

# Collaborative urban studio. Teaching collective problem solving via live projects.

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## **ABSTRACT**

The requirements of contemporary architectural and urban design practice places a growing importance on the ability to generate new solutions to complex design challenges. Such an approach is particularly relevant in the context of contemporary urban projects in need of urban innovation and socially engaged practice, i.e. urban regeneration or street quality improvement projects. Meaningful involvement in such topics requires a high degree of interoperability between the designers and other experts, community collaboration as well as internal team work. Such collective work methodologies are also employed by companies working on creative projects, such as engineering consultancies<sup>1</sup>.

In the paper we summarise the Authors' experience of developing, testing and running 'collaborative urban studio' – courses for the first year Master level architecture students at Gdansk University of Technology, which aim to train future architects in working within the collective creative framework. The course is based on three underpinning principles: (1) there is no obvious solution to a given task, as the topic is usually a complex, non-standard project and its scale is comparable with the professional commissions; (2) the course topic is based on a real-life case with a real client; (3) students are organised to work towards a jointly developed proposal. In order to meet this objective, the student teams need to organise their work through establishing their own management system, which must allow for continuous collaboration and mutual support.

The success of 'collaborative urban studio' is based on setting up the components of a creative environment – room for asking and receiving help from colleagues, as well as pooling and exchanging own knowledge through team-based 'reflective reframing'<sup>2</sup>. Developing a real project helps to motivate students to collaborate closely, owing to the perception of agency. In the text, we detail the rationale for establishing a studio as well we share the observations of our work. The Gdansk project is currently one of the first, sustained efforts in Poland to run 'live studio' continuously at the faculty of architecture. Despite the organisational challenges, the selected formula helps to promote the achievements of collective architectural work in engaging with complex, urban projects.

**KEYWORDS** collective creativity, architectural education, action learning, pedagogy, collective urban studio

'A collaborative studio' – a course, described in this paper, was organised in response to the need for a better preparation of the architectural students to the demands of their future work in the creative

environments.

In the paper, we focus on how the selected method of studio work helps to increase the capacity to engage in the creative collaboration by future architects.

We begin with the explanation of the relationship between the proposed teaching methodology and broader theoretical underpinnings on collaboration and innovation. We explore the parallels between our work and the 'live project' model that was established in the Western architectural pedagogical theory and practice of Live Projects<sup>3</sup>. We describe core elements of the course and explain how they help facilitate such teaching objectives as building the capacity to cooperate and innovate. Next, we elaborate on two components:

1. The organisation of the teamwork and its didactic role;
2. The role of the 'live' project in the course work.

In the concluding part we assess the project and its results, based on the observations and reviews of the studio work. We highlight the advantages of the selected approach as well as the observed drawbacks of these teaching methods.



Figure 1. 2015 Studio - workshops at the university (Monika Arczynska)

### Theory - the role of 'creative collaboration' from the perspective of the architectural practice

Increased research interest in the role of creativity and the role of teamwork<sup>4</sup> reflect a broader change of attitudes towards the concepts of collective problem solving and creation of the intellectual value in the creative professions. The creativity here is understood broadly as an ability to generate novel ideas, with the potential for implementation<sup>5</sup>. The ability to innovate is considered as a prerequisite for professional success of the design companies, especially those operating in the fields of engineering, management or research. In architecture, creativity can be considered as one of the core competences apart from technical knowledge.

