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A REVIEW OF AN ALTERNATIVE STUDIO PEDAGOGY FOR ALTERNATIVE SPACES: CASE STUDIES FROM A STUDENT'S DESIGN COMPETITION

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A R T I C L E I N F O

A B S T R A C T

The design studio remains an essential mode of learning for students to develop their basic design sensibilities. However, it often lacks discussions on real issues and challenges and rarely attempts at creating real-time changes in our built environment making design pedagogy only partly real. Design competitions provide an alternative to the conventional design studio environment and often seek design responses to real issues of our society. Design competitions facilitate informal learning among students where they enhance their design skills in a self-motivated and collaborative environment. One such experiment was witnessed in India in a National Design Competition (ANDC) that sought to redesign and build abandoned public spaces. The study aimed to evaluate the success of such projects in a real-time environment and their effectiveness in enhancing learning outcomes among students. Six projects designed and built by students from various schools in the Delhi-NCR region were studied and their learning outcomes were evaluated. Quantitative and qualitative data obtained was used to perform triangulation in a mixed-methods approach. Results obtained revealed a positive impact of the projects in their environments. Projects that engaged the community in their process of design created a more positive impact in their immediate environments. Other factors reporting success were collaboration and students' motivation.

Disciplinary: Architectural Sciences, Architectural Education.

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1. INTRODUCTION

The design studio enables students to develop their basic design sensibilities. However, design problems attempted in a design studio are often oversimplified and unrealistic (Rodriguez 2018). They are often evaluated as per the goals set by the design faculties, and not from the point of view of

its intended users or its usage (Salama 2015). A range of design studio pedagogies exists that attempt to align the design studio goals with the student's learning outcomes in a realistic manner, though they remain an unconventional and alternative mode of design studio education. The paper is a description of a case study undertaken to evaluate entries of a competition project hosted in 2017-18 by the National Association of Students of Architecture (NASA 2017) for the undergraduate students of schools of Architecture in India. The nature of this design competition is seen as an inquiry into an alternative mode of the design studio, which attempts to move beyond the boundaries of a conventional design studio education and seek realistic learning outcomes.

2. PROJECT DESCRIPTION

The Annual NASA Design Competition 2017-18 hosted by the National Association of Students of Architecture in India floated a competition on "Reimagining alternative urban spaces" in which they were supposed to 'redesign and build abandoned public space'. The design brief sought to question schools of Architecture if they can "create a positive social impact on derelict urban spaces by redesigning alternative spaces to have a larger social impact, and to rebuild and improve them with small interventions". The objectives outlined for the project were to identify an abandoned public space in the city, evolve a design for "Alternative spaces" that transforms the abandoned public space, engage in hands-on construction and transform the place, and to document the process and the way it is used (NASA 2017). The competition was an opportunity to study the success of the projects conducted by evaluating the project outcomes, perception of the users, and learning outcomes among students.

3. LITERATURE REVIEW

3.1 REVIEW OF DESIGN COMPETITIONS

Student Design Competitions provide an innovative platform for new dimensions of thinking and possibilities in design. They act as an out of curriculum studio where learning often occurs informally. Design competitions help students in learning on their own terms, through active and collaborative engagement, and a self-motivated environment. Many researchers visualize design competitions as a useful tool for design education as well as a profession. According to Rönn (2014), "architectural competition is seen by the profession as an old, effective, and reliable instrument for establishing dialogues among jury members representing professional experts, clients, and even end-users, during the selection and assessment of architectural design proposals."

The significance of design competitions in shaping our built environment has often been highlighted. Bonenberg (2019) stresses the significance of architectural design competitions in building spatial systems and improving the built environment. Banerjee and Loukaitou-Sideris (1990) view design competition as a form of the design method. Council of Architecture, India (CoA 2005) notes that design competitions "attract great public interest, and have led to the discovery of a new talent and new ideas, that could only be found by throwing an architectural project wide open to competition"

Design competitions have played an important role in shaping the informal design pedagogy among students, although little is written about the use of architectural competitions in education as compared to architectural practice (Bibbings et al., 2018; Buddhawanna, 2013). Khare and Khare

(2013) explore student design competitions as a pedagogical tool to meet educational objectives in academic curricula. Some also view design competitions as a break in style that is only loosely coupled to the curriculum, an effective way of motivating students and providing them with feedback (Verhoeff 1997), and as a tool for the growth of architectural creative activities (Bonenberg 2019). Banerjee and Loukaitou-Sideris (1990) emphasize on making competitions more responsive to user needs. According to Bonenberg (2019), competitions "aim to ensure a high quality of the built environment with the public interest in mind".

