Journal of Architectural Research and Education

Journal homepage:
https://ejournal.upi.edu/index.php/JARE/index

Architectural Pedagogy in Design Studio Learning : A Method between Learning and Teaching

Khalid Farah Hersi [1], Johar Maknun [2]*

[1, 2] Master of Architecture, Indonesian Education University, Indonesia
*Correspondence: E-mail: khalidfarahhersi@gmail.com

ABSTRACT

Pedagogy in architectural studio education emphasizes experiential and student-centered learning, where students develop technical skills, creative thinking, and conceptual understanding through hands-on design processes and collaborative engagement. This study explores various teaching and learning methods in architecture studios using a Systematic Literature Review (SLR) approach, which enables a structured and critical analysis of existing academic literature in the field. This study presents a systematic review of pedagogical methods in architectural studio education, highlighting strategies that foster active, collaborative, and practice-oriented learning. The review identifies fifteen pedagogical methods that are commonly applied in architectural studio settings, each contributing to the creation of an active and dynamic learning environment. These methods encourage students not only to receive information but also to construct knowledge through investigation, reflection, and application. Problem-based learning (PBL) is highlighted as particularly effective, as it engages students in identifying real-world design challenges, formulating solutions, and working collaboratively to develop integrated design outcomes. Other techniques such as blended learning, peer feedback, and context-driven tasks further support the development of analytical thinking, creativity, and teamwork. Overall, the study concludes that effective pedagogy in architectural studios must go beyond traditional instruction by adopting participatory and context-responsive strategies that simulate professional architectural practice, thereby equipping students with both design

ARTICLE INFO

Article History:
Submitted/Received 21 Dec 2024
First Revised 7 February 2024
Accepted 12 March 2024
First Available online 1 April 2025
Publication Date 1 April 2025

Keyword:
architecture studio,
learning methods,
pedagogy

competency and the soft skills necessary for success in the field.

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

1. INTRODUCTION

An architect's ability to adapt and be socially sensitive is no longer guaranteed by a university degree alone. The architectural students come from a variety of pre-university educational backgrounds. Different admission tests with different syllables and grading criteria are offered in different countries. In countries like Portugal, Iran, North Cyprus, and Turkey, students who majored in science in high school enrol in architectural courses, although in many other countries, the prerequisite education must be in an art-related course. It is expected that education in architecture will produce a workforce that is knowledgeable, creative, and flexible. Architecture students are expected to develop concepts that are creative and innovative while being realistic and capable of addressing sustainability's challenges (Pirdavari & Ribeiro, 2022).

During the seventeenth century, architectural education became more and more popular in Europe. Before then, architects were either regarded as master builders or craftsmen because there was no formal school for learning architecture. Architecture was taught through apprenticeships under the supervision of skilled craftspeople or builders. The establishment of the Ecole des Beaux-Arts in Europe in 1795 marked the beginning of formal architectural education, which subsequently extended to North America. With an emphasis on historic architecture and visual design, other courses in mathematics, geometry, physics, building, and architectural theory were later taught (Obi et al., 2022).

In order to complete their design tasks, architecture students need to be innovative and think beyond the box. They also needed to be able to use the right approach to deal with different design problems. Considering the many ways that students approach the design problem, which are influenced by their educational backgrounds, this expectation poses some challenges. Architects were educated through apprenticeships in architectural practices until recently. Only since 1980, when the post-war construction boom prompted a more structured approach to education and university courses began to replace the apprenticeship model, have most architects received their education in this way. As a result, architecture has not developed into a discipline with a clear curriculum.

The design studio, the most prevalent in architectural education, serves as the foundation for all architecture courses. We must examine the design studio in order to determine the source of the issues. All other courses are additional and auxiliary since architectural education is studio-based. No other theoretical subject compares to the experience that students get in the design studio course. Therefore, the first priority in this regard is to look at the issues with the design studio course.

The design studio is the focal point of architectural education, where students mostly use the tried-and-true teaching strategy known as "learning by doing." Architecture education is inherently defective. As every instructor teaches differently and according to their own set of values and views, teaching architectural design might mean different things to different people. The subjects taught, the regions of emphasis, and the methods of instruction vary greatly throughout schools and even within a single school as a result (Ghaziani, 2013).

The architectural design studio is the centre of architectural education. A studio, as defined by Webster's Dictionary, is a place where art and architecture are taught and where several students collaborate to finish a project under the supervision of a teacher. A learning setting where theory and knowledge are applied through design is an architectural design studio. Lecturers or teaching assistants are now helping to implement the "learning by project" mode of instruction that was previously employed in the architectural design studio.

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

Changes to the learning system or pattern affect the players, the procedure, the extent of material distribution, and the output produced (Wisnuadji et al., 2020).

