

Engendering responsibility in architecture students through real planning for a tram depot in Gdańsk

Justyna Borucka, Piotr Czyż & Wojciech Targowski

Gdańsk University of Technology
Gdańsk, Poland

ABSTRACT: Apart from technical competencies, the profession of architect requires specific social competencies: understanding the user's needs, ability to diagnose social problems, negotiating and understanding the impact of construction investments on society and the environment. The architect plays a significant role in the collective effort to create spatial order. This is why it is important to include these social competencies in the curricula of architectural studies. It should be required that students of architecture actively engage in real design processes to develop competencies underpinning professional responsibility and cooperation. Presented in this article is an experimental course. Enrolled in the course were students engaged in preparatory work on planning documents prepared for the city of Gdańsk. Participation in real activities, with real partners and problems, engenders the students' sense of responsibility. Attaining that is crucial in the future work of an architect.

INTRODUCTION

Methods for teaching non-technical skills crucial for architecture students are described in this article. The architect's profession, apart from technical competencies, requires social competencies: that is, understanding user needs; the ability to diagnose social problems; negotiating and understanding the impact of construction investments on society and the environment. This issue is the subject of many discussions and considerations at the academic and professional level [1-4]. As Pusca and Northwood observe:

The instructor's role is to find the appropriate tools and methods not only to motivate students' learning and engage them in the learning process, but also to help them achieve the desired skills. This is done by creating an environment that encourages and motivates students' engagement and creativity [5].

In the case of engineering students, it is crucial for them to develop not only academic knowledge, but also a set of practical and social skills. Developing students' individual value systems is crucial to outcome-based architectural education programmes [6].

In response to these considerations, educational reform has been carried out in the European Union over the past several decades. In accordance with the applicable European Union regulations, education should be oriented towards students achieving learning outcomes, as defined in the study programmes.

Learning outcomes state what a learner is expected to know, be able to do and understand at the end of a learning process or sequence [7].

Most European universities use the learning outcomes framework in developing education programmes for students. Learning outcomes, according to European standards, are divided into three domains: knowledge, abilities and social competencies. Although the first two were easily transcribed from traditional education programmes, the third domain - social competencies - are problematic to construct and execute. These often-called *soft skills* play a major role in the future profession of an architect. No architect works in a vacuum. Every architect works in a complex network of relations, from relations with contractors, through to working in an engineering team, to working with local governments and administration.

Most importantly, architects play a significant role in the collective effort to develop a unique quality called spatial order. Every investment must be seen as part of a socio-economic, as well as spatial, structure. The role of urban planners is to develop guidelines for architects, but without a deep understanding of the social role of architects, these guidelines only play the role of *damage control* instead of becoming a tool for social cooperation among specialists in the city development process.

Achieving that level of social cooperation is impossible without students of architecture and urban planning acquiring a special set of social competencies. This is why it is important to include these competencies as part of curricula. The *Polish Qualifications Framework* [8] forms an integrated part of the Polish qualification system, which was formally adopted by the Polish Parliament on 22 December 2015 and came into force in January 2016. The two most important social competencies for architects mentioned in the *Polish Qualifications Framework* are:

- competence to assume, evaluate and interpret basic professional and social responsibilities, and
- independent action and cooperation with others under structured conditions, directing a small team under structured conditions [8].

In the authors' opinion, developing such competencies is not possible through traditional education methods. It is required for architecture students to be actively engaged in real design processes to develop competencies, such as professional responsibility and cooperation. Such an attempt has been undertaken during an architectural design course with a group of students of Master's studies at the Faculty of Architecture in Gdańsk University of Technology (FA-GUT). New, innovative activities were an integral part of the didactic process. The classes included students in the real process of preparatory work changes to planning documents prepared for the city of Gdańsk in Poland, i.e. guidelines for a new strategic tram depot in a suburban area of the city. This was not a simulation, but involved actual participation in a professional process by real actors of urban planning.

Although it is intuitively known, Hadromi points out the potential benefits of cooperation between engineering schools and corporate partners [9]:

The partnership between vocational schools and corporate/industry aims to:

- 1) *improve and develop the partnership between vocational schools and corporate/industry to improve the quality of vocational education;*
- 2) *take concrete steps to implement the form and type of partnership to mutual benefit;*
- 3) *establish a joint commitment as a basis for the partnership;*
- 4) *develop the partnership to jointly implement education* [9].

The course of action, discussed here, had two goals. The first was to test many different, sometimes not even realistic, solutions to the given problem, and the second goal was to evoke the students' sense of responsibility for professional activities and their sense of self-agency. The first goal is important for institutional partners and the second for students. In later deliberations here, the authors will focus mainly on the second goal, but it is important to note that the first goal was also vital for the success of this education experiment.