The organisational research<sup>6</sup> emphasises the superiority of the team-based solution finding over individual work. Hardagon, describing the results of his research, coined the term of 'collective creativity' as a description of a joint and mutually supportive work of the individuals towards finding answers to the design problems. In Hardagon's model creativity was considered as an ability to apply knowledge gained through previous experience to solve new challenges, done mostly through meaningful interaction of group members. The proposed model entailed four components, occurring in a process of collective creation<sup>7</sup>: 1) a possibility to ask for help, 2) a possibility to give help, 3) an opportunity to do 'reflective reframing', i.e. pooling different knowledge, skills and past experiences of the team during joint work in order to solve current challenge and finally 4) reinforcing the organisational culture, which promotes team work. It was a departure from the previous findings, which focused mostly on the role of individual achievement and predispositions to innovate. Hardagon's model, especially its focus on the role of social condition of meaningful interaction, is often compared to the work on social psychology of creativity by Amabile<sup>8</sup>. She highlighted three aspects of individual predispositions towards innovation and its relationship with the social environment. They comprised domain-relevant skills (professional skills), creativity-relevant process (cognitive style and personality characteristics that were conducive to independent thinking, taking new perspectives and risk-taking) and task motivation<sup>9</sup>. Amabile's theory highlights the role of the social environment, which can either stimulate or stem individual traits. The ideal environment for the development of new ideas fulfils the following requirements: it positively motivates to work, includes work teams that are collaborative, diverse and idea-focused, provides higher management and supervisors who support the innovation and clearly articulate their vision, gives safe space to experiment and finally cultivates a culture of generating new ideas as well as sharing them openly within the organisation.

All of these findings provide arguments for creating space for team-based innovation within the educational system of the school of architecture. The core concepts of collaborative innovation are consistent with the specificity of architectural and urban design professions, which are collaborative

in their nature. Practicing architects need to be able to fit and actively participate in a team-work environment. More complex projects, such as urban regeneration or public space design, demand ability to tackle the tasks by collaborative problem solving due to their interdisciplinary and non-standard nature. It also demands considering diverse professional perspectives, as well as the needs and voices of the stakeholders as ethical and practical imperative.

### Collaborative 'live studios' - similar curricula

The discussions in the world of architectural academia<sup>10</sup> have been mirrored by the collaborative teaching techniques in STEM (Science, Technology, Engineering, Mathematics), led by US academics in the mid-90s<sup>11</sup>. Their results have been implemented and have influenced general pedagogical practice<sup>12</sup>. Johnson's methodologies utilised the elements of the hand-on 'active learning' and created the teaching environment, which allows to put Hargadon's concepts in the perspective of teaching in higher education.

In the architectural debate the critics called for break with the self-referential and detached nature of the exclusively academia-based approach<sup>13</sup> and move towards the 'architecture of engagement'<sup>14</sup>. Therefore, one of the shared objectives for 'live studio' projects is the ambition to provide alternatives to the predominant model of studio-based architectural education. Consequently, one of the core ideas of such studio is the opportunity of meaningful involvement with the particular contexts, people and places, thus providing a 'situated learning' environment for the students<sup>15</sup>. Since the early experiments in UK and US, there have been a number of live projects (at least 200 according to the Live Project Network<sup>16</sup>). Theories on the topic highlighted other aspects defining 'live studios'<sup>17</sup>. The real, or highly realistic projects, bring necessary depth to the learning experience as well as provide unpredictability that aims to enrich it. Live projects often challenge established teacher-student relationships by expanding the inner dynamic of a student group<sup>18</sup>, rearranging the power relationships between these two groups or adding participation to the course<sup>19</sup>, which brings them closer to the idea of radical pedagogy<sup>20</sup>. The other discussed aspect is the ethical dimension of such projects. In some of the studio examples, such as the Rural Studio, the educational process is not meant to increase the

efficiency of the future graduates but to use it as a transformative tool. The Rural Studio actions can be considered as an example of shaping the ethical attitudes and the 'moral sense' of the students<sup>21</sup> nurtured through serving the local community in need. The approach is also grounded in the concepts of humanitarian architecture<sup>22</sup>, similar to MIT CoLab initiatives. In 'live studio' this would be done either via more traditional academic engagement, more practical design or by testing new, often radical theories<sup>23</sup>.



Figure 2. 2015 Studio – final presentation for the local community and authorities (Monika Arczynska)