In the architecture studio, learning is not just about memorising theory; it is also about applying knowledge through practice and creative exploration. Pedagogical studies are closely related to learning and teaching, particularly in the context of active learning theory, constructivism, and problem-based approaches. By fusing theory and practice within the framework of architectural design, studio architecture pedagogy emphasises integrative, experiential, and contextual learning. The objective is to develop the technical and conceptual abilities necessary for the architectural profession while preparing students to approach difficult design problems critically, creatively, and pragmatically.

1.1. LITERATURE REVIEW

1.1.1. **Design Pedagogy: The New Architectural Studio and Its Consequences** (Deamer et al., 2020)

Deamer critiques the traditional architectural studio model for being outdated and disconnected from current social realities. She argues that the dominant Beaux-Arts-inspired approach focuses excessively on design virtuosity, competition, and formal aesthetics, thereby neglecting urgent societal challenges such as housing crises, income inequality, and climate change. Deamer calls for a radical pedagogical shift in architectural education, one that prioritizes socially responsible design, critical engagement, and the dismantling of hierarchical and elitist academic practices. This new studio model would empower students to become civic-minded professionals equipped to engage with real-world spatial justice issues.

1.1.2. **Aligning Design Studio Pedagogy to Industry Practice** (Fleischmann, 2024)

Fleischmann investigates how the COVID-19 pandemic reshaped studio pedagogy across seven countries. The research finds a growing acceptance of digital tools and online collaboration methods within design education, including pre-recorded lectures, online critiques, cloud-based tools, and self-paced learning modules. These changes align with the evolving demands of the design industry, which increasingly relies on decentralized, technology-savvy teams. The study also emphasizes the importance of preparing students for emerging technologies, such as artificial intelligence, and advocates for design education to remain flexible and responsive to future disruptions.

1.1.3. **Learning and Teaching Urban Design through Design Studio Pedagogy** (Kamalipour & Peimani, 2022)

This study focuses on a blended urban design studio that emphasizes transit-oriented development, highlighting the pedagogical strengths of constructively aligned studio modules. By integrating thematic continuity, site-based research, and student feedback, the authors demonstrate how a hybrid approach combining face-to-face learning with synchronous and asynchronous online methods can enhance critical thinking and real-world applicability. Their findings underscore the importance of studio-based urban design education in equipping students to engage thoughtfully with complex, sustainability-driven urban issues.

1.1.4. **Values in Urban Design: A Design Studio Teaching Approach** (Chiaradia et al., 2017)

Chiaradia and colleagues propose a values-based approach to urban design pedagogy, emphasizing the integration of societal, environmental, and economic values into studio teaching. The authors introduce an appraisal-based studio model that teaches students

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

to consider urban design not only in terms of aesthetics or function but also through the lens of value creation specifically private value, use value, and public externalities. This iterative process of design and evaluation fosters a holistic and reflective mindset among students, enabling them to make more informed, socially conscious design decisions.

1.1.5. Learning and Practice as Pedagogy for Architecture (Deshmukh & Manjrekar, 2021)

This article explores a pedagogical model that tightly integrates academic learning with real-world architectural practice. Manjrekar and Deshmukh argue for experiential, practice-based education where students engage in hands-on activities such as site visits, professional collaboration, and interdisciplinary teamwork. By mirroring the realities of professional workflows, this model helps bridge the gap between theoretical knowledge and application. The authors stress that such an approach cultivates critical thinking and practical competence, preparing students more effectively for professional life.

1.1.6. The Future of Design Studio Education (Peimani & Kamalipour, 2022)

Peimani and Kamalipour explore the student experience within blended design studios during the COVID-19 pandemic. Their findings reveal that while students appreciated the flexibility and digital skill-building offered by online formats, they also missed the social and peer-learning aspects of traditional studios. The study suggests that combining digital tools with in-person collaboration results in a more balanced and resilient learning model. The authors advocate for adaptive studio formats that can respond to both technological change and global crises, without compromising the integrity of design education.

1.1.7. Addressing the Current Pedagogical Challenges of Architectural Education in Nigeria (Obi et al., 2022)

Obi and colleagues assess architectural education in Nigeria, highlighting major shortcomings in curriculum content, infrastructure, and relevance to local conditions. The study identifies an overreliance on outdated British and American educational models and a failure to modernize in ways that reflect Nigeria's unique socio-economic landscape. The authors call for curriculum reforms, investment in physical learning environments, and an emphasis on practical skills development. They argue that such changes are essential to improving graduate employability and bridging the gap between education and practice.

1.1.8. Educating for Design Character in Higher Education (et al., 2020)

Boling and colleagues argue for a shift in design pedagogy toward nurturing "design character," which goes beyond skills and cognition to include values, judgment, and identity. Their co/autoethnographic reflections reveal that focusing on the personal development of students can enhance their growth as ethical and reflective designers. The paper identifies challenges in aligning this holistic model with traditional academic expectations but proposes that recognizing students' lived experiences and personal values can enrich the design learning process. The authors ultimately frame design education as a transformative journey of personal and professional maturation.

