

MEASUREMENT AND ASSESSMENT PRACTICES IN DESIGN STUDIO:
A CASE FROM METU DEPARTMENT OF ARCHITECTURE
BASIC DESIGN STUDIO

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submitted by **ÇİĞDEM ÇALIK** in partial fulfillment of the requirements for the degree of **Master of Architecture in Architecture, Middle East Technical University** by,

Prof. Dr. Halil Kalıpçılar
Dean, Graduate School of **Natural and Applied Sciences**

Prof. Dr. Fatma Cânâ Bilsel
Head of the Department, **Architecture**

Assoc. Prof. Dr. Esin Kömez Dağlıoğlu
Supervisor, **Architecture, METU**

Assoc. Prof. Dr. Yeşim Çapa Aydın
Co-Supervisor, **Educational Sciences, METU**

Examining Committee Members:

Assoc. Prof. Dr. Funda Baş Bütünler
Architecture, METU

Assoc. Prof. Dr. Esin Kömez Dağlıoğlu
Architecture, METU

Assoc. Prof. Dr. Yeşim Çapa Aydın
Educational Sciences, METU

Assoc. Prof. Dr. Derya Yorgancıoğlu
Architecture, Özyeğin University

Assoc. Prof. Dr. Zeynep Çiğdem Uysal Ürey
Architecture, Çankaya University

Date: 11.09.2023



I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name Last name : Çiğdem Çalık

Signature :

ABSTRACT

MEASUREMENT AND ASSESSMENT PRACTICES IN DESIGN STUDIO: A CASE FROM METU DEPARTMENT OF ARCHITECTURE BASIC DESIGN STUDIO

Çalık, Çiğdem

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Supervisor: Assoc. Prof. Dr. Esin Kömez Dağlıoğlu

Co-Supervisor: Assoc. Prof. Dr. Yeşim Çapa Aydın

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The emerging discussions on the learning-centered higher education paradigm require the restructuring of present-day (architectural) design education. One of the foremost issues is measurement and assessment since the design studio is based on learning in the production and assessment cycle. As the primary design studio of many design and architecture schools around the world, Basic Design aims to get learners to develop conceptual ideas and engage in the design process through learning by doing. The course stimulates the interpretation of acquired knowledge and skills to manage unique design experiences. Measurement and assessment in the Basic Design studio is based on this cumulative learning process, yet is regarded as problematic for several reasons. Although assessment criteria for design exercises represent a set of agreed design principles, in (architectural) design studios they are often not in a written and measurable form. This research argues that little attention is paid to the clarity, transparency, and accountability of assessment in these contexts. It supports that knowledge and skills determined as

criteria for design work in design education can be assessed in a measurable, systematic, and explicit manner. To achieve this, considerable research introduces criteria-based assessment models and tools. Within this framework, this study aims to examine and discuss relevant practices, methods, tools, challenges, and potentials for (more) effective assessment. As a limited number of studies embody the perspectives of educational sciences on architectural design education, the thesis aims to contribute to this field. It presents qualitative research on the reflection of Basic Design instructors in Türkiye on these issues. The thesis then outlines a rubric development process for the Basic Design Studio at the Middle East Technical University Department of Architecture. The results of the study show that this iterative process faces some challenges that require different perspectives and further research.

Keywords: Design Education, Basic Design, Measurement and Assessment, Assessment in Design Studio, Rubric Development

ÖZ

TASARIM STÜDYOSUNDA ÖLÇME VE DEĞERLENDİRME UYGULAMALARI: ODTÜ MİMARLIK BÖLÜMÜ TEMEL TASARIM STÜDYOSUNDAN BİR ÖRNEK

Çalık, Çiğdem
Yüksek Lisans, Mimarlık
Tez Yöneticisi: Doç. Dr. Esin Kömez Dağlıoğlu
Ortak Tez Yöneticisi: Doç. Dr. Yeşim Çapa Aydın

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Öğrenme merkezli yükseköğretim paradigması üzerine ortaya çıkan tartışmalar, günümüz (mimari) tasarım eğitiminin yeniden yapılandırılmasını gerektirmektedir. Tasarım stüdyosu, üretim ve değerlendirme döngüsü içerisinde öğrenmeyi temel aldığından en önemli konularından biri ölçme ve değerlendirmedir. Dünya çapında birçok tasarım ve mimarlık okulunun başlangıç tasarım stüdyosu olan Temel Tasarım, öğrencilerin kavramsal fikirler geliştirmelerini ve yaparak öğrenme yoluyla tasarım sürecine dahil olmalarını amaçlamaktadır. Ders, edinilen bilgilerin yorumlanmasını ve benzersiz tasarım deneyimini yönetme becerilerinin kazanılmasını teşvik eder. Ancak Temel Tasarım stüdyosunda bu kümülatif öğrenme sürecine dayanmakta olan ölçme ve değerlendirme, çeşitli nedenlerle sorunlu görülmektedir. Tasarım uygulamalarına yönelik değerlendirme kriterleri, üzerinde anlaşmaya varılan bir dizi tasarım ilkesini temsil etse de, (mimari) tasarım stüdyolarında genellikle yazılı ve ölçülebilir bir biçimde değildir. Bu araştırma, tasarım eğitiminde değerlendirmenin açıklık, şeffaflık ve hesap verebilirliğine az önem verildiğini ileri sürmekte, tasarım çalışmaları için kriter olarak belirlenen bilgi ve becerilerin ölçülebilir, sistematik ve açık bir şekilde

değerlendirilebileceğini desteklemektedir. Bunu başarmak için önemli araştırmalar kritere dayalı değerlendirme modelleri ve araçları sunmaktadır. Bu çerçevede bu çalışma, (daha) etkili değerlendirme için ilgili uygulamaları, yöntemleri, araçları, zorlukları ve potansiyelleri incelemeyi ve tartışmayı amaçlamaktadır. Eğitim bilimlerinin mimari tasarım eğitime bakış açılarını içeren sınırlı sayıda çalışma olması nedeniyle bu tez, bu alana katkı sağlamayı amaçlamaktadır. Mevcut çalışma, Türkiye'deki Temel Tasarım eğitmenlerinin bu konulara yaklaşımı üzerine nitel bir araştırma ve daha sonra, Orta Doğu Teknik Üniversitesi Mimarlık Bölümü Temel Tasarım Stüdyosu için bir rubrik geliştirme süreci sunmaktadır. Çalışmanın sonuçları, bu yinelemeli sürecin, farklı bakış açıları ve daha fazla araştırma gerektiren birtakım zorluklarla karşı karşıya olduğunu göstermektedir.

.

Anahtar Kelimeler: Tasarım Eğitimi, Temel Tasarım, Ölçme ve Değerlendirme, Tasarım Stüdyosunda Değerlendirme, Rubrik Geliştirme



to struggling first-year design students

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CHAPTER 1

INTRODUCTION

This chapter first presents the nature and significance of Basic Design education as a background of the research. It then provides problem definition and motivation for the research by elaborating measurement and assessment in contemporary Basic Design education concerning current educational paradigms. Based on these, the current chapter defines the aim, scope, and significance of the study referring to the research questions. It concludes with an explanation of the methodology and structure of the thesis.

1.1 Background: Nature and Significance of Basic Design Education

Architectural education is structured around design studios. Being the primary studio of many design and architecture schools around the world, Basic Design sets a foundational basis for the following design experiences. It introduces a sum of organizational methods aiming for reasonable thought processes and design decisions via visual media (Denel, 1979). Findeli (2001) deems Basic Design an effective pedagogical tool to enhance “visual intelligence, ethical sensibility, and aesthetic intuition” (p. 16). The schools of design-based disciplines such as interior architecture and environmental design, visual communication design, and industrial design share a common attempt to cultivate visual literacy at Basic Design studio (Bayırlı, 2021). Beginning design course has been given in design and architecture schools with different names such as *Visual Design*, *Foundation Design*, *Applied Design*, *Introduction to Design*, *Gestaltung Lehre*, *Form and Gestalt*, and *Design a Communicatione* (Boucharenc, 2006; Gürer, 1998). While their curricula differ in

terms of content, scale, output, and course hours, the significance of the course for a thorough education in design basics is valid for all.

The fundamentals of Basic Design are the main design concepts and principles. Basic Design education aims to get learners to develop conceptual ideas and engage in unique experiences of two and three-dimensional design processes. Merging the inherent and gained capabilities, the course acquaints knowledge, methods, and tools progressively while stimulating the interpretation of them to deal with wicked design problems, either abstract or concrete. Further, the first-year design studio encourages the students to form their creative ideas about what they are up to and improve their mental and manual skills for synthesis and reasoning in experimenting with the potential of various materials, tools, techniques, and technologies. This supports “the ability to think architecturally”, or *designerly* (Ledewitz, 1985, p.2), and the early awareness of the dynamic character of design knowledge, a necessity for sustainable contemporary design education (Özkar, 2017).

The foundations of Basic Design date back to the 19th-century Ecole des Beaux-Arts applying a master-apprenticeship system to teach art and design but it was developed as a *course* in Bauhaus (Cossentino, 2002). This school of design, architecture, and applied arts conceives unifying the disciplines of architecture, painting, and sculpture referring to the idea of *gesamtkunstwerk* (‘total work of art’) (Gropius, 1919). The curriculum of Bauhaus is based on “experimentation with material, abstract forms, and constrained abstract problems” and Gestalt psychology embracing the principles of visual perception (Özkar, 2017, p. 88). It addresses the engagement in design elements such as point, line, value, and color as well as space, form, and geometry for the articulation of design principles such as repetition, harmony, contrast, and hierarchy (Gürer, 1998). This structure shapes many of the beginning design education syllabi around the world (Farivarsadri, 2001), including Türkiye (Makaklı & Özker, 2016; Salem & Dündar, 2019). Definitely, the body of knowledge the course deals with has been accompanied by changing methods, techniques, and technologies affecting not only the ways of

designing through resources, materials, and tools but also pedagogical approaches since the dawn of Bauhaus. In parallel, the instructional approach of Bauhaus has been subject to fluctuation through various debates and hypotheses among academics and educational programs over the years (Boucharenc, 2006).

What makes Basic Design as challenging and complicated as it is unique and controversial in design education is that the learners devoid of the prior knowledge or experience at issue are to explore creative ways of thinking and doing. The freshman design students encounter a step change from the learning culture and habits of secondary education. This stems from the tradition of *learning by doing*, adopted through guidance and criticism in project-based design education (Schön, 1985). The limits of guidance and criticism shape the peculiar pedagogy of design studios and their practices for active and student-centered learning. The essential part of studio practices is conceptual and physical production for ill-defined problems promoting social learning that embraces the collective contribution of students and instructors. Communication between studio members through questions, discussions, or reviews, including assessment practices, maintains the learning environment. Özkar (2017) states that perceptive eye and motivation are sufficient to start this training, nothing more.

On this basis, Basic Design education aims to equip the learners with design knowledge and cognitive abilities reinforced by a designer attitude. In fact, the majority of the architectural education objectives identified by the UNESCO-UIA Charter (2017) indicate the goals of beginning design education. Examples include the acquirement of skills for imagination, creative and three-dimensional thinking, critical judgment, collaboration in teamwork, integration of knowledge and diverse determinants to develop strategies for design solutions, and conceiving design procedures. Besides, another facet of beginning design education that Denel (1998) regards the hardest intends the learners to build their set of values. Such value creation requires building self-confidence, awareness, and courage on what has been acquired and experienced as a novice designer. Hereby, it fosters accountability for design actions, and hence, the cycle of reflection on production

in any sense. Orr and Shreeve (2018, p. 138) remark “Students learn to value what lecturers value, so assessment practices need to align with what we hold dear”. This emphasizes that the course of assessment practices throughout the design process is of great importance in Basic Design studio just as so for all years of design education in any field.

1.2 Problem Definition and Motivation

Architecture has undergone numerous changes brought by the socio-economic, political, and technological dynamics in the contemporary era, as have many other design disciplines. Doubtless, these dynamics have a considerable impact on the position, perspective, and action of both design practice and education. Indeed, the changing conditions and requirements of the profession demand design education institutions to equip students with manifold skills and competencies, concurrently to keep up with the renewed design methods and tools. Further, current and future student profiles of the new generation in tremendously close contact with immense sources of knowledge call for reconsideration of the learning experience. In parallel, the growing body of literature on student/learner-centered higher education displays a paradigm shift from a teaching-centered to a learning-centered approach which is thoroughly valid for architecture and design education (Acar, 2008; Özkar, 2017). The above-mentioned factors address the need to take a critical and holistic view of restructuring present-day design education. Teymur (1992, p. 29) puts plainly, “In addition to a richer variety of research... creatively integrated into design teaching, we need to research of another kind: as distinct from research *in* educational contexts, we must encourage research *on* design and *on* education themselves”. Hereof, various views have been put forward and many design education programs tend to review their traditional practices and curriculum content (Çetinkaya, 2014). Yet, still limited research embodies the perspectives of educational sciences to delve into architectural design education (Çıkış & Çil, 2009; Ellmers, 2006).

In this framework, emerging discussions require a reexamination of the ongoing challenges of design education. One of the foremost is the issue of measurement and assessment since design education is premised on learning in the cycle of production and assessment. Assessment means the appraisal of the attributes of student work and/or performance, yet, in architecture and design education its practices imply more than one-way feedback and grading. The concept of exhibition integral to the design studio pedagogy determines the system of performance and feedback through pin-up, desk crit, jury, and (portfolio) review (Cossentino, 2002; Potts, 2005). Crit (also known as critique) underlies the sequential scheme of a design studio assessment that prioritizes immediate actions and revisions in the cumulative process. Further, students conduct self- and peer assessments, which are found beneficial exercises for them to grasp the implementation of assessment measures and improve their critical judgment as well as insight into the topic of concern (Megahed, 2018). Thus, assessment and learning are strongly intertwined at the core of design education (Orr & Shreeve, 2018).

The complex system of assessment and grading models in design studios has been considered unique and multifaceted, yet problematic and hard to document (Hassanpour & Ani, 2015; Marriott, 2012; Yorgancıoğlu et al., 2021). In fact, assessment is such a crucial determinant that Çıkış and Çil (2009) regard it as the ground for the common problems of the design studios all over the world. However, a limited number of studies focus on this issue within the growing literature dealing with design education (Marriott, 2012), particularly architectural Basic Design education. Among these, the assessment practices and parameters for creative productions in design studios have been a point of discussion. The prevailing view herein maintains that contemporary design education needs to modify the conventions that hail from the 1960s, where “Assessment was a mystery” (Orr & Shreeve, 2018, p. 138). Since assessment has a deep connection to learning, production, and communication in the design studio context, any point in question should be regarded comprehensively. This major challenge is coupled

with the ongoing educational shift from assessment *of* learning towards assessment *for* and *as* learning (Stančić, 2021). In this regard, Smith (2011) addresses the priority of assessment as augmenting its contribution to the disparate nature of student learning. Nevertheless, strong resistance to initiating new assessment practices still exists in many design and architecture schools due to the consensus that conventional ones are far beyond the other fields of study (Marriot, 2012). Still, institutional assessment anchored in educational philosophy is open to change in any context, especially in the contemporary era where diverse external stimuli accentuate improvement.

Aforementioned discussion is quite remarkable for introductory design education by virtue of its distinct pedagogy and significance in architecture and design-based disciplines. Basic Design studio is founded on “the individual designer and a constructive dialogue between his/her cognitive state and the educational settings” (Gürsel Dino, 2017, p. 2). Therefore, it requires novice designers to get involved in design problems and studio practices with a certain extent of awareness. It is not a coincidence that students with no conception of what they are attempting for are the ones who make less progress and achievement –if not by chance (Cowan, 2005). Considering the intense and unfamiliar process that Basic Design students conduct, they need to be clearly informed about both their progress and the course policies determining the objectives, outcomes, content, assessment, and anything related to the curriculum. This is a vital issue in Basic Design pedagogy and is strongly connected to the instructional message, materials, and strategies including the assessment basics and practices. Yet, disclosing learning and assessment criteria explicitly is not a common tendency in design studios (de la Harpe et al., 2009). This makes assessment called subjective and time-consuming in these contexts (Mervat & Hanan, 2015; Potts, 2005; Utaberta & Hassanpour, 2012). Thus, the motivation of the current research is the problem of ambiguity regarding the measurement and assessment in architectural Basic Design education.

Considerable research on assessment in design education advocates criteria-based models on this issue for several reasons. The main incentive is to achieve lucid and

fair assessment clear of the wide divergence of opinion by the multiple assessors through a less complex and more explicit process (Eilouti, 2020; Elbellahy, 2020; Hassanpour & Ani, 2015). Further, well-reasoned and specified criteria of evaluation are considered to enhance learning-oriented design education through a transparent and comprehensive analysis of student works improving their approach to design and associative productions (Harputlugil, 2018; Marriott, 2012; Yorgancıoğlu et al., 2021). This accounts for the need to create student-centered and research-based pedagogical tools and methods in architectural design education (Acar, 2008). Hence, the framework of criteria-based assessment presents a mind-opening perspective to design education on the development of measurement and assessment tools. Though, Rayment (2007) draws attention to the continuing debate that seeks a reasonable rationale for its utilization in design studios. There is evidence of further room for improvement.

1.3 Aim, Scope and Significance

Design courses mostly share similar approaches to assessment, yet the implemented models may vary according to contextual differences. Although assessment criteria represent a set of agreed design principles, the findings in the literature reveal that they are usually not in a written and measurable form in (architectural) design studios. This research supports that there is scant regard for the significance of clarity, transparency, and accountability in measurement and assessment in these contexts. It argues that knowledge and skills outlined as criteria for performance or an artifact can be assessed in a measurable, systematic, and explicit manner in design education. The purpose of this study is two-fold. One is to examine and discuss the measurement and assessment practices involving actors, methods, and tools to outline the advantages, problems, and potentials for a more effective one in Basic Design education.

In that respect, the thesis study addresses the main research question, *How can measurement and assessment be (more) effective in architectural Basic Design education?* and the following sub-questions:

- What are the current measurement and assessment philosophy and practices?
- What are students' and instructors' perspectives on the challenges of the measurement and assessment regarding philosophy, processes, and practices?
- What features define *(more) effective measurement and assessment* based on students' and instructors' perspectives?

This part presents a literature review and qualitative research structured upon the interviews with instructors who have experienced the beginning design education in different architecture schools of Türkiye. Based on current research, the study further aims to develop an educational tool for measurement and assessment i.e., a rubric, through a case study Basic Design Studio at the Middle East Technical University (METU) Department of Architecture. Therefore, at first, it critically reviews the alternative approaches and models, including examples of criteria-based assessment models for creative productions in architecture and design education. The thesis then aims to advocate the following architectural design education research through documentation and interpretation of the process in a case study.

Hence, the research question that arises in the next part of the study is: *How can the criteria for a design artifact be described in an assessment rubric for an architectural Basic Design exercise?* The corresponding rubric development process presents points to consider and steps to follow. The case study contextualizes the preceding discussion through qualitative research incorporating observation and interviews for the interpretation of the researcher to propose a prototypical tool.

Presenting a framework for architectural design education research, this thesis emphasizes the need for collaboration with educational sciences in the field. Acar (2008) points out the confusion between “designing an interesting exercise or

design problem” and “developing a pedagogical tool for design learning” in architectural education (p. 22). He relates this to a lack of knowledge of *education as a discipline-science*. This implies the need for a change of perspective as well as instructor training for architect-educators in certain fields. Therefore, the research tries to expand the discussion through that lacking knowledge and learning focus. Hereby, it attempts to be a part of the design education perspective that seeks more than design learning traditions known to date in order to improve the learning experience.

In this regard, the study introduces an assessment tool with a certain potential to bolster understanding of not only the subject matter but also the aim, significance, and process of the measurement and assessment. It can support learning since improving students’ understanding of measurement and assessment in design education also helps to remove some of the prejudice against it to begin with. Further, an assessment exercise can contribute to student learning when it allows for self-assessment through clear criteria to be applied (Davies, 2000). The tool presented in the study aims to achieve this by providing the students with the opportunity to make judgments for themselves and their peers. Obviously, various factors influence this experience that requires certain training, incubation, and instructional adjustments in basic design education from a refreshed point of view. The thesis sets out a portrayal of the Basic Design Studio at METU Department of Architecture, yet it emphasizes the adaptability of the proposed instrument to other basic design education contexts.

As for the method, qualitative research provides multilayered data for this study. In-depth interviews in the first stage of the study target the instructors’ perspective on the measurement and assessment in architectural Basic Design education. To elaborate on the issue, interviewees share a considerable amount of information about current curriculum content, instructional strategies, messages, and materials. The interview findings from Basic Design studios of different architectural schools in Türkiye can contribute to further research on design education.

1.4 Methodology and Structure

The methodology of this study consists of three main phases. As research questions evolve in an iterative process through qualitative study (Groat & Wang, 2013), they also shape the relation between these stages. Based on the main research question, *How can measurement and assessment be (more) effective in architectural Basic Design education?* the first phase is a literature review. It covers Basic Design pedagogy and related learning theories, followed by an introduction to the measurement and assessment in design studios, with an emphasis on Basic Design, including relevant terminology, approaches, and practices.

Following the conclusion of the initial phase, the second one is a combination of a literature review and data obtained from qualitative research. Referring to the main research question, it examines the reflections of students and instructors on the measurement and assessment in design education from the literature and gets the perspective of the instructors through interviews. This is a preliminary step for the determination of the needs and variants within the scope of subsequent research question: *How can the criteria for a design artifact be described in an assessment rubric for an architectural Basic Design exercise?* It provides a critical review of the measurement and assessment methods and tools for creative productions from existing educational literature, predominantly in architecture and other design-based disciplines. The qualitative data comes from the semi-structured interviews founded on the subquestions of the main research question that seeks the perspective of Basic Design educators. The inductive analysis of the data was employed through coding that generates certain themes on the issue. In line with the research questions and literature review, it provides a comprehensive insight into current approaches, practices, challenges, and potentials regarding measurement and assessment in Basic Design education.

The final phase, informed by prior knowledge and discussions, employs a combination of observation and interviews. To create an assessment rubric for

Basic Design education, the study works on an assignment from the first-semester studio of the METU Department of Architecture. Thus, it first examines contextual knowledge from literature. After the decision and planning for the assessment rubric development process, the methodology followed in data collection is qualitative. Multiple data sources in qualitative research require active engagement in site-specific settings, including formal and informal meetings as well as in-depth interviews (Groat & Wang, 2013). This study uses a combination of observation and semi-structured interviews for a comprehensive understanding of the setting and the assignment for which the assessment rubric will be designed. The researcher visited the Basic Design Studio during the announcement and explanation of the assignment, a lecture on the topic, and panel discussions of the previous exercise and the one of concern. Interviews with the studio executives also yield information about assessment criteria and assessors' views of the relevant methods and tools. Then, the researcher conducted further observation in their meeting for the assessment and grading of the assignment. The identity of the researcher was explicit for the educators and implicit for the students. Thus, the study employs both participant observation through note-taking and questions at the meeting and non-participant observation by taking an outsider position in the panel discussions. The data from observations and semi-structured interviews were analyzed through data coding to identify assessment criteria for the assignment. Alternating between the outcomes of previous phases and present contextual conditions and knowledge, the researcher took an active role in comprehending and interpreting the data throughout the assessment tool development process. Yet, as she was not familiar with the qualitative research procedures, consultation to expert opinions and feedback from thesis supervisors have helped a lot. Following the qualitative research at the beginning of the last phase, the tool proposal was developed and refined through feedback from the course instructors, research assistants, and thesis supervisors. The feedback incorporates a questionnaire and related comments, as well as an evaluation of the tool testing done by assessing sample student work via the proposed rubric. The study also provides a qualitative

and quantitative overview of the final feedback. The steps, participant profile, research content, and reflections on the process regarding research methodology will be expanded in the associated chapters. Figure 1.1 shows the relationship between methodology and structure of the thesis. The iterative sequence that stems from the methodology determines the structure by shaping the following three chapters with regard to the three presented phases.

The thesis consists of five chapters. The current chapter provides background for the research, the current situation of Basic Design education in architecture as the motivation of the study, as well as the aim, scope, and significance about that.

The second chapter focuses on the foundation and practices of measurement and assessment issues in architectural basic design education through a literature review. To underline the learning focus in the assessment, it first concentrates on the literature on Basic Design pedagogy and learning environment in the studio concerning the aim and scope of the assessment. Then, it scrutinizes the measurement and assessment processes and practices regarding educational terminology, approaches, methods, tools, participants, considerations, and assessment criteria.

The third chapter is on the difficulties, problems, and potentials regarding measurement and assessment in architectural basic design education. It provides a critical review of existing approaches and alternative practices or models for (more) effective assessment from literature and qualitative research analysis. The research addresses both the student and the instructor perspectives in the literature review, focusing on the student-centered education paradigm. It analyzes the difficulties and problems that measurement and assessment in design education face, leading to a review of perspectives and implications on (more) effective processes and practices. It presents a critical review of the examples of rubrics and other similar instruments built up to apply criteria-based assessment in design education. The qualitative research is then based on semi-structured interviews with instructors who have experience in Basic Design studios of twelve different

architectural schools in Türkiye. Its results contextualize the aforementioned points about assessment to guide further study in relation to the literature review.

The fourth chapter introduces a criteria-based assessment model based on a tool, a rubric, for a design exercise in METU Architecture Basic Design Studio. Based on what has been discussed, it presents a brief literature review and current conditions about the context. Outlining the rubric development process from the decision stage to the final proposal, this chapter elaborates on each phase that culminates in the analysis of the final feedback on tool fine-tuning.

