Effects of student architecture competitions on learning outcomes in design studio courses

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ABSTRACT: Architecture competitions have recently been undergoing a revival, also being used within architectural education. The popularity of architectural competitions is evident in the pedagogical practice of the Faculty of Architecture and Design at Slovak University of Technology in Bratislava (FAD-STU), Slovakia. The present research explored the consequences of implementing student architecture competitions as an assignment for studio design work. The aim of this contribution is to present research on the courses of design studios taught at the Bachelor and Master's degree level at the FAD-STU. The article opens with a discussion on student competitions in architecture education processes gathered from the reviewed literature, then looks at students' competitions from the student's perspective, and based on the research questionnaire, evaluates the long-term effects on learning environment, students experiences and outcomes. The presented research also draws on the issues relevant for student architectural competitions in general, including the problem of assessing the quality in competition and setting up an adequate assignment.

INTRODUCTION

Architecture competitions have recently been undergoing a revival, being used by various institutions as a tool with multiple positive effects: enhancing innovation in architecture; simplifying the way of commissioning high quality buildings; popularising architecture projects among the public; setting discourses and trends while simultaneously being a way of overcoming recessionary periods in this field of business.

Apart from professional competitions, the trend of increasing involvement in competing also applies to the field of student architectural competitions. Student competitions are a well-established teaching tool in the Faculty of Architecture and Design of Slovak University of Technology in Bratislava (FAD-STU). Furthermore, the FAD-STU, in 2021, became a host for the *Inspireli* competition - the biggest worldwide architecture student competition [1].

Involving students from all around the globe, from different geographical, cultural and educational backgrounds, the competition offers space for the in-depth scrutinisation of the effects on the learning process and environment. However, the real impact of the learning effects and student's performance has so far not been studied. Therefore, the present research explores this topic and studies the consequences of implementing student architecture competitions as an assignment for studio design work, a basic course in teaching architecture.

LITERATURE REVIEW

Researchers have increasingly been exploring architecture competitions from a variety of perspectives. Some authors regard the contribution of competitions in finding the best special solutions for a given area and its unique problems as mainly positive [2][3]. A topic of particular interest is that implementing competitions educates both architects and civil engineers.

Competitions are being used as a common tool for increasing student motivation - and it is happening across different fields of architecture studies, As Wojnowska-Heciak demonstrates, participation in international competitions, with its inherent aspect of competing with peers on a global stage, is highly motivational [4]. A further bulk of research has been published on the positives of competition as a didactic tool. The often highlighted positives include increasing skills of independency in the site, and context research and preparation [4]. Ortiz argues that ...*architecture competitions can prove excellent tools to encourage - not competition - but collaboration*, bringing in a space for dialogue between students and their tutors [5]. Białkiewicz pinpoints the role of the final stages of competitions [6], where public evaluation and the public presentation of the work stimulate students' creativity, provide satisfaction and a chance for them to compare their work with those of others. Ilkovičová and Ilkovič go a step ahead in recognising the stress levels that might occur in a classroom when students work on a competition-based assignment [7].

Student competitions are seen as a tool for bridging academia and practice. Ortiz developed a concept of *cooperative pedagogy*, basing his ideas on the elaborative study of a *unit-based* (*unit system*) design studio led by John Lloyd, established already in the 1960s, who taught at Architectural Association School of Architecture London [5]. Cooperative pedagogy, for Ortiz, is a necessary result of connecting architecture competitions and pedagogical processes, a positive way of academy engaging with professional structures while maintaining its necessary autonomy. This process brings in redefining the relationship between student, lecturer and the overall atmosphere in the process, and is focused on the production of new knowledge.

The unit-based design studio system, aimed to transform a design studio into a more professional office using assignments for professional architecture competitions as one of its tools, resulting in the replacement of traditional vertically power-dominated relationships between tutor and students, to more evenly distributed relationships. Furthermore, using competition as a brief for a design studio makes it possible to apply the strategy of *cooperative learning* [8]. The necessary precondition for this is group work, so that everyone in the team can have their share of the work.

However, as much as the literature recognised the evaluation of only one participation within a selected course or workshop in competitions, there is an absence of research that is focused on the long-term effect of the continuous application of competition as a method of teaching design studio.

RESEARCH METHODOLOGY

The research methodology was based desk research to review previous findings and check relevant sources including competition Web sites; questionnaire surveys and analysis of the experiences of design studio Vitková & Špaček at the FAD-STU.