1.1.9. Appropriate Teaching and Learning Strategies for the Architectural Design Process (Soliman, 2017)

Soliman presents a structured framework for aligning teaching strategies with each phase of the design process from programming to construction documentation. His research identifies three pedagogical pillars, teaching methods, assigned tasks, and communication techniques. These are tailored to specific design phases to reduce student overload and improve learning efficiency. The study proposes a tiered instructional

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

model, where group-based and interdisciplinary learning enhances both creativity and productivity. Soliman concludes that strategic studio management is essential to developing students' capabilities within limited academic timeframes.

1.1.10. Urban Design Studio Pedagogy: Thinking About Informality (Keswani, 2019)

Keswani emphasizes the importance of acknowledging informality in urban design studios, especially in the context of cities in the Global South. Through a case study of an informal street market in Ahmedabad, she illustrates how field-based, ethnographic research can reveal the social systems and spatial patterns that traditional planning overlooks. Keswani argues that design education must incorporate these realities to foster inclusive and context-sensitive urban interventions. Her study advocates for a people-centered pedagogy that respects local knowledge, challenges formalist paradigms, and prepares students to work effectively in diverse urban environments.

2. METHODOLOGY

The method used in this research is Systematic Literature Review. The process of finding, assessing, and interpreting all of the existing research that is pertinent to the formulation of the problem or topic area under study is known as a systematic literature review, or SLR. The process of locating, evaluating, and interpreting all available study material in order to provide answers to particular research questions is known as a Systematic Literature Review, or SLR (Norlita et al., 2023).

This study employs a literature review methodology, specifically The Systematic Review (SR), also known as the Systematic Literature Review (SLR), is a methodical approach of gathering, evaluating, combining, and analysing the findings of several research papers on research issues or subjects that you wish to investigate. Finding articles about the study topic that will be examined later is the first step in the research process. A systematic review is a process that involves recognising, assessing, and choosing a specific issue and posing questions that are obviously answered in accordance with predetermined standards. This is in line with high-caliber earlier research that is pertinent to the study subject.

To find, assess, and interpret all pertinent research findings pertaining to a specific study issue, topic, or phenomenon of relevance, SLR research is carried out. Finding solutions to the issues at hand, identifying various viewpoints on the issues under investigation, and exposing theories that are pertinent to the case are the goals of this Systematic Literature Review (SLR) study, which delves deeper into the impact of information technology's advantages on worker performance.

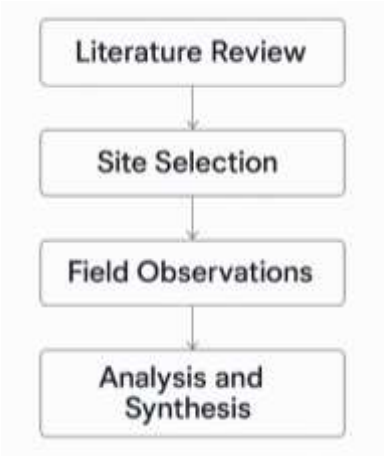

Figure 2.1. Method Diagram
Source : Author

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

2.1. Literature Review

The initial stage in this research is to conduct a literature review. The purpose of this stage is to build a theoretical framework and understand the scientific context relevant to the topic being studied. Researchers collect references from scientific journals, books, and previous research reports related to architectural studio learning methods, design pedagogy, and participatory approaches in architectural education. This stage is also important for identifying research gaps and formulating research questions more sharply.

2.2. Site Selection

After gaining a strong conceptual understanding from the literature study, the next step is to choose an appropriate study location. The selection of this location usually considers the suitability with the research objectives, data availability, accessibility, and relevance to the context of architectural education. For example, the location used can be an architectural studio at a particular college, an experimental class, or an educational institution that applies innovative pedagogical methods.

2.3. Field Observations

At this stage, researchers conduct direct observations at the selected location. This observation aims to collect empirical data related to the teaching and learning process in the architecture studio. Observation techniques can include recording learning activities, interactions between lecturers and students, the use of certain methods (such as problem-based learning, blended learning, or design exploration), and student work. This observation can also be supplemented with visual documentation, informal interviews, and field notes.

2.4. Analysis and Synthesis

The final stage is to analyze and synthesize the data that has been collected. Analysis is carried out systematically to identify patterns, themes, and key findings related to the effectiveness of pedagogical methods in the architecture design studio. Synthesis is carried out to connect field findings with the theoretical framework that has been built at the literature review stage. The results of this stage are used to draw conclusions, provide recommendations, and formulate research contributions to the development of architectural pedagogy.