In Gdansk case, at the time of the preparation of the studio, 'live projects' methodology had already been established in the Western academic practice and theory, with grounding ideas and principles being described and discussed in reports<sup>24</sup>, academic research<sup>25</sup> and manifestoes<sup>26</sup>. Still, the concept was not widely disseminated or established in the Polish academic context. However, at least three courses have been conducted since 2012 by Professor Krzysztof Nawratek, who engaged with Polish cities with his UK-based critical practice studio. A research-learning studio, akin to work conducted by MIT Media Lab, was also organised by Slawomir Ledwon from Gdansk University of Technology, who imported this educational approach to his home university. Such knowledge transfers helped to build initial concepts of our course. However, our experience of extracurricular education through tutoring at student workshops<sup>27</sup> as well as our perspective of the teacher-practitioner, particularly the commercial work in large design teams, ultimately informed the concept of the course. The testing of the course formula also coincided with a country-wide debate on refreshing the architectural

education<sup>28</sup>, including the discussion on the need to substantially refresh the teaching curricula. Considering these pedagogical and practical factors we decided to highlight and expand three key aspects of the studio: enabling group dynamics and team management to work, moving to the real-life context and allow for easy replicability within educational context.

### **The idea of the collaborative urban studio ‘Problem Areas’ at Gdansk University of Technology**

The concept of the ‘collaborative studio’ is based on the idea of organising a temporary work structure that allows for collective creativity and supports team-based work ethics and engagement with the world ‘outside academia’. Our course is structured to allow its completion within the timeframe of one semester – 15 weeks of the English-speaking course of the first year Master level architecture students. At the Faculty of Architecture at Gdansk University of Technology (GUT) this studio is available for the international students, including the Erasmus students (exchange students from EU and EMEA region). Usually, the studio engages a group of approx. 30-35 students, with the maximum of 45 students in 2017.

The initial idea to experiment with the management structure was derived from the Authors’ past experiences as tutors at national and international architectural and planning workshops<sup>29</sup>. The organisational structure, including establishing a special coordination team, was inspired by the tutors’ professional experience in the design of large scale architectural projects, involving a number of consultants and close collaboration within the architectural office. Three rounds of the course have been run in the years 2015-2017, with the topics and results as follows:

- Stare Polesie, Lodz, concept for the redevelopment of the 90ha of the inner city quarter; result: toolkit of potential actions including i.e. urban design, social actions, urban marketing;
- Gdansk, development of the main public space (pedestrian street and square) in the historic centre; result: design guidelines for the architectural competition;
- Witomino, Gdynia, modernist housing district regeneration through public space improvements; result: design guidelines for the architectural

competition.

Methodologically, the core concept is based on three major fixed components:

1. The topic of the studio is a complex urban project, requiring a non-standard approach from the participants. Examples of the coursework include a regeneration strategy for an inner city district or concepts for the development of the public spaces. The challenges require a critical application of various planning and design methods in order to deliver the solution.

2. The studio is run in collaboration with the real client, usually, due to the character of the work involved, a public one: a local authority, a public institution or an NGO. It involves collaboration with the client and local community during the process.

3. All participants work jointly on a single but complex project. They need to organise their work and build a project management structure. The participants choose their preferred fields and roles, selecting from the coordinating role or the production. The professors act as mentors to the design team. Professional help, if needed, is provided by the external consultants (sociologists, local activists etc.).

In terms of the scope and final deliverables, the studio aims to recreate the realistic conditions and timeframes of the urban design projects. The students work on a proposal that will have a realistic impact on future decisions of the client. The topic and scope of the project is organised to engage the participants fully and encourage their mutual collaboration, through active learning akin of Johnsons’ concepts of ‘collaborative base’<sup>30</sup>.

The typical schedule of the course comprises the four stages:

1. Team and capacity building, selection of the team coordinators;

2. Building the understanding of the context and the needs of the local community by implementing different methods of inquiry (social and behavioural research methods, public participation events aimed at on-site information sourcing, establishing local contacts);

3. Development of the scenarios, scenario testing by the use of mock-ups and prototypes and, if possible, a public consultation review;

4. Preparation of the final proposal based on the selected scenario, joint production of the report and

presentation of the results to the client and members of the public.

In terms of the actual design methodology the course utilises a blend of design techniques. The core is comparable with the models of participatory studio models by Sanoff<sup>31</sup>. The analysis stage draws from the participatory design concepts<sup>32</sup> and behavioural observations<sup>33</sup>, while design utilises models of decision making borrowed from strategic planning such as scenario making<sup>34</sup> and participatory urban planning practice in addition to architectural design. The testing may include simple methods, such as public consultation, to more advanced, such as urban prototyping. All of the above mentioned methods demand successful group-based interactions. Decision making stage usually includes deliberation and use of heuristics.

