

EMPOWERING DESIGN EDUCATION BY INTEGRATING ENTREPRENEURIAL MINDSET IN STUDIO PEDAGOGY

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Abstract. The discipline of design education, which includes creative fields like architecture, art, and design, addresses many challenges of contemporary education by inculcating creativity, adaptability, and lateral thinking among students. Despite this, there exists a gap between creativity and business. Since design graduates mostly operate outside formal structures, it becomes imperative to ensure that they are better prepared for the transition from education to work. In order to bridge this gap, there is a pedagogical need to focus on opportunities, business awareness and entrepreneurship. Design education is rooted in intensive studio exercises with creativity as the core. Accordingly, design students cannot take regular entrepreneurship courses from the business curriculum. The aim of this study is to understand the significance of entrepreneurial mindset in design education and to contribute in integrating innovative ways within the design pedagogy in developing entrepreneurial mindset. The methodology includes application of entrepreneurial approaches in studio pedagogy for a group of architecture students and interpreting the outcomes. The originality and value of the paper lies in its exploration of possibilities of applying entrepreneurial approaches to design pedagogy. This approach holds great potential in addressing the multiple challenges of contemporary higher education.

Key words: entrepreneurial skills and mindset, design education, studio pedagogy.

1. Introduction

In contemporary times, it has become imperative for higher education to ensure that the graduates are better prepared for the transition from education to work. Also, unprecedented challenge of rapidly changing factors like technology, environment, economy, and the needs of people make it harder for education to respond to the professional requirements of graduates (Storberg-Walker and

Torraco, 2004). Research studies indicate that many of these challenges are addressed by design education which induces creativity, adaptability, and lateral thinking among graduates. However, design graduates are often unable to take creative ideation to successful business implementation. They rely on intuition rather than a conscious awareness of market forces and business understanding to ensure professional

success (Ball, 2002). Researchers have suggested that only architects who are able to overlap their creative skills with entrepreneurial knowledge can ensure success in this new age (Gafar *et al.*, 2017).

Several studies have shown that creative professionals are more likely to become self-employed and are natural entrepreneurs (Nielsen *et al.*, 2013) since their career prospects include self-employment, short term employment contracts, freelance or part time work rather than a linear career path. Design graduates need to be better prepared for the transition from education to work and hence require greater understanding of opportunities, business awareness and entrepreneurship (Ball, 2002).

Entrepreneurship has been a popular topic in business and management studies for over 3 decades now. In more recent times, there has been a growing interest in entrepreneurship from disciplines like engineering, design, and arts (Gunes, 2012). However, most disciplines incorporate entrepreneurial education as an additional course or a minor subject. But in design education, entrepreneurship needs to be understood and integrated into the pedagogy such that the student responds simultaneously to the “creative fulfillment” as well as to the commercial usage (Pollard and Wilson, 2014).

It has also been researched that in creative fields, transitioning students to professional careers should focus on developing an entrepreneurial mindset instead of conventional teaching methodology of business entrepreneurship courses (Pollard and Wilson, 2014). An entrepreneurial

mindset entails developing appropriate attitudes, behaviours and capacities to create new jobs in the future and to steer economic growth through creativity and innovation.

2. Material and methods

An academic framework was created to understand integration of entrepreneurship into design education. The studio pedagogy of design education was studied parallelly to integrate entrepreneurial skills and mindset into the desired outcomes for design graduates. Different approaches in entrepreneurial education at universities were identified and integrated in studio pedagogy with a small sample of students of architecture at a university in Delhi National Capital Region. The methodology is arranged in the following order:

1. Identification of entrepreneurial mindset, skills and desired outcomes for design students.
2. Integration of entrepreneurial approach into design education.
 - 2.1. Understanding challenges of integration of entrepreneurial approach in design curriculum.
 - 2.2. Understanding of design studio pedagogy.
 - 2.3. Overlap of entrepreneurial approach in design pedagogy.

