

## **E-LEARNING TECHNOLOGIES IN THE INTERNATIONAL URBAN DESIGN: EDUCATIONAL CASE STUDIES OF THE SIBERIAN FEDERAL UNIVERSITY AND KARLSRUHE INSTITUTE OF TECHNOLOGY**

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### **ABSTRACT**

The article describes the experience of Master's programs in Urban Planning realization with modules in the form of distance courses with the participation of foreign partners. The creation of an international atmosphere in the University helps to develop the intercultural competences, to expand the professional and cultural growth opportunities, to promote the quality of education.

The International scientific-practical seminar on Urban planning «Metropol.X: St. Petersburg» has been realized from October, 2015 to February, 2016 on the base of two educational institutes - Institute of Architecture and Design (IAD) SibFU, Krasnoyarsk, Russian Federation and Institute of Urban and Landscape Design (IULD) KIT, Karlsruhe, Germany. The choice of the foreign partner based on many years personal contact with Barbara Engel, Prof. Dr., Head of the International Planning and Urban Design Department and Marketa Brezovska, Dr., and under the preparing bilateral agreement with the University partner. In addition, both sides sought to promote and diversify of research activity in the framework of the international laboratory: a variety of approaches, forms of research, integration of practice experience and technologies. And at the same time, familiarity with national, including the educational traditions of Urban design schools – participants of the experiment.

The object of the study was the St. Petersburg City as Cultural capital of Russia. The result of seminar work is a joint analytical project performed in the technology of interactive mapping "ATLAS of Saint Petersburg". The Atlas reflects the modern urban landscape of St. Petersburg, a critical evaluation of the city development: urban infrastructure, housing, cultural heritage, identity protection, historic landscape, public space, legal support, relations between public and private interests, etc. All maps are made in the same information environment and in the same planning document. Interesting conclusions of the collaboration work is the exchange of educational methods and approaches to understanding urban problems between two Universities of different countries.

**Keywords:** international urban design, collaboration project work, scientific-practical seminar, interactive mapping technology, E-learning technologies in education

## **INTRODUCTION**

Global computerization of design and development of information and networking technologies promotes the continuous advancement of studying process and thus, raises the quality of professional education for architects and urban-planners. Communicative technologies made international education programs possible which not only effaces physical boundaries of cooperation and broadens geographical distribution of the participants but also allows to take a generalized view of a given problem.

Above that, the procedure for implementing e-learning and distance education technologies in education programs for organizations engaged in educational work is regulated by the Order of the Ministry of Education and Science (№2 dated 01.09.2014) on the basis of the Federal Law "On Education in the Russian Federation» (№273-Federal Law, dated 29.12.2012). A decade ago distance learning was an innovation which was treated with caution, but now distance education system is rapidly advancing in the Russian Federation as well. It already has an overwhelming number of students and education programs and amazingly complex infrastructure. Furthermore, "mixed" education programs with distance education technologies are present in every large university in the country.

## **MATERIALS AND METHODS**

Analysis of current master's programs in urban-planning, which include distance courses with foreign professors, shows that such practice attracts new applicants, encourages students' interest towards studying and creative programming. Above that, networking allows to work together with best professionals, compete with large organizations, and to research topics widely and thoroughly.

At the present stage of the society's development the most widely spread form of organizing urban design process is distance networking. It especially promotes uniting specialists of different fields of study – urban-planners, sociologists, engineers, economists, scientists, and all kinds of consultants – into organized informational networks aimed at enhancing the effectiveness of design process and large-scale urban design projects.

According to A.N.Novikova's research there are several common tendencies in organizing distance networking in the sphere of architecture and urban design [1]: flexibility of project group's lineup defines the adaptive capabilities of the body, depending on the given or the new tasks; horizontal model of cooperation between members – direct communication; collaboration in design process aimed at the development of complex innovative decisions through sharing ideas and knowledge between members; nonlinear nature of design process defines the ability to perceive new information arising from research, testing and approbation design concepts and adjust the project accordingly; the possibility of distance networking is limited by technical resources like access to project information (project files) from any location. This peculiarity defines the following characteristics: geographically wide-spread team members; variety of work places, "third place"; mobility; virtual design space (cloud services for data storage, communicative technologies), etc.

Organization of international competitions plays a distinctive role in development of distance technologies in urban design. Such competitions combine multiple-option design of a given site and real-time basic data and information updating which allows organizers to accumulate a vast variety of international ideas.