The given timeframe, fifteen weeks, allows for the development of the necessary team-work capacity, group relationships and interdependencies, required for the teaching effect to take place. However, it proves insufficient for in-depth research and final production. It would be recommended to extend the studio to two semesters. The obligatory nature of the course distinguishes the studio from other initiatives, which utilise more voluntary engagement of the students, such as workshops, summer schools, student club activities or internships.



Figure 3. 2016 Studio – public consultation with the stakeholders and residents (Monika Arczynska)

### Role of team work during the studio

The general concept of the ‘collaborative urban studio’ is founded on the same principles as Hardagon’s collective creativity concept and Johnson’s cooperative learning<sup>35</sup>. The distinguishing factor, which stems

from the size of the classes and the nature of the architectural work, is the aspect of self-organisation and team management.

In the ‘collaborative urban studio’ the participants are divided into smaller teams. This allows for subdivision of tasks, as well as establishes the interdependencies between the working groups. From the content point of view, the subdivision creates the architectural equivalent of Johnson’s ‘jigsaw class’<sup>36</sup>, where different teams contribute to complementing elements of the joint project. The teams will not succeed if one of the elements fails.

The course utilises the management structure which resembles real-life architectural office environment with horizontal organisation. Each of the teams appoints a coordinator, who acts as a manager to the team and reports back to other coordinators and tutors. The use of larger, self-managed structure allows for a higher degree of autonomy and internal self-organisation. During every studio the work of the whole team is being ‘stitched together’ by a separate, dedicated management group, called ‘the glue team’. Its sole objective is to supervise the development of the whole project, filling out the gaps in the proposal and ensuring its overall consistency. The glue team is recruited from the students willing to develop their management skills.

The division of the class into task groups depends on the scope of the project. Different organisation models have been tested. An example of more flexible team arrangement is as follows (regeneration of Witomino estate public space studio run in 2017):

1. social action and research, public participation team;
2. architectural design;
3. ‘glue team’ – coordination.

In other cases teams can be subdivided for the duration of the analytical stage and join again for the final design and the final production phase. At the beginning of the course the students are asked to fill out the questionnaires on the team preferences, based on their skills and expectations. Also, the students are asked if they wish (or whether they are ready, if needed) to take on the management roles in the project or if they prefer to remain in ‘production roles’.

One of the important aspects is the ability to retain flexibility and to be able to switch assigned roles during the moments of the whole group mobilisation.

Such moments occur when all of the class members need to cover a major event requiring 'all hands on deck' approach. Usually these are the tasks requiring significant mobilisation of class resources, such as site observations and interviews at the early stages, public consultation or interventions in public spaces, such as site prototyping. The other instances are larger in-class workshops or ideas generating sessions, which are used to boost joint creativity and problem solving, as in real-life creative companies<sup>37</sup>. Finally, flexibility allows for necessary redundancy that is critical in such a complex project.

Since the studio is run in the international environment, foreign students are integrated into the work of the particular teams. The use of commonly understood language (in our context, English) is obligatory for students and teachers. Selecting local topics requires additional work to help foreign students understand the contextual constraints. Site visits and partnering with local participants is needed as well as clear assignment of the tasks. On the other hand, team work with international participants helps significantly in 'reflective reframing'<sup>38</sup> of the local issues with their own educational and professional perspectives, brought by the visiting students.

Work with larger groups brings its own challenges to the tutors, mostly concerning keeping up the motivation to work, ensuring that all of the users are evenly engaged and dealing with the 'slackers'<sup>39</sup>. Use of management techniques greatly helps to ensure the individual accountability of the participants. Final grading is done upon the completion of the project. Students are subject to the 'blind' 360-degree personal appraisal by their collaborating peers<sup>40</sup> and the reviews of the grades by their coordinators with a final decision by the professors. The use of such techniques allows for balancing between the need to achieve individual accountability and the final effect, which is based on the overall quality of the work.