3. RESULT AND DISCUSSIONS

In the framework of supporting pedagogical theory and practice to produce successful learning experiences, the relationship between architectural studio learning methodologies and educational pedagogy can be understood. How students learn and engage with resources, instructors, and other students is significantly influenced by pedagogy, which is the philosophy and practice of teaching.

3.1. Studio-Based-Learning Method

Based on research conducted by Muhammad Rijal and Pedia Aldi (2012) in an article entitled "Implementasi Metode Studio-Based-Learning Dalam Pengelolaan dan Prosedur Pembelajaran Studio Perancangan Arsitektur" it was found that when compared to the previous architectural design studio, the deployment of the studio-based learning technique in the administration and learning procedures of the studio proceeded smoothly and resulted in an increase in assessment. Both the presenters' performance and their understanding of the provided case studies were excellent. It is anticipated that this classroom action research will be conducted annually to observe the growth of learning in the Architectural Design Studio course and to enhance the studio-based learning approach (Rijal & Aldy, 2012).

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

3.2. Online Learning Model

Based on research conducted by Sigit Wisnuadji and Adhi Hermawan (2023) in an article entitled "ANALISIS MODEL PEMBELAJARAN STUDIO ARSITEKTUR BERBASIS DARING DI PERGURUAN TINGGI DI KOTA BANDUNG" it is known that the shift to distant learning as a means of instruction has not altered the Architecture Studio's learning process. A lecturer using the distant learning approach not only helps and supports students' exploration, but also teaches them new media through contact and communication. Compared to informal exchanges that can take place during the face-to-face procedure, communication between lecturers and students needs to be more structured. In studio lectures, where the calibre of the information delivered to students must be equal to that of in-person instruction, lecturers hold a central position that allows them to impact the teaching and learning process (Wisnuadji et al., 2020).

3.3. Before-After Method as a New Strategy in Architecture Studio

Based on research conducted by Prasetyo Wahyudi (2008) in an article entitled "STRATEGI PENYEGARAN DAN METODA BEFORE & AFTER SEBAGAI STRATEGI BARU DALAM PEMBELAJARAN DI STUDIO PERANCANGAN INTERIOR-ARSITEKTUR" it is known that comparing (juxtaposing) two photographs before and after treatment is known as the "before & after method." This technique is employed to guarantee the cosmetic success of the treatment that has been administered. Along with persuading students that interior design is simple, the program also explains the philosophy and concept of design aspects. Along with all the explanations provided by the before & after technique, examples of interior designs before and after are also included. Students must draw or take pictures of the design object before it is designed, especially for interior studio tasks, as these will be compared to the final design (Wahyudie, 2008).

The drawings are made with the same perspective point of view, as are the design alternatives and their concepts. At the refresher stage, a preview activity is also carried out as student accountability for the results of their designs, this preview also functions as a forum for discussion to increase students' insight and sharpness in designing Learning strategies using this method have been tried by the author in the Interior Design-Architecture Study Program, Industrial Product Design Department, FTSP ITS, and it is considered quite effective and very helpful compared to the previous classical method. This strategy is still far from perfect, so it is possible that there will be improvements and adjustments. From the results of discussions with students, students are generally happy with this learning pattern, they can immediately see and compare their work with previous conditions. They seem to get more solid self-confidence and feel "I can design and the results are better/nicer/aesthetic than before". This condition is a positive value for developing students' self-confidence. Self-confidence is also believed to increase the sense of enjoyment for the next design activity.

3.4. Project Based Learning Method

Based on research conducted by Oktavi Elok Hapsari, Rakhmawati, Noverma, and Yusrianti (2021) in an article entitled "PROJECT BASED LEARNING SEBAGAI METODE PEMBELAJARAN ARSITEKTUR PADA MATA KULIAH TEORI ARSITEKTUR JENGKI" it is known that Project-Based Learning is a form of instruction that combines theory and practice in the field by fostering students' critical thinking, independence, and responsibility through a series of processes and learning features. Students use this approach to create learning products by exploring, evaluating, interpreting, and synthesising. The application of knowledge and abilities can be promoted by this approach. Students should be able to comprehend

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

theoretical courses more easily if the Project Based Learning approach is used (Hapsari et al., 2021).

The project-based learning approach, which emphasises finishing practical and relevant work, is used in the architecture studio. The pedagogical idea that stresses learning in a more authentic, problem-oriented, and relevant manner is supported by this method. Students are exposed to design challenges through design projects, which foster contextual learning by requiring technical and aesthetic abilities, critical thinking, and the application of theory.