The final chapter summarizes the scope and significance of the study and concludes the discussion through implications for further research and practice.

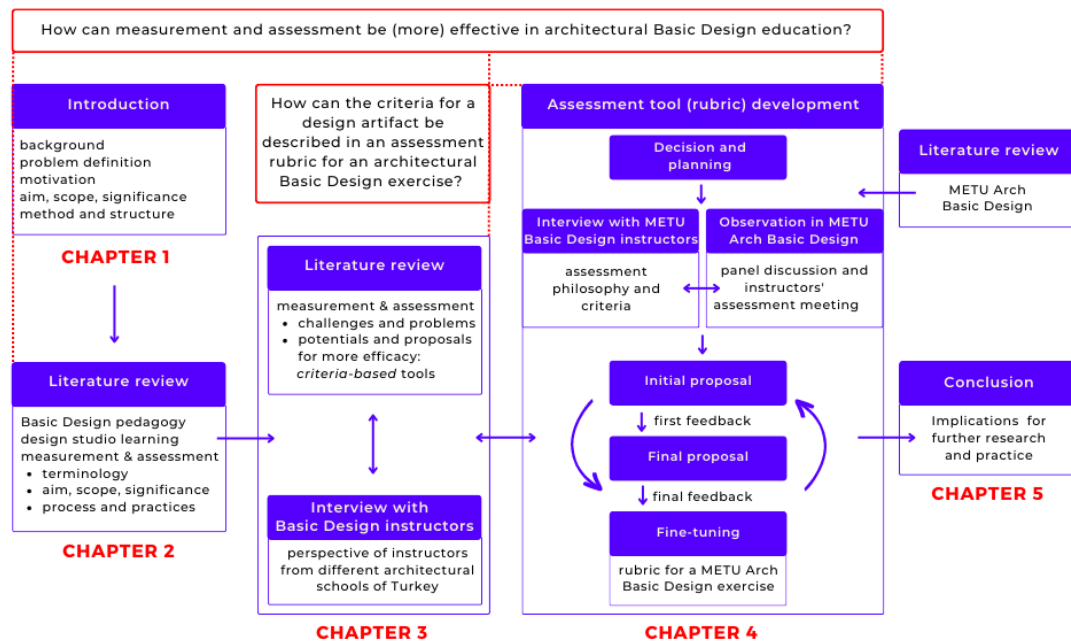


Figure 1.1 Methodology and structure of the thesis

CHAPTER 2

FUNDAMENTALS AND PRACTICES OF MEASUREMENT AND ASSESSMENT IN (ARCHITECTURAL) (BASIC) DESIGN EDUCATION

How can measurement and assessment be (more) effective in architectural Basic Design education? Based on the main research question, the current chapter dwells on the first sub-question: What are the current measurement and assessment philosophy and practices?

This chapter draws a theoretical background of measurement and assessment in (architectural) (basic) design education including origins, pedagogy, terminology, approaches, actors, and practices. It begins with Basic Design pedagogy and experience in the studio, emphasizing the significance of learning theories and genres in the curriculum and assessment. It then introduces assessment terminology for design education contexts and discloses the aim, scope, and significance of measurement and assessment to review the literature on its mechanisms, methods, and tools.

2.1 Basic Design Pedagogy and The Learning Focus in Curriculum

This part of the thesis aims to explain the fundamentals and dynamics of measurement and assessment in Basic Design education. It first dwells on the historical process of design pedagogy and its impact on contemporary design education. Then, it contextualizes the various learning theories within the framework of the multi-model learning experience prioritized by measurement and assessment in student-centered Basic Design education.

2.1.1 Origins of Basic Design Pedagogy

The practices of contemporary Basic Design education can be traced back to the 19th century, when the *École des Beaux-Arts* system was predominant in teaching art, design, and architecture (Cameron, 2003; Farivarsadri, 1998). Divided into two sections of architecture and painting-sculpture, the learning environment was established around *ateliers*, i.e., design studios, conducted by master architects. The master-apprenticeship model employed here created a workshop environment. Ateliers were collaborative and competitive settings fostering *learning by doing* under the guidance of not only practicing architects (*patrons*) but also the senior students (*ancien*) who helped juniors to compete with other ateliers (Cameron, 2003). The curriculum involved sequences of design problems and student works were assessed in a jury system in a close format, by tutors only, at first and became open to students and visitors in the middle of the 19th century (Anthony, 1991). The assessment criteria mainly focused on the presentation and drawings with a lack of concern about the architectural design process (Hassanpour et al., 2011).

The concept of the design studio was further developed by the formalization of the Bauhaus, transforming the assessment processes into an open format, a key method of current design education that has not changed significantly (Megahed, 2018). Basic Design can be viewed as part of a broad theory of design teaching and learning as practiced in many design schools, having its roots in traditional design schools, such as the Bauhaus (Boucharenc, 2006). The Bauhaus School in Dessau was founded in 1919 to incorporate the education and practice of art and design. This philosophy was grounded on the reconciliation of experimentation and craftsmanship for industrializing production of that time, as Gropius called workshops ‘laboratories for industry’ (Meyer & Norman, 2020). Bauhaus reformulated the concept of design studio by providing students with a space to work and live, which can be deemed as a creation of studio culture. The most remarkable contribution of Bauhaus to design education could be the initiation of the preparatory course *Vorkurs*, introduced by Johannes Itten and later given by

László Moholy-Nagy and Josef Albers (Boucharenc, 2006). *Vorkurs* ('Preliminary', 'Foundation' or 'Basic Course') has shaped the pedagogical foundations of Bauhaus and the classical schools of design and architecture starting from the 20th century (Salem & Dündar, 2019). The curricula of many Basic Design courses are based on its philosophy that sought theoretical and practical basis for design-based disciplines in basic design concepts (Makaklı & Özker, 2016).

Itten built the preliminary design course upon the pedagogical approach that accentuates individual differences, self-exploration, and intuition of the students throughout their unique experiences (Özkar, 2017). This implies more freedom, flexibility, and individualism in Basic Design education. When Moholy-Nagy arrived at Bauhaus, he shifted the focus to scientific-based problem-solving, calling back the relation of design and industry as Gropius had emphasized. Dwelling on laws of physics, structure, light, transparency, and kinetic energy, Moholy-Nagy emphasized visual training while Albers concentrated more on experimenting with real materials (Salem & Dündar, 2019). Despite different concerns and perspectives, the tutors of Bauhaus including Kandinsky and Klee essentially dealt with visual form and organization (Makaklı & Özker, 2016). The common focal point has laid the ground for the interdisciplinary character of preliminary design education based on visual perception and literacy. In that sense, Moholy-Nagy was an influential figure in design education with his application of Gestalt principles of perception (Acar, 2003). Although he tried to avoid Itten's pedagogical approach premised on empathy for the emotional responses of the students to strengthen their personal experience (Salem & Dündar, 2019), Moholy-Nagy still indicated a bond with psychology through Gestalt Theory. In parallel, the main learning outcome of Basic Design is the skills to relate forms of varying complexity in two and three dimensions and to experience design thinking (Özkar, 2017).

The pedagogical innovations brought by Bauhaus School initiated a shift in design from craftsman work to educated discipline (Meyer & Norman, 2020). While Bauhaus provided a new understanding of studio and teaching in design and

architecture education, the assessment and jury system were not much different from *École* (Anthony, 1991). The influence of *Ecole* continued after the sudden closure of Bauhaus which led its educators to emigrate to the US, where they carried the *Ecole* system and Bauhaus philosophy to new or existing design schools such as Chicago Bauhaus, Harvard, Yale, and IIT (Farivarsadri, 1998). What American architecture schools mainly adopted from the French system was the separation of ateliers, practicing architects as instructors, the coaching by older pupils, and the jury format that would become the backbone of architectural education institutions (Cameron, 2003; Cossentino, 2002). Among those, Moholy-Nagy established the New Bauhaus in Chicago in 1937 and maintained the original principles with certain changes in curriculum reflecting his science-based approach (Findeli, 2001). Following it, the Hochschule für Gestaltung in Ulm, founded in 1958, put the artistic aspect more behind the scientific basis in beginning design education by underscoring human sciences and social responsibilities (Farivarsadri, 1998). As Findeli (2001) expresses, in the foundation of Dessau Bauhaus, a threefold curriculum structure integrating art, technology, and science was on plan; however, a polar art-technology structure was run. He identifies the structure of the Chicago Bauhaus with art-science polarity, whereas that of The Hochschule für Gestaltung with science-technology.

As the principles of Bauhaus became widespread in many countries after the Second World War, they were subject to criticism and began to lose their influence on design education in the 1960s (Farivarsadri, 1998). This ends up with the discussion on the position of Basic Design in architecture and design education that has brought alternative perspectives and rebirth of Basic Design from the 1980s onwards (Boucharenc, 2006). The historical models of Basic Design education have significantly affected the present one that retains its seminal role in architecture and design curricula around the world.

2.1.2 Basic Design Pedagogy and Multi-model Learning Experience in Design Studio

The first year of architectural design education is a transitory step from rote learning to the realm of architecture bringing a completely new learning style than the students got used to (Denel, 1981, 1998). In contemporary secondary education in Türkiye, students pass through before beginning design education typically focuses on providing information through direct instruction. This does not require a two-way flow of any knowledge or production but rather expects the completion of tasks through assignments or exams that seek definite answers. In other words, the way of getting any action or feedback from students is to check the acquired knowledge in a quite rigid format. As the classroom practices are not built on discussion, pre-university education does not encourage research, analysis, or a critical view of the present knowledge. Thus, the learning experience of students is mostly limited to memorizing the given information at certain time intervals to pass the exams. The current secondary education system in Türkiye concentrates on the preparation for the multiple-choice university entrance exam which directs students to gain speed in objective response. Such an authoritarian system gives almost no place to creativity, imagination, self-expression, and self-confidence (Farivarsadri, 2001). Thus, while there may be contextual or personal differences, the majority of freshman design students have little prior experience in thinking, decision-making, and judgment in creative fields. Still, students from different backgrounds may have a diverse range of skills such as communication, creative thinking, drawing, or model-making. The previous knowledge, skills, and learning experience of beginning design students make it more challenging to formulate instructional objectives, curriculum content, and teaching methods or tools through the chosen pedagogical approach in Basic Design education.

There is no universally adopted design pedagogy in architecture; therefore, it is crucial for educators to be aware of divergent approaches for effective architectural design education (Farivarsadri, 1998; Ruhi Sipahioğlu, 2012). Sprinthall et al.

(1998) classify three main teaching methods as knowledge transfer, discovery and inductive inquiry, and interpersonal learning. Basic Design education typically embodies these three models, yet their combined use can be described through some practices and priorities peculiar to design education. Owing to the emphasis on learning by doing in design pedagogy, knowledge transfer remains in the background. As Gürsel Dino (2017) highlights, direct instruction does not adequately tackle the idiosyncrasies and intricacies of design, nor the variety of individual design manners. Therefore, exploration through inquiry-based and social learning is more dominant and closely associated with multiple learning styles such as constructive, experiential, and collaborative in the design studios. On this basis, it can be assumed that the current Basic Design approach is under the influence of Bauhaus pedagogy that is predicated on liberating students from disciplinary constraints and the perceptions or styles of their tutors. Much discussion and development since then have to do with the boundaries of guidance for the discoveries of the students.

Regarding that, the views describing basic design pedagogy mainly rely on developing student autonomy that fosters learning how to learn. Boucharenc (2006, p. 1) explains that “The pedagogy of Basic Design promotes a holistic, creative, and experimental methodology that develops the learning style and cognitive abilities of students”. Roberts (2005) specifies this methodology for architectural education as project-based learning seeking speculative and exploratory responses from students. Likewise, Cossentino (2002) refers to mastery and criticism as the core of both pedagogy and practice of architectural design, echoing Schön’s (1985) definition of critique as characterizing the activity of studio pedagogy. Here she articulates mastery through the balance between proficiency and artistry as well as rules and creativity, which is mutually constructed by students and teachers in the design studio. It can be inferred that the common point of these views is the emphasis on learning rather than teaching. Thus, a design studio is commonly regarded as an exemplary setting for a learner-centered higher education paradigm (Özkar, 2017). Still, the pedagogy of a project-based reflective learning

environment derived from the apprenticeship model has been criticized for reproducing common and dominant concepts of architectural habitus (Ruhi Sipahioğlu, 2012). This criticism is notable in the discussions about the position of the studio members in Basic Design education where self-reflection has a pivotal role in production. In this vein, the change in the method of transferring knowledge in current design studios is closely related to the continuing educational shift from a teacher-centered model to a student-centered one (Marriott, 2012). This denotes that the pedagogical implications of design education are intertwined with the learning experience of the student as a designer.

Holgate (2008) associates the learning experience in architectural design education with Jerome Bruner's cognitive theory called *spiraling*. He underlines that the practices of returning to previous learning with new understanding and learning from mistakes throughout the process reframe the perspective of students on design. This learning culture explains the cumulative nature of the introductory design education curriculum, wholly relevant to the term *spiral curriculum*, which fosters either capturing or deepening the subject of increasing complexity. The curriculum structure makes the design process a learning process in design education. The studio functions not only as a workspace, but rather as a dynamic ground for a series of supporting lectures, workshops, or site visits alongside the discussions on practices. The learning process in architectural Basic Design studio mainly focuses on dealing with a wide variety of abstract or concrete design tasks at different levels of demand. Abstract tasks drawn from real design problems have their own level of complexity due to their tentative and seemingly ambiguous nature (Özkar, 2017). Since Basic Design aims at developing a certain level of design competence to tackle uncertainties of complex design environments, variance-shifting definitions and all the ambiguities that designers value are typical practices in the curriculum (Gürsel Dino, 2017; Özkar, 2017).

The learning environment, i.e., design studio, stimulates active, experiential, constructivist, and social learning styles embracing multiple intelligences including

logical, spatial, kinesthetic, interpersonal, and intrapersonal. Design education accepts the student as an active participant who takes responsibility, defines his/her position, and progresses accordingly. Farivarsadri (2001) explains how to achieve this in dialogue through a student-centered critical pedagogy that respects the characteristics and background of the students. About considering the individual differences, Roberts (2005) underlines that first-year design education incorporates a series of ill-defined design problems which allows students to maintain a design approach that best suits their learning style. Since learning styles and relevant approaches are open to change, it would be more appropriate to say that the design studio encourages students to explore learning style strategies through their cognitive styles. Roberts (2005) also states that the distinction between rational and intuitive thinking may lead to analytical or holistic approaches to design work and may affect student progress accordingly. These approaches can also be variable and decisive in design pedagogy. For example, an approach focusing on the scientific components of design may ignore the intuitive background of the process and treat the designer as a black box (Uysal, 2003). Thus, studies on design thinking in the design process have been widely influential on approaches to design pedagogy (Schön, 1985).

“Design thinking challenges the teacher-centered approach (‘the sage on the stage’ teaching delivery method)” (Guaman-Quintanilla et al., 2022, p. 219). It is the source of the idiosyncratic path the student draws throughout the design process, which has a profound impact on the performance and attitude. This includes the dialogue between student and instructor since it begins when students get involved in the design problem and comes up with an initial response. Schön (1985) calls this dialogue *reflective conversation* as he argues that the attitude and interaction of studio members are formed in action, representing *reflection-in-action* as part of *reflective practice*. Studio-working encourages simultaneous thinking and learning to establish a position in action that leads the development of critical thinking through communication in a designerly way. Regular communication through

discussions, critiques, juries, and other assessment practices enables design studios to develop their unique pedagogies for active and reflective learning.

Active learning in the design studio aims to engage students with wicked design problems through learning by doing. Elrayies (2017) associates the active learning pedagogy that is grounded on problem-based learning and peer learning with *flipped learning* in design education. Flipped learning describes a pedagogical approach that replaces the lectures with out-of-class activities to use class time for discussion with the instructor and peers for in-depth understanding and problem-solving. As part of this, *problem-based learning* gives students the responsibility to analyze and synthesize knowledge for individual solutions and requires self- and peer review. Its related pedagogies address particular abilities that contribute to lifelong learning and collaboration as well as effective assessment methods (Elrayies, 2017).

According to Ledewitz (1985), the most effective way to teach all the layers of design education – the skills, the language, and the approach to the problems – is experience rather than explanation. This is because once it has been personally embraced and internalized, it is hard to impart the knowledge and understanding enlightened through self-discovery, that is, *tacit knowledge*. In the design milieu including the foundation studio, this is a type of knowledge not transferred but arising within the action and process of getting things done (Saranlı, 1998). It is strongly associated with the “unique rules” of Basic Design acquired from the “experience, experiment, common sense, and the givens and the set of goals of the specific problem” (Denel, 1979, p. 163). Experiential learning in design education and practice has much in common with David Kolb’s experiential learning theory which refers to a four-stage learning cycle (Khorshidifard, 2014). Kolb’s (1984) theory defines learning based on an integrated process that generates knowledge through the transformation of experience which starts from a concrete point leading to reflection and conceptualization for active experimentation (Figure 2.1). The cycle displays such a democratic and broad ground for both the design course and

individual experience that can accommodate various learning styles (Khorshidifard, 2011). It represents the fluctuation between thinking and doing in active learning. Further, Kolb's learning model corresponds with Schön's notion of reflection-in-action through a series of experiences evolving in the design process.

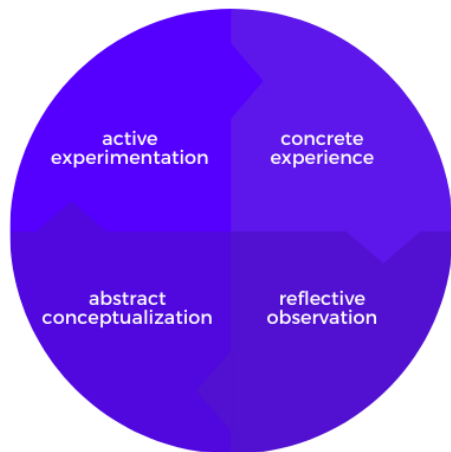


Figure 2.1 Kolb's learning cycle

Note. Adapted from *Experiential Learning: Experiences as The Source of Learning and Development*, by D. Kolb, 1984, Prentice-Hall. Copyright 1984 by Prentice-Hall.

Another learning theory dealing with the creation of knowledge and understanding is constructivism, which regards learning as a process of constructing meaning alongside experience (Kurt, 2011). Constructivist principles depict the plurality and complexity of the real world in a case-based learning environment instead of rigid instructional sequences (Guaman-Quintanilla et al., 2022). Being situation-based, flexible, and open to development makes the constructivist approach related to various learning theories including those mentioned above. It emphasizes *construction* rather than *reproduction* of knowledge and value through actions for learning and *meaning by doing*, which reminds reflective practice. Kurt (2011) discloses the instructional tenets of constructivist learning processes, some of

which are experience- and discovery-based learning, authentic and contextual learning, collaboration, active learning, and student-centered control. All of these are decisive in constructivist learning strategies for architectural design education that respects multiple learning perspectives. Amongst them, authentic learning, which creates meaning by doing, draws attention with its unique approach to design education.

Authentic learning basically refers to classroom experience parallel to real-world practices; therefore design studios are viewed as exemplary settings for this. The authenticity of design education, especially Basic Design education, stems from a constructivist learning environment and wicked design problems geared toward developing lifelong problem-solving skills and approaches. This perspective called *creative authenticity* regards learning as the personal and internalized experience of students in a form that is meaningful for them rather than useful for the architectural profession or design industry (Vernon & Paz, 2022). After all, learners can construct concepts in a context if they can create their own values, which is paramount in design education. Authentic activity bolsters performing as practitioners and builds a conceptual understanding in the culture of the field through social interaction and collaboration (Brown et al., 1989). Therefore, authentic learning environments need to be organized according to experience and academic level, which applies most to that of first-year students (Nicol & Pilling, 2005). Design studio reflects an authentic workplace specific to the cohort and enhances group identity (Holgate, 2008). In other words, it tackles authentic and contextualized tasks in a social space accommodating cultural behaviors. This means that authentic learning in design education is related to situated, social, cultural, and collaborative learning that constructivism embraces.

To examine the learning experience that emerges from the studio environment into a social bond and then becomes personalized, it is important to refer to two substantial branches of constructivism. These are cognitive and social constructivism, introduced by Piaget and Vygotsky. While Piaget's cognitive theory regards development as conceived through analysis and exchange of innate

responses, Vygotsky maintains that cognitive development issues out of social context and grows individually (Vygotsky, 1978). The perception and attitude of the learner are of utmost importance to take up this process in beginning design education. Bruner (1960), one of the pioneers of constructivist and student-centered education, argues that the drive to discover and learn is innate and nurtured. In any case, the communicative environment of Basic Design education calls for individual and collaborative engagement in shared experiences and social negotiation. The design studio is known to accommodate various production and socialization activities of the students who stay there until late at night, creating a living environment that integrates learning with daily life. The peer dynamic of the studio plays a key role in managing the transitional challenges from an early stage as it provides a platform for discussion, peer support, and informal dialogue, along with *pastoral care* through the tutor-student relationship (McClean, 2009). Based on such classroom activities scaffolding one another, Vygotsky (1978) regards learning as a thoroughly social process and argues that the developmental process falls behind the learning process. This reveals the *zone of proximal development*, which indicates the gap between the *actual development level* achieved through self-directed problem-solving and the *potential development level* that could be reached through adult guidance or peer collaboration (Figure 2.2) (Vygotsky, 1978). According to Vygotsky's (1978) cognitive theory, the transformation of the social process into an internal one occurs through mediated activity involving internally oriented signs and externally oriented tools. An example of the latter would be *associative knowledge*, deemed as "a powerful tool in design education", which encourages students to consider how others accomplish end products (Ruhi Sipahioğlu, 2012, p. 424). Essentially, this is an assessment practice, like comparison, in relation to social and collaborative learning in the design studio.



Figure 2.2 Zone of proximal development

Note. Adapted from *Mind In Society: The Development of Higher Mental Processes*, by L. S. Vygotsky, 1978, Harvard University Press. Copyright 1978 by Harvard University Press.

Brown et al. (1989) explain the relationship between learning and tools by the similarity of tools with knowledge, both can be fully grasped through use, which affects the viewpoint of the user depending on the culture in which they are used. This is the essence of *situated learning* derived from the notion that concepts, knowledge, and meaning constructed through activities in the culture of the domain are situated. Here, Vygotsky's *mediated activity* parallels what Brown et al. (1989) call *authentic activity* to emphasize the cultural dimension of contextual learning. They argue that authentic activities as cultural practices demonstrate that learning and acting are so blurred as lifelong learning consists of actions in situations; thus, they regard learning as *enculturation*. This echoes Schön's philosophy of reflection-in-action with respect to the authentic context of co-construction. Addressing the mediated and authentic activities in the design education context brings along the process of conscious thought and development.

The central pedagogy of situated learning, *cognitive apprenticeship*, likens authentic practices to craft apprenticeship and aims to support learning by

enculturating students into these through the social construction of knowledge and empowering them to continue independently (Brown et al., 1989). Referring to the apprenticeship model, design education seems to have embraced this cognitive theory from the outset within its distinct socio-cultural milieu. Follow-up, coaching, and assessment of student activities and performances collaboratively construct a studio culture and constitute a part of school culture that allows situated or contextual learning. Moreover, the emphasis on *activity* and *cognitive tools* in cognitive apprenticeship is a key learning dynamic of the design studio, representing the motivation of this study to dwell on assessment practices and tools. Further, the step from interpersonal to intrapersonal process for independent and continuous development supported by situated learning is one of the profound objectives of introductory design education. In order to attain this, it is crucial to get an idea about personal knowledge construction.

Independent progress of the student in design education takes place between guided and unguided inductive inquiry. Principles for organization, classification, and representation of knowledge can be generalized and learned, yet the premise or beginning point that experiences shape and also shapes experiences is personal (Uluoğlu, 2000). Experiences lead novice designers to create idiosyncratic values and individual boundaries to guide their design activities in addition to given constraints in the design learning process. Özkar (2017) states that reasoning depends on the process shaped by personal interaction and denotes that “Reasoning is contextual and does not conform to universal generalizations” (p. 148). She also holds that it should be more prominent in this way in Basic Design exercises. Architecture education for self-directed personal acts does not provide students with an explicit method by which they can develop personal knowledge by internalizing previous experiences and tacit knowledge gained through them (Kumkale, 2010). Instead, instructors take on the role of facilitators contributing to the construction of the framework within which students begin to form a *designer identity*.

Saranlı (1998) relates the limitations of the instructor's guidance in experiential learning to the Basic Design education being considered as a sort of *personality training*. The goals of architectural education meet on the common ground of personal development, in addition to professional development, to equip students with a critical and reflective attitude in socially conscious and creative design actions (Yorgancıoğlu, 2013). Therefore, throughout the ongoing dialogue with students, the instructional content and message are essential for personality education in the design studio. If studio pedagogy limits freedom and perception of choice, it can create a particular type of designer or personality (Webster, 2007). Similarly, the interaction between students can lead the studio to seek a single ideal; therefore, the setting should guide the student to a conscious process, not a preferred design product (Özkar, 2017). Design studios can achieve this by encouraging students to internalize the role and value of the personalization process and then discover knowledge, principles, and meaning as potential dynamics or constraints for their own. The importance of personality education here is to equip them with a vision that can open the horizon for change and adapt them to innovations as open-minded designers.