The source of self-agency is constructed on the awareness of being one of the important actors of a complex planning process. The expected additional value of the didactic process should be the development of an understanding of the social role of the architect as the implementer of important needs for the community, as well as earning experience from the participation in local law-making procedures.

PARTICIPATING PARTNERS

1. Investor: the city's public company Gdańsk Buses and Trams (Gdańskie Autobusy i Tramwaje) providing transport services for city residents. The company is a continuator of the tradition of public transport dating back to 1873 in Gdańsk, and is the largest transport company in the region. The company has depots in many parts of the city. The desire to hand over the area of the bus depot, which is in a particularly attractive coastal belt of the city, for investment and the need to locate a large tram and bus depot in the area of the main housing centres, has meant the investor considered the relocation to be necessary. Implementation of the project on land owned by the city requires a change of the city's urban plans and planning regulations. It is also important to assess the impact on the surrounding urban structure.
2. Professional design studios: to prepare an application for changing the city's urban plans, the investor commissioned studies from design studios. A transportation system functional proposal and an application to change the urban plans were produced by three architectural offices and design studios, viz. Biuro Projektów Budownictwa Komunalnego, Fort-Targowski, and Renata Czajkowska - Marek Nakonieczny PROJEKT, all located in Gdańsk. Cooperation was held between the studios and the Faculty.
3. Student design teams: six teams of students to verify the transportation, functional and urban guidelines prepared by the professional studios. The expected result was the development of variants of the spatial vision of urban planning and architecture of the future depot. This allowed the design assumptions to be assessed. This was significant, because of the role of student projects in the consultation held with the local community and the City Council.

In addition to direct cooperation, other participants were:

4. Gdańsk City Development Office (Biuro Rozwoju Gdańska): design unit developing regulations and documents for new city plans.

- Gdańsk City Council: the local government body responsible for the change to city plans as local law documents, i.e. the local spatial development plan.

The students had the opportunity to get to know this complex organisational structure of decision-making, and to understand their own role in it, as designers. They were also able to see both the various relations between the actors, as well as to see the different interest groups and their priorities.

ASSIGNMENT

All materials from the design offices were given to the students (Figure 1). Six design teams of three- to five persons worked on the assignment. An important factor was close cooperation with the investor. The investor was interested in assessing proposed projects and minimising the potential negative effects for the investment, as well as having reference material for discussion in the public consultation process. Hence, the investor provided the students with all the information to help the quality of their designs.

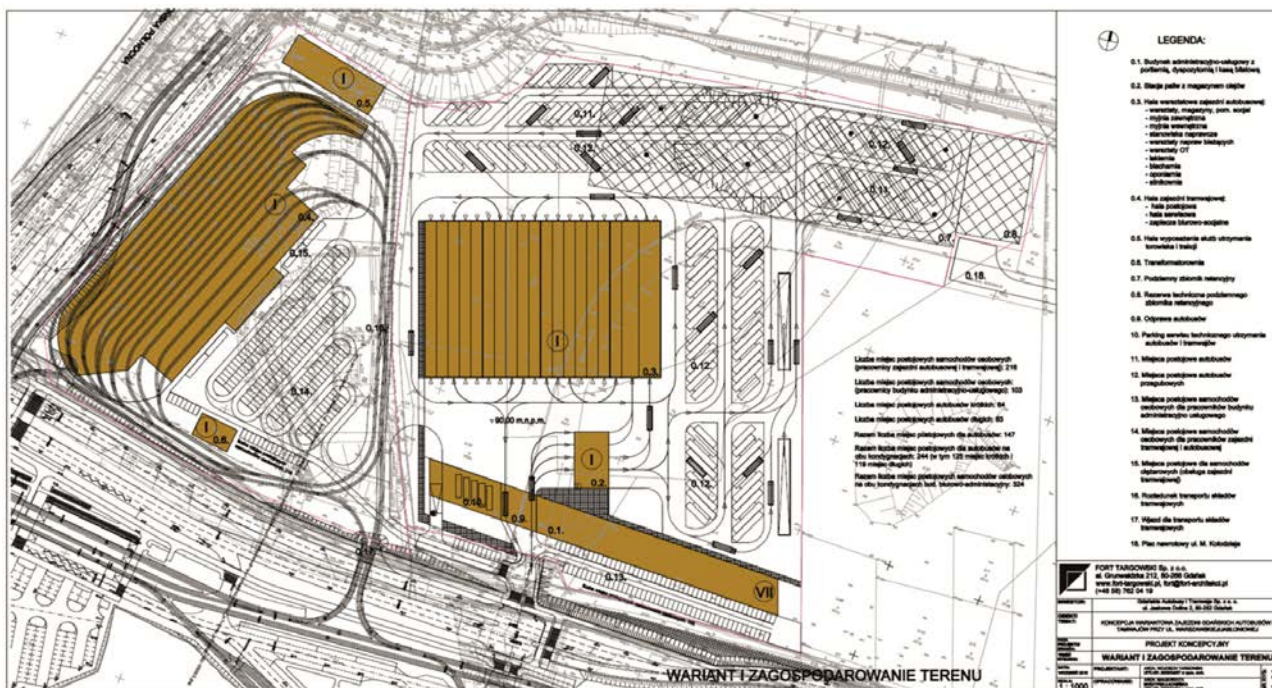


Figure 1: Area development plan of the tram depot station: a research topic for the design Master course (Fort-Targowski Architectural Office).