3.2 DESIGN COMPETITION AS AN ALTERNATIVE STUDIO PEDAGOGY

A range of alternative design studio pedagogies exists which attempt to create design learning environments in real circumstances and often in collaboration with people concerned, e.g. Design-Build, Live project, Community Design and Public Interest Design (PID). The projects studied may be categorized as 'Design and build' type of live projects as described by Sara (2006), where students work on small projects …"from preparing a brief to design and then construction… with a focus on the relationship between drawing and making, brief development, hands-on material understanding, project management, communication, and working with client/user". Live Projects comprise six factors reported by Anderson, Godiksen, and Harriss (2016); namely "negotiation of a brief, timescale, budget and product between an external organization and an educational institution".

Public interest design (PID) is another approach to an alternative design studio practice that places a priority on engaging people in the design process and advocates for an issue-based approach to problem-solving (Abendroth and Bell 2016). It includes evaluation as a necessary component in order to measure the success of the project. Since the intent was to evaluate the design projects and measure their success (or failures), and factors contributing to it, it may be assumed that in the study conducted, live projects performed in the design brief were evaluated with a 'Public Interest Design' based approach to measure their outcomes.

4. RESEARCH DESIGN FRAMEWORK

Out of more than 400 entries received from various schools of architecture in India, six projects completed by the students from schools of architecture in Delhi and its adjoining National Capital Regions (NCR) were selected for an independent study by the author. There were no restrictions on the number of entries from a school. However, for research purposes, the number of entries from a particular school was restricted to one only. The study aimed to measure the success of the completed projects & their learning outcomes. The objectives for the course were to measure success in terms of user's perception and improvement in learning outcomes among students. The research questions formulated were:

RQ1. Are alternative design studio projects effective at producing positively received projects?

RQ2. Are alternative design studio projects effective at enabling students to acquire positive learning outcomes?

The methodology involved performing case studies of the selected projects and collecting data to record user and student's perception. A mixed-methods approach was undertaken to evaluate the success of the projects.

5. CASE STUDIES OF COMPETITION DESIGN PROJECTS

Case studies of the projects were performed to observe site conditions, issues addressed, community engagement, and stakeholder involvement. The documents developed by the students for the competition entries were also reviewed to understand the design process followed during the design development, build activities undertaken, construction methods used, choice of materials, project costs, funding modes, quality of the outcome, and evaluation of the success of the project. Data were collected through observation, mapping of activities within the site, discussion with focus groups, and community surveys through the feedback form. Descriptions of the six projects studied are reported in Tables 1 to 6. Project C1 and C4 were also among the entries shortlisted in the competition.

Table 1: Project C1: Aarambh (Beginning), New Delhi (Rehani 2017; NASA India 2017).

Category	Description
Project brief	A neglected park in an EWS settlement turned into a garbage-dumping zone. The project aimed to transform the site into a safe, hygienic, and usable park for the community, especially for kids.
Design interventions	Interventions dealt with the cleaning of the site, provision of seating for elders, and swings for kids. Best out of waste materials (BOOW) and recycled materials were used to make design solutions more environmentally friendly, sustainable, and to reduce the project cost.
Materials used	Seating was built with materials such as bottles, pipes, cans, steel drums and sheets. Swings for kids were made by using materials like tyres, ropes, wooden planks, etc.
Community Engagement	Students worked on suggestions given by locals. Children and people of the neighborhood slums, generally shopkeepers took part in activities with great interest. The municipal corporation (MCD), and an NGO provided the necessary assistance for completing the project.
Outcomes	The park was developed in collaboration with the community. A sense of ownership was visible among the users as the site was maintained well by them along with the NGO, and they felt connected with the project.
Visuals	

Table 2: Project C2: Revitalization of a Park in a Central Market, New Delhi (Joshi 2017).

Category	Description
Project brief	A park surrounded by shops in a central market was not maintained and had no public infrastructure with a low footfall. The project aimed to develop the space to make it user-friendly, lively, and clean.
Design interventions	The intervention dealt with providing seating and eating spaces for visitors and shopkeepers and shaded seating areas for senior citizens under an existing banyan tree.
Materials	Waste and sustainable materials were used.
Community Engagement	There was initial support from the MCD but the project received no active participation from the community as the students built the project themselves.
Outcomes	People used the project initially but due to high footfall, the interventions could not sustain for long, as it demanded daily upkeep and the shopkeepers were not able to own responsibility.
Visuals	

Table 3: Project C3: Revitalization of a Park in Ghaziabad, Delhi-NCR.