The results of this methodology were gauged by student feedback through questionnaires and detailed interviews. The response of students and alumni were recorded through emails, personal conversations and phone calls. A basic sampling technique was used to select candidates from the graduating batches of 2020, 2021, 2022. The career paths of alumni of 2020 were assessed over a

period of two years to see if the entrepreneurial approach in their education helped them professionally. A total of ten graduates were interviewed for the primary data collection. Some of the quotes have been incorporated in the outcome section by these graduates where they have been mentioned as "Graduate 1" and "Graduate 2" to maintain anonymity. Since the research of integrating entrepreneurial approach to existing design pedagogy is almost negligible, the method of qualitative naturalistic inquiry was chosen. This is particularly relevant in the field of education as naturalistic researchers draw on observations, interviews, and other sources of descriptive data, as well as their own subjective experiences. Naturalistic inquiry helps in exploratory research, particularly in the absence of relevant theoretical frameworks (Salkind, 2010). Sample size in naturalistic inquiry may be small but the findings are explored in depth through witnessing of observers, selected raw data and words of people involved. (Pollard and Wilson, 2014).

2.1. Entrepreneurial mindset, skills and outcomes

Entrepreneurship is the process of recognizing opportunity and acquiring resources that lead to creation of something new and valuable for people (Diandra and Azmy, 2020). The common traits of entrepreneurs include the intuition to anticipate project prospects, the ability to innovate, take risks, and the confidence and competence to face unforeseen and adverse conditions (Paul *et al.*, 2017).

According to Serkan Gunes, the main objective of design entrepreneurship

education is raising students' awareness of self-employment as a career option and developing attitudes, behaviour and capacities to establish growth-oriented ventures (Gunes, 2002). It has been researched that entrepreneurial training and approach help students develop skills and attitudes like teamwork, creativity, initiative, and responsibility. These are a manifestation of the more deeply embedded entrepreneurial mindset.

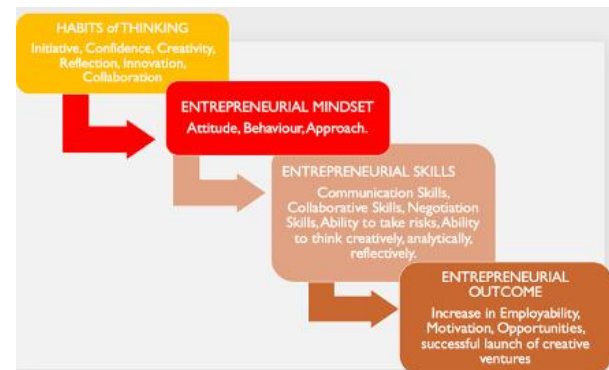


Fig. 1. Relationship of underlying entrepreneurial mindset in generating entrepreneurial skills and outcomes (Source: Author).

The entrepreneurial mindset can help entrepreneurs transform ideas into action and significantly increase their employability (Baschiera *et al.*, 2018). Since the main gap of design education is transformation of creative ideation to successful implementation, developing an entrepreneurial mindset becomes the key requirement. According to Alain Fayolle, entrepreneurial mindset is a state of mind that directs human conduct towards entrepreneurial outcomes and can be developed through habits of thinking. Based on the research by Pollard, Fig. 1 was prepared showing the underlying relationship of entrepreneurial outcome with entrepreneurial mindset and skills.

According to Serkan Gunes, Design entrepreneurship is a collection of appropriate skills and abilities to develop viable concepts and launch them successfully. This requires operating a plan with a proactive attitude and an overall understanding of all factors and risks involved.

2.2. Integration of entrepreneurial approach in design education

Education is seen as a powerful tool that can stimulate entrepreneurial behavior in different ways. Universities have a significant role to play in developing students' entrepreneurial skills. It is also suggested that entrepreneurial education should be part of university curriculum and should be based upon methodologies like active learning and learner centered approach (Valencia *et al.*, 2020).

2.2.1. Challenges of integration into design curriculum

Curriculum integration of entrepreneurial mindset is perhaps more challenging than introducing a new course on entrepreneurship. There is also an apparent dichotomy that exists between creativity and business. The association of business venture creation with profit making versus creative fulfilment (Pollard and Wilson, 2014) has led to the dichotomy between the discipline of design and entrepreneurship. It becomes important to address the dichotomy and see the entrepreneurial aspect as value creation (Beckman and Essig, 2012).

