

## **Problems Encountered in The Assessment of Architecture Design Studio**

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### **Abstract**

The design studio is the core course in architecture education. It is the pot where all complementary courses' knowledge is integrated and implemented. The teaching and learning of the design studio are crucially influenced by the assessment process, in which the quality of the assessment affects the student's learning experience significantly. Hence, this studio-based education system requires great attention to the assessment process. The assessment of design studio projects in Architecture education has always been a dilemma for faculty and jurors due to its challenging subjective nature. Many of the problems associated with the assessment process in design studios have been discussed in publications over thirty years ago, and to this day these problems still stand. This paper is a research review of problems associated with the assessment process of Architecture design studios. This review aims to identify the problems encountered in the design studio assessment and determine the shortcoming of this assessment process. Additionally, this research sheds light on the effectiveness of student-centered teaching in improving the efficiency of the assessment and evaluation processes. Based on the review, the author identified several problems encountered in the assessment process and linked them to three factors impacting these problems. Also, the student-centered teaching approach is recommended for the successful application of assessment and evaluation.

**Keywords:** assessment criteria; evaluation; pedagogy; self-assessment; student-centered

## **1. Introduction**

The learning environment in studio-based learning is quite different than other majors. In the architecture major, design studio is the core course in architectural education, in which all complementary courses' knowledge is integrated and implemented. The architecture design studio learning environment is unique. Although it might be structurally similar, each architecture program has its distinct culture. Teaching architecture design studio is based on critical thinking, where critical questioning, critical discussions, and decision-making are encouraged to develop better designs. The learning environment in design studios is characterized by the direct interaction between instructors and students providing one-to-one feedback. Also, the learning environment includes critiques and juries, where students present and defend their work. These learning activities elevate the complex nature of the design studio and are very challenging to teach (Koch et al., 2002).

This challenging educational environment in architectural design studios is based on different styles of learning that can be comprehensively described as experiential learning. Experiential learning means learning by experience. It is a pedagogical theory described by Kolb (1984) as "Experiential learning is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience... learning transforms experience in both its objective and subjective forms". Experiential learning has great implications for the learning experience in the design studio, however; it lays a burden on the assessment process with its subjective learning styles. The teaching and learning of the design studio are crucially influenced by the assessment process, in which the quality of the assessment affects the student's learning experience significantly. To promote students' learning, effective assessment, and evaluation are a must. Without understanding the problems and challenges of the design studio assessment process, it may be difficult to find solutions or to take steps toward more efficient, valid, and credible assessments in the architectural design studio. Therefore, this research aims to review and identify the problems encountered with the assessment and evaluation processes in the architectural design studio.

## **2. The role of assessment in teaching and learning**

Assessment is essential in education, and efficient and credible assessment is an integral part of the learning process. Assessment plays a crucial role in the teaching-learning process, in which it indicates the level of students' performance, knowledge attainment, and the level of fulfilling the course's intended learning outcomes. Assessment is important to the extent that failing to assess students could contribute to impeding their learning progress (Lindstorm, 2006). It allows instructors not only to measure the deliverability of the course objectives but also it improves students' learning process through the feedback provided. However, the assessment in Architecture education has always been a dilemma for faculty and jurors due to its challenging subjective nature.

Assessment is very critical in programs' accreditation, in which each accreditation system identifies or defines assessment specifically and requires universities, colleges, and programs to provide assessment plans (Petry, 2002).

For effective learning, where students feel challenged, it is essential to appraise students' knowledge, skills, and cognitive strengths and weaknesses. The use of diverse assessment types to assess different aspects of the educational process helps the teaching-learning process in different ways. For example, the ongoing assessment of a student's understanding can provide valuable feedback about students' progress toward learning goals. The standardized and outcomes assessments provide one type of information about achievement levels. Information about the attainment of learning outcomes can be provided when using performance assessments. Also, self-assessments of learning progress can improve students' self-appraisal and help them to become lifelong learners (Lueth, 2008).

Intrinsic motivation to learn and improve is an innate nature. Research argues that using any type of incentive tends to make people do inferior work and is ineffective over the long run. Consequently, grading, as an incentive, impedes learning. The argument is based on the fact that the best motivation for learning comes from a student's intrinsic motivation rather than the extrinsic motivation of grades (Kohn, 1999). Using grades in the assessment process is impeding collaboration among students and leading students to avoid self-challenging. It results in undermining the self-assessment and self-criticism learning modes. Using grades not only shifts the learning responsibility from students to instructors but also reinforces conformity and the ideology of "doing what the professor wants" (Koch et al., 2002).

