens the picture of semantic polarization and the value-orientation side of the university perception as an educational system and communicative space. The study used online survey methods and focus groups, a combination of which allowed for a diagnostic reconnaissance study of the visual environment of Peter the Great St. Petersburg Polytechnic University. The study of image components using a focus group allows to focus on visual, auditory, kinetic images. The online survey of students allows to focus on key visual characteristics that play the role of markers of attitude to the university and serve as orientation for a comprehensive opinion about the university and its advantages.

In order to study the visual characteristics of the educational environment of the university at SPbPU, a number of studies were carried out: in October 2018, an online survey (200 respondents), in March 2019 focus groups (in three academic groups, 65 respondents); in March 2020, an online survey (232 respondents) and a series of clarifying interviews with students (free interview).

The generalized data of the survey (2018) reveal that polytechnic students as the positive qualities of the university, revealed as a result of the university’s media activities, noted the following: well-known (51.5%), interesting (40%), promising (34%), comfortable (28%) (Figure 1).

![Figure 1. Positive qualities of the university.](image)

About 20% of respondents agree that the Polytech is a university "aimed at science, discoveries, innovations"; it "develops an atmosphere of friendship and cooperation"; it is characterized by "youth and movement along with attention to history and culture".
The analysis of the university’s image attributes allowed us to distinguish the following: the main building of the university (72.5%), the Water Tower as a symbol of the Polytechnic (16.5%), and the Polytechnic Park (8.5%) were dominant.

The university’s brand book was also highly rated, from 7 to 10 points it was given to 91% of the survey participants, while 28.5% of students gave the highest mark of 10 points. This indicates the high role of modern image tools and the virtual environment of the university in the communicative space used by students.

Almost half of the respondents (46%) believe that the rector is the face of the university. This opinion was also supported during the work of focus groups. To conduct a focus group study, students were selected for areas of study that are promising for the university - these are students specializing in applied mathematics, programming, advertising and public relations. During the discussion of visual environment of the university, it was found that among mathematics students, the university is more associated with such components of the material environment as the Main Building, the White Staircase, the concert hall (White Hall), the library, the student dormitory, monuments, the fountain on the territory of university campus, the nearest metro station. The students rated elements of the information environment below the rating: the university’s official website and social media accounts.

For students involved in programming, along with the main building of the university, the White Staircase and the Water Tower, a significant place is given to the new Research Building, a dormitory, a cafe, the nearest metro station, as well as large audiences of their educational building. For students-programmers, a significant place in the image of the university is occupied by sites on which online learning is concentrated: their design, ease of use, technical level. During the group discussion, they focused on the components of the communicative environment of the university, as they associate network with the university environment with teachers, management, services, as well as the ability to interact with student units (student teams, various social groups on the network).

Students of the advertising and PR direction were in agreement that the Main Building and the monument to Peter the Great are significant symbols of the university, but they noted the importance of Polytech’s corporate identity, discussed corporate colors and logo, attributes of the corporate environment (sweatshirts, brand of the Black Bears sports team). They took into account the state and equipment of classrooms in the university’s image, the role of individual teachers and practitioners in the educational process, and the features of communication with the staff accompanying the educational process. The focus group participants compiled a normative section for rectorial activity: the university rector should be a competent leader, an experienced manager, capable of leading the administrative, teaching staff of the university and students. The rector, from their point of view, is a person who knows how to delegate authority. Among the ratings in the characteristics of the current rector, the following positions received the most points: leader, competent in management; education, professionalism; non-corruption; purposefulness, ambitiousness.

The data of an online survey conducted a year later (it was possible to choose no more than 3 answer options) made it possible to establish the constancy and dynamics of a number of parameters. So, university values such as prestige and high status (52%), youth and movement (41%) along with maintaining a family atmosphere and maintaining friendships (40%), focus on science, discoveries and innovations (36%) prevail (Table 1).

To the question “What characteristics would you choose to describe the image of the Polytechnic University?” the following answers were received: well-known (59%), prestigious (56%), promising / open (44%), innovative (40%), supporting (12%), strict (10%), isolated 1% (Figure 2).
Table 1. What values of the Polytechnic University would you single out as the most significant.

| Values                                      | Choice (% of responses) |
|---------------------------------------------|-------------------------|
| Prestige and high status                    | 52                      |
| Youth and movement                          | 41                      |
| Family atmosphere and friendship            | 40                      |
| Science, discovery, innovation              | 36                      |
| Openness and freedom                        | 34                      |
| Career growth and success                   | 28                      |
| History and culture                         | 24                      |
| Creative achievements                       | 17                      |
| Other                                       | 3                       |

Figure 2. Characteristics to describe the image of the Polytechnic University.

An interesting point is the fact that it is the Main Building in its classic architectural style that students associate with the main symbol of the university. This is facilitated by the design of the university’s print media, printing products, souvenirs, as well as the really unfading bright look of the building itself, which serves as the background for most photographs of students and staff. This explains the fact that 85% of students chose this symbol as dominant in the image space of the university. And with this indicator, the proportion of students who evaluate the university’s brand book (website design, logo, fonts, colors) according to the highest scores (from 7 to 10 on a 10-point scale) corresponds to this indicator, which emphasizes the importance of the synthesis of the figurative and symbolic attributes of the university in the students’ views - their existence in both physical and virtual space.

4. Conclusion

The study showed the high importance of the visual environment of the university, formed expectations in relation to the integrity and limitation of the virtual and real environment, which should reflect the key characteristics of the image of the university, the leading element of which is prestige. The study also confirmed the assumption that students have various accents in the system of ideas about the dominant visual components of the educational environment, depending on the professional specialization they receive.

The information received is an important incentive for improving the organization of the educational environment and its development in modern digitalization and virtualization processes.
Visual symbols of university environment provide students with routers in the process of forming of their professional competencies taking into account the demands of modern labour market. Thus, the results of the study confirmed that the educational environment of the university is perceived by students simultaneously in two spaces - real and virtual - and both of these interconnected spaces need to be developed thanks to effective logistics in forming their effective personal educational and professional trajectories.

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