Basic Design education should also contribute to the individual differences and awareness of the students within the multiple learning model. As the source of interaction in the design studio experience is the production and feedback cycle, the assessment and learning relationship has a pivotal role in achieving this goal. The developments in assessment practices advance the learning experience in student-centered education. Yet, dealing with the multiple learning styles and relevant disparate pedagogies to design an effective assessment in the studio is a major challenge. Various forms of assessment support a diverse group of learners with different personal learning styles and prior learning experiences (Crowther, 2010). Aware of these individual differences in the studio, design students recognize that the view of the quality of work can vary among studio members, whether students or teachers; however, they find this variance quite personal as a grading criterion (Yorgancıoğlu et al., 2021). Lombardi (2008) states that learning theories typically

furnish a wealth of counsel for designing activities for students to show comprehension and competency. Still, she contends that practical advice on how to quickly and reliably assess the quality of student performance would be more critical. This concern for design education requires a critical insight into measurement and assessment in the studio.

2.2 Processes and Practices of Measurement and Assessment in (Architectural) (Basic) Design Education

Assessment is a judgement of student work or performance in the form of a decision and/or grade. It involves the process of setting learning objectives, describing learning outcomes, designing procedures, methods, and measures in consideration of time, analyzing and interpreting data for reformulation and improvement in educational settings. Various assessment models attempt to measure seemingly qualitative features of visual works in art and design-based disciplines (Marriott, 2012).

In order to address the issue of assessment in Basic Design education, it is essential to set forth the terminology that applies to the visual artifacts spawned in design and architecture schools. Marriott (2012, p. 44) discloses the forms of assessment for them with the following pairings: “formative-summative, qualitative-quantitative, normative-criterion-based, convergent-divergent”. Two main forms constitute the first pair: Formative assessment basically tracks student performance and contributes to the process as a teaching strategy while summative one measures the performance on a singular occasion. Assessment of visual works can aim at qualitative and quantitative aspects, mostly with an emphasis on qualitative ones due to the nature of unquantifiable characteristics of the work. This can be based on a norm-referenced or criterion-referenced approach. In the former, the grade of a student is conditioned by the quality of the work in the cohort, whereas in the latter there are minimal requirements to demonstrate the competency defined for a certain level (Çıkış & Çil, 2009). These assessment approaches can focus on

convergent or divergent thinking. While design is often associated with divergent thinking, learning outcomes and related assessment criteria for design artifacts are constructed to encourage both (Davies, 2000).

In addition to these terminology pairings, the terms interim and final can also be used in place of the formative and summative pair for design education. In parallel, from the interim to the final, the assessment formality and publicity represent the transition from informal to formal and semi-public to public, indicating other possible duos. Moreover, warm and cold assessments can be relevant couple in this context (Figure 2.3). Orr and Shreeve (2018) describe that a warm assessment denotes the significance of emotions and ambiguity while a cold one regards this as a violation since it prioritizes concise learning outcomes. This duality is embedded in design education debates over the objectivity of learning outcomes and the clarity of the associated assessment criteria.

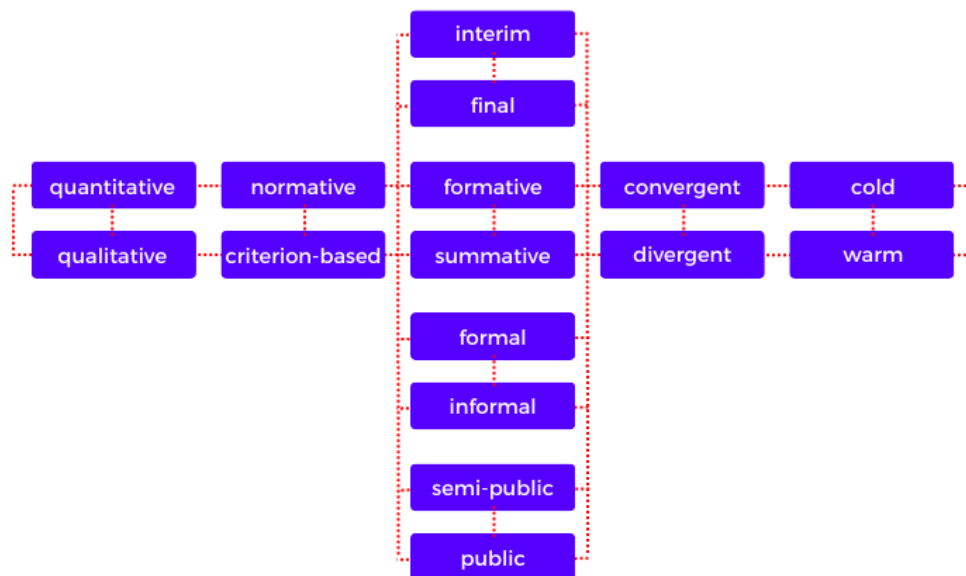


Figure 2.3 Assessment terminology pairings

Note. Adapted from *Assessment methods and tools for architectural curricula* (p. 44), by C. A. Marriott, 2012, Doctoral dissertation, Illinois Institute of Technology. Copyright 2012 by ProQuest LLC.

2.2.1 Aim, Scope, and Significance of Measurement and Assessment

Assessment has two main purposes: to guide and augment learning as well as to ensure the quality of educational provision for academic standards (Webster, 2007). These can be classified as formative and summative purposes. Ruhi Sipahioğlu (2012) describes the former as a black box since a more comprehensive analysis of how critics lead and encourage students is essential. It is also important for educators and students to comprehend the aim, scope, and significance of the assessment to acquire *assessment literacy*. Thus, the judgments need to be defensible and objective through a conscious selection of criteria, where descriptions of *student performance* are distinct among the different grade scales and are compatible with the definition of standards to be reached (Cowan, 2005). Student performance is defined as the main parameter in Basic Design studio (Çetinkaya, 2014). Creative teaching practice should start with a careful analysis of the activities that students will be asked to perform and how they will be assessed (Snell, 2014). Today, universities provide written policies for the assessment which clearly describes learning outcomes and then measures the student work to assess the extent of the learning. The emphasis on learning outcomes rather than learning objectives is related to the transition from a teacher-centered to a student-centered higher education approach, corresponding with a greater focus on how students learn (Davies, 2000). Orr and Shreeve (2018) argue that this model is affected by Biggs and Tang's notion of *constructive alignment*, which attempts to align teaching approaches to intended learning outcomes and achieve coordinated curriculum, learning, and assessment. *Intended learning outcomes* articulate the expected student performance for a certain period of learning; yet, design students may diverge from them to the ones that suit more to their inquiry by setting their

own *negotiated learning outcomes* (Davies, 2000). Assessment in design education should allow this process while addressing the performance level holistically to attain the outcomes. The challenge is that learning outcomes and dependent assessment criteria must paradoxically both determine and liberate the performance of the students to achieve the unexpected and unpredictable. Learning outcomes are more of a guide than of a goal; therefore, they can have utility and support creativity if there is a certain degree of slackness and uncertainty allowing for diversity in design outputs (Orr and Shreeve, 2018). The same can be said for assessment that opens up space for idiosyncrasies or casualness in creative milieus. These are two significant factors that foster *constructive learning* by embracing multiple values, meanings, and metaphors. Gordon (2004) advocates promoting the identifiably creative individual aspects of student work to allow for the “wow factor” that may arise at any stage of a solution through “creativity, originality, inventiveness, inspiration, ingenuity, freshness, and vision” (p. 61). Another major challenge is to redescribe these ambiguous cognitive attributes as more specific measurable outcomes (Davies, 2000) to guide well-structured assessment in design education.

Assessment has a multifaceted relation with learning experience. Design education is known for embracing both formative assessment i.e., *assessment for learning*, and summative assessment i.e., *assessment of learning* (Earl, 2003) at different stages of studio production. *Assessment of learning* measures student learning against certain learning outcomes, whereas *assessment for learning* attempts to bolster student learning by determining the needs through communication (Alagbe et al., 2015). The transition from assessment of learning to assessment for learning has continued with *assessment as learning*, a trend that treats learning as a tool to develop learning strategies beyond specific course objectives (Nordrum et al. 2013). Utilizing the above insight, Figure 2.4 illustrates the correlation between assessment and learning activities, as evidenced by the interplay among studio actors.

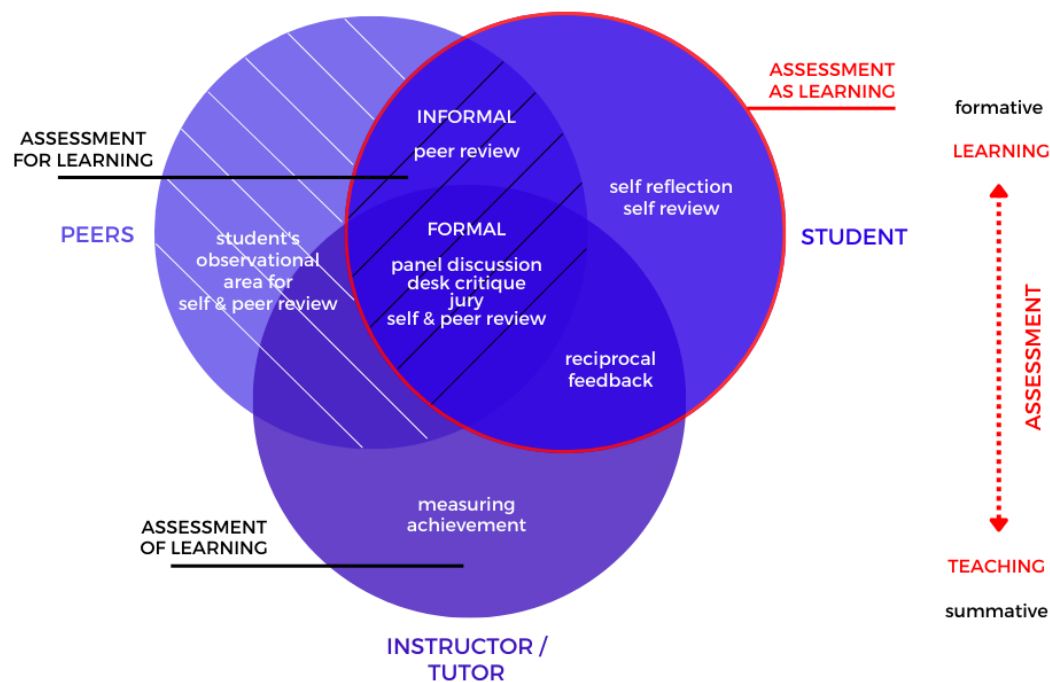


Figure 2.4 Assessment and learning dynamics in design education

The oral and public nature of assessment creates an intersubjective experience that fosters multiple learning practices such as active, social, and situated, thus contributing to critical thinking and communication skills as well as collective *assessment literacy* through shared experience. The judgments the studio members speak of reflect the studio values built in that ecology. As students begin to voice themselves, the assessment extends from grading the received education to discussing their questions and alternative answers in their thought and design process on which they might improve their learning (Özkar, 2017). This means that assessment literacy, which enables students to seek and act on assessment, supports *constructive learning* procedures that learners reflect on and construct beyond what they produce. The dialogue with students in such an assessment context also contributes to the self-cultivation of the architect-educators (McDonald & Michela, 2019). Overall, assessment has a great potential to have a positive impact on the

design teaching and learning experiences. Still, there are concerns and criticisms claiming that assessment practices may hinder learning due to student's perception of grade meanings and feeling of being lost within the inconsistency of feedback expressions (Çıkış & Çil, 2009; Smith, 2013).

Much effort has been placed into looking for new ways for learning and assessment in literature and design education settings. Assessment parameters for creative productions that determine the scope of assessment in design studios have been a point of discussion, yet the difference between these parameters in architectural schools has been paid little attention (Alagbe et al., 2015). Rayment (2007, p. 82) defines the scope of assessment in design education as “judgment of a process or a product within a framework of shared values – personal ideas which are shared through negotiation”. It can be implied that assessment and learning are reciprocally reinforcing, since those constructed throughout the learning experience shape and benefit from the assessment. Many design and architecture educators consider creative works difficult to assess in terms of both process and product (Ellmers, 2006). Assessment schemes that concentrate solely on finished design products limit discussion and understanding of design process quality and the potential learning driven by that, as they put students in a passive role. Hence, the emphasis for many educators has shifted towards the process rather than the outcome (Özkar, 2017). In fact, the topic of concern here is more about the assessment approach than the dichotomy of process and product because the former cannot be discussed without the latter. Affecting methods and tools applied, the assessment approach is largely informed by the meaning of assessment that is collectively constructed and situated by educators and students as well as the design pedagogy. Thus, the human factor in assessment practices and parameters is crucial to comprehend assessment dynamics in particular design education contexts.

The master-apprenticeship relationship at the core of architectural design studio can offer an important link between theory and practice through *authentic assessment* that enables integrated learning as a part of constructivist pedagogies

(Cossentino, 2002; Hassanpour et al., 2010). Authentic assessment deals with the ability to transform *factual knowledge* into *procedural knowledge* using its relevant skills and processes to solve open-ended problems (Armstrong, 1994). The skills developed through such an assessment involve communication and collaboration, time and resource management, decision-making, working with ambiguity, digital technology and presentation skills, which bring their own challenges (Arnold, 2019). Thereby, authentic assessment fosters the integration of diverse written and performance measures with an emphasis on the learning process by encouraging divergent thinking, as well as the approach where assessment drives the curriculum, unlike traditional assessment (Lombardi, 2008). The literature reveals that alternative schemes to traditional design studio assessment are assumed to bolster the understanding of the criteria and the development of relevant knowledge and skills, both of which require self-regulation and awareness. Authentic assessment upholds a *metacognitive* approach that emphasizes self-management and self-monitoring in the learning process (McAlister, 2000). Thus, the alternatives direct a shift in design education toward authentic assessment. This suggests more student involvement through self- and peer criticism which is aimed at students creating their own designer identity and professional values as well as an assessment perspective. To consider alternatives, the research presents a framework for existing assessment practices.

2.2.2 Measurement and Assessment Practices, Methods, and Tools

The coherent cycle of performance and feedback is so ingrained in the design studio pedagogy that it is not regarded as assessment, but the basis of instruction. In fact, reciprocal actions *mediated* and *enculturated* by criticism are the core of assessment in design education. The studio environment is rich in assessment modalities that emerge from the distinctive learning approach and pedagogy of design-based disciplines. Holgate (2008) identifies the key practices of assessment for learning in architectural design studios as authenticity and complexity,

summative assessment, formal and informal feedback, vast opportunities to develop and display learning, self-directed learning, and peer learning. For the assessment peculiar to Basic Design education, Güngör and Yorgancıoğlu (2019) emphasize learning by doing, individual and group critiques for collaborative learning, and formative assessment of both process and product in *critique climate*. These views reflect the learning focus in assessing performances and design products at various points of dialogue for diverse learners. On these occasions, Cossentino (2002) acknowledges that the concept of *exhibition* provides a powerful pedagogical system for instruction that goes beyond assessment strategy and brings the essence and language of artistry into the curriculum. She defines this system as a continuous, reciprocal, and sequential blend of showing and telling, an integrated notion of performance and assessment informed by an *embeddedness* of authentic assessment and *reflection-in-action*. Cossentino (2002) relates Schön's notion of reflection to exhibition as both flexible concepts supporting reflective practice express a stance and identity that guide students to construct sophisticated understanding and demonstrate mastery in design.

The assessment practices that contribute to this learning process are structured on *critique* (also known as crit). Critique is likely to continue as the primary, if not exclusive, assessment method in design education (Smith, 2011). It underlies the sequential system of design studios that prioritize immediate actions and revisions at varying levels of publicity and formality in the cumulative progress. While desk critique, panel discussion, and feedback provided in the prejury (also known as interim jury) act for formative assessment, portfolio examination and final jury do so more of summative assessment. The formality and publicity increase from desk to final critique; yet, self- and peer review, continuous informal critique at multiple publicity levels, emerge in blurring of formative and summative assessment. Critiquing is the core activity, mode of engagement, and outcome of the design studio. It aims to improve reflective and metacognitive skills by fostering discursive exploration of design processes and decisions (Gray, 2019). Critique is a *mediating force* for students to use these skills in forming their environment to

reveal identifiable *goods* of the studio where their activities are situated (McDonald & Michela, 2019). This means enabling students to acknowledge the challenges and discern which advice is appropriate to follow for the solution of design problems according to a set of studio values and cultural understanding.

By nature, critique might be unstructured, lengthy, and about minor aspects of the work, on which the student may not get a thorough assessment occasionally (Marriott, 2012). Yet, despite its emergent characteristic, the manner that critique covers is not arbitrary (McDonald & Michela, 2019). Setting up the common criteria, the timing and format of critiques depend on the phase of the design problem or project. Gray (2019) argues that while architect-educators accept the subjectivity of the critique, they seem to benefit more from its productive or provocative attributes than its conformity to objective criteria. He explains this through the shift of critique from *subjective* to *intersubjective* area, that is, from tacit design understanding to shared meaning among studio members. This reflects the realization of personal contact and active learning throughout the critique to be turned into *meaning by doing* through cognitive and social processes, as constructivist theories of Piaget and Vygotsky argue.

2.2.2.1 Panel Discussion and Desk Crit

The panel discussion and desk crit can be realized for individual or group work in the design studio. Most frequently, panel discussion or group desk crit is preferred at the beginning of a design process to establish a dialogue on the topic of concern, introducing relevant terminology and expectations via design vocabulary. It presents a common ground for studio members to speculate and dwell on alternative solutions to a design problem through *associative knowledge* and shared cultural understanding of critique. This bolsters exploring the boundaries of the rich design environment, common issues, imagination, originality, and the evaluative gaze of designers while unfolding the explicitly or implicitly stated assessment criteria.

Learning-oriented feedback processes are based on interaction with others, which comprises a transition from co-regulated learning to self-regulated (Yan & Carless, 2022). *Panel discussion* is an effective medium for collaborative and socio-cultural learning, where instructors or students select student work to be discussed whether they know the designer or not. Therefore, it provides students with both the opportunity and responsibility to learn by inference, either by remaining anonymous or feeling targeted (not) in the cohort. Participants also have the chance to share the studio agenda and follow the studio progress through discussion on related questions, problems, and potentials. These intersubjective and intrasubjective experiences and related psychological influences are decisive in Basic Design pedagogy.

The format of the work determines the formality and publicity of the group crit, including layout. Smith (2011) advocates that round table arrangement fosters greater peer participation and seems appropriate for when the student works do not have to be prone to hanging on the wall. A relevant study on student preferences and attitudes about studio critique reveals that students demand group critiques at the outset of the design process (Günday Gül & Afacan, 2018). Yet, the results also show that they prefer desk crit to group and pin-up at the following phases since a positive student attitude toward critique is strongly associated with comfortably asking questions.

2.2.2.2 Peer Review and Self-Assessment

Informal peer review takes place in a wide range of locations beyond the design studio, such as a school cafeteria or a virtual environment through student consultation throughout the experiential learning. It reinforces reciprocal benefit between students and contributes to the mutually developed critical thinking and judgment skills within the intersubjective field of peer dialogue. Holgate (2008) defines peer learning as the best practice of studio culture and a key teaching and assessment tool. As learning to assess others enhances student learning in the

manner that is criticized, peer assessment is used in design education as a self-assessment and learning strategy. Significant research shows that it is possible to promote student autonomy and greater internal motivation to participate in peer review despite external expectations and regulations leading to accomplishing a task or grade (Stančić, 2021). This means that it can contribute to assessment literacy by cultivating an understanding not only of assessment criteria but also the meaning of assessment. Due to its various benefits, formal peer assessment has been increasingly applied in first-year design studios to move it into the upper classes (Holgate, 2008).

Peer assessment can be executed through student scribes and peer comments presented to the designer in studio pin-ups (Cameron, 2003). The students can practice both *inter-peer assessment* by assessing others and *intra-peer assessment* by assessing their co-workers (Megahed, 2018). Peer reviews have a great potential to involve overly positive or negative attitudes due to the social dimension of peer dialogue, which appears in the form of cooperation and solidarity or competition. This may be context-specific depending on studio dynamics or case-specific, depending on interpersonal skills and attitude. The assessment of team-based tasks often raises concerns about individual differences in manifold skills and performances, as well as the dichotomy between individual contributions and collective performance in group work (Lombardi, 2008). Further, the structure of the assessment method, such as the absence of guiding assessment criteria, may affect the reliability of peer review and the sense of honesty and responsibility for critique in the design studio culture (Megahed, 2018). For the aforementioned reasons, students may feel constrained in peer assessment and may instead opt for teacher rating, which calls for planning and tutor moderation or guidance in these practices (Stančić, 2021). The foundations of assessment schemes and specific criteria are introduced to learners through sample comments to develop assessment literacy for peer review. Positioned between *pastoral care* and peer support, students hold diverse perspectives on how to maintain critique from instructors and peers. Studies on student perception of critique show that they

can get more targeted commentary from colleagues and prefer instructor critique to recognize defects of the end product without exhibiting cluttered work on progress (Crolla et al., 2019). This is because students tend to act on *directive* rather than *diagnostic* feedback; the former is viewed as more *generative* as it stimulates the design process (Smith, 2022).

Self-assessment is the most unrestricted and continuous form of diagnostic critique because it is self-directed. Stančić (2021) regards self-assessment as in the zone of proximal development to be transformed into a scaffolding instrument for students with the support of peer assessment. This is related to the role of peer critique in gaining insight into self-review as well as self-regulated learning derived from assessment literacy and meaning constructed in the conversational framework. Self-assessment practice is entwined with the capacity for feedback literacy; while the former is necessary to conduct the latter, both are vital for active independent learning (Yan & Carless, 2022). Figure 2.5 depicts the self-assessment process with an emphasis on feedback literacy. Determining the assessment criteria specified here is a constructive process fed by multimodal criticism in a design studio to proceed with the internalization of knowledge and value, a major attitudinal outcome of design and architecture education. This experience refers to the *creative authenticity* of personalized learning for problem-driven design environments, Basic Design studios in particular.

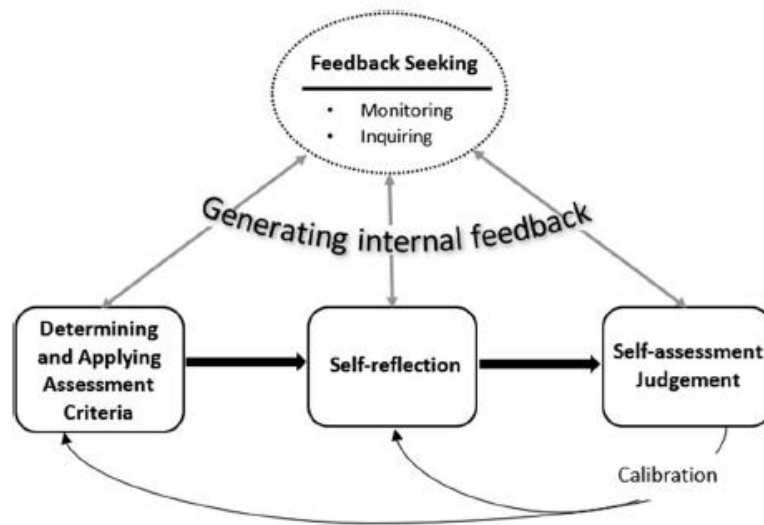


Figure 2.5 The self-assessment process integrating feedback literacy

Note. From “Self-assessment Is About More Than Self: The Enabling Role of Feedback Literacy,” by Z. Yan and Y. Carless, 2022, *Assessment and Evaluation in Higher Education*, 47(7), p. 1119. Copyright 2022 by Taylor & Francis Online.

The most important thing about the *self* in design education is to lead the student to explore without directing or dictating any meaning or value. Özkar (2017) differentiates this process from analyzing projects to disclose successful works and emphasizes that the discussion may never reach a point, but serves self-judgments. Self-assessment requires self-awareness in mental, interpersonal, and introspective processes to filter *how things are being done* from momentary design actions (Cowan, 2005; Yan & Carless, 2022). Learning-focused self-assessment mechanisms enhance the skills and motivation to monitor and review personal progress and attainments. Therefore, it is an indispensable cognitive tool for *personality education* which Basic Design education attempts, to manage potentials reflect on decisions, and take responsibility in self-exploratory design experience.

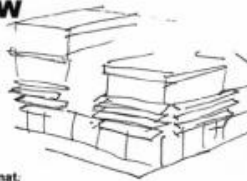
2.2.2.3 Written Review

The written review can be in the form of a peer response, in-text commentary, or rubric-articulated assessment in the design studio (Nordrum et al. 2013). Contrary to the rich communication modalities of verbal critique, it establishes one-way knowledge transfer limiting the exchange of ideas during assessment. On the one hand, it can prevent students from reflecting and acting on feedback in a passive position. An example study of a written critique proposal via the *post-it note* reveals that although it offers constructive criticism and advice for a specific work, the written commentary falls short of explaining a rationale for certain actions (Taylor, 2019). On the other hand, it can eliminate the challenges of verbal feedback, such as anxiety, which inhibits understanding and effective communication. Written feedback can clarify the assessment criteria by concretely stating the diagnosis or guiding principles as writing is a more controlled process, covering essential points that may be missed in speaking. Figure 2.6 shows an example of formal written feedback in the architectural design studio through a review sheet that discloses learning outcomes and grades for the respective six-point scale, in addition to commentary on student work (Holgate, 2008). The application of such models may raise issues related to assessment pedagogy and criteria-based tools in architectural education.

ASSESSMENT YR3 ADM 14/11/2006

One Stop Shop Int. REVIEW

name XXXXXXXXXX



Learning outcomes

- 1 To research and record context and place
- 2 To develop a solution that is contextually derived
- 3 To commit thematic and contextual ideas into model format;
- 4 To explore the nature of internal and external space their interaction
- 5 To investigate primary technology, and materiality.
- 6 To record the process in sketchbook and A3 workbook

1	2	3	4	5	6
D+	C+	B-	C+	C	C- (?)