## **2.1 Assessment vs. evaluation**

To have a successful assessment, we need to determine what we want to assess, why, and how to assess. And, before that, we need to understand what assessment means, and not confuse it with other terms such as evaluation or grading. Evaluation in education is more judgmental, grade-based, and product-oriented. It is used to assess what has been learned in terms of the quality of a performance, work product, or use of skills against a set of criteria (Starr, 2014; Bryan & Clegg, 2019). It is used to reflect a student's understanding of course material and measure an individual student's achievements based on normative criteria or sometimes peer-wise comparison (Lancaster). Evaluation is more like a program monitor that reviews the progress over time and provides feedback on the program design and implementation (Disha, M). Therefore, it is more important on the 'program level', which helps to assess a program's achievements and improvement plans.

On the other hand, assessment in education is defined as a systematic process of documentation that involves empirical data collected using various tools that measure knowledge, learning progress, and skills to improve students' learning experience, and it reflects students' understanding of course material. Also, it involves continuous feedback identifying students' weaknesses and strengths to help students to improve their performance (Bryan & Clegg, 2019). Assessment is process-oriented, in which the feedback is directly

linked to the learning outcomes. It helps to identify gaps in students' knowledge and different skills. Therefore, it is more important on the 'course level'. It involves giving grades to a student's work based on specific criteria and/or comparing the student's work to other students' work (Teachthought, 2022).

In other words, the evaluation focuses on the quality of the performance, while the assessment focuses on the performance to provide feedback on students' strengths and weaknesses to improve future performance. Evaluation indicates progress or success of the performance with no information on what had led to this success, however; on the other hand, the assessment indicates the reasons for the successful performance (Starr, 2014). To conclude, assessment (formative assessment) is the assessment for learning, while evaluation (summative assessment) is the assessment of learning.

The American Association of Higher Education (AAHE) Assessment Forum, 1992 has developed 9 Principles of good practice for assessing student learning, and they are (AAHE, 1992): 1)The assessment of student learning begins with educational values, 2)Assessment is most effective when it reflects an understanding of learning multidimensional, integrated, and revealed in performance over time, 3)Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes, 4)Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes, 5)Assessment works best when it is ongoing, not episodic, 6)Assessment fosters wider improvement when representatives from across the educational community are involved, 7)Assessment makes a difference when it begins with issues of use and illuminates questions people really care about, 8) Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change. 9) Through assessment, educators meet responsibilities to students and the public. The nine principles highlight the importance of assessing for improvement and that to be most effective it has to be an ongoing process whose power is cumulative. This can be achieved when assessment involves a linked series of activities undertaken over time. Also, the principles highlight the fact that for assessment to lead to improvement, it must be central to the institution's planning, budgeting, and personnel decisions.

The Maastricht University classifies the assessment into 3 types, assessment for learning, assessment of learning, and assessment as learning. Assessment for learning is basically the formative assessment, in which instructors get insight into a student's learning. On the other hand, the assessment of learning is the summative assessment, in which instructors get information about a student's achievement level. Whereas assessment as learning students engage in peer and self-assessment, in which students get to develop their metacognitive skills and link the new information to prior knowledge to use it for the new learning experience (Maastricht University).

Many universities are moving towards different assessment frameworks including the criteria-based assessment, the norm-referencing assessment (grading on the curve), and self-referencing assessment, in which grading is based on using students' previous work as a reference to measure the level of student's improvement (Sadler, 2005).

### **3. Key problems associated with assessment in design education**

Based on a thorough review of the assessment in design studio literature, the author identified the problems encountered in the assessment process of design studios in Architecture education. And based on analyzing these identified problems, it was possible to link the problems to three factors impacting them. The author classified these factors into three categories: 1) assessor/evaluator-related problems, 2) assessment process/approach-related problems, and 3) assessment tool-related problems. Having unsuccessful assessment processes within the design studio will adversely affect the quality of the anticipated outcome of the studio as well as the teaching and learning experience. In the following, the problems encountered in the assessment process of Architecture design studios are discussed.