Pollard addresses this conflict in art entrepreneurship by ensuring "academic robustness" in integration of entrepreneurship in creative education (Pollard and Wilson, 2014). Since Design

education is focused on developing creativity through studio pedagogy, entrepreneurial education needs to be woven into studio pedagogy.

2.2.2. Understanding of studio pedagogy

Studio exercises form the basis of design education with creativity as the core. A typical studio space has a desk, or a drawing board or computer space for each student to use at all hours. The studio space may include an atelier, computers or an open space with flexible furniture and screens, where students work on creative and open-ended design projects with a mentor-like teacher, who steers the creative and experiential application of the curriculum (Higgins *et al.*, 2009). Within arts and design education, studio pedagogy can be a blend of four basic elements (Abildgaard, 2019).



Fig. 2. Design studio as an overlap of diverse pedagogies (Source: Author).

1. Lecture, where teachers (or practitioners) deliver knowledge and information.
2. Workshop, where students solve a given assignment using specific tools, materials and techniques.
3. Critique session, where students display work-in-progress and receive feedback from teachers or experts through discussion and reflection.

4. Exhibition, where students display their work in either physical or virtual space.

Other advantages of studio education involve the following:

“Studios provide a quasi-real world situation not offered by taught courses” (Higgins *et al.*, 2009). Real life projects may be introduced as studio problems providing the students an opportunity to identify real life issues and develop solutions with the help of mentors and experts. Studio provides the opportunity to integrate and apply learning from various courses. Studio also allows for more student centric methods of teaching and learning. Thus, providing more space and opportunity for experiential and collaborative learning. Students and instructors work together on a professional level where their relationship changes as students become more self-directed (Higgins *et al.*, 2009). Design studio also can provide a learning model for other professions (Dutton and Willenbrock, 1989).

Over the years, studio pedagogy has formed the backbone of design education mainly because of application of theory, knowledge and skill development. For this paper, studio pedagogy is explored as the methodology to integrate entrepreneurial mindset into design education.

2.2.3. Overlap of entrepreneurial approach in design studio pedagogy

Research on universities promoting entrepreneurial culture showed that certain entrepreneurial approaches were introduced to facilitate the development of entrepreneurial attitude and mindset among students (Valencia *et al.*, 2019).

1. Interdisciplinary approach mirrors what's happening in the actual workplace and contributes directly to developing different skills and abilities in a dynamic world (Ball, 2002). This is an important factor in transition from education to workplace since it replicates the real work-place where boundaries of disciplines are often blurred (Higgins *et al.*, 2009).

2. Innovation and competitiveness are also essential for promoting entrepreneurship among students. By introducing courses, lectures, events and competitions around entrepreneurship, certain universities encouraged a culture of innovation and competitiveness among students (Liu *et al.*, 2021). Instead of top-down approach in teaching, an open framework can facilitate knowledge growth where students are involved in synergetic, self-organized activities (Riether and Wit, 2015).

3. Acquaintance with real world helps students connect with the needs of people. Learning entrepreneurship in a real-world environment can connect academic learning into creative and academic solutions that meet the actual requirements of public and private organizations (Ahmad *et al.*, 2020).

4. Experiential learning is defined as learning from life experiences and is offered in the form of internships, field projects and classroom experiential exercises in contrast with academic learning. This can be an essential tool to facilitate learning for professional development (Kolb, 2014).

5. Collaboration is an important skill for real life learning where entrepreneurs work in teams to collaborate with partners, consumers, stakeholders and clients to arrive at innovative solutions.

As methodology, the potential offered by studio-based learning was explored by application of the above-mentioned approaches to nurture entrepreneurial mindset among students. Within the studio pedagogy of architectural design at a School of architecture and design in Delhi National Capital Region, these approaches were introduced. A brief overview is mentioned below.