Urban Design Department of SibFU has the experience of organizing group distance education and design seminars. Our department participated in competitions, organized by SCHINDLER Company: SCHINDLER AWARD – 2010 and 2015 (Fig. 1,2).

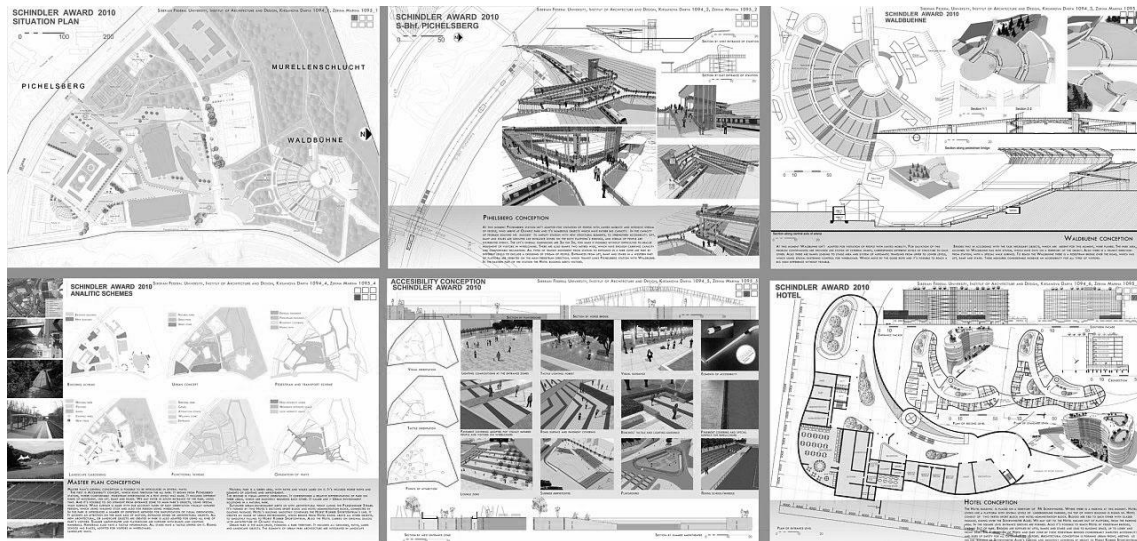


Fig. 1. Sporting and recreational environment accessible for people with disabilities. International competition SCHINDLER AWARD 2010: “Berlin Olympic park redevelopment: access for all”. Project of master degree students’ team, urban planning department, Institute of Architecture and Design, SibFU.

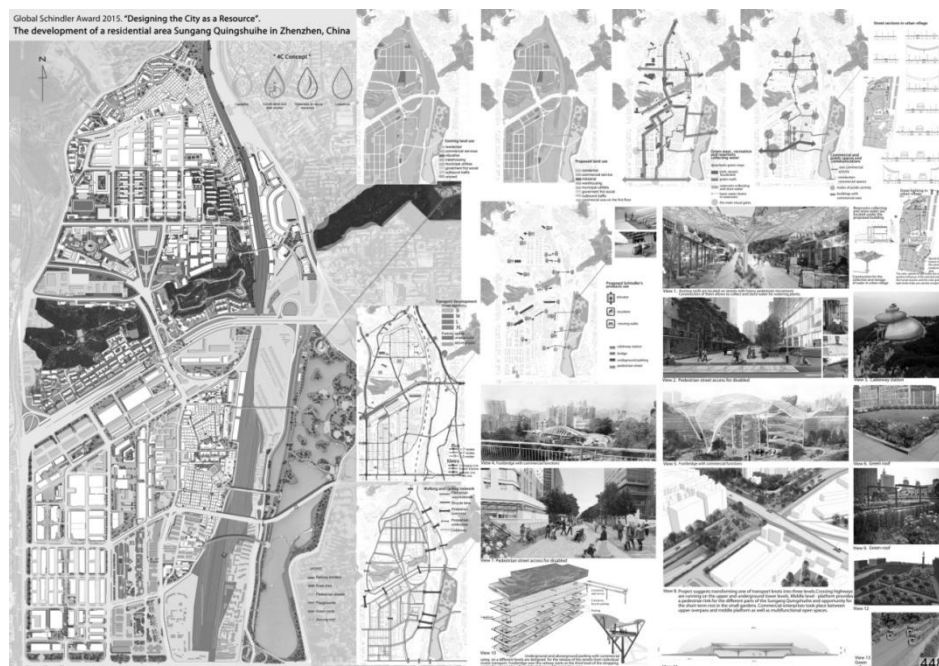


Fig. 2. Redevelopment of the Pearl River Delta in China. International competition SCHINDLER AWARD 2015. Project of master degree students’ team, urban planning department, Institute of Architecture and Design, SibFU.