GENERAL COMMENTS

CONSIDERING ANIMALS: PRESENT OF PORTLAND OFFICE:
 LOOK AT DRAWING PEOPLE IN:
 GOOD ORGANIZATIONAL DRAWINGS: SOME CLERKS WITH MECHANICAL
 TRANSPORTS OF GROUP PLANS:
 EIGHT FOR NOISY ALPHABET → DRAWING NOTE → QUIET AND SILENT
 NOODS TO BE SET WITHIN THE LOCAL CONTEXT → PRESENT IMAGE
 OF LOCAL MATERIALS AND THERE TO INCREASE PRECEDENTS:
 SET FLOOR LEVELS, BUILDING HEIGHTS USE. TO RESPECT NEIGHBOURHOOD
 FACILITIES.
 LOOK HARD AT TECHNOLOGY TO HAVE THIS OPPORTUNE, PARTICULARLY
 GROUP PLAN SECURITY ISSUES.
 SOME GOOD CONCEPTUAL WORK - MUST BE DEVELOPED - SPEAK WITH
 PE

Figure 2.6 Anonymized review sheet

Note. From “Assessment for Learning in Architectural Design Programmes,” by P. Holgate, 2008, *Interdisciplinary Studies in the Built and Virtual Environment*, 1(2), p. 9. Copyright 2008 by IGI Global.

2.2.2.4 Portfolio Assessment

Portfolio submissions present the design process of the student via diverse visual media such as sketches, diagrams, storyboards, drawings, notes, and models, i.e. any collected material or artistic production. While having summative assessment attributes, their examination aims to shed light on the iterative process driven by formative assessment for the cumulative output or product. The portfolio has been a backbone for evidence of student progress in design and architecture education.

As part of the *authentic learning* experience, it reflects a reporting process of real-world situations that require designer analysis and reasoning in problem-solving (Lombardi, 2008).

The reflective logbook or learning journal is a portfolio format encouraged by architectural design studios (Holgate, 2008). It demonstrates the quality and performance of students in reflection on their production and growth. The reflective journal assignment offers freedom of choice for creative expression through multimedia at different time intervals. Thus, it enables students to showcase their learning journey and perspective in a personalized space compatible with their disparate skills, learning styles, or prior knowledge and experience. Further, the journaling practice stimulates student participation in self-reflection and the development of a *designer identity*. Reviewing the learning journal is regarded as an effective tool to assess the activities and concepts of beginner design students rather than their visual communication capabilities (Crowther, 2010).

Yet, it would be more learning-oriented to use the reflective journal for self-assessment in design education so that students can follow their progress and develop new perspectives with changing interpretations when revisiting the journal. The learning process of each student is unique; depending on the incubation, some students may write every day, while others may write once every two weeks. Turning this into a task to be assessed by the instructor may reduce the efficiency of the practice. In fact, journal assessment may even be too much for the private student area, the field of thought. This is because students may want to write down what they do not understand most or have an interpretation or a strategy that they keep to themselves. Besides, learners will probably not benefit from a review of a journal they know someone will read and assess; therefore, it will not give the instructor an accurate idea of the student progress. In any case, it may not always be healthy and time-efficient to assess the student reflections in the design process, which is cyclical rather than linear, since there is no precision or strict sequence of the stages.

2.2.2.5 Exhibition Review and Design Jury

The concept of exhibition is the mainstay of the design and architecture profession and educational practices at varying scales and schemes. In terms of educational assessment format, exhibition review refers to the non-presentation critique of student work pinned or arranged to publicize the outcome to a particular design studio audience. It can be conducted as part of panel discussions, interim submissions for studio practices such as sketch problems, take-home assignments such as *model-only* review, or in place of final crit. Exhibition submission strengthens communication, collaborative working, and visual presentation skills (Webster, 2007). Still, its assessment lacks an essential component of design studio critiques, which is students' account of their work and the resulting impromptu discussion environment, similar to written feedback. Accordingly, the unrepresented exhibition review tends to focus on the finished product compared to the assessment of the design process involving the student (Smith, 2011).

The design jury is the most formal, *authentic*, –and public, if open– form of feedback and assessment specific to design education. It is a paramount pedagogical critique-centered occasion, whose methods and criteria regarding its effectiveness and psychological dimension for design students have been the subject of much debate (Ruhi Sipahioğlu, 2012). A closed jury is a form of exhibition review in the traditional Beaux-Arts jury style, which expects student work to *speak for itself*, yet leaves the assessment in the dark for students (Cameron, 2003). On the contrary, an open jury incorporates *discursive* and *non-discursive* practices of the participants (Webster, 2007), which can be considered as an extension of *active* and *collaborative learning* in the design studio. Similar to the portfolio review, the open jury is known as a summative assessment examining the final proposal, but it also aims to unveil the design process and perspective through student presentation. The formative character of the jury varies depending on the project phase where it is carried out. Interim jury functions more as an incentive for design students to receive a mid-stage review of the quality and

accountability of their work through constructive criticism and self-assessment. It also enables the instructors to assess the educational provision holistically and contributes to a reciprocal *authentic learning* experience in the studio.

The presence of external jurors seeks to ensure the impartiality of the jury review by embracing diverse design expertise and new perspectives on the subject and students, free of preconceived notions in the assessment (Yorgancioğlu et al., 2021). Still, the composition of the jury panel has a remarkable influence on the decision-making mechanism specific to these circumstances (Lans & Volker, 2008). Certainly, assessment dynamics and outcomes are not solely encapsulated in this particular practice but instead are built on the cumulative studio culture shaping *situated learning*. The open jury creates an inclusive design environment made up of disparate viewpoints that collaboratively construct design knowledge and values by the participants and audiences involving peers and faculty members. Jury rituals simulate an *authentic* real-world interaction as a rehearsal for the students taking on the role of *designers* starting with Basic Design education. The transparency of the assessment criteria, the jury structure, and assessment approaches profoundly affect the value and meaning attributed to the design jury, often reflected in student performance during the presentation.

2.2.2.6 Measurement and Assessment Tools

The complex structure of assessment in design education requires certain measurement instruments to apply the criteria and approach that the instructors concur with. The functions and limitations of assessment instruments are framed by the pedagogical approach prevailing in an educational setting. While the norm-referenced approach brings the assessment relative to group performance, the criterion-referenced assessment identifies predefined criteria under which no students can receive the highest mark (Marriott, 2012). In other words, norm-referenced tools rank the students against each other, whereas criterion-referenced tools measure individual student performance against a predetermined set of

expectations. As an example of the former, comparison is a common pedagogical tool in design education assessment that allows visual identification of recurring relations, schemes, patterns, and approaches in student works simultaneously (Özkar, 2017; Megahed, 2018). As implemented in formal and informal assessments, it can be adapted to multiple layers of design studio instruction and different individual methodologies of the raters, either students or instructors.

The introduction of assessment methods and relevant tools in the design studio determines students' approach to criticism and the production of their alternatives such as contrasting, self-designed checklists, or written commentary. This requires great attention from instructors regarding the psychological impact of comparing students with different backgrounds, skills, and learning styles (Megahed, 2018). Such concerns have created a shift in design education towards criteria-based assessment tools, aimed at standardized measurement of quality and performance. The scope of the design problem and the relevant learning outcomes defining the expected level of performance with certain methods, tools, materials, or time constants determine the assessment criteria of the design work. Thus, criterion-referenced assessment tools should measure the quality referring to learning outcomes that indicate certain knowledge, skills, and attitudes of the students. Concerning this, Morrison et al. (2013) propose a set of performance assessment instruments such as checklists, rating scales, anecdotal records, and portfolio reviews that can deal with both process and product.

Design studio executives are accustomed to creating a document that writes down the criteria they have agreed upon as a team, even if they do not develop it as a tool. Therefore, design instructors or other assessors like jury members tend to prepare an assessment tool when they do an assessment, which can be in different formats according to their initiative. It can be a list of criteria or phrases with keywords and reminders, or it can be converted into a table indicating their grading value or weight in the assessment. For example, Figure 2.7 displays an assessment tool created to be shared with the rates for the jury review of a project in the interior design department of a school in Türkiye (Kurt Çavuş et al., 2021). In the

first half of the second year spring semester, the project asks students to conduct research to provide the brand and corporate identity of the company they work for and to produce a 1/20 scale model and technical drawings to be presented. Although the students were informed about these criteria in the critiques, it is questionable how much the prepared document can contribute to their learning and task performance when it is not shared. This tool aims to reduce the bias between multiple assessors by disclosing the criteria, yet as there are no descriptors, it still leaves quite open to interpretation of what these criteria correspond to. For example, it is not clear in the table what weights the criteria that are considered together, such as *brand identity* and *conceptualization*, or what distinguishes *function solution* and *design value*. In addition, it is not specified what the *technical presentation* or *3D model* criteria cover, which aspects would be addressed, and whether one of the qualitative or quantitative assessments is more dominant than the other. Such shortcomings face the reliability problem arising from the ambiguity and subjectivity in assessing student products in design education.

ICT202 Interior Design Project II - Group C - Fair Stand Design Project - Jury Evaluation Criteria										
Student Name		Brand Identity	Conceptualization	Function Solution	Technical Presentation		Oral Presentation	3D + Model	Design Value	Total Grade
		20%		20%	20%		20%	20%	100%	
1										

Figure 2.7 The chart for evaluation criteria of jury

Note. From “A Student Focused Evaluation of Interior Design Education: A Design Studio Experience,” by Ö. Kurt Çavuş, M. Çavuş, and B. B. Kaptan, 2021, *Sanat ve Tasarım Dergisi*, 11(1), p. 200. Copyright 2021 by Anadolu Üniversitesi.

The critical point about the assessment tools is that performance should be identifiable to reach a judgment (Cowan, 2005). On this basis, a rubric is an effective tool to establish a set of criteria for performance quality to score the design work of students (Brookhart, 2013; Clary et al., 2011). A rubric is a document, often in a table format, designed to encourage self-assessment and improve student performance by providing assessment criteria and quality levels describing expectations for a task (Krebs et al., 2022). Figure 2.8 shows a rubric developed for the second-year Graphic Design Studio at the Emirates College of Technology (Mervat & Hanan, 2015). As a three-point scale assessment rubric, it displays three levels of achievement describing relevant performance for each against five criteria or *dimensions*. The criteria consist of clarity, originality, and relevance of graphics as well as design attractiveness and presentation, focusing more on the product rather than the process. On the other hand, a more detailed rubric for the assessment in the first-year Architectural Design Studio at Pharos University puts a particular emphasis on the process regarding the management of time, stress, and iterative actions, emphasizing *independent* and *constructive learning* (Ragheb, 2016) (see Appendix A). This suggests that the focus of assessment criteria, and hence the tools, differ by the contextual concerns that are hard to generalize for disciplines of creative practice.

Criterion	Levels of performance			Score	CLOs
Criteria	Levels of achievement			Score	CLOs
	Sophisticated 5 points	Competent 2.5 points	Not yet competent 0 points		
Graphics Clarity	Graphics are used effectively and have strong impact on the total design.	Most graphics are focused on the message of the design project, but could have been used more effectively by virtue of size or location, rhythm, etc.	Graphics fail to convey the message of the design project and there is a lack of understanding demonstrated by poor sizing or placement.	Descriptor	#1
Graphics Originality	The graphics and text used on the design project reflect an exceptional degree of student creativity in their creation and/or display.	The graphics and text used by the student, but are based on the designs or ideas of others and don't demonstrate original ideas.	Graphics and text do not demonstrate any original thought or creativity.		#1
Design Attractiveness	The design project is exceptionally attractive in terms of design, layout, neatness, dominance, rhythm, size, etc.	The design project is acceptably attractive though it may be a bit disorganized and does not demonstrate a clear understanding of layout dominance, size, rhythm, balance, etc.	The design project is distractingly cluttered or devoid of necessary elements and very poorly designed. It is not attractive.		#2,3
Graphics Relevance	All graphics are related to the topic and make it easier to understand.	All graphics relate to the topic.	Graphics do not relate to the topic.		#4
Design presentation	Overall presentation is excellent.	Overall presentation is acceptable.	Overall presentation is poor.		#3

Figure 2.8 A rubric for the second-year graphic design studio

Note. From “Developing Assessment Rubric in Graphic Design Studio-Based Learning: Experiments in Active Teaching in A Case Study,” by A. Mervat and E-D. Hanan, 2015, *International Design Journal*, 5(3), p. 1252. Copyright 2015 by The Designers Scientific Society.

This thesis supports that the criteria-based assessment framework for student performance offers a valuable perspective to design education on the development of measurement and assessment tools like rubrics. Still, the challenges of design studio assessment, such as reliability, also apply to criteria-driven instruments;

therefore, the applicability of the assessment rubric to design education is an ongoing discussion. In this sense, the following chapter provides a critical overview of the effectiveness of the criteria-based assessment tools based on the challenges and potentials involved.



CHAPTER 3

CHALLENGES AND POTENTIALS OF MEASUREMENT AND ASSESSMENT IN (ARCHITECTURAL) (BASIC) DESIGN EDUCATION

How can measurement and assessment be (more) effective in architectural Basic Design education? With reference to this research question, the current chapter focuses on the following sub-questions:

- What are students' and instructors' perspectives on the challenges of the measurement and assessment regarding philosophy, processes, and practices?
- What features define *(more) effective measurement and assessment* based on students' and instructors' perspectives?

This chapter presents a literature review on the challenges and potentials that students and architect-educators attribute to measurement and assessment design education and combines it with the analysis of semi-structured interviews. It identifies the challenges of measurement and assessment in terms of design nature, instructional, and student-related factors. Based on these, the research reviews perspectives and implications on (more) effective measurement and assessment regarding communication and resource efficiency, clear and responsive process and criteria, holistic and multimodal approach, student participation and motivation in the process, and criteria-based models or tools.

As the last one covers all previous items for effective processes and practices, it leads the research to the next question: *How can the criteria for a design artifact be described in an assessment rubric for an architectural Basic Design exercise?* Moving on to this, this chapter critically reviews the examples of assessment rubrics and similar instruments built up to apply the criteria-referenced approach in design education. The analyzed assessment models primarily target the production of either two- or three-dimensional visual artifacts involving drawing and physical

models. They are designed for visual communication, industrial, interior architecture, or architecture design studios at different levels, mostly in the first-year design programs. The objectives, approaches, and results of their testing, if exist, are examined respecting contextual differences.

3.1 Challenges of Measurement and Assessment in (Architectural) (Basic) Design Education

Generally viewed as the *black box* of design education, assessment is a disputable matter for several grounds (Güngör & Yorgancıoğlu, 2019). Any factor that affects measurement and assessment, such as curricula, disciplinary and pedagogical approaches, or individual issues with both instructors and students, can create a difficulty or problem for design education. The main reason for this is the variability and unpredictability of these factors. Lowe (1970) identifies the sources of variance in assessment structure as temporal or lasting characteristics of assessors, students, assessment format, or design problem. He highlights that some of these factors may also turn into error variance that causes unreliability of assessment, a possibility little considered by the architect-educators. The unpredictability of the parameters mostly stems from the temporal design studio dynamics, such as the student profile of that semester, peer communication, or the composition of the instructor team. As aforesaid, constructivist approaches propose alignment in course objectives, content, student learning, and assessment mechanisms. To achieve the appropriate assessment strategy, instructors conduct a thorough audit each year to ensure assessment parity among students (Holgate, 2008). This may imply a dilemma between the necessity of implementing a program according to the variants of that year, and how inclusive and objective it can be if it changes case-specifically.

3.1.1 Nature of Design

The idiosyncrasies, plurality, and unpredictability attributed to the essence of design make it challenging to assess. The multiplicity of tasks with various possible levels of complexity is regarded as the primary source of measurement error in authentic performance assessment (McAlister, 2000). The design studio culture embraces imaginative intuition of *tacit knowledge* and *creativity*; therefore it is *subjective* in both instruction and learning, in contrast to the rational objectivity central to the intellectual rigor of the university education model (Wang, 2010). Discussions on the “*arbitrariness, inconsistency, and subjectivity*” of assessment are related to the very nature of design, which requires *creative* thinking more than other cognitive skills (Çıkış & Çil, 2009, p. 2106). These factors creating an environment of *ambiguity* are the source of *reliability* concerns in measurement and assessment in design education. Still, Yorgancıoğlu et al. (2021) assert that problems with the *uncertainty* and *subjectivity* of the assessment practices stem from the problem of understanding the complex nature of design assessment rather than the lack of objective criteria. This emphasizes that knowledge of not only design but also its measurement and assessment is one of the kind that should be gained through the development of feedback and assessment literacy in the studio. This thesis endeavors to strengthen such knowledge and understanding that will contribute to effective assessment and learning.

The difficulty of *tacit knowledge* transfer in design education is described in Findeli’s (2001, p. 12) question, “How will this intelligence of the invisible be taught?”. The transfer of tacit knowledge beginning from the Basic Design studio is predicated on observation, conversation, and construction practices of the students throughout the *experiential learning* experience; therefore, it is unstructured. Meyer and Norman (2020) maintain that many design programs adopt an insular perspective and inefficient mechanism of tacit knowledge transfer that must go beyond simply relying on the traditional master-apprenticeship model. According to Kurt (2011), articulation that makes tacit knowledge explicit should be

encouraged in authentic activities of *situated learning*, a major one of which is assessment. Extending Findeli's question, Rayment (2007, p. 7) raises the following one: "How can one assess what cannot be specified or taught?". Although the assessment of tacit knowledge relies on certain purposes and principles, its reflection on the students in the jury differs according to their background, understanding, and awareness as well as the contribution of the jury members. While their tacit knowledge of the design discipline is the subjective component of assessment, a set of guidelines derived from this and prior teaching encounters also render design assessment more objective (Yorgancıoğlu et al., 2021). Still, the intuitive aspect of tacit design knowledge gives an intuitive character to assessment, as does the concept of creativity.

It is hard to describe the subjective, irrational, and mysterious nature of design *creativity* (Wang, 2010). The literature on design thinking and educational processes focuses highly on this issue. While some educational philosophers claim that creativity cannot be taught as it is innate, others challenge this view with convenient and enlightening teaching methods aimed at developing relevant abilities, dispositions, and intentions (Asasoğlu et al., 2010). Creativity is often accepted as a core skill growing through design education that drives multiple outcomes about it. It indicates the originality of not only the end product but also the ideas and practices of the design process (Güngör & Yorgancıoğlu, 2019). Still, some arguments nurturing student skills to think as a designer does not necessarily mean creativity; nevertheless, creativity refers to a way of thinking (Asasoğlu et al., 2010). Assessing possibilities or potentials through critical reflection and reasoning in *experiential learning* and self-discovery is essential for *learning by doing*. This implies that the exploration of its boundaries parallels the ambiguities and unpredictable aspects of the thought process, namely, the creative process. Therefore, the notion of creativity does not fit strictly defined learning outcomes (Orr & Shreeve, 2018). Rather, it corresponds to the *intended learning outcomes* – or *negotiated* ones proposing more student involvement– in addressing performance as mentioned above. This means creativity can be identified and

supported through flexible and non-prescriptive assessment criteria embracing freedom of choice for alternative outcomes, including those that are unpredictable within the framework of needs and expectations (Çıkış & Çil, 2009). It is difficult to describe such inclusive and coherent assessment criteria by which instructors and students can *creatively construct* design knowledge, practice, and meaning in education. First-year design students often tend to approach the concept of creativity as a criterion rather than a mode of thinking in the design process. They may perceive breaking the rules or producing something strange enough as *creativity* that can live up to the relevant assessment criteria. It is therefore critical to assessment in Basic Design studios where creativity is put as a term and practice.

The issue of assessment *reliability* in design education stems from the *subjectivity* and *ambiguity* of design knowledge and practice to a certain extent. There is no general design teaching path that determines the content of knowledge and exercises applicable to all design studios. In addition, the unquantifiable dimensions of design work create a complexity about quality judgments that can be overcome with expertise developed through years of experience, which brings the connoisseurship model to assessment (Smith, 2013). Thus, architectural design education seems to follow master-apprenticeship traditions, where individual experiences and preferences of the tutors affect the instructional methods, including the assessment model to be implemented (Elbellahy, 2020; Uluoğlu, 2000). Tutors might not always agree on expectations and priorities regarding the assessment of student work in a pluralistic studio setting, just as in the discipline of architecture.

Asking “To what extent can subjective judgments lead to fair concurrency?” Lans and Volker (2008, p. 9) underline the authenticity that creates the problem of objectivity and fairness of assessment. They point out that the instructors present in the studio because of their expertise bring individual frames of reference to the assessment of design tasks specific to their circumstances, not the overall quality of a designer. This implies that the subjective aspect of the assessment depends not only on the assessors but also on the uniqueness of the cases. Context-specific or

case-specific results in assessment also explain the difference in the quality of student work from different years or contexts with the same grades.

The duality in assessment emerges from the subjective design process informed by the objective criteria, that the instructors have in their repertoire (Güngör & Yorgancıoğlu, 2019). The co-existence of subjective and objective principles makes it difficult to understand the assessment criteria. While multiple assessors offer higher *reliability* associated with *objectivity* for assessment, each rater indeed adds unique value that goes beyond balancing the variance errors. Besides, the assessment structure, which recognizes more experienced raters and novice designers, creates a hierarchy of roles (Güngör & Yorgancıoğlu, 2019). Since there is subjectivity and plurality in this role distribution, its inevitable effect on students gains different dimensions. For example, there may be communication problems, such as verbal interruptions between critics, which may not be a problem for instructors but may distract the students (Ruhi Sipahioğlu, 2012). Behavioral studies on studio critique show that students tend to adapt to their roles and look for ways to turn them into an opportunity to keep their grades high. Webster (2007) argues that due to the asymmetrical power construction in the design jury, students may resort to superficial tactics concealing weak points or voicing the juror's taste for the sake of good judgment. Accepting the design expertise of the assessor as the main criterion may lead to ignorance of the multiplicity and diversity in design approaches by defining them strictly as *good* or *bad* (Yorgancıoğlu et al., 2021). Therefore, targeting or imitating the style and preferences of the master may inhibit students from coming up with authentic architectural ideas and benefiting from critique through honest understanding and reflection (Webster, 2007). This calls for taking a psychoanalytic perspective on how the individual contribution of masters influences intersubjective processes, especially in Basic Design studios, where feedback literacy and designer attitude begin to develop through interaction. Considering the psychometric dimension, a study by McAlister (2000) maintains that human judgment is a less serious source of reliability error than expected and can be corrected with appropriate training.

In design studios, *ambiguity* in assessment may appear as the unstable complex design process and implicit criteria. Wang (2010) defines “creative leap in the dark” as the central experience of design studio education, supported by the complexity paradigm that incorporates spontaneous invention into the process. Uncertainty resulting from unfamiliar experiences with abstract forms and materials allows the design action to start with a clean slate (Pınar et al., 2023). Through learning by doing, the uncertainty of a particular form of design may lead to shallow cognitive concepts early in design education (Gürsel Dino, 2017). Besides the unpredictability of the design process, the ambiguity deliberately presented as part of the design nature in the studio may be perceived by the student as getting lost in the concepts, tasks, and assessment. For example, when projects meeting expectations are less discussed to advocate learning from mistakes by setting aside the *good* ones for students to explore, these works remain in a black box (Ruhi Sipahioğlu, 2012). Further, non-clarity can result from ill-defined project briefs, instructors not conforming to the brief or not determining what to give feedback on, and inconsistencies between various inferred or implicit objectives (Smith, 2011). These factors in the assessment strategies and instructional messages in the design studio adversely affect the *reliability* arising from the *transparency* of the assessment criteria that support student learning (Alagbe et al., 2015; Webster, 2007). Hidden assessment criteria and practices hinder *independent*, *active*, and *collaborative learning* experiences as they limit self and peer review due to a lack of understanding and motivation. To guarantee better grades, the students may be inclined to take the assessment of instructors without questioning or comprehending. Özkar (2017) underlines that Basic Design education does not offer any value than the accountability of a work that encourages responsibility for design decisions. Thus, if the criteria set out to judge the quality of a design product are ambiguous for novice designers, it will be difficult for them to develop their own critical view as part of the *designer identity*.

3.1.2 Instructional Design and Communication

Design studies are executed in much more intensive programs than other theoretical courses (Çetinkaya, 2014). This is further compounded in Basic Design studios by the time constraint and the curriculum content in addition to a multitude of actors in a learning experience and environment quite unfamiliar for first-year design students. Basic Design education is said to adopt a *labor-intensive method*, based on a series of design tasks in a one- or two-semester *learning by doing* process with long class hours (Uysal, 2003). The conversations and representations around the students, coupled with the data and communications in the daily operations of the studio, are so intense that the students are at risk of being overwhelmed or overburdened (Wang, 2010). Measurement and assessment is a primary source of this information and communication network, which contains the limitations and challenges inherent in applying its principles to the design studio. A major one is that it requires a maturation process of the student with regular trials and assessments with the tutor (Çetinkaya, 2014). The assessment of these authentic learning tasks necessitates a great deal of time and effort to manage, monitor, and coordinate for instructors who are already under workload and also prone to overload (Lombardi, 2008). This reciprocal challenge is a difficult-to-balance studio dynamic to consider when developing the assessment scheme in the design studio.