3.5. Parametric Design Method

Based on research conducted by Wendy Sunarya, Yusvika Ratri Harmunisa, Rizka Tiara Maharani, Heru Subiyantoro (2022) in an article entitled "Mempromosikan Desain Parametrik Untuk Pengajaran Arsitektur di Indonesia: Strategi Model Pembelajaran" it is known that In contrast to earlier digital trends like CAD (Computer Aided Design) and BIM (Building Information Modelling), parametric design is a new movement in architecture. While parametric modelling is a computational tool for geometric manipulation, exploration, and evaluation of design alternatives at the conceptual design stage, CAD and BIM software are typically employed as tools to create digital representations or photographs of design objects (Sunarya et al., 2022)

Parametric modelling will be used not only to create geometric architectural forms but also to solve social and environmental issues using ever-evolving new methodologies. Interoperability (connectedness) between building simulations and parametric modelling software supports this. Because of this interoperability, architects may optimise parametric-based designs to identify the best options among the many design possibilities that are generated.

3.6. Exploration Method

Based on research conducted by Ari Widyati Purwantiasning (2014) in an article entitled "EKSPLORASI ARSITEKTUR SEBAGAI SALAH SATU METODE DALAM PROSES BELAJAR MENGAJAR MAHASISWA AKTIF DI JURUSAN ARSITEKTUR UNIVERSITAS MUHAMMADIYAH JAKARTA" it is known that In addition to attempting to delve further into the significance of an architectural work, architectural exploration activities serve as a means of extending conversation. One may also say that architectural exploration is a component of architectural communication, in which students attempt to speak with themselves as well as with architectural things that are absorbed by their eyes and stored as literature within them (Purwantiasning, 2014).

The technique employed in this architectural exploration exercise is direct exploration of important locations in order to discover something novel or something that, in theory, already exists and can be verified by examining the actual things. The purpose of this architectural research exercise is also to help students become more knowledgeable and articulate about a number of significant topics.

3.7. Workshop Learning Method Using Architectural Models

Based on research conducted by Sita Yuliastuti Amijaya and Yordan Kristanto Dewangga (2023) in an article entitled "EFEKTIFITAS PENGGUNAAN MAKET SEBAGAI METODE PEMBELAJARAN ARSITEKTUR PADA KAJIAN FASAD DINAMIS" it is known that in order to improve skills and methods of applying work that are in line with current needs, the workshop or training method consists of a number of activities that develop appropriate ways of thinking and acting as well as knowledge about work tasks, including tasks in carrying out self-evaluation training. The workshop or training approach is a component of a learning strategy

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

that aims to enhance skills in a certain amount of time using phases and techniques that give more weight to hands-on activities than theory (Amijaya & Dewangga, 2023).

An explanation is given before the workshop approach is put into practice, followed by a debate about it. Brainstorming is done in the first step to determine how well-prepared the pupils are to comprehend the subject being worked on. During this phase, ideas are discussed and communicated. In order for this topic to become contextual and immediately applicable to case studies (project-based learning), the original goal was to tie it to other tasks in the Architectural Design Studio course. This phase is highly pertinent to the research that students in the Architectural Design Studio course are doing.

3.8. Architectural Design Studio Learning Method

Based on research conducted by Rosyd Rosyadi, and Johar Maknun (2023) in an article entitled "Pentingkah Pedagogik Dalam Pendidikan Arsitektur: (Metode Pembelajaran Studio Perancangan Arsitektur)" it is known that the first is taught through architectural exploration methods, the second is taught through active student learning methods; and the third is taught through understanding learning methods for architecture students. This is done in order to help students grasp and master a number of important life lessons, develop their skills in architectural studios, and comprehend life values (Rosyadi & Maknun, 2024).

The approach taken in this architectural exploration exercise is to go straight to important locations in search of something novel or something that, in theory, already exists and can be verified by examining actual items. One teaching and learning strategy that has been adopted in Indonesia is the active student method, which places a strong emphasis on in-person lectures as the primary technique that lecturers or teachers employ. Active learning techniques have been used by lecturers in the architectural study program. Students must be able to complete lecture tasks on their own, beginning with the field location survey procedure and continuing through the compilation of programs and space requirements.

3.9. Research Learning Model

Based on research conducted by Heru Subiyantoro (2007) in an article entitled "Model Pembelajaran Dengan Riset Dalam Studio Perancangan Arsitektur" it is known that The difficulty of the learning process in connection to teacher research has been the subject of an intriguing discussion by a number of design teaching specialists. In the past, there was also criticism that was published in Australia's mainstream media, essentially stating that research was no longer a distinct activity and had instead become the sole domain of researchers (Subiyantoro, 2007).

Understanding the importance of research in all academic endeavours is crucial since it forms the foundation of the learning process. particularly in endeavours that involve numerous scientific areas. The expansion of architectural engagement into domains more sophisticated than scientific disciplines makes the development of research in the field of architecture imperative.