1. Interdisciplinary approach was introduced in the urban design studio. An urban village which was strategically located close to a fast-growing urban centre was introduced to the students. Geographically, the urban village was located along the slopes of the oldest mountain range in the region. Students were asked to propose interventions based on the understanding of social, political, economic, and environmental needs of the area. Placing architecture within a broader context of ecology that puts people and environment as interdependent factors further enhances the research (Zarzycki, 2021). Students were divided into groups that explored these aspects and their influence on the manifestation of the existing built form. Students met with the local community and governing body, assessed the natural topography, analyzed socio economic factors and proposed design solutions that addressed all these factors (Fig. 3). Such an approach has been addressed as “trans-critical

pedagogy” where social and environmental issues are studied to arrive at design solutions (Salama, 2015). The proposed design interventions were rooted in creating sustainable solutions. Rural heritage has the potential to trigger sustainable development through an understanding of the economic and territorial balance present in rural culture (Ausiello *et al.*, 2020). The students addressed issues like gender ratio, degradation of natural landscape, rapidly transforming rural character, water drainage and revival of existing water bodies in creating sustainable development through urban design interventions.



Fig. 3. Students interacting with the local inhabitants to understand the socio cultural aspect of the project (Source: Author).

2. Innovation and competitiveness were introduced by promoting and facilitating participation of students in various competitions. Students across different batches (years) were given an opportunity to work together on a national level competition as part of studio exercise. The students formed teams and worked on the design competition exploring ideas, collaborating for presentation techniques and timely submission of the project. Students of the graduating batch mentored younger students in developing the concepts, design and

presentation skills. This motivated the students and triggered their strong participation in several other national and international competitions.

3. Acquaintance with real world learning was facilitated by introducing practicing architects in the design studio team. It has been researched that creative and enjoyable business awareness involving practicing architects or designers should be introduced at various levels of the curriculum (Ball, 2002). Students in the final year of Bachelor of Architecture programme interacted regularly with practicing architects to develop their design thesis with a real-life perspective. Students were given inputs by practicing architects and gave valuable insights into academic projects.

4. Experiential learning was introduced in Seminar for students of Bachelor of Architecture. Instead of just discussion and research in the studio, students visited the city of Varanasi in north India. They witnessed several ongoing projects as part of the transformation of Varanasi into a smart city. They also interacted with people on site and government officials executing the projects (Fig. 4). There is a lot of significance attached to the physical context of experiential learning (Morris, 2019). This context specific experiential learning triggered genuine interest in the topic and helped students understand the impact of research in real life.

5. Collaboration was experienced by participating in competitions as teams and in group project work. The Urban Design project and the Seminar

presentation of Varanasi were semester-long collaborative projects. The students' output in terms of motivation and quality of project work was noticeable. They also learnt collaboration with stakeholders by interacting with the community, government bodies and officials.



Fig. 4. Students at the transformational project of Kashi Vishwanath Temple at Varanasi (Source: Author).

3. Outcomes

Graduating students of 2020, 2021, 2022 were gauged over a period of time. The results of the above-mentioned studio exercises were gauged by asking students and graduates to evaluate their experiences in terms of entrepreneurial competencies developed. They were also asked to reflect and attribute those competencies to any of the specific studio exercises where entrepreneurial approach was applied. Through this research methodology, the graduates were given questionnaires to answer. Some were interviewed on phone and some even wrote back by email. The questionnaires and interviews were evaluated and the outcomes compiled in Table 1.

Table 1 was compiled from the data collected regarding entrepreneurial competencies that the graduates had developed through the studio exercises.

Table 1. Results of Applying Entrepreneurial Approaches to Studio Exercises (Source: Author).

S. No.	Entrepreneurial approach applied to studio based exercises	Name of studio-based exercise	Entrepreneurial competencies developed through studio-based exercises
A.	Introduction of Multidisciplinary Approach and Collaboration with Community.	Urban Design project at Alipur, Haryana, India. (August- December 2019)	-Understanding of Contemporary Context and Real-world challenges, -Capacity to think creatively, analytically, and reflectively -Professional Ethics, Responsibilities, and interface with stakeholders -Collaborative Abilities/ Teamwork,
B.	Innovation and Competitiveness.	National Association of Students of Architecture (NASA) and other competitions (February- September 2020).	-Confidence in one's abilities, -Collaborative Abilities/ Teamwork, -Communication Skills (including graphic communication).
C.	Acquaintance with Real World Learning.	Urban Design (August- December 2019), Architectural Design Thesis (January-June 2020), External Examiners/ Jury (January- June 2021)	-Understanding of Contemporary Context and Real-world challenges, -Capacity to think creatively, analytically, and reflectively. -Confidence in one's abilities.
D.	Experiential learning.	Seminar (February – June 2020), Urban Design project at Alipur, Haryana, India. (August- December 2019)	Understanding of Contemporary Context and Real-world challenges. -Confidence in one's abilities. -Professional Ethics and Responsibilities and interface with stakeholders.
E.	Collaboration.	Urban Design, National Association of Students of Architecture (NASA) and other competitions	-Confidence in one's abilities, -Collaborative Abilities/ Teamwork, -Communication Skills (including graphic communication).