Category	Description
Project brief	The project aimed to revitalize a park in a shopping area, which turned into a dumping yard, making the space unhygienic and unsafe for visitors.
Design interventions	Interventions consisted of reconstructing the broken boundary walls of the park by fixing grills for safety and providing design interventions within it. Shelters for seating area were constructed off the site and installed later on site
Materials used	Roofs were built with bamboo and canvas. Seating was created by using tree guards filled with stones and cemented at the top. Metal scrap and concrete blocks were also used. Oilcans and a mannequin structure were painted and crafted with waste materials for aesthetics.
Community Engagement	Students received financial support from the market association and the municipal corporation for reconstructing the broken boundary wall of the park.
Outcomes	The engagement of the community and the authority helped the students in creating a space, which was utilized effectively instead of being a dump yard. Users, especially nearby vendors were happy as they felt they had a cleaner and hygienic environment.
Visuals	

Table 4: Project C4: Revitalization of a Park in Gurgaon, Delhi-NCR (NASA India 2017).

Category	Description
Project brief	A central hub in the market was a neglected space, which turned into a dumping ground. The project aimed to transform the space into a socially interactive one through experimentation with materials and techniques.
Design interventions	Students experimented with materials to design seating arrangements and the adjoining landscape. The temporary light installation was another initiative to make the area safe at night
Materials -used	The students collected waste and cost-effective materials from nearby construction sites and their colleges in order to minimize the budget. Seating was made with bricks, used tyres, white cement, mosaic and glass bottles.
Community Engagement	The project received active participation from locals as well as stakeholders. Students cleaned the site with the helpers. Nearby residents and shopkeepers extended moral support and provided supervision, while few also provided material and financial support.
Outcomes	Space was actively used in the market, and the residents and stakeholders were happy. A permanent light installation was still needed as females felt the area was unsafe.
Visuals (Tripathy 2017)	

Table 5: Project C5: Revitalization of a Park in New Delhi.

Category	Description
Project brief	Students attempted to revive an abandoned park space, sandwiched between two economically diverse community groups who did not mix with each other. The project aimed to create a park for the children, which may stimulate interaction among groups.
Design interventions	Students cleaned and removed garbage from the site. They designed and installed the swings with the help of skilled laborers for children's recreation.
Materials	Bricks, cycle rim, used tyres, MS sections, discarded water bottles, and ropes were used.
Community Engagement	Communities were reluctant to engage in the project although they felt positive towards the change. Few people provided utility items and labor while still few gave financial support.
Outcomes	The project was only partially successful as, despite the interventions, few children only from the economically weaker community used to come to the park while others chose to stay away.
Visuals	

Table 6: Project C6: Sadhya: Revitalization of Hospital outdoors in Murthal, Delhi-NCR

Category	Description
Project brief	A dirty and unhygienic outdoor in the civil hospital with stagnant water was a breeding ground for insects. The project aimed to revive the open space and make it lively and usable for the people.
Design interventions	The attempt was to design for healing through nature and provide a space that acts as an outdoor extension of the hospital interiors but is soothing to its users. Huts made of the bamboo framework were designed with the provision of seating inside them. Swings were also designed for children through waste materials.
Materials used	The brickwork was used to create seating, while bamboo frames were used to create huts. Paints and used tyres were also utilized.
Community Engagement	The hospital support staff and local masons helped in cleaning the site and build activities. An NGO involved in feeding the wards of the patients in the hospital agreed to take care of the work. A shop owner on-site and users helped in providing insight into the issues on site.
Outcomes	Both hospital authorities and users appreciated the project. An immediate increase in footfall transformed an obsolete space into a vibrant one. The project provided an important node for people to sit and interact but it ultimately degraded due to negligence, lack of ownership and civic sense.
Visuals (Dahiya 2017)	

Most interventions attempted by students dealt with issues of unhygienic conditions and lack of civic sense. Consequently, design interventions often dealt with the cleaning of spaces, raising community awareness and ownership, and promoting civic sense. Projects that stressed on community involvement were more successful in their outcome, as they were maintained by the

community groups. In projects where the community did not own the project, the interventions decayed with time.

6. DATA ANALYSIS & RESULTS

Live projects differ due to their complex and holistic nature incorporating teamwork, external collaborators, context-dependence, and varying learning outcomes (Morrow 2007; Harriss 2015; Salama 2015). Morrow (2007) argues that projects may even shift in emphasis as they develop, which makes their assessment difficult.