#### **The role of the 'live' project and real-life client**

The use of 'live project' methodology distinguishes 'collaborative urban studio' from a standard architectural class. In the context of our studio it means that the students work on a real project, which is based on actual needs expressed by the client, usually a public institution or a non-governmental organisation. The chosen topics require an innovative approach

and cooperation with residents in reaching the solutions. The results of the work involve preparation of the design guidelines: a briefing document for the architectural competition or an action plan for the local community.

From a didactic perspective, such methodology is closer to the idea of professional internships and the concepts of work of teachers-practitioners, bridging the work and academia<sup>41</sup> rather than the standard academic curriculum. A real project gives an opportunity to cooperate with the real stakeholders, usually from the position of a partnership with young practitioners. Such approach is a major departure from a standard academic situation where students are considered as learners and acquire their knowledge in a classroom. The participants have to work on real data, with real support of the consultants and meet the expectations of the real residents. Therefore students take part in public consultations, apply innovative methods such as 'urban prototypes' (use of on-site mock-ups) as well as organise workshops with residents.

The use of such complex project has a number of benefits. Firstly, it brings motivation to innovate. The challenge for the team is to untangle the project conditions and propose a solution. Still, as in case of the real projects, the solution is undetermined at the beginning and students must reach one within the duration of a semester. If the results are accepted and implemented by the client, it brings the notion of agency and real life effect that also boosts the collective engagement. Here, the public consultations and team workshops have similar effect.

One of the more important effects of the 'out of the classroom' teaching is exposing future architects to the realities of work with the local communities or the public clients. The use of real-life exercise and integration of public consultation elements allows future designers to build practical understanding of the design dialogue. Students gain a first-hand experience of negotiating various and often conflicting needs of the communities, meeting, discussing and receiving feedback on their work. The effects could be observed towards the end of the course. On the other hand, the long-term effect would be the increase of the understanding and empathy towards the end-users of the students' proposals. This brings another teaching effect concerning the ethical dimension of architects'

work – developing social responsibility.

The use of real-life cases brings its own set of challenges. Such assignments are considered as high difficulty projects for the students and expose them to higher stress due to time, pace and scope involved. They require logistics and coordination between university and the client in advance of the class, during the work and after its completion (publishing, spin-off activities). The class requires additional work from the tutors in terms of time allotted as well as professional expertise. The studio cannot succeed without additional capacity-building via specialised, dedicated consultations. Finally, the use of live project demands careful ethical considerations<sup>42</sup>, such as pertinent selection of the potential topic, managing the responsibilities and the effects of the design decisions including limitations of the student work and potential liabilities. Also the issues of the use of intellectual property of the participants, for example the decision whether to offer the results of the work as open license project, need to be solved.

On the other hand, a successful studio brings potential for mutually beneficial engagement between the local community and the students, as well as more lasting legacy projects.



Figure 4. 2016 Studio - users' feedback during prototyping (Monika Arczynska)

### Differences with the other 'live studio' concepts and assessment of the results

The differences with earlier concepts in studio architectural education, such as the Beaux-Arts Academy and Bauhaus approaches<sup>43</sup>, lies with key teaching objectives - emphasis on the process and team-work in an 'ad-hoc' design office and focus on urban issues. This style of work reminds an

architectural workshop or a 'charrette', but spreads over fifteen weeks. In the traditional approaches the solutions are usually developed by small, project-based teams focused on the design delivery. Such choice limits the burden of advanced team management for the participants, which is required in 'collaborative urban studio'. The use of the live project is another key difference. In the traditional approach, even if the projects are based on real sites, the academic teacher acts in lieu of the client and the public. In 'collaborative urban studio' participants have to organise together to meet real-life challenge while their access to knowledge is decentralised. The role of the academic teacher in this model is the one of a mentor – a guide, helper and supervisor – rather than a 'master', a sole knowledge holder and ultimate judge of the students' performance. Therefore 'collaborative urban studio' blurs the borders between school environment and the industry practice, which places it closer to the models of teaching-practice.

Major differences between our approach and other 'live studios', such as Live Project initiative<sup>44</sup>, are the use of large scale teams, which must cooperate within their given tasks on a single major project as well as the larger scope of the proposed work. The studio places a lesser focus on preparing a truly transformative project as compared to Prof. Nawratek's Plymouth studio. His work places much stronger emphasis on the theoretical grounding of the research and the objective of his work at the outset has a progressive and transformative character<sup>45</sup>.