The main questionnaire survey, focused on gathering students' perspectives, used Google forms which were spread through social networks to Bachelor and Master students enrolled in programmes in the FAD-STU. The academic information system was deployed and data were collected during May 2021. The survey consisted of 15 questions which aimed at evaluating the long-term results and experiences of the students who had regularly participated in student competitions during the course of their studies. The objective was to research the impact of the competitive environment on the learning outcomes of students in educational design studios. The questions were selected after a trial, run on a sample group of 10 students, and involved open-ended questions for detailed description and an evaluation scale for assessing the experiences of the students concerned.

Furthermore, these quantitative data was supplemented by more in-depth questionnaires completed by students attending design studio Vitková & Špaček during 2019-2021, as well as considering the experiences from the perspectives of the tutors involved.

STUDENTS' ARCHITECTURE COMPETITIONS AS PART OF EDUCATION IN THE FAD-STU

Architecture competitions are a well-established tool in educational processes in the FAD-STU. As presented in Table 1, the FAD-STU uses competitions as a tool for recognising the best projects. More importantly, the Faculty has in recent years become a provider of a number of student competitions, including the biggest architecture competition for students; namely, Inspireli. Furthermore, tutors within individual courses implement competitions as tools for enhancing the quality of learning and for the motivation of students.

Table 1: Review of various types of architecture competitions implemented in the FAD-STU.

	Competitions - awards	Theory courses	Design studios	
Year of study, course and programme	All student cohorts can apply	Bachelor - Master's courses	1st - 3rd year Bachelor	25 vertical design studios (4th year Bachelor, Master's programme)
Focus of the competition	Award the best project and thus demonstrate the quality of architecture	Building Structures, Building Utilities	Studio Design III	Bachelor Project, Studio Design 1, Studio Design 2, Studio Design 3
Name of the competition	Prof. Kodoň Award (landscape architecture), Prof. Hruška Award (urban design)	REA Competition, Progressive Architecture	ISOVER, Xella	Inspireli, MUNISS, ISOVER, Xella, Multicomfort Saint-Gobain; UIA competitions

As for the competitions in their present form - given the same brief and content - several ways of their implementation in the teaching process in the FAD-STU, can be identified. Within these, the FAD-STU plays a role as a partner in implementation and organisation. This provides opportunities for the students to participate in:

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- Local and national level competitions: including competitions, such as MUNISS, VilaDom and progressive technologies in architecture;
- International level competitions: these sometimes also have a national round at first, from which the winner progresses to the international round. These include competition such as: REA, ISOVER, Xella and Multicomfort Saint-Gobain;
- Long-term, periodically repeated competitions: ISOVER, Xella, Multicomfort Saint-Gobain, MUNISS and Inspireli;
- One-time action competitions: UIA competitions and individual investors.

The competitions that are integrated in individual courses taught at the FAD-STU, are diverse. These involve both theory and design courses. The purpose of this study is to focus on design studio experiences, since design studio is an important part of the education of an architect, where students spend most of their time; and thus might have the strongest influence on the overall architecture education [9].

In order to evaluate the general trends at the FAD-STU, research was conducted for all 25 vertical design studios, since their establishment in 2019, throughout their performance, up to May 2021. Vertical design studios combine students at different levels of their studies, with an aim of supporting the learning process and allowing for the transfer of know-how, and this forms the basis of teaching architecture at the FAD-STU. The findings show several trends.

Firstly, using student competitions is popular. Thirty-two percent of the design studios (8) offered at least one assignment in four that involved student competitions. Among these, one design studio offers a competition for each semester, one design studio involved some competitions twice - one as the main assignment and one competition as a smaller assignment. Another two design studios offered students an opportunity to propose and compete in any student competition of their choice. However, it was found that this opportunity was not often used by students, and thus does not work well as an impetus for active participation in competing.

Further refinement of the data shows that, 12% (12 out of 98) of the overall assignments provided for students, were students' architecture competitions. Secondly, the use of student competitions between semesters was equable. Thirdly, the competitions involved were complex in nature, combing architecture and urban design disciplines. The scale varied from urban design to a closer focus on the architectural scale in an attempt to find complex solutions for the contexts of the site on a bigger scale, as well as solutions for constructions and building materials.

CASE STUDY: DESIGN STUDIO VITKOVÁ & ŠPAČEK - FOUR COMPETITIONS IN A SPAN OF TWO YEARS

The vertical design studio Vitková & Špaček is focused on sustainable urban and architecture design, merging the two disciplines and scales. As can be seen in Table 2, within the last two years which includes four semesters, student competitions were presented as assignments twice: once the student competition was used as a tool for catalysing the work and once the students participated in the competition during the ongoing semester. It was extended to outside of the University programme.