Hence, Morrow (2014) suggests that live Projects must be assessed differently to design studio projects as it may lead to different types of learners being valued in different ways at different times in the curriculum. However, given its holistic and complex nature, there is a lack of well-defined methods of assessment for live projects. Anderson (2017) argues that ordering live projects by singular categories such as outcome or motive fails to acknowledge their complexity. Hence, emphasis on the process is more relevant, rather than on product in case of live projects. Moore (2016) suggests that for evaluating a project, the intentions of the design team (students in this case) should be known. He further proposes the use of multiple sources of data and performing triangulation for analysis, by combining both qualitative and quantitative methods to ensure validity and encompass differing views of reality. In his critique on live projects, Brown (2012) describes three participating stakeholders in the live project: the student, the educator, and the client.

Based on the arguments discussed, and building on a grounded theory approach, studies were performed through surveys, case studies (including open and closed questionnaires, observation) and literature review (Sara 2004). It intended to record and evaluate the perception of both participating stakeholders, i.e. the student and the client/ user which is detailed out in the continuing sections.

6.1 REVIEW OF CASE STUDIES

For comparing and analyzing the projects, six factors reported by Anderson (2017) as common to all live projects were considered. Each factor with its own spectrum was used for a quantitative interpretation of information. Unused spectrums were filtered out for analysis. A description of three factors, namely brief (level of institutional support), timescale, and educational organization (group size, student level and curricular/extra-curricular), which shared common spectrums in all projects is being provided in Table 7.

Table 7: Description of common spectrums of studied projects

#	Factors		Common Spectrums
1	Brief		To be developed by Students
2	Timescale		3 months
3	Educational Organization	*Group size*	1-10
		Student level	Undergraduate
		Type of Activity	Extra-curricular

All six projects were documented on three remaining factors, i.e. budget (funding source), product (permanence of outcome), and external collaborator (client) which are described in Table 8. In addition, a study of the primary motivation behind every project, identified from four categories of

motivation (Technical, Social, Design, Professional) reported by Dodd et al. was also conducted (Dodd, Harrisson, and Charlesworth 2012).

Table 8: Comparative description of the spectrums of studied projects.

#	Factors	Spectrums	Project #					
			C1	C2	C3	C4	C5	C6
1	Budget: Funding source	Self-funded	●	●	●	●	●	●
		Sponsorship						
		Client funded	●		●			
2	Product	Temporary		●			●	
		Semi-Permanent			●			●
		Permanent	●			●		
3	External collaborator	Self-initiated		●			●	
		Collaboration	●		●	●		●
		Commission						
4	Motivation	Technical				●	●	
		Social	●	●	●			●
		Design				●		

All projects were self-funded by the students themselves, while two projects also managed to raise funds from the community. Four projects were temporary or semi-permanent in character, but two projects which were permanent were also the ones shortlisted in the competition. The projects also reflect that a process-oriented approach was undertaken and that the stress was not on obtaining a final finished product, but on making it work by evolving a process.

Three projects were self-initiated while three others collaborated with external organizations such as NGOs. Most projects displayed a socially motivated approach in their design revealing the social perspective to design, though it was not mentioned in the design competition brief. This shows how a real-time design engagement in itself results in client/community engagement, and students envision their design solutions from people's perspective rather than their own or educator's perspective.

6.2 EVALUATION OF STUDENT'S INTENTIONS

Student's perception was recorded through response obtained from a qualitative questionnaire based on the "SEED evaluator" (SEED Network 2015) which emphasizes on designer's narration to arrive at learning outcomes achieved. The SEED evaluator takes a PID approach to evaluate projects and "provides a common standard to guide, measure, evaluate and certify the social, economic and environmental impact of design projects. It promotes the critical evaluation of design that strives for positive impact apart from other benefits" (SEED Network 2015).

The content of the evaluator referred was 'Part C', meant to obtain feedback from the designer (student) and reflect on project results during/ after its completion. Three open-ended questions with multiple sub-questions embedded within them were summarized in order to simplify them for evaluating student's learning outcomes. The questions summarized were "Is the project considered a success?"..."What are the positive and negative impacts of the project?"...and "What did you learn from the PID project and its process?"

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Table 9: Coding of responses seeking positive and negative impacts of the project (Q2).