#### **3.1 Problems associated with the assessor/evaluator**

##### **3.1.1 Lack of Communication**

Communication problems exist in the design studio. For example, creativity within the architectural context of the design studio is being assessed while it is conceptualized differently among students and instructors. This would result in having a defective and non-homogenized assessment process that would implicate not only the instructors' assessment of students but also the assessment by jurors/ judges (Doheim & Yusof, 2020). Another communication problem is that the aim of the critiques and juries is perceived differently as well by students and instructors, which minimizes the important role of criticism as a for-learning assessment approach. In critiques and juries, instructors tend to highlight the inadequacies of student work, rather than giving constructive feedback to build upon it, while students expect recognition of their progress and accomplishment, and this is because many jurors base their evaluation on an inadequate understanding of project objectives and challenges. In other words, the formal activities in critiques and juries are usually based on presenting and defending rather than being reflective, active, or dialogical (Koch et al., 2002). Additionally, communication problems can impede the assessment process if the feedback is not timely given or communicated well with the students to the extent that students couldn't use it to move forward in their learning (Carless, 2007). This lack of communication among students, instructors, and jurors could change this process to be one-sided (Frederickson, 1990). Another form of communication problem is that students are not educated on the art of presentation and verbal communication which influences how the juror would perceive their work (Ilozor, 2006; Koch et al. 2002).

Some communication problems were highlighted a long time ago and are still ongoing, which indicates the importance of urgent action. Thirty years ago, Frederickson (1990) classified communication problems within the juries in design studios into three types: 1) student to juror: in which discourse is distorted or communication is blocked, 2) juror to student; in which jurors need to demonstrate listening skills, and 3) juror to juror: in which jurors attempt to discourage different opinions from other juror/s.

### **3.1.2 Subjectivity**

The subjective nature of the design work is another problem in assessment, where the assessment of a design work lacks objectiveness because it relies on human judgments, where there is no specific answer for the design problem. The assessors/ jurors come with different perceptions, ideologies, experiences, and backgrounds that affect their perceptions and interpretation when assessing students' work to the extent that they can agree to disagree (Lueth,2008). Jurors' experience would dominate the assessment process regardless of the requirements and criteria of assessment. For example, jurors with planning experience focus more on the planning deficiencies in the design (Ilozor, 2006). This would result in losing the credibility of the assessment, in which jurors assess based on their experience and not based on the student's performance.

Also, creativity is an inseparable part of the assessment of any design work, where creative approaches are required. This increases the challenges of the assessment process as creativity relies on intangible aspects such as originality and inventiveness, and assessors come with various past personal, emotional, and contextual experiences (Williams et al., 2012).

### **3.1.3 Lack of assessing experience**

Lack of assessing experience is another problem, in which assessors/evaluators received little or no training on how to use rubrics, especially in juries, where they tend to use the techniques that they have been assessed by when they were students (Anthony, 1991), or they attend the jury without guidance before the critiques start, along with having insufficient information of the course objective, which would result in invalid assessment and unhealthy and deconstructive experience for students (Koch et al., 2002).

Another problem is that some jurors tend to ignore the rubric criteria and assess and evaluate based on what they like or do and not what they are asked to assess (Ilozor, 2006). This could be because the jurors don't know how to use the rubric, the rubric's criteria are not clear, or their ideologies and background dominate their judgment.

### **3.1.4 Knowledge gap between assessors in practice and academia**

Architects in practice gain some knowledge from the work experience that would influence their perspective and priorities in their design decisions (Doheim, 2020). Therefore, when the jury committee includes both academics and practitioners, it is expected to have divergent perceptions, views, and opinions due to different experiences and the knowledge gap between academics and practitioners. This may result in a gap in the assessment and inconsistent evaluation since academics focus more on the theoretical, while practitioners are more practical and give more priority to real real-world design applications (Doheim, 2020, Koch et al., 2002).

### **3.1.5 Teacher-centered assessment experience**

Problems associated with assessor/juror also include that the studio setting became a teacher-centered experience, where the assessor (instructor/juror) measures the success of the students only to the extent that students' understanding agrees with the assessor language or

ideology (Koch et al., 2002). This inhibits students' creativity and prevents them from expressing their own identity in their designs. As a result, students tend to adhere to their instructors' work style for the sake of grades (Pressman, 1997), which would result in a misleading assessment that limits students' creativity and captures their ability of problem-solving.