3.10. Architecture Studio Learning Method with Virtual Reality

Based on research conducted by Mutiara Cininta (2024) in an article entitled "**PENGEMBANGAN METODE PEMBELAJARAN VIRTUAL REALITY UNTUK MAHASISWA ARSITEKTUR TAHUN PERTAMA**" it is known that architecture students can more successfully, realistically, and captivatingly convey their ideas in 3D using the Architecture Studio learning approach with virtual reality, making them easier for lay clients to understand. Every user is represented by an avatar that shows all of their motions, enabling real-time viewing of each other's reactions. The majority of students believe that virtual reality (VR) technology can help

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

them see architecture ideas more realistically and make studying more engaging (Cininta, 2024).

3.11. Critical, Creative and Pragmatic Thinking in Architecture Design Studio

Based on research conducted by Nik Lukman Nik Ibrahima and Nangkula Utaberta (2012) in an article entitled "Learning in Architecture Design Studio" it is known that the primary requirements for architecture students enrolled in Design Studio include critical, imaginative, and practical thinking. In Design Studio learning, it is crucial to integrate these three ways of thinking. The hierarchy and proportions of these three ways of thinking vary depending on the degree of the Design Studio. Generally speaking, the first and second years are when creativity is most valued, and the fourth and fifth years are when pragmatic reasoning is given more weight. This does not negate the need of creativity in these later years, though, and the architecture course as a whole requires a balance between these three ways of thinking (Ibrahim & Utaberta, 2012).

3.12. Creativity Method in Architecture Design Studio

Based on research conducted by EIGBEONAN, Andrew B. (2013) in an article entitled "CREATIVITY METHODS IN TEACHING THE ARCH-DESIGN STUDIO" it is known that being creative means being inventive, being an entrepreneur, and having the capacity to create something out of thin air. Although it cannot be taught, creativity can be developed and shown via practice over time. Creativity-promoting strategies are rarely implemented in higher education. As a result, the majority of professionals that graduate can only use what is well known in traditional ways (Andrew B., 2013).

Furthermore, less seasoned students see architectural design as a chance to fulfil their artistic impulses rather than as a difficult task that involves resolving a complicated array of social and technological problems. The foundation of the architectural design process is a creative phase in which originality is highly regarded and there is a wealth of literature on the subject.

3.13. Material-Based Learning

Based on research conducted by Resza Riskiyanto (2023) in an article entitled "Material-Based Learning in Architecture Design Studio: From ‘Beaux-Arts’ to ‘Bauhaus’ into Current Educational Era" it is known that the material categories that served as the foundation for the design in this studio's learning process are divided into two categories: organic materials and non-organic materials with distinct properties. Specifically, the materials covered in this article are precast concrete, bamboo, steel, and wood. Physical and non-physical material properties, as well as the materiality of the material itself, are all part of the material knowledge process (Riskiyanto, 2023).

Determining the fundamentals of the sort of material chosen through a variety of literary genres, case studies, and prior study is the first step in the reading process. In order to prevent material-based inquiry from beginning from scratch, this process becomes a crucial component of learning. This reading's objective is to present a range of exploration opportunities for any kind of content. Additionally, to develop critical thinking skills regarding the chosen content.

3.14. Discussion, Site Visit, and Experimental Method

Based on research conducted by Ashraf M. Soliman (2017) in an article entitled "Appropriate Teaching and Learning Strategies for The Architectural Design Process in Pedagogic Design Studios" it is known that Students' awareness of a site is increased by the discussion of famous architects' experiences, first as users of the built environment and then as designers who will incorporate building forms into the landscape (Soliman, 2017)

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

Usually, site visits are conducted as part of the predesign stage. For a site visit to be as effective as possible, it must be properly managed and planned. One theory of design education is experimental learning. As opposed to students in other classes, design students have a greater sense of assimilation and convergence when they are divided into groups according to their preferred learning styles.

3.15. Innovative Participation Method

Based on research conducted by Michal Czafík, Karol Görner and Lucia Štefancová (2019) in an article entitled "Participation as an Innovative Method in Architectural Education" it is known that One planning technique that promotes dialogue and consensus-building is participatory planning. In the context of spatial planning, it primarily involves deliberation and the pursuit of consensus over a practical and geographic solution (Czafík et al., 2019).

Both individual residents and representatives of various interest groups (public administration, businesspeople, citizens, environmentalists, artists, maternity centres, and so on) may be involved in planning, depending on the size of the area in question. Identifying the stakeholders, learning about their interests, holding joint meetings, and identifying common ground are all common steps in participatory planning. A more open and cooperative approach to the design process is taken via innovative participatory approaches in the architectural studio, which involve several stakeholders from the start to the finish.