Coding of Responses by marking segments of data		
Stakeholders using the area	tired customers can take rest	Children
but not maintaining it	aesthetic force	space to play
Stakeholders happily using the area	hospital users	Patients
maintaining it.	using the space	family members
Space utilized in a proper manner	awareness among the people	space they can relax
	keeping the space clean	nature

Open-ended responses were obtained from student groups for every project, and content analysis was carried out. Transcripts of open-ended responses for each question were segmented to form meaningful analytical units. Codes were obtained by marking segments of data with descriptive words, or category names, and were categorized into a small number of groups of like answers (Gibbs 2008). Table 9 shows the coding of responses for the second question seeking positive and negative impacts. The process helped in identifying anchor codes that related to the themes enquired (Table 10).

Table 10: Identification of anchor codes and themes (Q2).

Themes	Anchor codes	Codes (categorized)
Positive impacts	*Impact in terms of people:* Use Happiness Awareness	Stakeholders using the area Stakeholders happily using the area tired customers can take rest hospital users awareness among the people Children Patients family members
	Impact in terms of space: Space utilization Keeping space clean Type of usage of space	Space utilized in a proper manner using the space keeping the space clean space to play space they can relax
	Others	aesthetic force nature
	A higher level of motivation: Community collaboration	maintaining it.
Negative impacts	Lack of community involvement	but not maintaining it

In response to the first question stating, "Is the project considered a success?" all groups considered their projects a success, which was attributed to the happiness of people in two cases, while the provision of funds and transformation of space in one case each. One entry recorded a higher level of motivation, where they sought to extend their work under a banner, where more people can follow. A single negative response talked about a completed project not maintained, reflecting a lack of community involvement. An analysis of the number of occurrences of codes revealed that there were eight occurrences of positive terms defining the success of the project, such as "happy", "success", "yes", "transforming intangible negativity"; and a single occurrence of a negative term "not maintained". In response to the second question stating, "What are the positive and negative impacts of the project?" all projects reported a positive impact. While most projects mentioned

impact in terms of people, relating to their use of design, happiness, and enhanced awareness; other important criteria mentioned were a positive use of space. Single instances of extremities reported were in terms of community collaboration or lack of collaboration in maintaining the project after completion, reflecting again that projects were majorly understood in terms of people's satisfaction. In response to the third question, stating "What did you learn from the PID project and its process?" most responses again related learning to design for people through engagement. Other learnings reported were collaboration, goal setting, and space consideration.

6.3 EVALUATION OF PEOPLE'S PERCEPTION

An evidence-based approach was undertaken to evaluate people's perceptions. A feedback form was used to evaluate the projects in the post-occupancy evaluation phase (POE) by obtaining feedback from the users of the community on their perception towards the built project on various design parameters. The feedback form was a single page questionnaire developed by the author (Saquib 2019) having seven items on a five-point Likert scale (Leung 2001; Harpe 2015). Responses to the statements were obtained as "Strongly disagree, Disagree, Can't say, Agree and Strongly agree" (Bertram 2006). Responses obtained under the "strongly agree" and "agree" categories were considered positive and in agreement with the respective statement, while under the "strongly disagree" and "disagree" categories were considered negative, and those under "can't say" category were considered neutral.

**Table 11**: Item-wise analysis (n=239) on a five-point Likert scale.

#	Item	n	Frequency and percentage			Standard Deviation		
			SD/D	N	A/SA	SD/D	N	A/SA
1	Have you ever felt the need for developing this area	228	19 (8%)	42 (18%)	167 (70%)	0.13	0.12	0.22
2	The developed space now seems attractive than what it was earlier	237	3 (1%)	20 (8%)	214 (90%)	0.03	0.1	0.11
3	I am happy with the built design	237	24 (10%)	23 (10%)	190 (79%)	0.17	0.07	0.22
4	Space is used by more people than earlier	237	28 (12%)	40 (17%)	169 (71%)	0.12	0.08	0.22
5	The project is durable and will survive for a long period of time	235	67 (28%)	58 (24%)	110 (46%)	0.22	0.14	0.14
6	It is secure and safe for use at all time of day	239	40 (17%)	45 (19%)	154 (64%)	0.14	0.1	0.22
7	It fulfils the purpose for which it was developed	238	21 (9%)	40 (17%)	177 (74%)	0.12	0.12	0.15

Legend: 'SD'-Strongly disagree, 'D'- Disagree, 'N'-Neutral, 'A'- Agree, 'SA'-Strongly agree.