Table 2: Preview of the assignments of the design studio Vitková & Špaček.

	Winter term 2019/2020	Summer term 2019/2020	Winter term 2020/21		Summer term 2020/2021
	-	MUNISS 2020	Touch4IT	Superstudio	Inspireli
Overall number of students in design studio	-	12	12	12	16
Number of students participating in competition	-	4	8	1	4
Award	-	2.	1., 2.	2. national round	-
Number of awarded students	-	2	6	1	-

MUNISS 2020, was a part of a regular international student competition where students are supported to create multi-disciplinary teams [10]. The 2020 assignment was to redesign the inner courtyard of university campuses with a special focus on the inner-city campus of Slovak Technical University in Bratislava (STU) - also with the adjacent public spaces.

Touch4IT involved designing a *city* that will support starting companies - start-ups - and thus improve the employment of STU students, on the area near the Faculty of Electronics and Informatics STU, while taking into account contextual relations with the environment and expressing the concept of a clean operational and functional solution, based on the parameters of the local programme [11].

Superstudio competition involves a two-round (national, international) students' idea competition that is based on a short and intense reflection on the given assignment [12]. The duration of this assignment stretches over 24 hours -

from the presentation of the assignment to the final elaboration of the proposal. Students are encouraged to work in interdisciplinary teams.

Inspireli, currently ongoing, is a competition focused on proposing the ideological design of the STU - Centre of Innovation in Bratislava [1]. Student teams or individuals from all around the world are given more than six months for the elaboration, this period overlapping with the academic semester. The competition annually brings in surprising ideas from the students of different backgrounds.

As can be seen in Table 2, students from the design studio Vitková & Špaček were divided into two groups - one group working on a competition assignment and the other working on a regular assignment with no further specification. This division offered an opportunity for the tutors to evaluate the outcomes and the overall performance and to compare the effects of the competition assignments.

The most important parts of the design for the assignment were identified as the competition assignment design brief and entry materials, as well as formulating the clear aims of the design. From a pedagogical point of view, the issue of assessment is of special importance. This includes the assessment of the students when finishing the design studio, as well as assessment provided by the jury who assesses the architectural competitions. The concept of *quality design* is rather complex for students and they are given two perspectives.

From the teachers' perspective, the results were evaluated as good. It could be clearly evaluated that the motivation of the students involved in the competition assignments was higher and more sustainable, more continuous than the motivation of the students who were busy with standard university work. More sustainable means, the more consistent performance throughout each consultation during a semester.

Despite the initial expectations, the attempts to diversify the design proposals between the students from the group working on competition and the group working on standard assignments, did not materialise.

STUDENTS' EXPERIENCES AND OUTCOMES

Given the identified frequent occurrence and use of student competition as the main themes in design studio courses, the researchers further explored the real consequences of implementing student architecture competitions as an assignment for the studio design work. They investigates in more detail, whether pressure and stress (above the natural level of competition between students in the classroom) are increased by using competitive assignments. They also examined how the competitive assignments influenced students' experiences, their learning outcomes and the general atmosphere in the design studio. Predominant effects on the overall atmosphere in the design studio, students' experiences and their knowledge and skills gain, were thus evaluated.

The results show that participants were distributed equally: 50% were busy with a Bachelor's degree, 50% were busy with their Master's and doctoral degrees. More than half of the students overall (60%) had already participated during their studies in some student competition (see Figure 1).
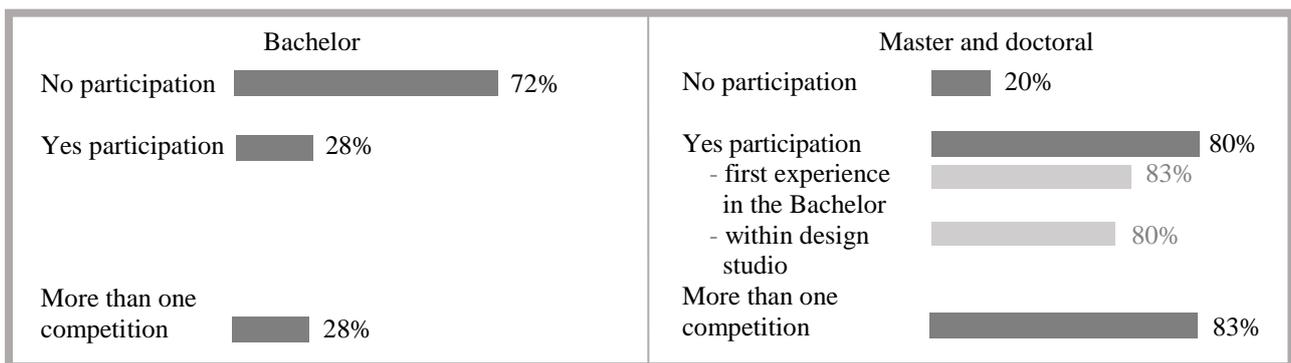

Figure 1: Results of the questionnaire circulated among the FAD-STU students.