Every technique used in the architecture studio adheres to educational ideas that prioritise context-based, active, and cooperative learning. These approaches assist students in developing the abilities required in the architectural profession by fusing technology, creative discovery, critical reflection, and real-world experience. In addition to imparting technical knowledge, this teaches them how to think creatively, critically, and practically skills that are crucial for meeting the problems of architecture in the future.

4. CONCLUSION

The architectural studio's teaching and learning strategies are developed to support theory-based, hands-on learning. Studio-Based Learning is one of the primary approaches, in which students work on actual design projects while being supervised by instructors. With this method, students can refine their technical abilities and inventiveness in a more appropriate and realistic setting. Furthermore, site visits provide students a firsthand look at field conditions and the social environment around the project, while the Innovative Participation Method gives stakeholders (such users or communities) a chance to engage in the design process. By encouraging students to experiment with different shapes, materials, and design solutions, the Experimental Method and Material-Based Learning enhance their comprehension of the real-world applications of architectural design.

The Creativity Method and Critical Thinking in Architecture Design Studio are two further techniques that emphasise the growth of creativity and critical thinking. Students learn to think creatively and thoughtfully as well as to carefully consider every design choice using this method. In order to facilitate this, architectural studios are increasingly utilising technologies like Parametric Design and Virtual Reality (VR) to increase the range of possible designs. While parametric design provides a data-driven method for producing shapes that are responsive and adaptive to particular factors, virtual reality (VR) enables students to experience space in a virtual world. A significant component of the architectural studio is the Project-Based Learning Method, which stresses working on actual design projects that motivate students to use their abilities to solve tangible issues and generate workable solutions.

This approach to education has a lot in common with constructivism pedagogy, which emphasises active engagement between students and the subject matter. One method that

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279

incorporates research into the design process is research-based learning, which encourages students to delve deeper into the background and design philosophy that inform their choices. This fosters the development of analytical and evaluative abilities, which are critical in the architectural field. Additionally, using Workshop with Architectural Models aids students in bringing their design concepts to life and deepens their comprehension of the connection between form and space. Students are encouraged to think critically about the effects of design choices by using the Before-After Method, which asks them to consider and assess the changes brought about by their designs.

According to educational pedagogy, these techniques establish a collaborative and dynamic learning environment. In addition to receiving information, students are encouraged to actively generate and expand their knowledge by investigation and application. Because it motivates students to recognise design challenges, come up with answers, and collaborate in groups to create projects as a whole, problem-based learning is a pertinent approach. Students can learn in a more immersive and applicable way by utilising technology and an experiment-based approach, which will equip them to handle real-world difficulties in the architectural profession. All of these approaches uphold the idea of holistic education by striking a balance between the development of creativity, critical thinking, and technical skill mastery, all of which are crucial for architectural design.

REFERENCES

Amijaya, S. Y., & Dewangga, Y. K. (2023). Efektifitas penggunaan maket sebagai metode pembelajaran arsitektur pada kajian fasad dinamis. *Paedagoria: Jurnal Kajian, Penelitia Dan Pengembangan Kependidikan*, *14*(4), 47–482.

Andrew B., E. (2013). Creativity Methods in Teaching the Arch-Design Studio. *DIMENSI (Jurnal Teknik Arsitektur)*, *40*(1), 1–9. https://doi.org/10.9744/dimensi.40.1.1-10

Boling, E., Gray, C. M., & Smith, K. M. (2020). Educating for design character in higher education: Challenges in studio pedagogy. *DRS2020: Synergy*, *4*, 11–14. https://doi.org/10.21606/drs.2020.120

Chiaradia, A. J. F., Sieh, L., & Plimmer, F. (2017). Values in urban design: A design studio teaching approach. *Design Studies*, *49*(February), 66–100. https://doi.org/10.1016/j.destud.2016.10.002

Cininta, M. (2024). Pengembangan Metode Pembelajaran Virtual Reality Untuk Mahasiswa Arsitektur Tahun Pertama. *Vitruvian : Jurnal Arsitektur, Bangunan Dan Lingkungan*, *14*(1), 23. https://doi.org/10.22441/vitruvian.2024.v14i1.03

Czafík, M., Görner, K., & Štefancová, L. (2019). Participation as an innovative method in architectural education. *Global Journal of Engineering Education*, *21*(3), 227–232.

Deamer, P., Deeg, L., Metz, T., & Tursky, R. (2020). Design Pedagogy: The New Architectural Studio and Its Consequences. *Architecture_MPS*, *18*(1), 1–8. https://doi.org/10.14324/111.444.amps.2020v18i1.002

Deshmukh, M., & Manjrekar, S. M. (2021). Learning and Practice as Pedagogy for Architecture. *International Journal of Research in Civil Engineering*, *5*(1), 58–67. https://www.researchgate.net/publication/352876435

Fleischmann, K. (2024). Aligning Design Studio Pedagogy to Industry Practice: Future Proofing Higher Design Education. *International Journal of Changes in Education*, *2*(May 2024), 10–18. https://doi.org/10.47852/bonviewijce42023051

Hapsari, O. E., Arsitektur, T., & Jengki, A. (2021). *Project Based Learning Sebagai Metode Pembelajaran*. 163–170.