Adequate design studio environment is essential in instruction and assessment strategies aimed at multilayered *active learning* with the engagement of students in studio practices. The assessment program during class time requires an efficient setting to host a panel discussion accessible to all students, or a desk crit arrangement that allows all studio members to convene in different groups simultaneously. A study on the student approach to design studio critique reveals that smaller groups tend to participate more in peer assessment (Smith, 2011). Therefore, in addition to the *collaborative learning* environment, students who take individual time to work or discuss with their peers need personal space in the

design studio for *independent* or *peer learning*. The spatial sizes of the studios and the size of the instructor team in many design and architecture schools endanger the dynamic and experiential learning and assessment environment in design education in the face of increasing student numbers. For example, according to 2020 data in Türkiye, the number of universities with an architecture department has increased by 322% in the last fifteen years, while the number of newly enrolled architecture students has increased by 205% (Sezer, 2020). On the one hand, the relatively small teaching team size provides flexibility and effective communication between the instructors and allows potential problems to be identified and resolved quickly (Holgate, 2008). On the other hand, it is difficult to manage teaching and assessment workloads and sustain consistent standards for highly enrolled design studios in limited time frames. Prolonged review hours cause fatigue from mental exhaustion for the studio members; therefore, the students may not have sufficient time and interest for critique, which influences their perceptions and actions regarding assessment.

Design studios embrace social learning, where Vygotsky (1978) emphasizes the dialogue and diverse roles of language in instruction that guide *mediated cognitive growth*. Critiquing as a form of assessment is the key source of communication mediating the learning experience in design education. Critique derived from acute and perceptive observations of the instructor to offer progressive feedback is much more challenging than merely being critical (Smith, 2011). Critiquing is to challenge student approaches to show how to be involved in the design discourse and master professional jargon (Popov, 2007). Therefore, the potential for contentious discussion may lead the student to take a defensive position, which may misinterpret the critique as personal criticism, and where tutors must be sensitive about separating the outcome from the students (Holgate, 2008). Communication problems in design studios are often associated with the hierarchical relationship between instructors and students, creating an atmosphere of confrontational and abusive critique that limits conversational activities, especially for first-year students (Anthony, 1991; Crowther, 2010; Webster, 2007).

The problems might arise due to possible reasons, such as unconstructive feedback starting with or focusing on weaknesses, and students not being ready at the time and place for the (type of) feedback. Negative criticism can confuse students when they are unsure about how to fix and move forward something seen wrong about their work (Smith, 2011). Yet, a further challenge facing Basic Design education is a design lexicon of abbreviations, analogies, and idioms unknown to beginners (Holgate, 2008). Learning a common design vocabulary is one of the main objectives of beginning design education that contributes to overcoming this challenge (Farivarsadri, 2001). Yet, beginners need not only critique but also examples feeding their intellectual background to internalize new vocabulary; thus, tutors play a greater role in communicating ideas rather than making students comprehend the problems (Ruhi Sipahioğlu, 2012). Negotiation in constructive dialogue between master and student throughout assessment practices is crucial to student learning and to design and feedback literacy. However, Crowther (2010) claims that assessment methods like end-of-project critique only appeal to students' *modified actions* between their conceptions and the teacher-created environment, as depicted in the conversational model (Figure 3.1). He goes on to claim that this does not provide sufficient variety in assessment processes for optimal learning, nor does it give insight into student work.

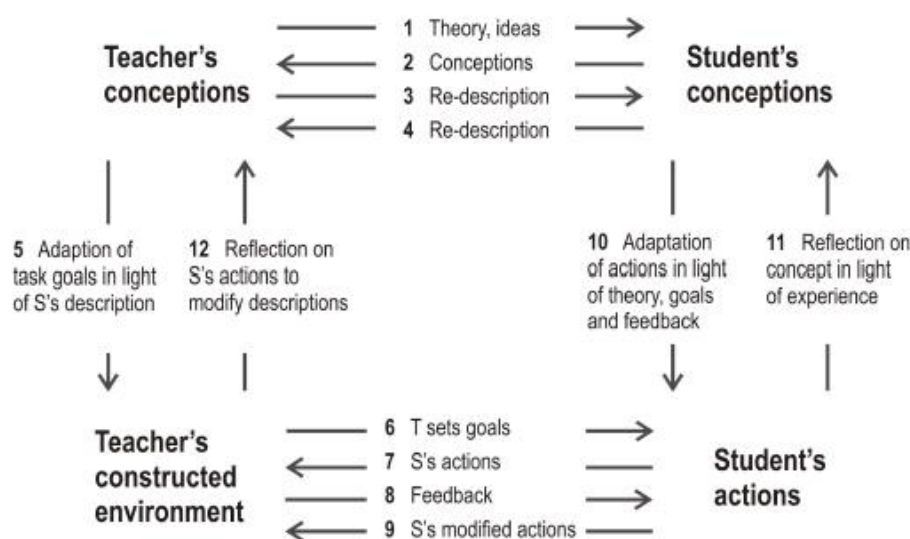


Figure 3.1 The conversational framework

Note. From “Assessing Architectural Design Processes of Diverse Learners”, by P. Crowther, in K. Waite & N. Parker (Eds.), *Proceedings of assessment: Sustainability, diversity and innovation* (p. 28), 2010, University of Technology Sydney, The Institute for Interactive Media and Learning. Copyright 2010 by The Institute for Interactive Media and Learning.

3.1.3 Students’ Perception of Meaning and Source of Assessment

The student perspective is significant for a learning-oriented design pedagogy approach. Acar (2008) asserts that architectural design education gives little place to psychological issues while determining pedagogical approaches as the least evaluated parameters are students’ conditions, needs, motivation, and readiness. He notes that the enormous literature on the problems of Basic Design students emphasizes the absence of abstract thinking that, in his view, actually indicates the zone of proximal development to be explored by the tutors. Introductory design education requires challenging transformations in cognition and learning of newcomers bestowed with different levels of cognitive styles, skills, and capacities, thus, creating great confusion for students (Gürsel Dino, 2017). As students progress, they develop diverse strategies to overcome difficulties, which urges architecture schools to explore the cognitive structures of the students and inoculate new modes of thinking and doing from the beginning (Acar, 2008; Roberts, 2005). Further, as the Bauhaus pedagogy assumes, prejudices can create in first-year students a resistance to what is new and different (Çetinkaya, 2014). This means that prior experiences from pre-architectural education may affect a student’s readiness and motivation, and hence perception, for learning and teaching styles and environments of the design studio unfamiliar to them.

Assessment is an integral part of this process, to which students respond in line with their perceptions, not the instructor’s, regardless of the actual motive or narrative of events (Smith, 2013). A qualitative study by Orr and Shreeve (2018)

asking students to reflect on their own assessment experiences shows that they perceive assessment in design education as something *done to them*, *done for them*, or *done with them*. It reveals that the first scenario focuses on the quantity of work in the design process rather than on the quality of the outcome, whereas the second emphasizes improving student skills and learning through guidance. A similar research that surveyed architecture students shows that the majority of respondents perceive the purpose and role of assessment as a contribution to their performance and learning (Smith, 2022). Undergraduates have come to see themselves as *learning consumers* who demand increased transparency in their education regarding assessment criteria and mechanisms guiding their progress and development with direct, functional, and specific critique (Lombardi, 2008). Transparency may seem to empower students (Orr & Shreeve, 2018). This means that the perception of assessment shapes the perspective of students not only on the meaning and source of assessment but also on the role of the instructor in the design studio.

Although the design studio pedagogy treats measurement and assessment as a conversation-based and learning-oriented formative practice, it is inevitable for students to approach grade-oriented due to their positions. Grade perception varies among students and can go beyond a work-specific performance measure. A relevant study based on interviews with interior design students reveals that they interpret grades as an indicator and predictor of success or failure as they tend to characterize their designer identities according to their grades (Smith, 2013). The study also denotes that when students perceive a disconnect between effort and outcome, they attribute grade sources to factors largely beyond their control, such as the stylistic preferences of the instructors. This is because the grade can be the studio practice that most concretely transcends the domain of the students and sharply separates their role from that of the instructors. Students may struggle to reconcile critique and grade, which may arise from student misunderstanding or confusion, or the instructor's sensitivity to the student's feeling of demoralization or lack of self-confidence during communication (Tucker & Beynon, 2012).

Motivation is an extrinsic or intrinsic force to take up the design process and act on relevant assessment acquired. Thus, outside of the sources, perceived inconsistency is apt to demotivate students and undermine learning, which rates the assessment as an obstacle to the development of design expertise (Smith, 2013).

Design students apply various strategies to review and understand feedback on their work, such as summarizing in their own words or highlighting key points to integrate different feedback channels (Smith, 2022). Gray (2019) argues that students' beliefs and general admissions about assessment may cause them to have difficulty in incorporating components of pedagogy into their personal experience of design critique. He suggests this can only be resolved through student development, pointing to design and assessment literacy. However, the source of this does not have to depend merely on the student in discursive or non-discursive assessment practices based on mutually constructed dialogue. For instance, the problem might be related to the psychological state that design feedback triggers temporarily or permanently. The rituals of any studio critique create an atmosphere of tension, conducted with a certain language and intonation, and organized by roles and constructed meanings in studio culture. Prevalent and dominant student emotions regarding design studio assessment are fear, confusion, frustration, embarrassment, fury, injustice, enmity, boredom, apathy, and competition (Anthony, 1991; Cameron, 2003; Holgate, 2008; Makaklı & Özker, 2016; Smith, 2011). Design students are usually associated with a typical artistic emotional profile demonstrating strong feelings about their work (Wang, 2010). Yet, Orr (2007) argues that although certain assessment strategies like anonymous grading are promoted to disconnect the student from work, for design educators, the work and student are also intertwined. Therefore, whether the source is internal or external, the emotional state is closely related to the students' approach to their work, the work of others as well as the studio culture and dynamics. In this sense, there can be temporary or case-specific factors that affect student's perception and reaction to assessment. An observational study with a visiting observer in an architectural design studio discloses that the students may misinterpret the

reflection time that the instructor allocates to think as a negative critique (Cowan, 2005). Such a psychological layer of the complex design studio structure presents another challenge for assessment to give a precise impression without imposing any direction or value. This is more critical in Basic Design education because the impact of unfamiliar fields and settings can create a more emotionally loaded learning experience and become a psychological barrier to communication and development.

3.2 (More) Effective Measurement and Assessment in (Architectural) (Basic) Design Education

Pedagogical approaches to advancing the assessment scheme in design education emphasize learning-centered and student-centered practices to a large extent, as effective assessment is associated with effective learning. The components of the curriculum, including instructional methods, tools, and messages are determinants to achieve (more) effective design studio assessment. Yorgancıoğlu et al. (2021) define learning-oriented assessment for design education through clear and constructive feedback, explicit and well-defined assessment criteria, and student involvement in feedback processes. Likewise, Stančić (2021) emphasizes the consistency of the messages sent to students, the opportunity to resubmit and improve their work, and participation in peer review for assessment that nurtures the learning experience. Feedback has limited effect until a counter-action is taken by the student (Sadler, 2005). Thus, all these strategies attempt to lead the learners to chart an original path for active learning by providing relevant knowledge and a framework for action. In this context, the design pedagogy of assessment focuses on equipping the student with a designer attitude to become independent from the instructor's guidance throughout the process. The purpose is to increase the motivation of students and improve their ability to manage the authentic process and maintain psychological challenges. Uncovering the possibilities in student works during authentic assessment enables them to consider taking risks instead of

using psychic defenses for the sake of success (Ruhi Sipahioğlu, 2012). Further, encouraging students to express their preferences frames the shared problem not as a personal attack but as an experiment where they define their roles, and allows new possibilities for design actions (Schön, 1985). This necessitates considerable input from both instructors and students in terms of time and dedication to the learning process so that students grasp the purpose, process, and criteria of the assessment (Davies, 2000; Stančić, 2021).

3.2.1 Communication and Resource Efficiency

Itten's pedagogical approach to the personal experiences of students through a psychological concept of empathy is the legacy of Bauhaus design education (Özkar, 2017). In parallel, Ochsner (2000) presents a psychoanalytic perspective by associating the communication between instructors and students in a design studio with the therapist-patient relationship. He suggests offering first-year students an interpretative perspective showing that design work is valid even if it fails by reaching the *dead ends* due to the nature of creative play. He argues that the perception of critique as interpretation reveals not only problems but also potentials for exploration. Still, the balance of positive and negative points in interpretation is critical for students to respond effectively to feedback and develop design and assessment literacy from the early stages of design education. The current tendency in design pedagogy is to start the critique session with positive comments and appreciation, followed by constructive and honest feedback that leads to progress in the student work (Megahed, 2018).

It's not a very controversial issue that the critique should focus on the performance of the students, not on their characteristics, but this can be difficult to achieve during spontaneous communication. It is necessary to manage this limited time in a planned manner, that is, in sufficient time and detail to be formative to provide effective feedback (Megahed, 2018). Time management in critique is significant to understanding students and allows them to express and assess their goals,

productions, and predictions. Therefore, the format, timing, and efficacy of assessment are intertwined dynamics of the design process that should be addressed together in the assessment pedagogy of design education. In line with these considerations, Smith (2013) suggests that formative critique that is not accompanied by grades may need to be provided at more regular intervals during longer studio projects. For design juries, where the student participates in the assessment through presentation, separating the submission and review day can be a strategy for effective design studio assessment (Megahed, 2018). It is a fact that the performance, understanding, and attitude of the students in the jury review are affected by lack of sleep and motivation on the deadline day. Besides, when the assessment format is not suitable for the active participation of the student, it should be considered how efficient it can be in terms of the course of the student work. For example, a summative end-of-project review may be too late to be effective because students who know their work at hand will not be assessed again often tend to ignore it (Smith, 2013). This applies particularly to first-year design students who are just beginning to develop feedback literacy. It can be understandable that they are not willing to endeavor to get the most out of an assessment over which they have no say or control.

3.2.2 Clear and Responsive Process and Criteria

Establishing a transparent assessment process and criteria for students necessitates negotiation on the matter among educators, which can be accomplished through impartiality. Lans and Volker (2008) explain how subjective judgments can guide fair consistency with objective subjectivity, that is, training-enhanced intersubjective reliability to ground assessment plans and criteria on a known frame of reference. It is noteworthy that even though assessment is a significant component of student learning, university educators rarely receive any formal instruction before they administer it (Orr & Shreeve, 2018). Therefore, the assessment experience of the design tutors as well as consensus grading and

critique through dialogue between critics is essential for coherent assessment in design education.

To inform this process, learning outcomes should be clear enough to be measured through assessment criteria that consider learning progress against course objectives (Davies, 2000; Holgate, 2008). Defining and clarifying the assessment mechanism at the beginning of a course or study is essential for both staff and student accountability and responsibility to achieve a balanced individual and collective design studio pedagogy (Potts, 2005). The definition and clarification encompass task requirements, timetable, criteria, and supportive assessment plan, i.e., how to enable students to achieve the outcomes by getting student perspective on their needs and concerns in the process (Arnold, 2019). This supports the importance of using qualitative methods in architectural research. Taking student opinion supports *reflection-in-action* through *authentic* and *socio-cultural learning*, encouraging their observation and interpretation skills for self- and peer assessment to collaboratively monitor colleague and studio progress. It also provides a basis for meta-assessment in a particular institutional culture, where educators can get feedback from students and students can develop assessment literacy. In this sense, clarifying the assessment criteria for a design task can be a strategy to sustain the continuity of feedback (Smith, 2011). This requires effective assessment process management as a complementary support, which is more dominant in beginning design education. To bolster student learning, studio critique should actively refer to declared assessment criteria and avoid distracting or vague comments that lack guidance for improvement (Arnold, 2019; Megahed, 2018). While judgments should be defensible and transparent, Snell (2014) suggests that tutors should be open to discussion and explanation in critique. Since assessment criteria for effective learning provide space for unexpected or unpredictable performances that indicate *negotiated learning outcomes*, the assessment process should also deal with divergent responses (Arnold, 2019; Davies, 2000). This enables assessment in design education to respond to changes and uncertainties in the studio environment due to disparate human and non-human factors, which may range from student-

specific situations to pandemic conditions. A clear and responsive assessment structure contributes to the design of not only effective assessment but also instruction.

3.2.3 Holistic and Multimodal Approach

The complex structure of design education embraces plurality in the *authentic learning* environment and diverse cognitive styles through *constructive alignment* of assessment with instruction. As reliance on a single assessment method may restrict the scope of learning assessed, multiple assessment models are favored to incorporate combined approaches for inclusive design pedagogy. An extension of this approach can be traced to the complexity paradigm, which treats the design process as an elaborate system of possible relations and meanings constructed through both rationality and creativity (Wang, 2010). While respecting the dichotomy between normative rationality and the multiple but sometimes conflicting issues of creative design environments, it focuses on achieving a balanced pedagogical approach between design education and higher education models (Gürsel Dino, 2017; Wang, 2010). In fact, design education adopts assessment schemes from educational domains outside of creative areas associated with the higher education model in general, such as utilizing tools of written feedback and criteria (see Chapter 3). This reflects the notion of holistic assessment that objectifies and clarifies assessment practices, indicators, and values respecting the situated dynamics of the design learning environment for (more) effective practices.

A relevant study on the focus of assessment in architecture, art, and design education offers a holistic model based on the implications for the scope of assessment (Figure 3.2) (de la Harpe et al., 2009). Analyzing 118 journal articles on studios and the educational literature from the last decade of that time, de la Harpe et al. identify 11 key components around creative practice respecting three core values: process, product, and person. The authors emphasize that it is not an

examination of existing assessment mechanisms, but a proposal to guide and enhance studio assessment in creative disciplines. This holistic assessment model puts more emphasis on the product in architecture whereas on the process in art and design studios. However, the blurred boundaries of the fields of architecture, art, and design may raise questions about such a distinction between disciplinary approaches to assessment. In addition, three core factors, process, product, and person, may display interdependence or transitivity at unpredictable or inseparable levels because they are entwined in creative environments. Similarly, hard and soft skills can be diversified in the unified grounds of the design process that are hardly defined by different learning outcomes and assessment criteria. These might be research, management, critical and creative thinking, problem-solving, empathy, and teamwork skills that develop by intertwining in *experiential design learning*, a key experience to be put into practice in Basic Design education. Thus, a comprehensive assessment approach should be prudent in categorizing and combining its elements for a reliable and effective measurement.

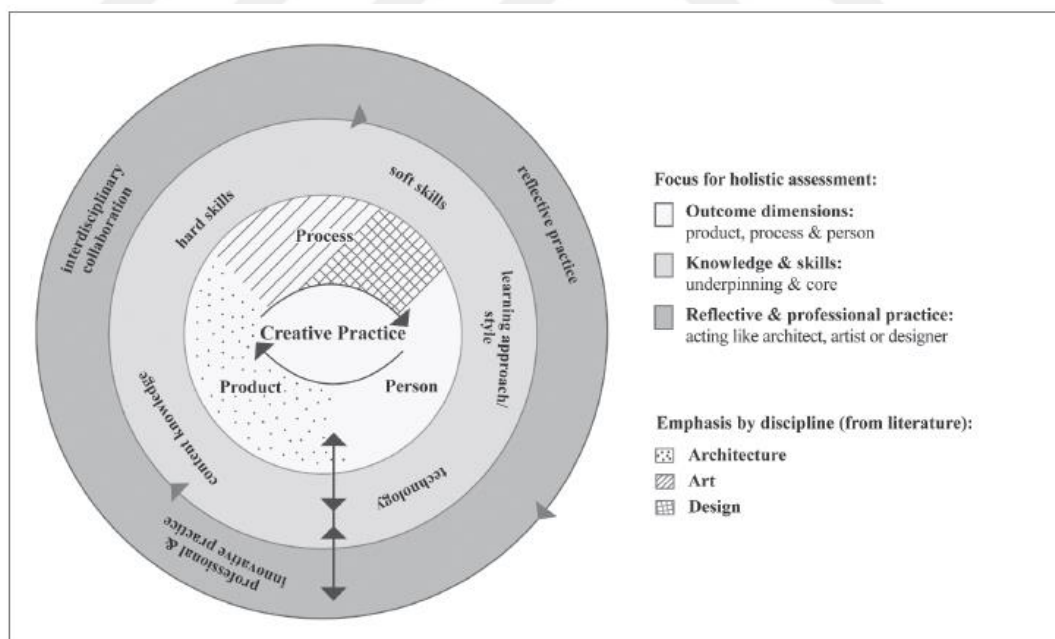


Figure 3.2 Model for holistic assessment in studio showing most prominent focus from literature in architecture, art, and design disciplines

Note. From “Assessment Focus In Studio: What Is Most Prominent in Architecture, Art and Design?,” by B. de la Harpe, J. F. Peterson, N. Frankham, R. Zehner, D. Neale, E. Musgrave, and R. McDermott, 2009, *International Journal of Art & Design Education*, 28(1), p. 47. Copyright 2009 by Wiley Online Library.

For this, the major strategy of design education is the multimodal critique, the realization of different critique types according to curriculum operation and studio progress. Design studio dynamics are strongly tied to this ever-evolving system, where informal self and peer review uncontrollably accompany the entire formal assessment process in the background. Based on these principles, architect-educators develop alternative assessment models by combining different methods concerning subject matter and student progress. In this context, Gray (2019) describes multimodal critique as democratizing assessment through multiple simultaneous feedback conversations and increasing student engagement. He proposes a critique model to provide transmedial interactions that comprise panel discussion, peer review, and written feedback expanding student role in design studio assessment. Here, at the beginners’ final project presentation, senior students, called *mentors*, attend the panel and collaboratively produce written feedback and offer synthesized verbal commentary at the end of the session. Gray (2019) argues that the involvement of mentors creates a more interactive setting to develop and document critique while enhancing the skills of mentors to build a proto-professional identity as more capable others in peer assessment. Such experiments have made a great contribution to creating a culture of critique in an authentic design milieu from the beginning studio and opening up new alternatives for effective assessment in design education. They still require strong planning, attentive observation, and disciplined practice; otherwise, the results can be misleading.

3.2.4 Student Involvement and Motivation in the Process

As learning pedagogies of design education prioritize active student engagement and reflection in problem-solving, assessment practices support this at the heart of the design process. Student-involved assessment processes foster a conscious attitude towards the task and shared objectives since they attain a deeper grasp of the assessment content as they practice learning and using the criteria (Stančić, 2021). This supports the constructivist theories of design pedagogy, referring to active learning regarding the experiential approach and flipped learning about responsibility to deal with relevant knowledge through self and peer review. The active learner role also enhances the fundamental design and intersubjective skills attempted for professional identity and effective assessment mechanisms in design education. Forming a student connection with assessment addresses a shift towards a more student-led process; however, students may need guidance depending on their different levels of readiness for *independent learning* (Megahed, 2018). Parallel to the learner-centered education paradigm, student autonomy can be promoted by the right to take part in *collaborative learning* and the processes of decision-making, making mistakes and corrections for assignments and assessments (Stančić, 2021). Guidance on student engagement with the assessment process also covers encouraging communication skills, particularly public speaking, to defend their work and respond to feedback (Megahed, 2018). This contributes to a transparent assessment structure that bolsters students to become more accountable and self-aware around common goals to build upon their work and values.

Effective self and peer assessment can be guided through different assessment methods and tools. Student involvement basically allows one to benefit from the contribution and value of each assessment methods it applies to. For example, in a panel discussion at the end of an exercise, as is often the case in Basic Design studios, the instructor may ask students to reflect on their work without judging or illustrating any work (Özkar, 2017). Cowan (2005) suggests a similar model used

in an architectural design studio where the panel discussion ends with students describing their design process step by step. He maintains that student-led discussion opens a peer dialogue and increases the benefits from self or peer learning and assessment. Such mechanisms depend on the redefinition or sometimes blurring of the role of studio members in design education. Yorgancıoğlu et al. (2021) highlight that when all studio actors contemplate their design process and share feedback, the stance of tutors or jury members alters from a proficient to a reflective practitioner. Student conceptions of assessment and the subject under review may evolve into the process that drives learning through a transition from external regulation towards autonomous motivation for assignment and assessment (Stančić, 2021). Motivation is an extrinsic or intrinsic force to take up the design process and act on relevant assessment acquired. This is a major enhancing factor for feedback literacy, leading to appreciating and managing feedback, making judgments, and taking action on feedback (Kara, 2021).

An important assessment strategy to follow for student motivation can be grading policy due to students' approach to the meaning and sources of grades and its impact on learning and assessment efficiency. Based on design pedagogy, Megahed (2018) asserts that assessment and grading are completely different and, therefore, should not go together. Instead, he appreciates the concept of deadlines, established through the critique process, that encourage design students to work on time and be productive. This method can be defined by the *ungrading* philosophy, which prioritizes comprehension and metacognition over conformity and accomplishment (Vernon & Paz, 2022). Ungrading mostly pertains to formative feedback from instructors that can be supported with student self-assessment or peer assessment. Emphasizing formative assessment as a coaching method, it takes a process-based approach to learning instead of just task completion (Kenyon, 2022). The concept of ungrading can be quite compatible with design studios, pointing to the assessment dichotomy between design-based education and university education models. The former has already developed authentic assessment methods that differ from the latter for multilayered design learning.

Thus, grading does not appear to be an effective option for design education assessments in its existing traditional form, rather than the common higher education system. Taking the emphasis away from grades liberates students for more authentic engagement and intrinsic motivation for *experiential learning*, in contrast to a numerical mark often derived from vague assessments in design education (Vernon & Paz, 2022). Still, there are potential shortcomings to consider in both higher education and design education contexts. For example, on the one hand, the implications of ungrading may result in students overrating themselves because of prioritizing getting higher grades over their learning or assessment practices. On the other hand, students may underrate themselves or their peers by being abstinent or overly critical in assessment. These may be especially true for beginning design students who are just beginning to develop assessment literacy. Therefore, the educational settings practicing ungrading can provide support or guidance to students for peer and self-assessment through standards-based assessment methods and tools. The implications for ungrading can be co-created assessment rubrics and reflection papers or presentations by students (Blum, 2020).