A study visit to the existing depots was organised at the start of the work (Figure 2), which included investor-prepared presentations. A novelty was the establishment of cooperation between the Faculty of Architecture and the architect responsible for preparing the investment. That cooperation was informative for the students and the university's teaching team by providing professional experience and knowledge.

Another element was the organisation of classes in the form of a competition. In creative endeavours, competition has a positive effect on students' creativity.

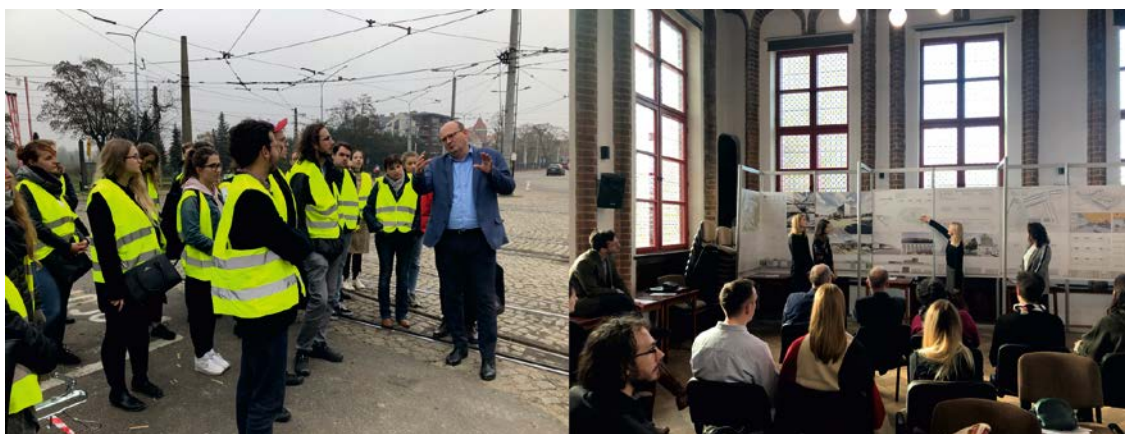


Figure 2: Field trip, studies, research and discussions conducted within the studies on architecture design for Master's students in the academic year 2019/2020 (Photographs: J. Borucka).

Haupt et al opined:

(...) the more difficult assignment was either a challenge undertaken by the most qualified students or the vision of the more prestigious international competition motivated students to work harder [10].

This was verified by the comparison of students whose work was competitive versus non-competitive. The above authors also noted:

The practice of the authors in the field of teaching a design studio based on the architectural competition assignment shows that entering a prestigious event is a great motivation for students to undertake more difficult tasks, as well as to bring them to a successful end [10].

That sense of achievement was strengthened by the assessment of real-world professionals. The students were aware their work would be assessed not only for semester grades, but also by representatives of the investor. Such an experience had a huge impact on students' quality of work; they knew that developing a high quality design assignment on time was not just a whim of the teacher, but a real-world assignment, with real expectations and deadlines.

RESULTS

The course involved students in a final presentation and defence of their works, which was accorded special importance. The final presentation was held outside of the University, which gave the students a sense of formality in their work and also provided extra motivation for the participants. An exhibition of students' works was organised at the representative seat of the national professional entity, the Association of Polish Architects (SARP o. Wybrzeże), in the historic Renaissance court of the brotherhood of St George in Gdańsk.

Representatives of the investor, with the president of the company, representatives of professional associations - i.e. the aforementioned Association of Polish Architects (SARP), and the National Chamber of Polish Architects: Pomeranian District (POIA) - took part in the final presentations and final assessment of the students' works.

The projects were significantly varied in approaches (see Figure 3 and Figure 4), and addressed problems initially not indicated in the project brief. For example, some of the design solutions were specifically oriented towards solving ecological problems of facilities of the type, such as water and energy management. Another solution incorporated social functions into the project; for example, a kindergarten for employees' children, community centres, as well as social gardens and workers' canteens.



Figure 3: Final project proposal 1 (Student group: A. Roguszewska, S. Sitniewska, P. Stępińska, M. Cymanowski).



Figure 4: Final project proposal 2 (Student group: P. Hejden, K. Moczyński, P. Rojewski).