Important were also the future plans of the students. On the direct question whether respondents planned to participate in any future students' competitions, only 7% of the respondents replied that they do not plan to participate in student competitions in future. However, on the question related to their plans to participate in professional competitions upon completion of their studies, all the students stated that they plan to participate in competitions after graduating as young architects. Similarly, all the students saw participation in student competitions as an important part of building a *good resumé*.

The research that focused on student competitions as part of the design studio teaching (see Figure 2), shows the effects on the atmosphere and the overall experiences of the students. The most important factor can be identified as the positive impact on student motivation and their efforts to work on the design studio. The finding complements what one of the respondents stated: *It* [working on a competition assignment] *is a form of self-expression, opinion and presentation. I am not*

bound by opinions and consultations with the client, where it is often about compromises. In addition, almost half of the students enjoyed working on a competition assignment more than they did working on a standard studio design assignment.

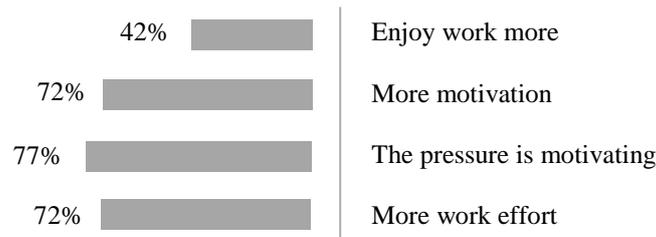|	
42% ▬▬	Enjoy work more
72% ▬▬▬▬	More motivation
77% ▬▬▬▬▬	The pressure is motivating
72% ▬▬▬▬	More work effort

Figure 2: Individual motivation and work effort - results of the questionnaire circulated among the FAD-STU students focused on experiences in the educational process when competition assignments formed part of the design studio.

Figure 3 shows the specific findings of the research conducted on the learning process and gained skills. More than half of the students stated that they had learned to work in a team. A third of the respondents experienced that their tutors spent more time with students when the assignment involved a competition brief. Respondents also noted a better quality of preparation for competition assignments. *They* [students' competitions] *are also more realistic and professionally prepared as assignments, than regular school assignments are.*

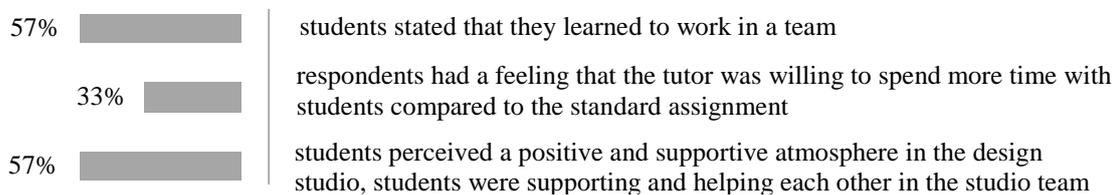|	
57% ▬▬▬	students stated that they learned to work in a team
33% ▬▬	respondents had a feeling that the tutor was willing to spend more time with students compared to the standard assignment
57% ▬▬▬	students perceived a positive and supportive atmosphere in the design studio, students were supporting and helping each other in the studio team

Figure 3: Learning process, outcomes, skill gain - results of the questionnaire circulated among the FAD-STU students focused on experiences from the educational process when competition assignments formed part of the design studio.