Dealing with rubric-articulated feedback in design education exerts many of the personal and interpersonal benefits of self and peer assessment (Blum, 2020; Krebs et al., 2022; Lombardi, 2008; Marriott, 2012; Nordrum et al. 2013; Salem & Dündar, 2019; Stančić, 2021; Yan & Carless, 2022). An exemplary rubric model developed by Yan and Carless (2022) proposes collaboration with student input in the self-assessment process in three steps: criteria planning and implementation, self-reflection, and calibration. The first step is to co-create or negotiate assessment criteria with students and support their application in studio productions through feedback processes to enhance understanding and operation of the criteria (Figure 3.3). Model creators suggest that the rubric can either be co-constructed or instructor-constructed to be shared and discussed with the students. While the model structure corresponds to democratic assessment ensured by multiple participants, the increasing number of raters raises the need for assessment training for intersubjective reliability.

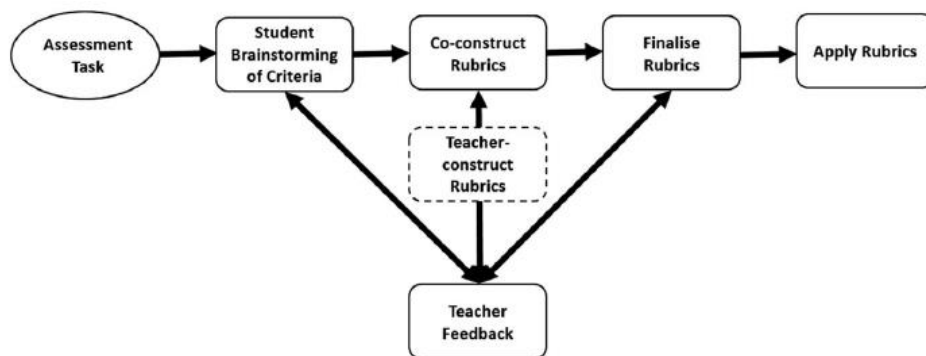


Figure 3.3 Co-constructing and applying rubrics

Note. From “Self-assessment Is About More Than Self: The Enabling Role of Feedback Literacy,” by Z. Yan and Y. Carless, 2022, *Assessment and Evaluation in Higher Education*, 47(7), p. 1119. Copyright 2022 by Taylor & Francis Online.

The second step is to open up internal feedback driven by self-reflection to strengthen its implication and impact. Students write responses comparing their work and the work of others with the guidance of reference information, that is, examples of different qualities that previous or current students have produced. While this process is expected to lead to the revision of their production performances and actions of feedback literacy, it is also claimed to be workload-efficient for the instructors. However, comparative reflection may damage the fundamental approaches of design pedagogy that respect differences in students’ backgrounds and abilities as well as unique design processes and progress. Also, if there is quality assurance referencing the work of other students, assessment can turn into a compliance mechanism, and the works produced can become standardized as creativity is constrained. Moreover, students’ use of rubrics should focus on their engagement in assessment procedures to achieve a more effective process. Therefore, an approach developed only to reduce the instructor’s workload by labor division between instructors and students may neglect the control mechanism and the instructor’s expertise and role in the assessment system.

The last step of Yan and Carless's (2022) model is to adjust the self-assessment judgments by reconsidering the assessment criteria and additional reference information obtained through feedback. At this stage, students submit their revised work and self-reviews to be randomly matched for peer review that involves both grades and written feedback against the generated rubric. Establishing a discussion foundation with peers and instructors by making self-assessment explicit may create an effective climate of critique, but it is doubtful that its calibration will do so. If calibration is needed for reliability and accuracy, this may apply to peer assessment similar to self-assessment; thus, it is debatable how significant they are to be calibrated. Regarding tools, in design education, a learning journal or reflection essay is a part of the learning process that can be revised by the student over time. Therefore, opening it up for an instant discussion is to skip the incubation phase and try to trigger the next learning by intervening.

For effective assessment improving student understanding and awareness, self- and peer assessment should be left to some extent informal for social learning, not structured completely under instructor control. Such a strategy can support the personality education of the *designer* and build a more reliable reciprocal feedback dialogue between student and instructor. This means increasing student participation in assessment practices relates to other strategies such as effective communication and clear processes, all aimed at greater student comprehension of the assessment material. Accordingly, currently, standards-based education treats self- and peer review as a learning strategy to enhance student engagement, motivation, and learning (Elbellahy, 2020). Indeed, these are common but often informal design education practices essential for constructivist learning; hence, the need for their standardization highlights the necessity of criteria-based assessment in design studios.

3.2.5 Critical Review of Criteria-Based Models and Tools

Authentic assessment in design studios requires context-based techniques and performance measures that establish a set of values to ensure reliability and validity in assessment systems (McAlister, 2000). Hence, there has been a shift towards more explicit assessment criteria in architecture and design education (de la Harpe et al., 2009). In this framework, different case-specific methods and tools have been developed, tested, and discussed under various parameters. Yet, there is no current agreement on the application of a standards-based design assessment model that describes predetermined performance expectations and their relative weights (Elbellahy, 2020). Among these, the most widely supported strategy in assessment discussions for learning is criteria-based models that can be implemented through rubric-articulated feedback (Nordrum et al., 2013). A growing number of design studio educators recognize that these tools employed are gaining significance in the studio outputs. This may stem from the potential of criteria-based assessment to optimize and overcome both temporary or permanent parameters and challenges faced by measurement and assessment in design education mentioned above. An effective rubric can reduce key concerns about the assessment of design work: measurement error due to subjectivity or inconsistency in ratings and excessive time spent on critique or rating (Eshun & Osei-Poku, 2013). Their use in design studios encompasses the aforementioned strategies for effective assessment, which prioritizes student learning through a holistic model of a clear, responsive, and student-involved process with impactful communication and time management.

A study on the student perspective on assessment in design education discloses that although course documents broadly involve the learning outcomes and expected tasks throughout the curriculum, the majority of students are unaware of the assessment process and criteria (Smith, 2011). This is a common pattern, especially among first-year Basic Design students, affected by their academic background, level of feedback literacy, and unfamiliarity with the design vocabulary and understanding. Still, they may be more likely to look and understand the tools that

they can relate to these learning outcomes through concepts referred to, explained, and discussed in studio critiques. Currently, the changing attitudes of students who want to gain broad information about their assessment and learning, regarding themselves as *consumer learners*, influence their actions upon feedback (Lombardi, 2008). Therefore, the use of criteria-referenced assessment tools in design education aims to bolster not only their understanding of criteria but also the self-confidence it brings to learning through self-assessment (Taylor, 2019). Since the rubric has a high capacity to increase self-assessment accuracy and thus also facilitate effective self-regulation in learning, its employment as a self-assessment tool has been attracting more attention (Krebs et al., 2022).

Orr and Shreeve (2018) note that “In contemporary higher education, clarity is viewed as a force for good that shines a light into the dark corners of the (often perceived as elitist) academy.” (p. 59). Introducing criteria-based tools at the beginning of a design task clarifies the mechanism to enhance student learning and performance, and prevent inconsistent and changeable criteria based on the preferences or biases of the raters (Elbellahy, 2020). Discussion on the documented criteria throughout the studio critiques then contributes to the construction of shared meanings of the learning environment (Orr & Shreeve, 2018). This illustrates the cultural understanding of design and its assessment through contextual practices, as *collaborative* and *situated learning* theories explain. Therefore, the applicability of criteria-based assessment tools in design education depends on contextual dynamics, such as assessment philosophy, suitability for the task, and attitudes of students and instructors towards assessment. This explains the growing demand from design and architecture educators for research investigating students’ perceptions of rubrics to boost student learning (Ellmers, 2006).

Çıkış and Çil (2009) present a survey of the assessment perspectives of instructors from four architectural schools in Türkiye. It shows that contrary to popular belief or discourse about the subjectivity of design practices, the majority of studio educators consider criteria-based assessment essential in design education. They also believe that the assessment criteria should be developed by the group decision

of the instructors according to the predetermined objectives of each semester. The system of multiple assessors who collaboratively set criteria through negotiation and apply them through a co-constructed tool implies democratizing and objectifying assessment in the design studio. A different survey by Eshun and Osei-Poku (2013) examines communication design students' views on rubrics in peer assessment and reveals a largely favorable attitude towards its implementation in the graphic design studio. Yet, the majority of students highlight the need for training in the use of assessment rubrics to help them develop skills and understanding to support learning. The results contend that the utilization of the rubric with appropriate training and facilities can have a positive impact on the learning experience by guiding studio-based activities. Training and guidance on the use of rubrics have been gaining ground with their ability to reduce discrepancies and intrinsically motivate students to uptake them for learning (Dawson, 2015; Morton et al., 2021). A related study by Çıkış and Çil (2009) demonstrates that, however, architect-educators may find technical assessment training in the design studio unnecessary for themselves. This view might introduce contextual challenges to its application in design studios; still, Eshun and Osei-Poku (2013) assert that the benefits of rubric for student learning override the challenges of organizational and staff engagement.

Besides the increasing interest in the use of criteria-based assessment in design education to facilitate effective assessment, the literature issues some critical points. For instance, Sadler (2005) warns against the overpreference of benchmarks and rubrics that leads to little consensus on how to use the criteria, and hence, instructors being subjective and inconsistent when interpreting them. This may be because focusing on the number of criteria rather than accurate standards of expected quality in the design of the rubric results in overgeneralization or overspecification. Sadler (2005) attributes the former to *elasticity*, the lack of precision in learning outcomes and assessment criteria, which makes them inadequate for communicating standards. On the other hand, the latter, emerging when assessment criteria are too detailed, risks overreliance on them. Both

overgeneralization and overspecification in the design work rubric can influence the assessment experience of all studio members, whether students or instructors. For example, overdefined assessment criteria may cause students to perceive them as checklists to get a good grade instead of constructing certain learning strategies by practicing *assessment as learning* (Torrance, 2007). Moreover, a related study displays that students believe that overly detailed criteria prevent design studio instructors from appreciating their creative efforts (Williams et al., 2010). In this manner, the art, design, and architectural education literature shows that rubrics may be insufficient to respond to the creative dimensions of student work and may undergrade them (Rayment, 2007; Taylor, 2019). This underlines the dilemma in criteria-based assessment dealing with unexpected and sometimes immeasurable values in design education, such as creative solutions beyond predictions. The growing literature offers many sources that examine rubrics as an instrument for creativity assessment. For example, a qualitative study comprising semi-structured questionnaires and interviews with the instructors focuses on the effectiveness of criteria-based assessment of creativity in graphic design education (Alhajri et al., 2017). However, there are also studies suggesting that including creativity and divergent thinking criteria in a rubric developed for project-based learning assessment in design studios may seem discriminatory (Clary et al., 2011). Besides, values of design processes and practices, such as self-awareness in the incubation and illumination processes of design thinking, that any criteria-based assessment tool cannot measure is an inevitable design studio fact.

The considerations in the preparation of a rubric reflect the approach that determines the assessment method in which it will be applied. Therefore, the aforementioned problems may not necessarily be directly related to the rubric content and detail but may be related to the assessment philosophy, such as strong compliance with the criteria. Overreliance on criteria by simply following the assessment rubric tends to be a setback with intolerance outside the predefined framework (Eshun & Osei-Poku, 2013). It may create a rigid pedagogical environment that hinders creative reactions or productions and misses

immeasurable design activities of the studio learning experience (Çıkış & Çil, 2009). According to Torrance (2007), assessment processes and practices outweigh this experience through a shift towards assessment as learning, resulting in the replacement of *learning* with *conformity to criteria*. He asserts that the clearer expectations are, the easier they would seem to attain for learners; hence, transparency through explicit criteria fosters instrumentalism among students and validates instructor support. He further questions the worthiness of the results obtained regarding the *challenge* of learning under conditions of the *imperative to compliance* and the *expulsion of failure*. It seems that understanding the assessment criteria and system cannot be guaranteed with a more transparent policy, nor is it sufficient for a more effective outcome in a multi-model and rich learning environment of design education. Thus, the introduction of criteria-based tools is not expected to harm the role of the studio tutor. On the contrary, the best assessment understanding is widely advocated to be achieved through contextualization of the criteria by combining explicit and tacit remarks, with reference to the connoisseurship model (Smith, 2011). Popham (1997) underlines that rubric creators should be aware that their endeavors should assist assessors, not overpower them. As assessment is an integral whole, complemented by dialogue through studio critique in addition to the tools, a criteria-based model always has some degree of subjectivity due to the human factor. While rubrics do not always produce consistently aligned rankings across all assessors, they can still be an effective assessment instrument for design work (Clary et al., 2011).

In parallel, Taylor (2019) describes students' acceptance and understanding of criteria-based assessment as subjective and ill-defined as design. This indicates the focus of relevant methods and tools as student understanding and learning, respecting learning-oriented design studio pedagogy. Here, student psychology and approach are also crucial besides the technical and academic factors. For example, rubrics can also become a source of stress that hinders performance under certain conditions, such as time constraints (Krebs et al., 2022). The rubric can put tangible pressure on students who are especially just beginning to deal with new types of

tasks with little experience in process management, such as Basic Design students. While criteria-based assessment tools offer a clear outline of expectations, they may present the written task requirements as a burden. Still, whether rubrics increase cognitive load or not is an ongoing discussion. On the one hand, they may lead students to infer to what degree their work responds to the prescribed quality; on the other hand, rubrics may prevent students from performing randomly without any guidance (Krebs et al., 2022). Either way, rubrics can be an effective self-assessment tool in design education because of their formative function that encourages reflection-in-action at multiple levels of independent and social learning. Since rubrics provide certain measures as a concrete guide, they may draw a path for students to become aware of their performance and potential. This means that rubrics can afford students the possibility to articulate what they are not capable of expressing regarding their activities. Hereby, they can encourage students to challenge something they would not have considered if they had not seen them together in a written tool.

Given all the advantages and concerns, criteria-based assessment tools are increasingly being applied around the world, such as the North American, British, and European education systems, to ensure transparency in assessment and learning (Nordrum et al. 2013). The following part of the research examines examples of alternative models to the traditional design studio assessment for a better grasp of more effective methods and tools. The literature reveals that these models mainly aim to bolster understanding of the criteria and the development of relevant knowledge and skills. Hence, they are driving a shift towards more authentic assessment that proposes greater student involvement through self- and peer review in architecture and design-based education. The discussion will accordingly be based on the current educational environment of the learning/learner-oriented paradigm.

The first case is a study investigating the effectiveness of rubrics in the first-year Industrial Design Studio at Carnegie Mellon University, presenting three assessment forms and an anonymous questionnaire provided to 49 students

(Rohrbach, 2008). The research reveals the significance of clear terminology, a planned introduction of the tool, and keeping an open mind for the assessment from the students' perspectives. According to the survey results, both students and instructors agree on the contribution of rubrics to the assessment of intangible attributes. However, they emphasize that the use of rubrics in design education requires a change in the understanding of the value and use of assessment tools. The study supports that the documentation of assessment tools with similar criteria but in disparate formats and their actual or perceived effectiveness by instructors and students need more attention. Thus, it presents three types of criteria-based assessment tools for three projects, focusing on design work, process, participation, and attitude based on a reference rubric shared with students on the first day of class. Figure 3.4 shows a row of criteria for *work* related to each project. The reference rubric uses a four-point scale to describe the level of performance, each ranging from excellent to unacceptable. For example, grasp of course concepts is described through “*key concepts*,” “*most concepts*,” “*some concepts*,” and “*no evidence*.” Yet, there are also ambiguities in the descriptors, such as ranking the quality of workmanship as “*stellar*,” “*good*,” “*poor*,” and again “*poor*,” which require differentiation between the last two items.

	Excellent	Good	Needs Improvement	Unacceptable
Work	consistently high-quality work is generated that takes an unconventional, yet appropriate approach to problem solving; craftsmanship is stellar; ideas are communicated clearly in visual and verbal forms; understanding of key course concepts is illustrated in work	good-quality work is generated that appropriately addresses the requirements of projects; no significant problem areas are visible; craftsmanship is good; visual and verbal communication of ideas is understandable; understanding of most course concepts is illustrated in work	the minimal amount of work is generated and is of fair-quality; work addresses some of the requirements of projects; craftsmanship is poor; visual and verbal communication of idea is difficult to understand; basic grasp of some course concepts is illustrated in work	poor-quality work is repeatedly generated that addresses few of the requirements of projects; craftsmanship is poor; idea communicated using visual and verbal forms are incoherent; grasp of key concepts isn't evident in work

Figure 3.4 A row of the rubric that students attending the freshmen design studio received on the first day of class

Note. From “Educational Assessment In Emerging Areas of Design: Toward The Development of A Systematic Framework Based On A Study Of Rubrics,” by S. Rohrbach, in D. Durling, C. Rust, L. Chen, P. Ashton, & K. Friedman (Eds.),

Undisciplined! - DRS International Conference (p. 7), 2008, Sheffield Hallam University. Copyright 2009 by Sheffield Hallam University.

Founded on this model, Figure 3.5 displays a portion of the rubric comprising the checkboxes used to define the performance level for each scale in the first project assessment. Instead of defining each quality level in itself, this rubric encodes the criteria with keywords or phrases, leaving the descriptors ambiguous and, therefore, based on a comparison of different levels. For example, the second description, which ranges from “*very effective and innovative*” to “*not effective*,” does not give a clue at which point of the design work to look for effectiveness; it just creates a relative difference among four levels through adjectives. Therefore, the assessment of this dimension will focus on comparison rather than quality, and the question arises as to why the rubric is used. Further, the small number of words in both the criteria definitions and the descriptors make them seem more like notes or reminders for the instructors themselves, rather than a tool for student understanding and self-assessment. Using such ambiguous expressions shortly and clearly may create a perception in students that the design assessment is sharp, rigid, and incomprehensible to them. Students may also easily think that they meet these criteria, which are explained inadequately and quite open to interpretation, without identifying them in their works. This can damage self-assessment accuracy and demotivate students for task performance if they detect inconsistency between self- and instructor critique.

Overall Work <i>(see the course syllabus for more information)</i> Project-specific Work: (CONTENT/COMPOSITION) use of visuals, motion, and sound to describe the actions and use of a tool in 2d form; (BALANCE) integration of visuals, motion, and sound in 2d form; (CONTEXT) depiction of brand and/or retail source of tool in 2d form	☐ excellent	☐ good	☐ needs improvement	☐ unacceptable
	☐ is very effective and innovative	☐ is effective in that it matches expectations	☐ is somewhat effective but opportunities may have been missed	☐ is not effective
	☐ is very well-balanced	☐ is fairly well-balanced (subtle distractions)	☐ is moderately balanced (moderate distractions)	☐ is not well-balanced (strong distractions)
	☐ is easy to identify, seamless, and accurate.	☐ is visible, fairly accurate, (identified by similar brands)	☐ is difficult to identify and loosely accurate	☐ is invisible and/or inaccurate

Figure 3.5 A section of the assessment rubric with checkboxes that were used to describe each student's performance levels in a range of areas

Note. From “Educational Assessment In Emerging Areas of Design: Toward The Development of A Systematic Framework Based On A Study Of Rubrics,” by S. Rohrbach, in D. Durling, C. Rust, L. Chen, P. Ashton, & K. Friedman (Eds.), *Undisciplined! - DRS International Conference* (p. 8), 2008, Sheffield Hallam University. Copyright 2009 by Sheffield Hallam University.

Another example of a rubric used to assess the second project is shown in Figure 3.6. This one prescribes common successful or unsuccessful steps taken by students along the design process. First of all, creating a dichotomy while describing the design process activities can lead to an absolute and one-sided development of approach to design. Step-by-step checkboxes can destroy the perception of *experiential learning*, which is an iterative process; thus, students may tend to follow a standard path to be sure and be overly cautious while avoiding *unsuccessful* choices. This can undermine the formation of a designer gaze throughout the process as it harms the learning by doing practice including self-discovery and learning from mistakes, the basis of Basic Design education. Hence, the rubric can turn into a restrictive tool for students to build their own design values. Besides, as in the previous rubric, some expressive ambiguities, such as “*effectively use*”, do not seem to provide the students with a reference to guide their work and enrich the learning experience.

<i>This row is intended to give you more detailed information regarding your process work for this particular project.</i> <i>The first column describes successful steps taken during the making of the chair and instructions.</i> <i>The second column describes common unsuccessful steps taken during the making of the chair and instructions.</i>	chair process ☐ effectively uses drawing and modeling as a means of structural exploration ☐ effectively uses sketching and modeling as a means of problem solving instructions process ☐ includes a strong assessment of the chair's design and construction ☐ uses the design and construction to define key points to be represented in the instructions ☐ translates key points in the design and construction into image-based instructions that don't require additional verbal or written explanations	chair process ☐ includes one idea that is pursued prematurely, with little or no evidence of a range of ideation ☐ includes lots of ideas but none that are pursued in depth, leading to the refinement stage ☐ has trouble integrating structural and aesthetic attributes instructions process ☐ includes a lack of understanding and/or poor representation of the key steps taken to build the chair ☐ explores a limited range of visual techniques as a means of communicating instructional steps ☐ includes minimal analysis of a website, solely building its structural appearance (grid) into the instructions as opposed to using its visual attributes (contrast)
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Figure 3.6 A part of the assessment rubric with checkboxes that describe common successful and unsuccessful steps taken by students

Note. From “Educational Assessment In Emerging Areas of Design: Toward The Development of A Systematic Framework Based On A Study Of Rubrics,” by S. Rohrbach, in D. Durling, C. Rust, L. Chen, P. Ashton, & K. Friedman (Eds.), *Undisciplined! - DRS International Conference* (p. 8), 2008, Sheffield Hallam University. Copyright 2009 by Sheffield Hallam University.

The last assessment tool is a sheet for written feedback and checkboxes to indicate the performance quality for the third project assessment, as Figure 3.7 shows. It offers a list of criteria and five-dot checkboxes indicating performance levels; both have no explanation. As a form of written feedback with no predetermined quality standards, it may communicate through spontaneous comments case-specifically and fail to convey the critique of each criterion to each student. According to the survey results of the relevant study by Rohrbach (2008), the students appreciate the attributes of the rubrics more, yet still prefer the written commentary as it is personal. This emphasizes that for the assessment tool to reach the students and be effective, it must first serve their understanding, regardless of its suitability for measurement.

	unacceptable	poor	fair	good	excellent
Resolution quality of work generated and approach to problem solving; craftsmanship; communication of ideas in visual and verbal forms, understanding of key course concepts illustrated in work; success of compositions individually and as a set; transformation of compositions	☐	☐	☐	☐	☐

Figure 3.7 A section of the assessment sheet with and area for writing comments and checkboxes to indicate the quality of performance

Note. From “Educational Assessment In Emerging Areas of Design: Toward The Development of A Systematic Framework Based On A Study Of Rubrics,” by S.

Rohrbach, in D. Durling, C. Rust, L. Chen, P. Ashton, & K. Friedman (Eds.), *Undisciplined! - DRS International Conference* (p. 8), 2008, Sheffield Hallam University. Copyright 2009 by Sheffield Hallam University.

The second example of criteria-based assessment is a general rating template developed by the University of Technology in Sydney for authentic assessment in group projects as shown in Figure 3.8. (Lombardi, 2008). According to the task requirements, the instructors can modify the tool before introducing it to students. The model suggests that students assess the contribution of each group member to the work, including their own, based on grades ranging from +2 above the group score to -2 below the group score. Hereby, the sum of the total grades in each row in the rubric must be zero. The rubric deals with student performance in group work, calling for skills and attitudes regarding *collaborative learning*, contrary to the first case, focusing on the design work quality. This shows that the structure of the criteria-based tool is adaptable to the context according to the intended use, and is open to combining tangible and intangible values, such as the design process and product of the studio work.

The third example is a criteria-based tool for assessing design quality in architecture. As inferred from the previous case, the rubric includes both product and process-oriented criteria: context, concept, form, function, performance, and skills (Eilouti, 2020) (see Appendix B). Alongside the criteria, the rubric has a column called *indicator*, including sub-criteria (e.g., *spatial layout* and *accessibility-and-circulation* for *function*) or defining the criteria in parenthesis (e.g. *presentation skills* defined as “*verbal, graphic, animation, modelmaking, and writing*”) (Eilouti, 2020, p. 158). While this clarifies the criteria content, the four-point descriptors of performance quality, relative or not, fall short of defining a certain standard. This is because the descriptors are formed through *problems* or *errors* in vague terms that make them hard for students to identify. The examples are “*frequent minor errors in graphic presentation,*” “*multiple minor errors or a major deficiency in the design sequence,*” or “*many minor problems or a major*

problem in integration.” An assessment tool created through such dense, ambiguous terms can create a cognitive load with much information and consideration for both students and educators, as mentioned above. Therefore, students may struggle to use this rubric for formative purposes as it may not enable a holistic assessment when combined with the uncertainties in the design process. The same problem may apply to the instructors in the summative assessment that can transform into a laborious process impeding effective judgment.