Topics vary together with the site to be designed and geographical distribution of participants. Base-line data (maps, statistics, historical background and future prospects), comments from organizers, photo and video tracking are provided for every participant and for every topic in real-time format on the competition organizers’

website. It ensures every participant to be under the same conditions – to assess the problems of the site remotely. In the same way, using distant means of communication (Internet) participants should provide their results, make their design decision clear for the international competition committee, using not only verbal means of communication like explanatory note but expressing ideas visually, in order not only professionals could understand it but also people with disabilities, who also present in the committee and influence its decisions greatly.

Another large-scale project began in October 2015: International research and practice seminar in urban planning “Metropol.X: Saint-Petersburg” organized by Institute of Architecture and Design, SibFU and Institut for Urban and Landscape Design, KIT for students and professors from department of International urban planning (KIT) and department of urban planning (SibFU).

Preparation for the seminar began long before that time. The choice of foreign partner was based on long-term personal contact with Barbara Engel – Doctor of Engineering, department of international urban planning professor – within the framework of forthcoming bilateral agreement with partner university; aimed at possible development of networking master’s program in urban planning. Above that, both sides were interested in development and diversification of scientific research in the course of the international lab: variety of approaches and forms of research, integration of professional experience in fields of socio-ecological planning and information technologies. Another goal was to get acquainted with national traditions and teaching practices of urban planning schools-participants of the experiment. An essential condition of network interaction was ICT-based education environment which, above all, provides an access to information resources.

International research and practice seminar in urban planning “Metropol.X: Saint-Petersburg” is a part of an extensive research and practice study “Metropol.X: new towns. City planning in global context”, elaborated by the German colleagues. Research framework suggests separate seminars in eight cities of the world: Saint Petersburg (Russia), New Delhi (India), Ankara (Turkey), Astana (Kazakhstan), Brasilia (Brazil), Auroville (India), Almere (Netherlands), and Ordos (China). Each of the seminars aim at description and analysis of the chosen city in 4 aspects: reason of foundation based on geographical, socio-cultural, political, economic and ecological circumstances; city structure development based on time period, historical, political and economic changes; present-time and future prospects of development. For the detailed coverage of the topics German colleagues work in collaboration with partner universities from around the world, depending on the geographical region of the study.

## **RESULTS**

Saint Petersburg was chosen as an object of collaborative study with SibFU as a city with gorgeous history, rich cultural and landscape heritage. In 1990 “Historical center of Leningrad and associated groups of monuments” were included into UNESCO’s List of World Heritage Sites. Infill development of the historical center began in the same period, endangering the image of the whole city that in 2005 administration officials declared to be “the highest value” among the architectural heritage of Saint Petersburg. Regretfully, under the pressure of the developers the most part of the territory was excluded from heritage protection zone. However, today the protection zone covers almost 7800 objects: buildings, engineering structures, gardens and parks, ponds and canals, monumental park and garden sculpture, historical and archeological sites. Since

2007 Saint Petersburg has been annually witnessing no less than twenty public demonstrations against demolition of historic buildings and public greenery [3].

That is why it is crucial not only to develop the city, along with other global scale metropolises, taking into account modern practices of urban science and society's needs but also sustain the integrity of architectural environment and historical city landscape in order to preserve the city's distinctive character and its attractiveness for future generations and ourselves.

The main project coordinator was Dr. Marketa Brezovska. The seminar program was elaborated during the summer break. It included project goals, brief historical overview of the object, links to the information resources and, most importantly, the coordinated schedule of the seminar and online meetings. The last part was the most intricate due to the time zone (6 hours between Karlsruhe and Krasnoyarsk) and academic calendar differences. Nonetheless, the real-time online sessions between the two universities were planned with due consideration to specificity of educational processes and technologies: teaching seminars for professors, summarizing lectures, conferences, consultations, student seminars for exchange of ideas in the design process. Student project and research work was chosen as a basic element of cooperation, which, in turn, consisted of three stages: 1- "Pecha Kucha" – the first impression of the chosen topics discussed online, 2- separate work on the main research, 3 – summarizing and presentation of the results via Skype conference.