### **3.2 Problems associated with the assessment approach**

#### **3.2.1 Critic-centered assessment**

When it comes to the approach there are three main problems. The first problem associated with the assessment approach is that the design jury approach is more a critic-centered event rather than student-centered. Jurors tend to ignore that design juries/critiques are an essential form of assessment for learning, and they use it to highlight from their perspective the weakness and reinforce the inadequacies and deficiencies in students' work rather than their strengths and achievement (Koch et al. 2002, Ilozor, 2006).

On the other hand, students tend to perceive the jury event to be humiliating and frustrating for them, and they complain that jury members tend to disparage them (Aderonmu et al., 2017). Students perceive the jury environment to be hostile and they feel they are under attack from the juror/s. The jury settings put the jurors in a power position, in which students are keen to adopt survival tactics but not necessarily to learn (Webster, 2006). The jury setting model puts pressure on many students, where the students have to stand in front of their project and the audience and present their work to the jurors in the front row, and other students in the back. And students have to present in a short and intense time which increases students' anxiety levels and affects their project presentation to the extent that they struggle to verbally explain their work (Frederickson, 1990; Koch et al., 2002).

#### **3.2.2 Comparative method approach**

The second problem associated with the assessment approach is using the comparative method approach. It is based on comparing a student's work with another student's work, in which jurors rank all projects in descending order. This approach is criticized and considered unfair because students are not graded on the quality of their work but rather with reference to other students' performance. Additionally, using this approach in which jurors holistically evaluate projects allows a lot of subjectivity, would result in neglecting students' creativity, and wouldn't provide students with effective feedback to know their strengths and weaknesses. However, using this approach with a large number of students is very challenging and unmanageable (Utaberta & Hassanpour, 2012).

#### **3.2.3 Process vs. Product assessment**

The third problem is that despite the importance of the design as a process in students' learning experience, some jurors emphasize the product over the process in the assessment, where they put a lot of weight on the end-products rather than the process that led up to the product (Ilozor, 2006; Koch et al. 2002).

Also, some jurors attend juries with hidden agendas that may result in setting educational goals aside. Some jurors think of the jury as the time to propose certain philosophical design approaches, attempt to discourage different opinions from other juror/s or find it an opportunity of showing-off to other prominent jurors (Frederickson, 1990)

### **3.3 Problems associated with the assessment tool**

#### **3.3.1 Vagueness and lack of clarity**

A rubric is an essential tool for improving the quality of learning. Designing rubrics significantly influences the assessment and evaluation process to the extent that poorly designed ones may hinder learning and impede progress (James et al.2002). One of the problems associated with the design of the assessment tool is the vagueness of the assessment criteria. The clarity of the assessment/evaluation criteria in the rubric is very critical to both students and assessors. If the criteria are not clear enough for anyone using the rubric, this would significantly affect how each one perceives it. Students may not be able to respond correctly to the rubric if the criteria and the expectations of their product are not clear, and assessors may assess based on their understanding of the criteria. Hence, having a clear design of the rubric is crucial.

#### **3.3.2 No or weak connection with course objectives**

Also, not linking the course objectives directly to the assessment criteria of the project is a serious problem. When instructors don't clearly interpret the course objectives and the course learning outcomes into well-defined assessment criteria, confusion is highly expected from both students and jurors. Consequently, expectations of students' products are not clear to them, and jurors, more specifically external jurors, will assume the objectives based on their understanding of the criteria and leading to incoherent assessment.

#### **3.3.3 No clear vision of assessment criteria**

Problems associated with the assessment tool include also that instructors have no clear vision of the assessment criteria, hence, they don't instruct students toward fulfilling the course objectives or the assessment criteria (OECD, 2013, Sadler, 2005). Having no clear vision of assessment criteria means that the course CLOs are not effectively aligned with the assessment tools (Hassanpour et. al, 2011). This would be totally reflected in the designed rubric where the assessment criteria are not clear.