Criteria	Distinguished	Proficient	Basic	Unacceptable
Workload	Did a full share of the work—or more; knows what needs to be done and does it; volunteers to help others.	Did an equal share of the work; does work when asked; works hard most of the time.	Did almost as much work as others; seldom asks for help.	Did less work than others; doesn't get caught up after absence; doesn't ask for help.
Getting Organized	Took the initiative proposing meeting times and getting group organized.	Worked agreeably with partner(s) concerning times and places to meet.	Could be coaxed into meeting with other partner(s).	Did not meet partner(s) at agreed times and places.
Participation in Discussions	Provided many good ideas for the unit development; inspired others; clearly communicated desires, ideas, personal needs, and feelings.	Participated in discussions; shared feelings and thoughts.	Listened mainly; on some occasions, made suggestions.	Seemed bored with conversations about the unit; rarely spoke up, and ideas were off the mark.
Meeting Deadlines	Completed assigned work ahead of time.	Completed assigned work on time.	Needed some reminding; work was late but it didn't impact grade.	Needed much reminding; work was late and it did impact quality of work or grade.
Showing up for Meetings Score	Showed up for meetings punctually, sometimes ahead of time.	Showed up for meetings on time.	Showed up late, but it wasn't a big problem for completing work.	No show or extremely late; feeble or no excuse offered.
Providing Feedback Score	Habitually provides dignified, clear, and respectful feedback.	Gave feedback that did not offend.	Provided some feedback; sometimes hurt feelings of others with feedback or made irrelevant comments.	Was openly rude when giving feedback.
Receiving Feedback Score	Graciously accepted feedback.	Accepted feedback.	Reluctantly accepted feedback.	Refused to listen to feedback.

Figure 3.8 Group participation rubric

Note. From “Assessment In Authentic Learning” by M. Lombardi, in D. Oblinger (Ed.), *Making the grade: The role of assessment in authentic learning* (p. 9), 2008, EDUCAUSE Learning Initiative (ELI). Copyright 2008 by EDUCAUSE Learning Initiative.

The fourth example is a rubric for the assessment of interior design projects at Philadelphia University (Phillips, 2014). Figure 3.9 shows its *process* section that presents five-item descriptors for each level of performance. The rubric differs formally from previous examples for several reasons. First of all, it provides grade letters in addition to adjectives in the levels of performance. Further, it indicates the percent grade weight for each criterion and offers a space to write relevant grades for each criterion below this. Lastly, the rubric presents the descriptors in items, some of which are ill-defined or could be covered by another item. In contrast to this vagueness in qualitative assessment, the rubric appears to be more rigid in quantitative one. Due to its format, the rubric already offers a relatively defined rating intended to aid students' self-reflection by allowing comparison in the design learning process where management and assessment are critical. Hence, the priority of sharing them with students in design education seems to support their understanding through explicit systems and criteria rather than providing the clearest formulation of grading. If how to convert the performance rating to letter grades is left as a procedure to the instructors, students will focus on the content instead of looking for ways to calculate it with the available information. In short, since the format of the rubric can also guide how the content will be perceived and used, it should be designed to reveal the formative and instructive aspects of the tool.

	Formative (D/F)	Developing (C)	Accomplished (B)	Exemplary (A)
PROCESS: Work ethic, refinement and development throughout project WEIGHT: 20% GRADE FOR PROCESS:	1. Students are occasionally too dependent on instructor or others to move the design to the next step 2. Often unprepared for intermediate deadlines 3. Lacks initiative 4. Little research into refinement of working knowledge of design details, codes and standards 5. Students could improve in their ability to represent and communicate design intentions from <u>parti</u> development through design development through technically precise two and three-dimensional documents showing materials and methods of construction.	1. Students could push their design further independently more often 2. Meets most deadlines in a timely manner 3. Initiative is somewhat inconsistent 4. Could increase understanding & researching detail assemblies, codes & standards 5. Students demonstrate some ability to represent and communicate design intentions from <u>parti</u> development through design development through technically precise two and three-dimensional documents showing materials and methods of construction.	1. Students show occasional risk taking 2. Meets almost all deadlines in a timely manner 3. Average initiative 4. Students reasonably research detail assemblies, codes & standards 5. Students reasonably demonstrate the ability to represent and communicate design intentions from <u>parti</u> development through design development through technically precise two and three-dimensional documents showing materials and methods of construction.	1. Students show a great degree of calculated risk taking that has clearly shaped the design 2. Meets all deadlines and often works ahead 3. Shows consistent initiative 4. Students are self motivated when researching detail assemblies, codes & standards 5. Students clearly demonstrate the ability to represent and communicate design intentions from <u>parti</u> development through design development through technically precise two and three-dimensional documents showing materials and methods of construction.

Figure 3.9 The process portion of a rubric used to assess interior design students

Note. “Moving Past ‘Grading From The Gut’: Defining Meaningful Assessment Criteria In The Design Studio” by L. Phillips, in *Proceedings of the ICED 2014 Educational Development in a Changing World* (p. 4), 2014, ICED. Copyright 2014 by ICED.

In this context, another rubric prepared by Ragheb (2016) for graphic design projects in a similar form that specifies grade weight for each criterion, includes a column for learning outcomes before the criteria (see Appendix A). The explanations provided herein contain some unmeasurable statements, such as “*understand the basics of surveying and the orthographic projection*” (p. 1023). Since learning outcomes guide the determination of assessment criteria to capture the indicators in the student's performance, their inclusion in the rubric with ambiguous expressions may cause students to perceive inconsistencies in the assessment. This is because students who reach such information have a common tendency to react like: “How did I earn this low grade when I completed all of the drawings required?” (Phillips, 2014, p. 1).

As in the examples, the number of studies investigating the efficiency of criteria-based tools that are contextually developed in design studios is increasing in the literature. Despite the shortcomings, many of these demonstrate that rubric supports learning as a pro-student tool and facilitates the assessment mechanisms of design education. For example, Wolf et al. (2008) present a study on the use of rubrics for assessment at the University of Colorado Denver Landscape Architecture first-year graduate studio. According to the study, the rubric fostered student progress through *active learning*, as it provided a framework for self-assessment. The rubric is said to create a more coherent assessment and ease the process by shifting the discussion focus from the studio tradition of personal judgments to a clear professional language shared by the assessors. The study argues that the utilization of the rubric by the tutor team as both a formative and summative instrument reinforces this result. Thus, it also emphasizes that design project assessment still requires tutors' expertise while the rubric lays a

groundwork for common values and objectives. Considering these, the continuous debate over the use of criterion-referenced assessment tools in design education requires a coherent and convincing justification (Rayment, 2007). In the next part of the research, a qualitative study explains the rationale for this thesis based on the contextual problems and potentials regarding measurement and assessment in architectural Basic Design studios in Türkiye.

3.3 A Qualitative Study of the Instructors' Perspective

Referring to the main research question, *How can measurement and assessment be (more) effective in architectural Basic Design education?* this study focuses on the following sub-questions:

- What are instructors' perspectives on the challenges of the measurement and assessment regarding philosophy, processes, and practices?
- What features define *(more) effective measurement and assessment* based on students' and instructors' perspectives?

The following parts describe the methodology of this research, including its design, context and participants, data collection instruments and procedures, and data analysis with the results. Trustworthiness issues and limitations of the study are also presented briefly.

3.3.1 Design of the Study

This study aimed to get the perspective of instructors on the current challenges and potentials of measurement and assessment in architectural Basic Design education. Since limited research focuses on this subject in the Turkish context and ongoing discussions call for a review of current situations, the study defines its framework as the architectural Basic Design studios in Türkiye. On this basis, it employed a basic qualitative method dealing with “natural setting, interpretation and meaning,

and how the respondents make sense of their own circumstances” as Groat and Wang (2013, p. 218-219) define. To comprehend individual reflections, the study appealed to educators’ approaches to their actions, experiences, and contextual conditions. Thereby, the qualitative research actively engaged in the research process by guiding and transforming research questions in the interpretive and iterative process (Groat & Wang, 2013). This informed the following case study, also carried out at an architectural Basic Design studio in Türkiye, and strengthened the consistency between successive studies.

3.3.2 Context and Participants

Measurement and assessment processes and practices within the disciplines of design and architecture vary across educational settings. Both the structure and content of the assessment models are critical indicators of the prominent instructional approach towards (architectural) design teaching. This approach is rooted in the way design knowledge is produced and used; thus, it is related to the educational philosophy that forms institutional assessment (Farivarsadri, 1998; Marriott, 2012). Based on this, the context of the current study was determined within the scope of Basic Design studios in different architectural education institutions in Türkiye.

According to 2022 data provided by the Council of Higher Education, there are 104 (79 state and 25 foundation) universities with architecture programs in Türkiye. 76% of these programs involve *Basic Design*, while 24% of them give similar courses with different names, such as *Design*, *Design Fundamentals*, *Design Studio I*, *Introduction to Design*, *Introduction to Architectural Design*, and *Architectural Design I*. The course hours and weights in their curriculum demonstrate the significance of Basic Design education in contemporary architecture schools in Türkiye. Many of these architecture departments set similar initial design course objectives and learning outcomes regarding basic design elements and principles. In this sense, the Bauhaus pedagogy seems to be still influential in these learning

environments (Salem & Dündar, 2019). Yet, there are certain differences in terms of course hours, curriculum, and its relationship with other courses. Furthermore, some of these Basic Design studios may take different approaches to scale and content as they work in partnership with regional planning, industrial design, or interior design departments. Therefore, the current study aimed to conduct interviews with a group of instructors from these universities that would provide valid information on contemporary measurement and assessment in the Basic Design studios of architecture departments in Türkiye.

As this study sought to comprehend phenomena in a specific context, the participants were selected accordingly. The main criterion was experience in Basic Design studios of different architecture schools in Türkiye and the limitation was accessibility to the target participants. After identifying fifteen possible candidates from architecture departments in five different cities, the researcher contacted them to ask their interest in being included. As a result, the participants of this study were twelve instructors from the contemporary architecture schools in Ankara (n=8), İstanbul (n=3), and İzmir (n=1).

3.3.3 Data Collection Instruments and Procedures

To understand the experiences of individuals through basic qualitative research, the study used interviews as a data collection instrument. At the outset, the researcher developed semi-structured questions targeting research questions, contextual data, and individual assessment philosophy. These mainly cover current practices, problems, potentials, and suggestions for measurement and assessment in architectural Basic Design studios. Since the language of the interviews to be held was Turkish, the native language of the participants, the questions were prepared and compared in both languages. The initial draft was discussed and revised with the supervisors regarding terminology, question order, and congruence with the purpose and scope of the study. The researcher then consulted two experts, one from the department of architecture and the other from the department of

educational sciences, to get feedback on appearance and validity. Against biased or vague statements, both experts were asked to examine the interview questions in terms of format and content suitability. The experts mainly commented on the preparation of clearer, more relevant, and less directive questions. After necessary revisions, the researcher conducted a pilot interview with an architect-educator who has years of experience in the Basic Design studio and qualitative research. The interview was made online and recorded with expert approval to prevent data loss.

The output of the pilot study informed the researcher about the clarity and flow of the questions as well as the duration of the meeting. Considering the expert opinions, to have a clearer idea about the future of the study, a question about the use of criteria-based assessment tools was added. The last draft was again discussed with the supervisors and took its final form (see Appendix C). In line with the research questions, the scope of the interview questions on the current measurement and assessment mechanisms can be listed as follows:

- aim, role, and value
- institutional and individual philosophies
- process, practices, methods, and tools
- positive aspects
- challenges
- suggestions for (more) effective assessment

Moreover, additional questions on the philosophy and practice of measurement and assessment regarding the scope of the study aim to elaborate on the following:

- use of written and/or measurable criteria and relevant tools
- student involvement in the processes and practices

Following the determination of participants and preparation of the data collection instrument, an application was made to the Middle East Technical University Human Subjects Ethics Committee, and ethical approval was received (see Appendix D). The researcher contacted the participants and prepared a one-month

data collection program before the 2022-2023 Fall semester. Provided with the *Voluntary Participation Form*, the participants were informed about the purpose and scope of the study, and their questions were asked before the interviews. They were also reminded about their right to leave the study at any time and the confidentiality of their identity and answers for anyone other than the researcher. The semi-structured interviews were held online via *Zoom* meetings, lasting between 30 to 80 minutes, and audio recorded with the consent of the participants. After each meeting, the recordings were labeled and organized on the computer.

3.3.4 Trustworthiness Issues and Limitations of the Study

The principles of quality standards for trustworthiness in research encompass truth value, applicability, consistency, and neutrality (Groat & Wang, 2013). While the typically accepted standards of the (post)positivist paradigm are internal validity, external validity, reliability, and objectivity, Guba and Lincoln (1998) describe an alternative set for naturalistic research, including credibility, transferability, dependability, and conformability. This section will address both existing classifications.

The idea behind internal validity and credibility is whether the key concepts and actions of the study are truthful representations of the situation or circumstance under study (Groat and Wang, 2013). Procedures that can be applied for the credibility of a qualitative study are prolonged engagement with data, member checks, triangulation, peer review, and referential adequacy (Lincoln & Guba, 1985; Merriam, 2009). This study employed prolonged engagement with the data and peer review. The former was performed through long-term interaction with the data, using the notes and comparisons taken by the researcher during and after the interviews until the data reached saturation. Peer examination was implemented at multiple levels of the study. As stated in the data collection instruments, the interview questions were examined by four experts (two from architecture and two from educational sciences departments), including the thesis supervisors, and were

practiced through a pilot study with an architect-educator. Necessary revisions were made to the interview protocol to increase credibility. Additionally, the supervisors monitored the data analysis process as the researcher was unfamiliar with qualitative research procedures. The initial coding of an interview conducted by the researcher was revised by reviewing the transcript with the co-supervisor, and other interviews were conducted by the researcher accordingly. Again, to finalize the data analysis, the compiled quotes were examined together to reduce codes and themes.

External validity and transferability concern whether the results of a study can be applied to another setting or situation (Groat & Wang, 2013). According to Lincoln and Guba (1985), transferability can be achieved through *thick descriptions* that allow the relative similarity of different contexts to be evaluated. Therefore, this study provided a framework for the qualitative research context and related considerations, along with data collection and analysis procedures that can be applied to other conditions.

Reliability and dependability deal with the consistency of data measurements or findings, including the traceability of predictable instability in the data (Groat & Wang, 2013; Guba & Lincoln, 1998). The main instruments to achieve dependability are triangulation, audit trail, and peer review (Merriam, 2009). In this study, peer review was used during the data analysis phase to ensure consistency, as mentioned above.

While the notion of objectivity refers to the extent to which the research is free from possible biases of the researcher (Groat & Wang, 2013), Guba and Lincoln (1998) instead emphasize the conformability of data and interpretations. According to them, this can be maintained through triangulation and reflexivity of the investigator. Reflexivity necessitates the researcher to disclose any epistemological assumptions, their impact on the research inquiry, and any changes in viewpoint that may occur during the study (Groat & Wang, 2013). The researcher of the current study was part of the process with prior experiences as a student, observer,

and novice instructor in Basic Design studios and was hence knowledgeable about the context. This influenced the production of data collection instruments and the interpretation of the data. The researcher practiced reflexivity by taking notes during the interviews, including individual thoughts that affected the research process.

This research had some limitations. The first limitation was how representative the accessible participants were of architecture schools in Türkiye. Target participants were selected from five different cities considering accessibility, and the twelve instructors who agreed to participate were from architecture schools in three different cities. A broader sampling from different contexts would reveal more aspects of the measurement and assessment in the Basic Design studios of architecture departments and enrich suggestions for (more) effective assessment. The second limitation was that the researcher had limited prior experience in conducting interviews. This could have run the risk of interviews becoming long or unfocused. Therefore, the researcher conducted a pilot study and consulted the supervisors on the subject. For data analysis, the study utilized peer review to increase credibility and dependability; however, as the work of a single analyst, it had no means to cross-reference the coding of all data with other investigators. Thus, the researcher attempted to adequately engage with the entire data set by comparing the validity of the codes and themes with the meanings obtained from interviews, as well as the aim and scope of the study. The final limitation was the temporal effects on the participants, which they may not have been aware of during the interviews. For example, the virtual environment of the meeting may have introduced distracting environmental factors or created distrust of privacy.

3.3.5 Data Analysis and Results

The initial step in data analysis was getting familiar with the collected information. The audio recordings were transcribed via *Transkriptor* application and the researcher went through each of them by listening and reading to make the

necessary spelling and punctuation corrections. In the analysis, the purpose of the researcher was to develop insights into current approaches, practices, challenges, and potentials for measurement and assessment by organizing the interview data regarding the research questions. Data analysis was performed in *MAXQDA 2022* software.

As stated above, the interview questions determine six main categories related to research questions. Inductive and comparative data analysis was employed to address these categories through coding establishing themes. The coding process started with open coding by grouping data into separate quotes and labeling them to create any possible codes. A large number of preliminary codes involved the detailed expression of the participants so that the themes could be formed correctly and comprehensively. The initial themes were generated by comparing and interpreting the pre-codes to cluster the related ones. To refine the existing codes and themes, the compiled excerpts for each theme were analyzed to make sure that they display separate coherent patterns referring to research questions. Afterward, the code list was reduced and arranged considering similarities and recurrences, taking care to preserve the meaning of participant expressions. This step was followed by the reduction of two themes that fell outside the scope of the associated research questions. To finalize the data analysis, the researcher meticulously re-read the whole data set to ensure that all the meanings obtained from the interviews were retained. It is also checked whether the codes met common denominators and constructed the relevant themes and whether the themes referred to the purpose and scope of the qualitative study. The resulting themes and codes, along with their definitions, are presented in Appendix E.

The results of the qualitative data analysis encompass six categories: (1) role of assessment, (2) assessment philosophy, (3) assessment processes, practices, methods, and tools (4) positive aspects of assessment, (5) challenges of assessment, and (6) suggestions for (more) effective assessment. Given the scope of the thesis and this chapter, the results of the qualitative data analysis will be presented with reference to the fifth and sixth categories.

The findings related to the category of challenges respond to the following research question: *What are instructors' perspectives on the challenges of the measurement and assessment regarding philosophy, process, and practices?* In this regard, seven themes and nineteen codes emerged, as shown in Table 3.1.

Table 3.1 Themes and Codes for Challenges of Assessment

THEMES	CODES
Institutional policy	Numerical grading
Instructor-related factors	Unconstructive assessment Fairness concern
Workload	Tracking and critiquing a large number of students Time-consuming and tiring process
Subjectivity	Subjective approaches against objective criteria
Ambiguity	Absence of rational absolute truth in design assessment Assessment limited to the framework of student work
Student characteristics	Openness to learning through assessment Adaptation to a new educational system and learning style Adaptation to new terminology Formation of the studio culture
Assessment literacy	Comprehending assessment Grasping the meaning and source of assessment Acting upon assessment Taking responsibility for assessment Managing emotional challenges Peer collaboration Peer competition

The most frequently mentioned code was *tracking and critiquing a large number of students*, denoted by all participants. Most of them spoke of the difficulty of dealing with the interests and performance of all students. As P1 explained, “*I think that due to a large number of students, there is not much space left to find the areas of interest of the students, their curiosity, maybe the things that they will realize that they are doing better.*” Several noted that few studies can be reviewed in panel discussions compared to class size. As P12 stated, “*If panel discussions were held with fewer students, they could be assessed and monitored better.*” Some instructors shared how this problem impacted their assessment strategy. P9 explained that: “*The large number of students is a problem for us. As instructors, we start to get tired towards the end; that’s why we always try to change the order while criticizing.*” Further, the majority of the instructors called the assessment process a *time-consuming and tiring process* due to the class size. The two codes mentioned above formed the theme of *workload*.

The second most frequently mentioned code of the challenges of the measurement and assessment in the Basic Design studio was *subjective approaches against objective criteria*, denoting the theme of *subjectivity*. The participants mainly highlighted the duality of the subjectivity of design and objectivity of associated criteria. As P4 expressed, “*The greatest difficulty is that we have to assess both the design process, we call a subjective process, that includes subjective elements, with some objective criteria. Striking the balance between these two is not an easy task from the perspective of the instructor as a studio executive.*” In addition, almost all of the interviewees agreed that despite different points of view, they had a common ground on the assessment criteria among the assessors. P6 stated that: “*In the assessment, there is a point where Basic Design stands apart. Of course, we personally have inevitably different approaches and opinions, but I think we have created a common language.*” Some noted that the main difficulty in this regard was to convey the balance between objectivity and subjectivity in assessment to the student. As P7 explained, “*There is a designer-assessor in the studio with an*

individual approach. However, it is a little difficult to explain to the Basic Design student that assessment is still based on much more objective criteria.”

Another common problem denoted by more than half of the respondents was the *absence of rational absolute truth in design assessment*, belonging to the theme of *ambiguity*. The instructors reported that design processes and practices have some peculiarities that cannot be identified or predicted precisely, thus creating uncertainties in the relevant assessment. As P3 stated, *“As the design process is not completely rational, there is no clear-cut assessment system such as question and answer.”* P4 clarified the challenge as follows: *“There is no single answer to design problems and the design process; there are multiple alternative solutions. Therefore, it is not possible to say very clearly to the students that ‘this is that, that is that’.”* The other code that came up regarding the ambiguity issue was *assessment limited to the framework of student work*. This denotes the formulation of assessment based on the specific framework of student work, which results in the assessment failing to convey some criteria to the student case-specifically. P2 expressed the ambiguity of the assessment process in the following words: *“We do not talk over the textbook, we discuss the issue over the works done and we try to come to a place through an undetermined route.”* Some participants underlined that the agreement on certain assessment criteria cannot avoid ambiguity in spontaneous dialogue in assessment. As P5 explains, *“Although we share a common value judgment with the instructors to the extent of providing certain parameters, we can make different assessments in each project since we cannot discuss a criterion that is not there.”*

The following findings obtained from the data analysis present the codes that appeared under the theme of *student characteristics*. The first code was *openness to learning through assessment*. Two of the respondents used the term *resistance* for this issue. P1 stated that: *“The biggest problem is student resistance. If we manage to overcome this, the process proceeds better.”* P10 described the impact of student resistance on the understanding of assessment as follows: *“When students behave resistant, they do not understand the grade they received. We cannot communicate*

due to this resistance; if they listen, they will understand, but they do not listen. This is the biggest problem for me.” Further, the instructors pointed to the intrinsic motivation of the students as the determinant of their openness to learning through critique. On the contrary, hesitation in speaking and getting critiques in public was indicated as an inhibitor of student learning through design studio critique. The second code related to this theme was *adaptation to a new educational system and learning style*. This was the third most frequently mentioned code of the current category. Most of the participants noted that Basic Design students had a hard time grasping that hard work in the design process does not have to yield ‘successful’ results in terms of grades due to their prior learning experiences. P10 explains that: *“They're all good students, they come accustomed to getting good grades, and for them, studying means getting good grades. This is not always the case in design learning, it takes time for them to accept it.”* Another often recorded code specific to Basic Design students was the *adaptation to new terminology*. Regarding that, the instructors stated that the communication problems in the beginning design studio mainly stemmed from students’ lack of design terminology and thinking systems. The last code that emerged in this theme was the *formation of the studio culture*. Some participants noted that the miscommunication formed by the multiple studio dynamics among students negatively affected the assessment dialogue. As P8 described, *“Different studio dynamics and cultures are formed with different students every year. The miscommunication between them is reflected in their studio work, their communication with us, and the dialogue in the assessment.”*

The fifth theme of the challenges of assessment in the Basic Design studio was *assessment literacy*, consisting of seven codes. The first code was *comprehending assessment*, indicating students’ difficulty in understanding the assessment criteria and mechanisms at the beginning of the design education. Another relevant code was *grasping the meaning and source of assessment*. More than half of the respondents indicated that Basic Design students tend to treat the assessment as a checklist. P8 detailed this as follows: *“At the beginning of design education,*

students often do not understand the source of the grades, so I hear the question a lot from these students: 'Why did I get 70 when I did everything asked?'. In addition, the instructors emphasized that students might perceive the assessor's personal preferences as a source of assessment. As P11 exemplified, "First-year design students develop a reflex like this: '...(instructor's name) doesn't like symmetry'. Actually, there is no such thing, but the students act like 'Don't do anything symmetrical', thinking of the instructor who will assess their work." The participants also noted that some students did not trust the fairness and expertise of studio executives for various reasons, regardless of whether they understood the assessment criteria or not. Most respondents attributed this to the fact that Basic Design students had not yet developed assessment literacy. As P1 explained, "Both those who pass and fail the course may think that I am not fair, but I think a serious maturation process is required for an architectural designer to be able to make judgments about his own work or what others have done. It is not possible to catch this in a semester." P6 emphasized that the peer factor affects this: "No matter how much we explain this every time, there are always grade objections. Comparing their grades with their peers', they may not trust our assessment." Besides, two peer-related codes associated with assessment literacy emerged: *peer collaboration* and *peer competition*. More than half of the participants mentioned that they applied peer assessment methods mainly in group work to see its impact on student learning in Basic Design studios. One of them even stated that it was applied formally, that is, in a way that would affect students' grades, systematically in the studio. All these respondents agreed that peer assessment did not yield meaningful results since students were generally not objective for two reasons. The first one is *peer collaboration* due to solidarity. As P5 stated, "Students are very reluctant to comment on each other because they believe that when they criticize each other, they reveal their vulnerability in our eyes." The other reason was *peer competition* bringing out mistrust in peer assessment or "sacrificing someone else for their own success" as P1 described. P6 detailed this problem as follows: "Surprisingly, students may hide their work from each other and may not want to participate in

the assessment together due to competition.” Another code related to the theme of *assessment literacy* and related student performance was *acting upon assessment*. Some respondents noted that beginning design students needed time to take action based on the assessment they received. In relation to that, the instructors also pointed to students’ difficulty in *taking responsibility for assessment* by taking an active role. P2 stated that: “*The process in which students develop their perspectives, take initiative in learning experience, make some decisions, and take responsibility for these decisions challenges novice designers.*” According to participants, *managing emotional challenges* about assessment was another challenge of the design process, which develops along with *assessment literacy*. They highlighted that assessment often evokes negative feelings in design students, such as anxiety, embarrassment, and fury.