A sample size of 40 responses per project was targeted for study, and 239 respondents were surveyed for six projects. Descriptive analysis conducted to obtain means, standard deviations, and percentages showed a positive impact of the projects among users. A mean of responses with respect to the items (Table 11) suggests that 71% of responses were positive. For every item indicating agreement in column 'A/SA' the standard deviations recorded a variance of CV < 1 (0.18) which is low and represents a concentrated data, suggesting little difference of opinion among respondents. A description of responses with respect to the items reveals that 70% (n=167) respondents felt the need of developing their area, while 90% (n=214) respondents agreed that the developed space seemed more attractive than before the intervention. Seventy-nine percent (n=190) respondents said that they were happy with the built design, whereas 71% (n=169) respondents agreed that more people use it

now. Only forty-six percent (n=110) respondents agreed that the structure is durable and will survive for a long period, while 64% (n=154) respondents agreed that it is strong and safe for use, indicating a lesser degree of agreement. Seventy-four percent (n=177) respondents reported that it fulfills the purpose for which it was developed.

An analysis of mean with respect to projects (Figure 1) reported that 71% of responses were positive, which suggests that the competition design projects were received well by the community. Out of six projects studied, three projects recorded more than 78% positive responses. The highest level of agreement recorded was for "Project C3" with 260 responses (93%) in agreement with the statements. The least level of agreement recorded was for "Project C5" with 127 positive responses (45%), which also relates to the lower level of satisfaction among students.
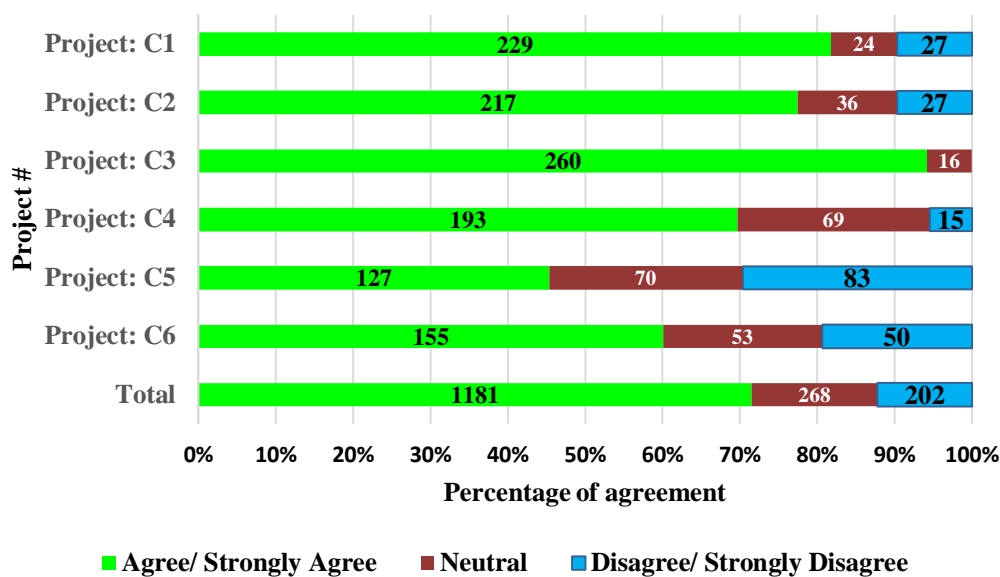
Figure 1: Project-wise analysis of responses on a five-point Likert scale.

A mixed-methods approach was undertaken and analysis of quantitative and qualitative data was performed through triangulation (Table 12). The analysis attempted to compare outcomes of the studied projects, evaluation of intentions of the design team (students) and their motivations behind the project, and evaluation of the user's perception. The findings suggest that most projects were effective in terms of project success as well as learning outcomes.

An analysis of the user's feedback and the project outcomes reveal that except Project C5, all reported successful results on identified parameters. While projects which were permanent in character were the only entries shortlisted in the competition, in reality, projects that aimed for a social perspective to design, whether temporary or permanent, reported successful project outcomes.

A summary of content analysis of student's feedback reveals that irrespective of the project outcomes, the process adopted by students ensured self-motivation and collaboration amongst them, as responses were largely recorded in the affirmative. Student groups perceived the projects as successful and having a positive impact. Learning was also primarily motivated in terms of designing through engagement with people despite the design competition brief not specifying it in its scope, which also relates to the findings by Anderson (2017), where 'people' were the prime source of motivation.

Table 12: Triangulation of data.