Last but not least are the findings on the stress level and its consequences on the overall atmosphere of the design studio (see Figure 4). The statement of one of the respondents: *Overall, I perceive architectural competitions positively, because thanks to them we can see the improving quality of designs and create a healthy degree of competition…* is completed by the numbers. More than half of the students actively perceived positive and supportive atmosphere in the design studio, literally stating that *students were supporting and helping each other in the studio team.*

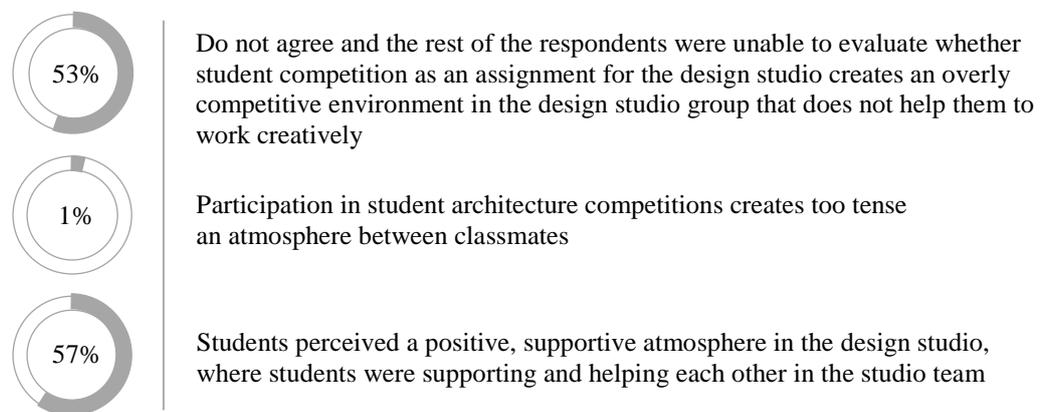|	
53%	Do not agree and the rest of the respondents were unable to evaluate whether student competition as an assignment for the design studio creates an overly competitive environment in the design studio group that does not help them to work creatively
1%	Participation in student architecture competitions creates too tense an atmosphere between classmates
57%	Students perceived a positive, supportive atmosphere in the design studio, where students were supporting and helping each other in the studio team

Figure 4: Stress and atmosphere in studio design - results of the questionnaire circulated among the FAD-STU students focused on experiences from the educational process when competition assignments formed part of the design studio.

DISCUSSION

One of the main impetuses for this article was to look more deeply at the real consequences of incorporating competitions on a permanent and long-term basis, into courses of design studios; and looking more deeply at what the effects of such highly competitive environments on students are.

As Ilkovičová and Ilkovič recognise, competition presents a natural aspect of the education process, especially in the creative fields [7]. Their research indicates that competition should be encouraged, and the potential stress be ameliorated by using the CES (competitiveness to eliminate stress) methodology based on teamwork, co-operation and sharing activities. The presented research complements these findings, even though the focus is on courses of design studio. The results show that indeed, in many cases, competitions also improve the overall atmosphere in design studio towards more supportive and helpful relationship between students, and apparently also between the students and their tutors.

Furthermore, especially from the students' perspective, student competitions that are part of the regular teaching process of design studios, brings academia closer to the praxis. It is not only the quality of the preparation of the assignments, quality of the prepared materials and overall information, that was identified very specifically by the students in this research, but the findings also support Ortiz who stated that:

…instead of competitions being understood as spaces of rivalry, teachers-architects-students can find ways to cooperate and establish productive relationships that subvert the individualistic ideology of entrepreneurship, towards a practice that allows for exploring radical empathy and critical pedagogy in both the profession and schools, blurring the boundaries between the architecture office and the classroom space [5].

As Rönn also pinpoints, quality is seen as a controversial key concept in architecture and urban design due to the various definitions and different criteria that determines it [13]. Of particular importance, from the pedagogical point of view, is the issue of assessment. This includes, on the one hand, the assessment of the students when finishing the design studio, while on the other hand, the assessment is also provided by the jury who assesses the architectural competitions. Thus, the concept of quality in design is more complex seen from the perspective of the students, who are given different perspectives and evaluations of their projects by the competition's jury, and also from their tutors.

CONCLUSIONS

Architecture competitions have recently been undergoing a revival. The presented research aimed to look, firstly, at identifying general trends of using architectural student competition as a tool within the educational processes in the Faculty of Architecture and Design at Slovak University of Technology in Bratislava. Furthermore, the research explored the real consequences of implementing student architecture competitions as an assignment for the studio design work. The research thus looked, in more detail, at whether the pressure and stress level of students engaged in competitive assignments, was above the natural competition between students in a classroom and how this influenced students' experiences, their learning outcomes and also the overall atmosphere in the design studio.

Identifying general teaching trends at the FAD-STU, three main findings can be concluded. Firstly, the application of student competition is popular. Secondly, the use of student competition between semesters was equable. Thirdly, the provided competitions are complex in nature, focused on scale of urban design and architectural scale, involving teams and thus calling for complex design solutions. On the level of the teaching process and experiences of both students and teachers, the main positive effect identified, was the increase of the student motivation in design work.

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