Design graduates should not only be aware of the value of their educational experience but also be able to articulate and apply the valuable processes that they have learned (Ball, 2002). The entrepreneurial competencies developed through the innovative approaches in studio pedagogy also led

to certain outcomes. These were recorded through interviews and calls with the graduates.

The outcomes were most noticeable in the graduating batch of 2020 as they were further in their career paths. They were able to reflect on their experiences and put

them in perspective with respect to their career and long-term objectives. The multidisciplinary approach of projects, involvement with stakeholders and understanding of contemporary context had helped them develop sensitivity to much larger issues. Graduate 1 who belongs to an indigenous tribe in Northeast India said, "These [studio projects] broadened my horizon of understanding my culture and identity and this somehow made me more sensitive towards other cultures and traditions". He attributed these to the studio exercises that exposed the students to other aspects of design. "In general, these two projects [urban design and architectural thesis] really allowed me to understand and see my identity as an indigenous... tribal in a very multi-disciplinary perspective". There was a notable development in their thinking and how they related to their surroundings.

The entrepreneurial path allows designers to identify problems by responding to social, technological and environmental concerns (Zarzycki, 2021). Some of the students had chosen topics for architectural thesis in their native towns and places of origin, relating architectural design to nature, ecology, rapid urbanization and increasing commercialization of land. Graduate 1 wrote, "While doing my architectural thesis, I discovered and learned so much about my culture and my land. My people and our community lived in a serendipitous relationship with nature, and we adapted to our unique and diverse topography through our traditional indigenous ecological knowledge, be it in agriculture, livestock, building houses etc. But most importantly safeguarding the forests and our

resources. At this rate of rapid globalization and urbanization, this traditional ecological knowledge is struggling to adapt to the change especially with regards to climate change". The perspective of looking at their own work had transformed into something larger and more significant.

Interaction with stake holders had also empowered them. There was a distinct confidence that developed through these experiences which strengthened the understanding of their profession and the impact of their work. They felt as if they had a role to play in the lives of people and were able to contribute something bigger. Graduate 2 sums it up by saying, "The interaction with the residents of the village made us feel the impact of what we were doing. It also made us realize that we were designing solutions for improving people's lives. Before this, the design studio was merely a paper exercise but dealing with the local people and governing body made us realize the value and impact of our work as architects".

It was observed through the feedback and interviews that they also developed the ability to choose career paths that enabled them to address these larger issues. There was an overall development in the level of motivation. This also culminated in more ambitious career and higher education choices by the graduates. A distinct shift towards entrepreneurial orientation was observed. Entrepreneurial orientation includes autonomy, risk taking, proactiveness and competitive aggressiveness (Fayolle, 2008). These students, when assessed in their career prospects and confidence level, had fared better than the batches that had

graduated before them. They had developed the confidence to apply to better universities for post-graduation and for better jobs. Some even evaluated their risks by taking student loans to fund postgraduate studies in top US universities. This was also the first batch to have some graduates launch themselves successfully as practicing architects. Many of them attributed this to their project work. The students had started to develop the ability to assess their future prospects and take risks.

4. Conclusions

The general level of confidence of the graduates had grown in terms of understanding their professional role, their ability to work with the various stakeholders and to comprehend their work in a much larger context. The graduates were able to articulate and acknowledge their own competencies through the revised approach in studio exercises. The entrepreneurial competencies include collaborative skills, ability to analyze and reflect, communication skills and overall confidence. These competencies enhanced the employability and career prospects of the graduates by making them more aware of the context and impact of their work.