Project #	Intentions of the Design team	Evaluation of Student's perception	User's response rate	Motivation	Project outcomes
C1	To transform the site into a safe, hygienic, and usable park the community and kids.	Stakeholders were happy and were maintaining it.	82%	Social	Park was developed well in collaboration with the community, and a sense of ownership was visible
C2	To design a park in a busy market and make it user-friendly, lively, and clean.	The project was completed but not maintained by shopkeepers	78%	Social	Interventions could not sustain due to high footfall, and shopkeepers not owning responsibility.
C3	To revitalize an unused park in a shopping area	The project is a success considering the positive response of the people and their happy faces	93%	Social	Space was utilized effectively, and nearby vendors were happy. Engagement of the community and the authority helped the students.
C4	To transform an unused space in a market into an interactive one by experimenting with materials and techniques.	Yes, the project is considered a success as the local people are happy and appreciated work	67%	Technical Design	Space was used positively and stakeholders were happy. Females felt unsafe during the night due to low light levels.
C5	To revive an abandoned space between two economically diverse groups for children.	We worked hard to design and create elements but few children used the space	45%	Technical	Only partially successful, as few children from the economically weaker community used the park.
C6	To revive the dirty outdoors of a hospital and make it lively and usable for the people.	The project is indeed a success. The positive impacts include the use of space.	58%	Social	Both hospital authorities and users appreciated the project, but it ultimately degraded due to negligence, and lack of civic sense.

In response to the first research question, the study revealed that design projects were received positively, as they ensured student's as well as people's satisfaction, in terms of design intervention. Findings for the second research question suggest that the design projects were effective at enabling students to acquire positive learning since most students chose to adapt a social perspective to design, which reportedly results in enhanced learning outcomes. It also reflects a higher level of motivation among students, where they were self-motivated enough, and collaborated to ensure project completion and success. The above findings suggest that the alternative studio projects initiated by the competition brief were successful in terms of project outcome, and user's and student's perception.

7. CONCLUSION

Design competitions facilitate informal learning among students where they enhance their design skills in a self-motivated and collaborative environment, as witnessed in India's National Design Competition (ANDC) that sought to redesign and build abandoned public spaces. The study ascertains the success of projects in enhancing learning outcomes among students. Six projects designed and built by students from various schools in the Delhi-NCR region were studied and their learning outcomes were evaluated. Quantitative and qualitative data obtained was used to perform triangulation in a mixed-methods approach. This study revealed a positive impact of the projects in their environments. Projects that engaged the community in their process of design created a more positive impact in their immediate environments. Other factors reporting success were collaboration and students' motivation.

8. DATA AND MATERIAL AVAILABILITY

Information can be made available by contacting the corresponding author.

9. ACKNOWLEDGEMENT

10. REFERENCES

Abendroth, L.M., and B.Bell. 2016. Public Interest Design Practice Guidebook SEED Methodology, Case Studies, and Critical Issues. Edited by Lisa M. Abendroth and Bryan Bell. Routledge. Routledge.

Anderson, J.. 2017. "Devising an Inclusive and Flexible Taxonomy of International Live Projects." ARENA Journal of Architectural Research. 2(1).

Anderson, J., C. Godiksen, and H.Harriss. 2016. Live Projects across the Disciplines. The Higher Education Journal of Learning and Teaching 8(1 and 2). http://hejlt.org/article/live-projects-across-the-disciplines.

Banerjee, T., and A. Loukaitou-Sideris. 1990. "Competitions as a Design Method: An Inquiry." Journal of Architectural and Planning Research. 7(2): 114–31. DOI: 10.2307/43028961.

Bertram, D. 2006. "Likert Scales: CPSC 681—Topic Report." Poincare, 1–11. DOI: 10.1002/9780470479216.corpsy0508.

Bibbings, H., P.A. Bieluga, and C.Mills. 2018. "Enhancing Creativity and Independent Learning of Architectural Technology Students Through the Use of a Real Life Design Competition Module." International Journal of Architectural Research: ArchNet-IJAR 12 (1): 376. DOI: 10.26687/archnet-ijar.v12i1.1409.

Bonenberg, W. 2019. "Success Analysis in Architectural Design Competitions in Terms of Design Quality." In Advances in Intelligent Systems and Computing, 788:47–55. Springer, Cham. DOI: 10.1007/978-3-319-94199-8_5.

Brown, J.B. 2012. "A Critique of Live Project: Volume I." Queen's University Belfast. http://issuu.com/jamesbenedictbrown/docs/brown_james_benedict_-_a_critique_of_the_live_proj/130.

Buddhawanna, S. 2013. Observation on College Steel Bridge Truss Models Thailand Eighth Contest and Thammasat University Team Bridge Model Design Concept. International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies. 4(3), 215-224.

CoA. 2005. "Council Of Architecture." 2005. https://www.coa.gov.in/index1.php?lang=1&level=2&sublinkid=262&lid=241.