#### **3.3.4 Late introduction of assessment criteria to students**

Another problem associated with the assessment tool is not providing students with the assessment criteria as early as the design process starts. A well-developed and carefully designed rubric can help both assessor and student to determine the success criteria for process and product that can be used prior to and during the completion of a task. In authentic assessment, students are asked to demonstrate meaningfully what they know and can do. Authentic assessment can examine the process as well as the product. To have an accurate

and fair assessment of the product and process, a specific assessment criterion should be clearly introduced to students in advance so that they can apply the process to achieve their products. Having clear criteria that students can understand would help students to perform self-assessments and would make the rubric useful. Clearly specified criteria should provide a description of all levels of performance that students are capable of doing (Montgomery, 2002)

#### **4. Discussion**

The learning and teaching process in architecture and studio-based courses is mainly based on evaluation and assessment. Hence, the importance of investigating assessment problems encountered in the design studio. In this part, the discussion will focus on one main approach as one step toward successful assessment implementations, and it can be a solution for more than one of the problems discussed above.

To provide a successful teaching experience and promote reflective learning, the design studio assessment must shift to be student-centered (Webster, 2006). Student-centered education means having students' learning at the forefront of an educational experience. Student-centered learning environment starts with the instructor. The characteristics of student-centered education are that it allows students to use their critical thinking and communication skills, and students get involved in data collection to solve problems they are facing, in which teacher and students learn together and learning is assessed through the work students produce (Huba & Freed, 2000). The design critic/jury setting should be student-centered to provide an efficient learning experience and it is important to clearly understand how the formal and performative aspects of the design critic work. For a jury system to have a more radical and constructive role in architectural education, and to allow students to construct their own architectural identities, jurors should work as co-learners engaged in a collective project to continually reconstruct the architectural habitus (Webster, 2006).

One way to have a student-centered studio setting is when students learn modes of self-assessment and self-criticism (Koch et al., 2002). Self-assessments can improve students' self-appraisal skills and enhance motivation and self-directed learning (Lueth, 2008). Students' perceptions of the process of assessment and evaluation can be a key to improving the current implemented assessment models (Hassanpour et. al, 2011). If students are given many opportunities to assess their performance and to receive feedback from peers and teachers, their capacity for self-assessment can be fostered (Lindstorm, 2006).

James Polshek, a Fellow of the American Institute of Architects and AIA Gold Medalist when describing the design studio, he emphasized that peer criticism is an important ingredient to reinforce the studio's environment. Also, it is recommended to involve students in reviewing each other's work and practice peer review to reduce the homogeneous power of the jurors (Cuff, 1992).

Self and peer assessment is a great approach to involve and engage students in the assessment process. Self and peer assessment has been proven to have a great positive impact on the

students' experience in educational practice. It improves learning responsibility, promotes self-reflection, and problem-solving skills. The use of this practice improves and develops over time (Dochy et.al, 1999). The use of self and peer assessment allows students to have a better understanding of the assessment criteria and recognize the weakness and strengths in their own work. This practice allows students to be more mature learners by developing the skill of providing constructive feedback to peers.

## **5. Conclusions**

Assessment in studio-based education systems requires great attention because of its crucial role in the teaching-learning process. Although the research and literature in this area have been discussing problems associated with the assessment and evaluation processes in design studios for over thirty years, yet, problems are still ongoing, which indicates the importance of urgent action. Identifying the problems encountered in the design studio assessment and determining the shortcomings of this assessment process is a step toward finding practical and applicable approaches for a more efficient and successful assessment process.

After a thorough review of the assessment in design studio literature, the author identifies 12 problems encountered with the assessment process of Architecture design studios and linked them to three factors impacting these problems. These factors are classified into three categories as below:

- 1) assessor/evaluator-related problems
- 2) assessment process/approach-related problems
- 3) assessment tool-related problems

Categorizing the problems calls for direct action, of which the key factors among all problems associated with the assessment process are: *person, approach, and tool*. The paper discussed student-centered teaching including teaching students self/peer assessment as one big step toward successful assessment implementation. It is recommended that assessment in design studios shift to be student-centered and engage students in the assessment process, which would potentially promote assessment and evaluation and lead to successful practices. The implications of using student-centered settings in architecture design studios are expected to greatly promote the assessment process and enhance the teaching experience and reflective learning.

The implications of the conclusions are for design studio educators to adopt this approach in their design studio setting. Furthermore, the implications for researchers and academics who teach design studios to explore and investigate other successful assessment implementations. This will improve the efficiency of the assessment process, and thereby, enhance the quality of the teaching and learning processes of the design studio..

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