German and Russian students were to choose a topic (layer) for detailed research of the city. Each topic suggested three blocks: 1 – history and theoretical background, 2 – contemporary context, 3 – suggestions for the future development. Based on the institutes' scientific interest and education program focuses 14 topics were chosen: seven for Russian students and seven for German students. It was hoped that the research would help answer significant questions like:

- Is it possible to follow the contemporary trends without damaging cultural heritage?
- Could it be possible for the city to yield benefits from developing private business without harming its image: improve public spaces with the help of private capital?
- Whether or not it is possible to revive the system of canals and small rivers, which were buried during the construction of transportation routes at the turn of XIX-XX centuries, for the sake of improving ecological situation in the city, creation of unique and attractive public spaces and, surprisingly, hygiene?
- How could construction of new pedestrian touristic routes attract attention to less popular historical monuments not only of tourists but also investors, who could fund the upkeep of these monuments?
- What changes city structure development and political situation shifts brought to housing? What is "elite housing" and what is today's image of bedroom suburbs?
- Is the theory of landscape urbanism appropriate in "cultural capital"?
- Is it possible to give the waterfront back to pedestrians, not only filling the space with many scenarios but also making it ecologically viable?
- What have been accomplished in the process of ecological improvement of the Saint Petersburg's urban environment? What challenges are to be faced in shaping ecological infrastructure of the city?

The final joint project was finished in February 2016. As the result, the teams issued a unified document – “Saint Petersburg Atlas” which contains all data analysis, future prognoses for each topic in graphic and visualized form (Fig.3).

The joint analytic project was made using interactive mapping technology, which allowed to unify the design of all the versatile approaches of urban fabric research familiar to the two urban planning schools, and also graphically adjust so distinct objects of research as infrastructure, landscape arrangement, cultural heritage, public spaces, residential architecture, place identity, etc.

Such stratification of scientific research allowed to create a unique model of Saint Petersburg based on the synthesis of various degree of participants’ familiarity with the subject’s environment, mindset, level of perception, and professional development. It could be said that as a result of joint effort within the framework of the project, an analytic corpus of topics in the common information environment was created.

The Atlas, essentially, is a printed A4 edition in English language featuring graphics, digital information, and text. To unify the style institute of Karlsruhe created an Adobe InDesign template layout with possible variants of presentation. The variety of possible elements includes: pictures, maps, icons, collages, comics, tables, and charts. Text captions for each topic consist of epigraph – emotional opening statement, introduction, explanatory information, and a short conclusion.

Layouting the project results was a new type of task for SibFU students, since the common form of presentation within the scope of term projects for them is a 1x1 meter presentation board with an explanatory note. As a result of the Seminar and in the course of education process participants understood the principals of creating a printed publication and thus enlarged their professional skill set as urban designers.

Atlas contains 14 researched topics: 7 topics from each institute, general conclusions, and “forewords” from lead instructors of each group of topics. Despite the individual approach and versatility of research layers each section holds a set number of elements: mapping and visual support. First mandatory map – “city level”, which contains basic information and outlined areas for further research labeled with an individual number. Second element is a district-scale map, which contains analytic and design information supported by photos or visual materials. Therefore, unified hierarchy of project results obtained by different groups allows to coordinate the process of joint project creation, taking into account the peculiarities of parallel workflow at several distant places.

Research results of the separate topics from the joint printed publication were presented in PDF format during the online conference. Subsequent to the results, the difference between the approaches to educational processes of the two partner institutes was observed. Thus, KIT students’ works are characterized by detailed analysis of social, emotional and legal aspects. Verbal questionnaires and charts based on them play a significant role in their researches (4 topics out of 7). Visual support is mostly emotional, rather than informative and argumentative. Textual part of the research includes extensive argumentative base. Excellent usage of infographics, icons, symbols, and signs should also be mentioned.