The students were encouraged to develop further their design ideas. The projects were a surprise to the invited guests, who did not expect such a broad and multi-contextual approach to the problem; guests were more oriented to the form of the buildings rather than the buildings' function(s). This shows that the investor achieved the goal of obtaining many perspectives on the problem, as well as reference material for social consultations.

DISCUSSION AND CONCLUSIONS

The students understood the expectations of the investor. To better understand the project task, several student groups independently deepened their knowledge of the company's history and present operations, as well as possible future projects, such as the electrification of transport.

All but one student project respected the technical, urban and functional guidelines received from the design offices. Only one project proposal exceeded the design framework by offering a futuristic design for the facilities. The students were motivated by solving a real, practical problem. Cooperation with specialists had given the course the character of professional work in which reliability and responsibility were more important than just seeking formal or speculative solutions.

While the professional participants' solutions were focused on the proper, technological functioning of the facility, the students' solutions extended beyond that. The students also considered non-suggested issues in three distinct areas:

- 1) Environmental awareness: in this respect, most studies went far beyond the investor's expectations and the guidelines of the design offices. This clearly shows the priorities of the new generation. Lucyna Nyka states that it is crucial to develop water-sensitive strategies in architectural curricula [11]; students were independently seeking ecological solutions for a reduction of energy and water use, as well as rainwater retention.
 - *The question arises: do architectural studies curricula properly address climate change challenges and are graduates prepared to participate actively in the formation of water-sensitive strategies?* [11]
- 2) Relations with the local community: a distinctive feature of the student projects was concern for the proper relationship of the buildings with the surroundings of the housing complexes and landscape. Attention was drawn to the need to humanise the depot, so that the presence of this new edifice would be seen as part of a friendly urban neighbourhood.
- 3) Social programme: the students noticed that the transportation company in Gdańsk had a compelling history. Being a large company employing hundreds of employees in one place, the company facility during the Soviet period had many social amenities, such as a community centre with a cinema, a kindergarten and employee housing estates. Historically, it was the centre of social activity. The students wanted to recreate this in a contemporary manner. This would also serve as a form of compensation to the local community for the inconvenience of hosting the depot.

The participation in real activities, with real partners and real problems engendered the students' sense of responsibility. This was particularly evident in their understanding of the task and the need to establish positive relations with the local community. In the students' work there was a noticeable desire to avoid or at least minimise, conflict with the present and future local community, as well as respecting the natural environment. A modest view seems to have emerged in the minds of the students about the role of the architect, which resulted from an understanding of the role as involving co-operative decision making. Attaining that social awareness is, in the authors' opinion, crucial in the future work of an architect.

REFERENCES

1. Spiridonidis, C., Voyatzaki, M. and Meiss von, P. (Eds), *New Responsibilities of Schools of Architecture. Preparing Graduates for a Sustainable Career in Architecture*. Thessaloniki: EAAE & ENHSA (2009).
2. Spiridonidis, C. and Voyatzaki, M. (Eds), *Learning for the Future. New Priorities of Schools of Architecture in the Era of Uncertainty*. Thessaloniki: EAAE & ENHSA (2011).
3. Spiridonidis, C. and Voyatzaki, M. (Ed.), *Educating Architects towards Innovative Architecture*. Leuven: EAAE & ENHSA (2010).
4. Borucka, J. and Macikowski, B., Teaching Architecture - contemporary challenges and threats in the complexity of built environment. *IOP Conf. Series: Materials Science and Engng.*, 245, **8**, 1-12 (2017).
5. Pusca, D. and Northwood O.D., Curiosity, creativity and engineering education. *Global J. of Engng. Educ.*, 20, **3**, 152-158 (2018).
6. Savic, M. and Kashef, M., Learning outcomes in affective domain within contemporary architectural curricula. *Inter. J. of Technol. Design Educ.*, **23**, 987-1004 (2013).
7. Cedefop, *Defining, Writing and Applying Learning Outcomes: a European Handbook*. Luxembourg: Publications Office of the European Union (2017).
8. The Polish Qualifications Framework (PQF), 2 March 2020, <http://www.infor.pl/akt-prawny/DZU.2016.008.0000064,ustawa-o-zintegrowanym-systemie-kwalifikacji.html>

9. Hadromi, A., Model for a vocational school-corporate/industry partnership to improve students' technical skills. *World Trans. on Engng. and Technol. Educ.*, 16, **1**, 89-94 (2018).
10. Haupt, P., Wijas M., Mochocka S. and Chyb, A., Teaching architectural design through competition, motivation and challenge. *World Trans. on Engng. and Technol. Educ.*, 17, **3**, 338-342 (2019).
11. Nyka, L., Bridging the gap between architectural and environmental engineering education in the context of climate change. *World Trans. on Engng. and Technol. Educ.*, 17, **2**, 204-209 (2019).