Ibrahim, N. L. N., & Utaberta, N. (2012). Learning in Architecture Design Studio. *Procedia* -

Social and Behavioral Sciences, *60*(October 2012), 30–35. https://doi.org/10.1016/j.sbspro.2012.09.342

Kamalipour, H., & Peimani, N. (2022). Learning and Teaching Urban Design through Design Studio Pedagogy: A Blended Studio on Transit Urbanism. *Education Sciences*, *12*(10). https://doi.org/10.3390/educsci12100712

Keswani, K. (2019). Urban design studio pedagogy: Thinking about informality. *New Design Ideas*, *3*(2), 113–123.

Norlita, D., Nageta, P. W., Faradhila, S. A., Aryanti, M. P., Fakhriyah, F., & Ismayam. A, E. A. (2023). Systematic Literature Review (Slr) : Pendidikan Karakter Di Sekolah Dasar. *JISPENDIORA Jurnal Ilmu Sosial Pendidikan Dan Humaniora*, *2*(1), 209–219. https://doi.org/10.56910/jispendiora.v2i1.743

Obi, N. I., Obi, J. S. C., Okeke, F. O., & Nnaemeka-Okeke, R. C. (2022). Pedagogical Challenges of Architectural Education in Nigeria; Study of Curriculum Contents and Physical Learning Environment. *European Journal of Sustainable Development*, *11*(4), 32. https://doi.org/10.14207/ejsd.2022.v11n4p32

Peimani, N., & Kamalipour, H. (2022). The Future of Design Studio Education: Student Experience and Perception of Blended Learning and Teaching during the Global Pandemic. *Education Sciences*, *12*(2). https://doi.org/10.3390/educsci12020140

Pirdavari, M., & Ribeiro, H. C. (2022). *Architectural Pedagogy Within the Design Studio: a Trench Between Learning and Teaching*. *November*. https://doi.org/10.46529/darch.202236

Purwantiasning, A. W. (2014). *2 eksplorasi desain with digital 216-416-1-SM*. *November*.

Rijal, M., & Aldy, P. (2012). Implementasi Metode Studio-Based Learning dalam Pengelolaan dan Prosedur Pembelajaran Studio Perancangan Arsitektur. *Journal of Education and Learning (EduLearn)*, *6*(1), 15–22. https://doi.org/10.11591/edulearn.v6i1.186

Riskiyanto, R. (2023). Material-Based Learning in Architecture Design Studio: From 'Beaux-Arts' to 'Bauhaus' into Current Educational Era. *Journal of Architectural Design and Urbanism*, *5*(2), 86–96. https://doi.org/10.14710/jadu.v5i2.18448

Rosyadi, R., & Maknun, J. (2024). Pentingkah Pedagogik Dalam Pendidikan Arsitektur: (Metode Pembelajaran Studio Perancangan Arsitektur). *MESA (Teknik Mesin, Teknik Elektro, Teknik Sipil, Teknik Arsitektur)*, *7*(1), 1–11. https://doi.org/10.35569/ftk.v7i1.1958

Soliman, A. M. (2017). Appropriate teaching and learning strategies for the architectural design process in pedagogic design studios. *Frontiers of Architectural Research*, *6*(2), 204–217. https://doi.org/10.1016/j.foar.2017.03.002

Subiyantoro, H. (2007). *Model Pembelajaran Dengan Riset Dalam Studio Perancangan Arsitektur*. *March*.

Sunarya, W., Harmunisa, Y. R., Maharani, R. T., & Subiyantoro, H. (2022). Mempromosikan Desain Parametrik Untuk Pengajaran Arsitektur di Indonesia: Strategi Model Pembelajaran. *Review of Urbanism and Architectural Studies*, *20*(2), 13–24. https://doi.org/10.21776/ub.ruas.2022.020.02.2

Wahyudie, P. (2008). *STRATEGI PENYEGARAN DAN METODA BEFORE & AFTER SEBAGAI STRATEGI BARU DALAM PEMBELAJARAN DI STUDIO PERANCANGAN INTERIOR-ARSITEKTUR*.

Wisnuadji, S., Hermawan, A., Arsitektur, P. S., & Teknik, F. (2020). Analisis Model Pembelajaran Studio Arsitektur. *Geoplanart*, *5*(2), 1–15.

DOI: https://doi.org/10.17509/jare.v7i1.78184
p- ISSN 2776-9909 e- ISSN 2580-1279