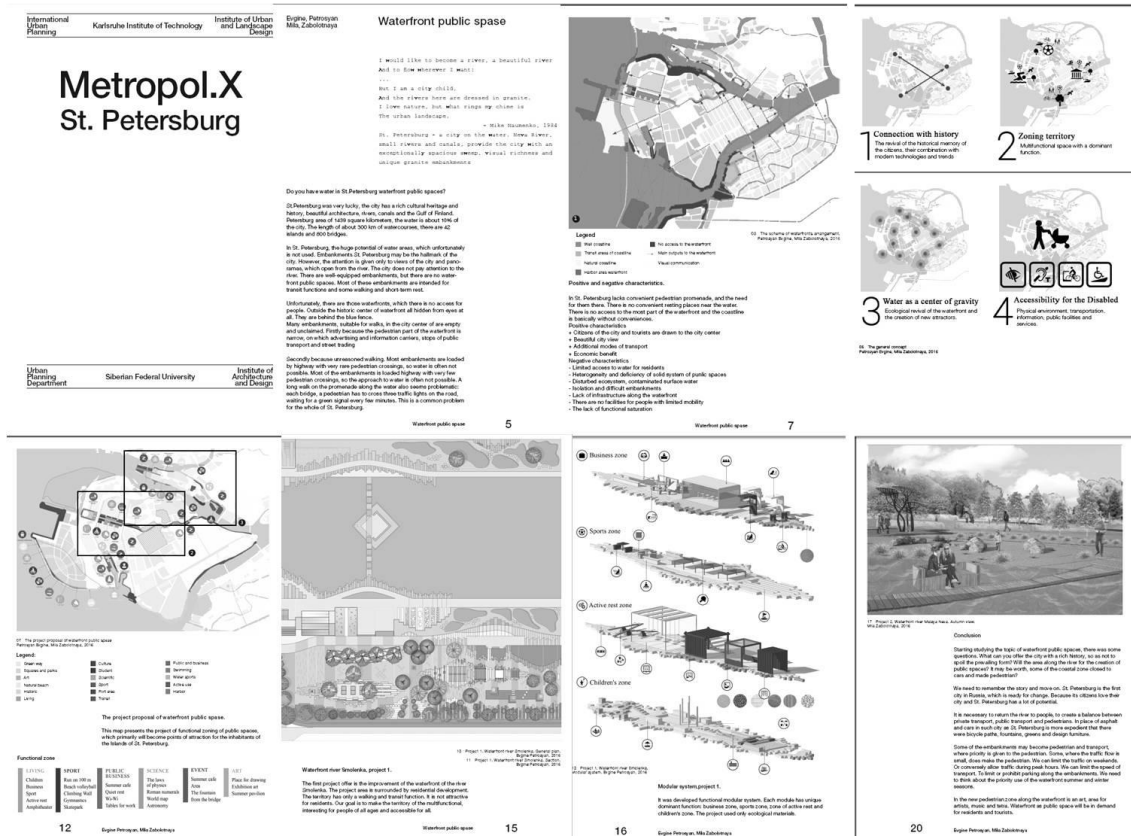


Fig.3. The pages of Atlas with analytic part of work and design concept “Waterfront public space”, authors E. Petrosyan, M. Zabolotnaya, SibFU.

As far as SibFU students’ results are concerned, most part of their works is a conceptual design (6 topics out of 7) based on actual perception of the object’s current state and its development in accordance with consumer demand. Visualization serves as an actual representation of the design concept or as a proving point of the research. Textual part acts as an explanatory note to the design concept. The main advantage of the Russian school (6 topics out of 7) is a greater amount of work and in-depth development of the visionary part - future prospects.

**DISCUSSION**

This experience allowed to sharpen the skills of positioning in accordance with matrix of common tasks and given requirements, effective cooperation, and designation of individual functions in teamwork. The Seminar showed the difference in understanding of urban planning tasks and methods of design used by institutes of different countries which manifested itself in setting project and analytic emphases. German school features stressing socio-culturological component of the research and ingenuity of the research approaches. For example, meta-analysis of independent artists, culturologists, mind maps of Saint Petersburg’s citizens, views of individuals from documental movies, newspapers and interviews taken out of context. Russian school values practical result of analysis. Each section contained author’s own view of the situation, which German works lacked of. Nonetheless, developing this kind of partnership will promote the creation of unique projects based on the difference of various architectural schools students’ perception which will result in deeper differentiation of project goals. Above

that, the result will reflect contemporary tendencies of global architecture and urban planning including local peculiarities.

Joint international projects within the framework of educational process will promote the development of innovative education environment inside the institutes and professional communication networking, broaden the professional perception of analysis and design, including mastering new ways of arranging and presentation of projects and analyses, attract talented students and instructors, and stimulate international scientific cooperation.

The development of distance technologies in the international design – is one of the tools for the internationalization of the educational process through the development of strategic partnerships, expanding the circle of the academic community, mobilization of domestic intellectual resources, and expanding competencies of graduates in accordance with the challenges of the global labor market and employers' requirements.

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