Dahiya, Unique. 2017. "A.M.A.C.E.171, PROJECT SADHYA." 2017. https://www.youtube.com/watch?v=t7VnVuh8T60.

Dodd, M., F. Harrisson, and E. Ruth. Charlesworth. 2012. Live Projects: Designing with People. RMIT University Press.

Gibbs, G.R. 2008. "Analysing Qualitative Data | SAGE Publications Ltd." Mar-05-2008. https://uk.sagepub.com/en-gb/eur/analysing-qualitative-data/book225075.

Harpe, S. E. 2015. "How to Analyze Likert and Other Rating Scale Data." Currents in Pharmacy Teaching and Learning. Elsevier.

Harriss, H. 2015. Architecture Live Projects Acquiring and Applying Missing Practice-Ready Skills. Oxford Brookes University. https://www.academia.edu/17600756/PhD_Architecture_Live_Projects_acquiring_and_applying_missing_practice_ready_skills.

Joshi, A. 2017. "A.M.A.C.E.030, Behtari Initiative - Merging Community with Comfort." 2017. https://www.youtube.com/watch?v=cusg_iB5NNI.

Khare, R., and A.Khare. 2013. "Design Competition as a Pedagogical Tool to Teach Concepts of Universal Design in India." Proceedings of the Human Factors and Ergonomics Society, October: 511–15.

Leung, Wai-ching. 2001. "How to Design a Questionnaire." BMJ 9: 187–89.

Moore, S.A. 2016. "Post-Occupancy : Implementation and Evaluation." In Public Interest Design Practice Guidebook, edited by Lisa M. Abendroth and Bryan Bell, 81–92. Routledge.

Morrow, R. 2007. "Creative Transformations: The extent and potential of a pedagogical event." In Design Studio Pedagogy: Horizons for the Future, edited by Ashraf M Salama and Nicholas Wilkinson, 269–84. Gateshead, UK: The Urban International Press.

Morrow, R. 2014. "Foreword: Live Project Love: Building a Framework for Live Projects." In Architecture Live Projects: Pedagogy into Practice, edited by Harriet Harriss and Lynnette Widder, xviii–xxiii. Routledge. https://www.routledge.com/Architecture-Live-Projects-Pedagogy-into-Practice/Harriss-.

NASA. 2017. "Reflection-Reimagining Alternative Urban Spaces." Annual NASA Design Competition 2017-18. https://doi.org/http://youtu.be/uW43VJ8-xlg.

NASA India. 2017. "NASA | OnlineLibrary | Shortlisted Entries." NASA INDIA. 2017. http://www.nasaindia.co/index.php/winningentry?type=annual&trophyId=6&groupId=1&year=2017#lg=1&slide=0.

Rehani, K 2017. "A.M.A.C.E. 263, AARAMBH." 2017. https://www.youtube.com/watch?v=P5-7sN_gOhU.

Rodriguez, C.M. 2018. "A Method for Experiential Learning and Significant Learning in Architectural Education via Live Projects." Arts and Humanities in Higher Education. 17(3): 279–304.

Rönn, M. 2014. "Architectural Quality in Competitions. A Dialogue Based Assessment of Design Proposals." FORMakademisk 4(1): 100–115. https://doi.org/10.7577/formakademisk.130.

Salama, A.M. 2015. Spatial Design Education: New Directions for Pedagogy in Architecture and Beyond. Spatial Design Education: New Directions for Pedagogy in Architecture and Beyond. Ashgate Publishing Limited.

Saquib, M. 2019. "Designing , Conducting and Evaluating the Effectiveness of an Integrated Public Interest Design Studio." International Journal of Architecture, Engineering and Construction 8(3): 32–40.

Sara, R. 2004. "Between Studio and Street: The Role of the Live Project in Architectural Education." University of Sheffield. http://etheses.whiterose.ac.uk/21784/1/412728_Vol1.pdf.

Sara, R. 2006. "Live Project Good Practice : A Guide for the Implementation of Live Projects." CEBE Briefing Guide Series, no. 8: 1–7.

SEED Network. 2015. "SEED Evaluator 3.0." http://seednetwork.org/wp-content/uploads/2015/07/The-SEED-Evaluator.pdf.

Tripathy, J. 2017. "A.M.A.C.E. 468." 2017. https://www.youtube.com/watch?v=68ALRBwvt9E.

Verhoeff, T. 1997. "The Role of Competitions in Education." 1997. http://olympiads.win.tue.nl/ioi/ioi97/ffutwrld/competit.html.

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