The initial review of the project, based on the post-course reviews by the students (questionnaires, individual discussions), peer reviews and own observations reveal the following benefits and risks of such approach in the context of its objective, teaching collaboration.

#### Key benefits:

Combination of an academic course and a real urban project, packaged as a semester course with high potential for replicability (as in Sheffield Live Projects);

Creation of the environment which boosts collaborative problem-solving via team-work and deliberation;

Accelerated education results thanks to 'hands on' experience and active learning methods embedded within the course structure;

Exposure to the concepts of public participation

and sociological methods of observation which help in problem solving;

Good reception of the course by the participants and high motivation for work;

Good potential for continuation of work with follow-up, 'legacy' projects for the students involved and building a lasting relationship with the community;

The studio's format supports students in experimenting with their own capacity limits and different team positions such as management and production roles or work within different task groups. Since there is always a possibility to change the role during the course, the risk of remaining in an unwanted position is reduced to minimum.

Drawbacks and risks:

The course demands high involvement of the tutors both in terms of time allocated and required qualifications of the personnel;

Risk of the 'project creep' (i.e. unplanned growth of workload, for example due to poor quality of final student work) for the teachers, who must act as a final 'quality control' and a 'safety net' for the team;

The workload can exceed the timeframe of the standard studio (at Gdansk University of Technology conditions standard studio takes 45 hours per semester);

Uneven educational results for the 'coordinators' and 'producers': the 'coordinators' receive additional training in managing the project;

Risks of poor team selection may hinder the educational and design process, ample time for careful team building is needed as well as regular team 'health checks';

High pressure is put on students due to complexity and severity of the task.

It must be stressed that the studio represents a 'high stress, high reward' learning environment. To be successful it requires significant planning in advance, use of team building and management skills and communication with the design teams. Nonetheless, the successful project allows for good combination of the factors, which contribute to developing the collaborative skills. The higher entry requirements are one of the reasons why the course is taught to the Master level students.



Figure 5. 2017 Studio - prototyping in public space (Monika Arczynska)

## Conclusions

'Collaborative urban studio' is an example of the project that aims to resemble the real-life work environment of the architects and urban designers. Its core elements are built in line with the findings of the organisational, psychological and educational theories of collective creativity and cooperation. Our approach is in a way similar to earlier 'live studios' run at Western universities, which confirms that many of the principles are indeed easily transferable between the Western and Polish context.

One of the still unresolved questions is the replicability of 'live studio'. A broader question is to what extent such studio can be standardised and placed within the academic curriculum or should it be considered a special, unique project? What elements have to remain in place for it to act as 'live studio'? We potentially see two risks here. Firstly, it places a higher burden on teachers as it at least basic managerial and mentoring skills from the tutors. They have to be able to coordinate the course, be aware of the dynamics of the group relations and liaise with the partners outside academia. In case of larger scale projects and other academic tasks at hand, the pressure placed on a tutor is extremely high. Secondly, the studio requires sourcing internal and external resources to be applied successfully. Finally, social responsibility factor of the course – work with the community on truly transformative projects – requires dedication and understanding from a leading teacher.

Another emerging question is to what extent such formula requires a large complex proposal to be developed to achieve the didactic effect. The realistic



project helps to motivate students but at the same time its overwhelming nature may become disincentive in the architectural curriculum. Its application can be limited for undergraduate students. The project places high burden on the students, leaving them out of their academic 'safety zone'. However, our results show that the selection of the complex real-life project is crucial for keeping the teams motivated. It gives a sense of responsibility and agency, as well as helps to keep the morale high.

In our opinion, one of the main achievements of the studio is a success in creating a base for building a real, professional collaboration of students and outside partners within the academic context. The studio does not put pressure on developing design skills, but rather on understanding the design as a multidisciplinary process, in which each participant and each component matters. From our point of view, this is a major benefit of our approach and its potential standardisation - it gives the ability for all of our students to test their skills in a large group work exercise and to find their own way in pursuing its completion.

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