Given the multiple challenges in today's world, the greatest contribution of triggering entrepreneurial mindset in design education is the solution-oriented approach of design graduates in a real-life context. However, the sample size of the study conducted was relatively small and research needs to be carried out with a larger group to confirm these observations and include entrepreneurial

mindset and competencies within the design pedagogy.

4.1 Discussion and future scope of work

The interviews and questionnaires answered by the graduates still left some questions unanswered. They felt the gap in terms of finding opportunity and network to help with their ventures and careers. The research data indicated certain other aspects which needed more research. Even though the level of confidence, communication and competence as architects had seen a remarkable improvement, the graduates felt unsupported in terms of being able to launch commercially viable ventures and designs. The given approaches and exercises were perhaps instrumental in developing an entrepreneurial mindset and attitude but focus on new venture creation for the graduates also needs attention. They wanted guidance and support to develop their networks and apply entrepreneurial skills beyond studio work.

This paper is an indicator in the direction of introducing ways to integrate entrepreneurial mindset in design education. However, extensive research needs to be carried out for systematic integration of entrepreneurial education into the curriculum and pedagogy of design education. As an emerging area of research, this needs to be studied with a much larger group and results should be recorded quantitatively as well as qualitatively to assess student motivation and career prospects. This study could be an indicator to direct more efforts and resources into exploring the vast potential of design studio pedagogy in promoting entrepreneurial behavior and mindset in design education.

An aspect that emerges from the study is how entrepreneurial learning can be maximized through design pedagogy and how it can be integrated in the design curriculum. The following stages are included for curriculum planning and implementation: Content, intended learning outcomes, assessment methods and measures and best practices for delivery and support (Wilson *et al.*, 2000). To make the curriculum integration more meaningful, every stage of curriculum development must ensure the interweaving of entrepreneurial mindset into design education.

1. Content for courses and programmes could be modified to achieve learning outcomes in terms of developing entrepreneurial mindset while creatively resolving studio-based problems.
2. Intended learning outcomes could integrate the development of entrepreneurial mindset. There can be clearly defined entrepreneurial outcomes of a studio exercise in terms of achieving the desired entrepreneurial behaviour through the studio exercise.
3. Assessment methods and measures to evaluate entrepreneurial competencies simultaneously with design assessment would ensure a good career path for all design graduates. The assessment methods and measures could gauge not only the creative skills through the process of evolving the design but also the development of entrepreneurial mindset through the studio exercise (Fig. 5).
4. Best practices for delivery and support of the curriculum can be integrated in studio pedagogy. Studio is considered a pedagogical tool ahead of its time offering a mode of educational delivery best able to prepare students for careers (Higgins *et al.*, 2009). Design studio is a

platform that brings together multiple modes of teaching and learning in the most interactive way and holds the potential to take multidisciplinary education to the next level.

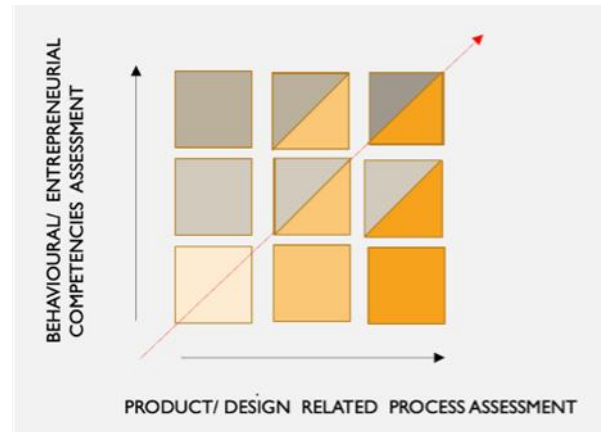


Fig. 5. Possible assessment graph to evaluate entrepreneurial competencies along with design related competencies developed in proposed curriculum (Source: Author).

Further research could strengthen and formalize these changes into the design curriculum. More research could also explore possibilities of applying the studio pedagogy in other disciplines and encouraging cross disciplinary engagement to resolve much larger issues. This approach and pedagogy could also replace more resource intensive proposals for interdisciplinary, project-based learning that are increasingly assuming center stage in addressing the challenges of contemporary higher education.

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