Another theme created in the data analysis of the challenges of assessment in Basic Design education was *institutional policy*. The only code that came up for this theme was *numerical grading*. The respondents describing this problem also emphasized that they preferred only to give critique rather than grading. As P3 explained, “*I prefer an assessment format that is not dominated by numerical grading, such as critiquing students. The numeric grade application of the department sometimes leaves no room for the instructors in assessment in the design studio.*” Further, P8 stated “*Grade, on the one hand, is the concrete equivalent of something, but I think it is the most unpleasant part of our work. It is better to give the student critique because grading everything can be a tedious thing.*”

The last theme of this category was *instructor-related factors*, involving two codes. The first code was *fairness concern*. The reason for associating this with the instructors was their definition of the problem in reference to personal issues. Many participants mentioned that as assessor teams, they went through intense assessment processes in order to be fair and to fulfill the procedures. As P7 expressed, “*I hate grading. The biggest problem is this conscientious responsibility. The effort to give the right grade and the necessity of reflecting this*

sense of justice on hundreds of grades makes me very tense and tired.” The other code in this theme was *unconstructive assessment* by the instructors. Some studio executives acknowledged that starting with or focusing on negative aspects in the assessment of student work might demotivate students as designers and prevent them from participating in design tasks and assessments.

Following the results of the challenges, the next part presents the instructors’ perspective on (more) effective measurement and assessment, referring to the following research question: *What features define (more) effective measurement and assessment based on students’ and instructors’ perspectives?* This category consists of nine codes under four themes as shown in Table 3.2.

Table 3.2 Themes and Codes for Suggestions for (More) Effective Assessment

THEMES	CODES
Learner-centered approach	Multimodal assessment for different needs Effective communication
(More) outside opinion	Contacting other courses Hosting outside jurors
(More) student involvement	Getting student feedback on the studio and assessment practices Getting student feedback before setting criteria Implementing formal peer assessment
Transparent assessment	Clear assessment mechanism and criteria Criteria-based tools

The first theme of (more) effective assessment was the *learner-centered approach* that indicates the restructuring of existing practices in Basic Design education. The most frequently repeated code was *multimodal assessment for different needs*, voiced by all participants. They drew attention to the diversity and multi-purpose

assessment in Basic Design education to support learning. Most instructors stated that considering the difficulty and length of the task, student performance and work, as well as feedback on the assessment increased efficiency. As P12 exemplified, *“Brainstorming on panel reviews at the beginning of a design exercise paves the way for students to discuss and learn together. Yet in some cases, desk critiques with fewer students can be more effective due to the diversity of learning styles and elaboration of student work.”* The second code of this theme was *effective communication*. Almost all participants highlighted the impact of communication on student engagement and learning. As P1 expressed, *“When students feel accepted in the studio by their presence, name, individual characteristics, and experiences, they start walking with us.”* Regarding that, some instructors shared their strategies for recognizing and following the students. P4 stated the following: *“I learn the name of each student in a short time, I call them by name, I take care of them personally.”*

The second theme was *(more) outside opinion*, consisting of two codes. In this context, some instructors pointed to *contacting other courses* that conceptually supported the studio for the understanding of the assessment criteria. Three of them mentioned that the curriculum of existing first-year courses outside the studio in their schools and the studio curriculum were created in parallel with this concern. P11 explained the system they are applying as follows: *“At the studios meeting, each grade level of the studios explains both its pedagogy and assessment practices and methods. There we get very productive feedback that can guide the Basic Design studio.”* Regarding getting feedback for assessment, more than half of the respondents mentioned *hosting outside jurors* in design juries. They stated that in addition to multiple assessors in the studio, hosting jurors from outside can allow the students to grasp the subjectivity and plurality of design. Some further mentioned the advantage of inviting students from the upper classes. P9 explained the effectiveness of their current strategy as follows: *“The transfer of older students' own experiences from previous years makes a very important contribution*

to both the learning environment and increasing the dialogue between the studios, which are co-production environments.”

Another theme related to (more) effective assessment was (more) *student involvement*, created by three codes. The first one was *getting student feedback on the studio and assessment practices*, which could be realized with different methods or tools. Most participants underlined the importance of taking student perspective on the needs, problems, and potentials of studio execution and assessment mechanisms both during and at the end of the semester. They also mentioned getting feedback from students on their learning experiences and progress to improve educational and assessment provisions. According to the instructors, these could be done through in-class exercises or discussions, assessment forms, and end-of-term colloquia. The second code in this theme was *getting student feedback before setting criteria*, indicating a participatory assessment planning process. As P2 proposed, “*It would be a good idea to get students’ opinions while creating some criteria. We can include them a little with questions such as: ‘What do you expect from this project? What do you think a good result shows in the project? What do you look for in a good project in such a process?’*.” The last code for the (more) *student involvement* theme was *implementing formal peer assessment*. As mentioned above, many participants stated that they have implemented such practices. However, the instructors acknowledged that they did not provide much benefit due to the students’ attitude and the lack of useful assessment tools. Still, the majority agreed on the potential of integrating systematic peer review into studio practice through effective assessment tools.

The final theme of this category was *transparent assessment* with two associated codes. One of them was *clear assessment mechanisms and criteria*. All participants agreed on the effectiveness of providing clear assessment criteria for both students and assessors and described three main methods they used. The first one was *planning assessment*, that is, determination of assessment criteria and system before the assessment. The second method was the use of *instructional materials*

informing about assessment, such as syllabus and assignment sheet. The respondents mentioned that these explain the grades to which student performances correspond, the grade weight of student work and performances, or the assessment process and timetable. The last method was the *presentation of assessment criteria in the studio* through emphasis and attention to them in reviews and discussions. P5 put plainly: “*Most importantly, the assessment criteria and the learning outcomes that must be obtained during the term and for each assignment separately should be presented clearly to students and assessors.*” In relation to that, the other code for *transparent assessment* was *criteria-based tools* that are used to provide clear and objective assessment criteria. Most of the studio instructors underlined the significance of *sharing the assessment criteria and system transparently with the students* for an effective assessment while defining their assessment philosophy. Half of the interviewees stated that they benefited from written assessment criteria in studio critique or design juries. Two of them added that they use criteria-based tools in their Basic Design studio. As P9 explained, “*I think that it is possible to progress much better with rubrics that express expectations for students. We use them and write criteria such as ‘associating parts in three dimensions in space, establishing a certain systematic, hierarchical, and static order’ there.*” While most of the instructors stated that the rubric could be efficient as an assessment instrument, they also expressed some criteria regarding their role in assessment in the Basic Design studio. For example, P9 stated that: “*Rubrics can be a cohesive or collaborative tool and control mechanism, but not the entire assessment in the design studio should fall within the confines of the rubric.*”

In this context, as previously stated, there were also interview questions focusing on the use of written and/or measurable criteria and relevant tools considering the purpose and scope of the study. With the answers given to the following questions, the instructor view regarding the next stages of the current study was taken:

Are there any written and/or measurable assessment criteria for student works or performances? Why?

- i. If any, how and by whom are they determined?
- ii. If not, would you define them as a need? Why?
- iii. What do you think about using criteria-based assessment tools, such as rubrics, in the Basic Design studio? Why?

Nine out of twelve respondents described criteria-based tools like rubrics as an effective tool and need for the Basic Design studio. Besides its advantages, the instructors also expressed the considerations and limitations for its use and their concerns about possible negative consequences. On this basis, Table 3.3 displays the instructors' rubric definitions, taking into account the (possible) positive and negative impacts on assessment in Basic Design education. The common consideration of all respondents expressing positive or negative aspects was that the rubric should be flexible enough to give room for subjectivity. They noted that as long as this is ensured, they may consider using the rubric in their studio despite the risks and shortcomings.

Table 3.3 (Possible) Advantages and Limitations/Disadvantages of Using Rubrics in Basic Design Education

Advantage	Limitation/Disadvantage
Coherent and objective	Time-consuming for assessors
Explicit	Perceived as checklist by some students
Transparent and reliable	Unable to define creativity
Convincing for students	Unable to consider individual differences
Motivating for students	Unable to assess design process
Useful for guest jurors	Unable to detect current average quality

This study revealed a variety of significant findings and conclusions. Although not all the results of the participant data were presented in this thesis, they contributed to the contextual understanding of the relationship between instructional approaches and assessment philosophies. Despite the various dynamics in the twelve architecture schools in Türkiye, they share many common points in

measurement and assessment in the Basic Design studios. Further, the instructors' views on the challenges and potentials are similar in many respects and are in line with the literature. Their perspective constitutes a profound guidance for designing an effective assessment for architectural Basic Design education.



CHAPTER 4

DEVELOPMENT OF AN ASSESSMENT RUBRIC FOR METU DEPARTMENT OF ARCHITECTURE BASIC DESIGN STUDIO

Through the literature review and qualitative research presented in previous chapters, this study addresses the fundamentals, practices, challenges, and potentials of the measurement and assessment in Basic Design education. Based on the educational shift towards criteria-based assessment models and tools, it dwells critically on the relevant current approaches and applications while respecting contextual differences. This research reveals that the use of criteria-referenced assessment instruments in (basic) design studio brings out certain considerations, limitations, advantages, and shortcomings. Therefore, it continues to be discussed, receiving increasing attention in architectural education research. With these in mind, this study supports that criteria-based tools can facilitate effective measurement and assessment for student learning when developed considering contextual dynamics for certain tasks in (architectural) (basic) design education.

On this basis, it addresses a further research question: *How can the criteria for a design artifact be described in an assessment rubric for an architectural Basic Design exercise?* To contextualize the preceding discussion, it expands on relevant points to consider and steps to follow.

In this regard, the current chapter presents a qualitative method for the development of a rubric, a criteria-based assessment tool, for a design exercise at METU Architecture Basic Design Studio. It begins with a description of the design of the study and defines the role of the researcher, referring to trustworthiness issues and limitations. It then sets out the context and participants of the study, including the scope of the chosen exercise for which the rubric was designed. The chapter further goes on with data collection instruments and procedures as part of

the rubric development process. After presenting the designed rubric, it ends with the results of the qualitative research.

4.1 Design of the Study

This study aimed to develop a rubric for the assessment of a design exercise given as an assignment at METU Architecture Basic Design Studio. Within the scope of this thesis, it further attempts to be a part of architectural design education research that looks beyond traditional design learning with a student-centered perspective. Morrison et al. (2013) emphasize that instructional models with a learner-centered approach prioritize the analysis of needs, goals, and limitations through research-based decision-making. This study employed a qualitative method aimed at “holistic exploration of a setting, including context-rich detail; the reliance on unstructured (i.e., not precoded) data, a focus on a single case...” (Groat & Wang, 2013, p. 225). The rubric development process required the researcher to understand the context and specific case, as well as the instructors’ articulation of the criteria, and even their tacit knowledge and awareness. Therefore, this study utilized two data collection methods, observation and interviews, allowing engagement in multiple learning and assessment experiences of METU Architecture Basic Design Studio.

4.2 The Researcher’s Role and Limitations of the Study

Considering the literature review, the results of the previous stages, and the current contextual conditions, the researcher took an active role in interpreting and making sense of the data throughout the whole process. Conducted by a novice researcher in data collection procedures and data analysis in qualitative research, this study made great use of the supervisor feedback and expert opinions, recorded in the researcher’s journal.

The observational research in the study can be considered as the continuation of a process fed by the researcher's eight-year personal experiences and observations at varying depths, starting from the Basic Design Studio experience during her student years at METU. The accumulated observations involve inferences arising from the interaction formed over the years through participation in Basic Design juries and exhibitions or communication with METU Faculty of Architecture students. Also, the researcher had conducted a qualitative study to develop the curriculum of the Basic Design course at METU Department of Architecture within the scope of a course on designing curriculum and instruction. It included in-depth interviews with students, instructors, and research assistants who had experienced the METU Architectural Basic Design Studio in different years and unobtrusive measures obtained by participating in the online Basic Design Studio in the 2020-2021 Fall semester. Moreover, the researcher had two semesters of Basic Design education experience at another school as a new research assistant. The following study embodied both unobtrusive and participant-based observations at the METU Architectural Basic Design Studio to collect data on assessment processes and practices in the rubric development process. The researcher's approach to basic design education with different roles and experiences affected how the research was framed and how the data were interpreted.

The limitations of this study were mainly related to the skills and understanding of the researcher and sources of variance in the assessment of the design work regarding context, subject, assessors, the proposed assessment tool, sample student work, time, and place. The first limitation was that since the researcher was the only analyst interpreting the data and developing the rubric, there was no opportunity to cross-check the coding with other evaluators. The feedback received from experts regarding the developed assessment tool was about validity and appearance, and the only person who dealt with all the data collected was the researcher. Therefore, a type of member checking was implemented to increase the credibility of the study by sharing the rubric with the participants and allowing them to comment on the researcher's interpretations.

As the rubric development process focused on a Basic Design Studio assignment with only one group of participants during one semester of an academic year at an architecture school, the study was subject to certain limitations. Although produced as an adaptable assessment tool, the rubric was not independent of context dynamics. For example, the assignment was selected according to certain criteria, yet there may have been limitations on how well it reflected the assessment criteria determined by the instructors. In addition, individual or group identities, approaches, and expressions of the studio executives participating in the study constituted limitations of this study. Therefore, testing based on these variables with the developed assessment tool may have been among the limitations. For instance, even if selected from different levels of achievement, sample student work may have affected the way instructors used the rubric and expressed their experiences. A larger sample of student work would allow for better analysis of feedback on the rubric. Finally, the rubric development process, from the decision and planning to the fine-tuning of the tool, involved several months after the assignment of the task, during which the rubric was prepared and assessed. It inevitably took place in various places, including the virtual environment. Thus, time and space became a limitation for the researcher's and the studio executives' approaches to interviews and tool testing. A further study with control groups with different assessment mechanisms would provide triangulation across time, space, and person to strengthen research validity.

4.3 Context and Participants: METU Architectural Basic Design Studio

The context of this study is the METU Department of Architecture Basic Design course. It has been given to freshman students in the first semester since 1956. As the first institutionalized practice of beginning design education in Türkiye, it has exhibited consistent content but changing instructional methods and curriculum for years (Acar, 2003). Despite the changes in instructors and studio assignments since the establishment of the school, the Basic Design course structure has always

demonstrated a powerful Bauhaus impact and student work has aimed at a high quality consistency (Savaş, 2019).

The ideology of any introductory design course represents a worldview to be conveyed implicitly to position ‘the designer’ and establish a set of values about the discipline (Farivarsadri, 1998). While METU Basic Design education adopts the Bauhaus approach as many architecture schools in Türkiye (Salem & Dündar, 2019), it has developed its distinct philosophy based on institutional culture over time. METU Department of Architecture sets an important example in its incorporation of the Basic Design course as a major component of its first-year curriculum (Pınar et al., 2023). Thus, Basic Design displays its impact in other courses and practices throughout the four-year education at this school. The studio conduct emphasizes timely attendance and submission, the policies of which are introduced strictly in the course syllabus. The students are highly encouraged to stay in the studio for the entire period of class hours to participate in-class activities, and in the long run, practice the whole design process by taking each step orderly. Thus, the regularity and timeliness of the submissions are vital to keep up with the sequential content of the curriculum. The Architectural Basic Design Studio at METU functions not only as a workspace, but rather as a dynamic ground for a series of practices, workshops, and discussions supported by the curriculum. Further, this studio is known to accommodate various activities of production and socialization of the students staying up late at night there, which makes it a living environment integrating learning into daily life. Thus, the course fosters a strong studio culture with a respectful attitude to both studio members and the learning environment, from desks to the faculty building.

At the heart of the first-year education of architecture, the course is currently taught for 12 hours per week by four instructors and six research assistants. Divided into two sessions, one of eight and the other of four hours, the course deals with both theory and practice of design, allowing students to work in the studio on the half-day class day. Throughout the term, the students are expected to accomplish a series of design exercises, named ‘assignments’, in the order of two-dimensional,

relief, and three-dimensional tasks on color, form, and materials. While the projects evolve in scale and complexity, the manner of studio work fluctuates between groups and individuals. METU Architectural Basic Design Studio appreciates the systematic feedback through critique of instructors, research assistants, class fellows as well as the students themselves in panel discussions, group and individual crits, or non-studio hours. The formative desk critiques are arranged in such a rotation that the students can contact at least two instructors of four/five shifting among the individuals or groups. Most assignments are assessed through formative critiques and final grades given in the exhibition reviews without presentation of the students. On the other hand, the final assignment with the highest grade weight is assessed in prejury and open final jury. While the prejury is mostly semi-public, the final is open to all visitors, both inside and outside the faculty, who wish to watch the presentation, critique, and discussion. The juries consist of studio instructors, faculty members, and instructors from other universities, yet they mostly do not include practicing architects, unlike the upper years. This stems from the distinct Basic Design pedagogy, which applies to most other architecture schools according to the interviews presented in the previous chapter, demonstrating the authenticity of the assessment. All in all, the assessment mechanism in Architectural Basic Design education at METU supports both critical individual work and effective communication in the studio through collective discovery. As for the scope of this study, no measurement and assessment tool provides written and measurable criteria for the performance quality of the design works produced by the students in this studio. This shows that the motivation to rethink measurement and assessment in Basic Design education also comes from contextual considerations.

In this context, the case study was carried out in the 2022-2023 Fall semester. The studio was run by four instructors and six research assistants, with officially 131 students over 14 weeks. The weekly schedule of the course is shown in Table 4.1, highlighting important dates related to the assignment for which the rubric was prepared. This timetable was shared with students within the syllabus, including

keywords related to the assignments in each module. These keywords were also put in assignment sheets under the title of “*discussion themes*”. For METU Architectural Basic Design Studio, the assignment sheet is an important concrete instructional material that provides the students with the main concepts, procedures, and submission date(s) for specific tasks. While instructional materials for many courses have been shared online for years, the rationale for distributing a hard copy of the assignment sheet for this course is fundamentally the hands-on experience in studio learning. For each task, the students engage in the design process taking in-class time and extended hours in which they need to refer to the requirements or goals addressed in the assignment sheet. Thus, they are encouraged to do so by treating it as a type of guide and reminder.

Table 4.1 Weekly Schedule of METU Arch 101 Basic Design 2022-23 Fall Semester

ASSIGNMENT	WEEK	DATE	
2D			
	Week 1	04 Oct	07 Oct
(order, hierarchy, unity, symmetry,	Week 2	11 Oct	14 Oct (Lecture 1)
balance, part-whole, figure-ground)	Week 3	18 Oct	21 Oct (Lecture 2)*
	Week 4	25 Oct**	28 Oct
3D			
(abstraction, body-movement-space, parametric variation)	Week 5-8	01 Nov***	25 Nov
Final (space&form)	Week 9-13	29 Nov	30 Dec
Final jury	Week 14	Jury Week	

Note *announcement, **first submission, and ***final submission of the *assignment 4*

To plan this study, the researcher had a meeting with two supervisors, one of whom was a member of Basic Design Studio at METU Department of Architecture,

before the fall semester started. The first step was to decide which assignment to prepare the rubric for. According to what is gained from the literature and the results of the previous qualitative study, the main considerations for this were as follows: First of all, it would be productive to start such a study with an assignment whose criteria can be determined more clearly in a short time. With the determination of this criterion, it was decided to work on a two-dimensional (2D) assignment instead of more complex three-dimensional (3D) works that cover a wide variety of criteria. When deciding between 2D assignments, the curriculum and assignment contents were taken into consideration as the tool to be developed will be used by the course instructors within the scope of this study. Accordingly, it was decided not to work on an assignment in the first weeks when few criteria were observed. When the contents of the assignments were examined, *assignment 4*, the last of the 2D studies, was found suitable for this study considering the level of complexity, timetable, and type of assessment. First of all, this assignment would begin by presenting the theoretical background that should be used in student work in a lecture by one of the studio instructors. It was also the richest 2D assignment in terms of the number of criteria increasing cumulatively over consecutive assignments. Students would remain anonymous as they wrote their names behind the 2D design field while submitting their work and the assignment would be assessed in closed review format. In addition, although the assignment would build on the cumulative knowledge from previous studies, it would be addressed individually; that is, not the process but the product would be assessed. Therefore, it was found appropriate to assess the *assignment 4* with a rubric that can be adapted to similar design exercises in terms of content and quality with the necessary variations.

The concepts covered in the first four assignments were disclosed in the assignment sheets as follows (e.g., A1 referring to Assignment 1):

- A1: continuity, repetition, symmetry, asymmetry, hierarchy
- A2: organization, order, element relations, continuity, repetition

- A3: figure-ground, organization, order, element identity, element relations, repetition, variation, reference system
- A4: figure-ground, organization, order, element relations, reference system, complexity, repetition, variation, transparency, depth

As can be seen, each assignment has progressed by improving on the previous one. Besides the layer of complexity it added to previous studies, *assignment 4* introduced two important concepts: *transparency* and *depth*. On the day this assignment was announced to the students, one of the studio instructors gave a presentation titled “*Depth: Perception and Transparency*”, to lay the conceptual basis for the assignment.

Based on this, students were asked to prepare a 2D design composition with 4 different shapes of colored elements on a 27 cm x 37 cm white design field. It was stated that the elements should consist of transparent, semi-transparent, and opaque papers and that the composition should reflect the theme of *depth*. While each design element must be multiplied 5-7 times, it was allowed to be done by rotating, scaling, stretching, and overlapping. The first submission and discussion date of the assignment was announced as the next studio day, and student works were requested to be uploaded digitally to the class forum *ODTÜClass* in addition to physical submission. The assignment sheet with requirements, keywords, and important dates can be found in Appendix F. On the first submission day, a panel discussion was held with the participation of all studio members. Since the next lesson could not be held due to the public holiday, the students were asked to revise their work on what they learned in the panel discussion for one week later. The assessment of the assignment was done in an out-of-studio meeting attended by all the studio executives, where the student works were collected and examined physically. Figure 4.1 shows examples of the student work for the assignment.



Figure 4.1 Examples of the student work from *assignment 4*

Since this study aimed to develop a rubric for the selected assignment, it conducted qualitative research through interviews to identify the assessment criteria. Therefore, the participants were selected as the studio executives as assessors. After planning the rubric development process, the researcher contacted them to ask if they would like to be included. As all approved, the participants of this study were 10 studio executives of METU Architectural Basic Design Studio, including instructors (n=4) and research assistants (n=6).

4.4 Data Collection Instruments and Procedures

Wolf et al. (2008, p. 29) define the three main steps of designing an effective rubric as “identifying performance criteria, setting performance levels, and creating descriptions of performances for each criterion at each level”. This study first required an understanding of the assessment mechanism and criteria for developing

a related rubric. To have a holistic insight into case-specific phenomena, it employed qualitative research in the architectural education context through interviews, observation, and *metarubric* as data collection instruments. Planning the process concerning the timetable for *assignment 4*, the researcher aimed to first conduct semi-structured interviews with the studio executives and unstructured observation in the studio to create the rubric. Both aimed to identify the dimensions (criteria), descriptions, scale, and overall design of the rubric. Then, the feedback from instructors on the designed assessment tool was planned to be received through unstructured interviews and *metarubric* consisting of polar questions on the rubric quality.

The researcher began the process by developing semi-structured interview questions about the considerations in assessing the targeted and similar types of assignments. Since the language of the interviews to be held was Turkish, the native language of the participants, the questions were prepared and compared in both languages. The face and validity of the initial draft were discussed with the supervisors considering terminology, question order, and compliance with the purpose and scope of the study. Based on feedback from supervisors, some questions for respondents unfamiliar with rubric-related terminology were layered and detailed with alternative answers in mind. The final draft was discussed with them again and took its final form focusing on the following (see Appendix G):

- identification of the dimensions
- weight of dimensions
- difference in the descriptions of the dimensions
- assessment of the *extreme cases*
- out-of-assessment cases
- alternative methods or tools

After the questions were prepared, the researcher contacted the participants and prepared a one-week data collection program that would end the week the selected assignment was announced. The participants were informed about the purpose and

scope of the study and their questions were asked before the interviews. They were also reminded about their right to leave the study at any time and the confidentiality of their identity and answers for anyone other than the researcher. The semi-structured interviews were conducted face-to-face (n=8) and online (n=2) via *Zoom*, for 15 to 30 minutes. The audio was recorded with the consent of the participants and transferred to the computer after each session. These interviews formed the basis for subsequent observation and documentation.

This research also benefited from three sessions of observation to address the assessment criteria. Before these observations, the studio executives were informed about the purpose and scope of the study and their approval was obtained. The first one was non-participant and unstructured observation, where the researcher observed the contextual activities to examine a single case without exposing the study and interfering with ongoing practice (Groat & Wang, 2013). On the day when the fourth assignment was announced and the “*Depth*” lecture was given, it was carried out at the studio meeting by sitting next to the students and taking notes. The role of the researcher was known to the instructors but not to the students. The focus of the observation was the expectations about the assignment expressed at the time of the presentation or assignment explanation. The explanation of the assignment was made through the text in the assignment sheet and the presence of the keywords here was emphasized by the instructors. At this stage, the students did not have any questions about the task. In the presentation, actual and illusional depth awareness was touched upon and examples of perspectival and shallow depth through layering were presented. In addition, the concepts of physical and perceptual transparency were explained through a spatial sense of ambiguity, with an emphasis on opaque, translucent, and transparent material properties.

The second observation was performed on the day of the first submission and the panel discussion of the assignment, with a similar strategy to the previous one. It aimed to understand how the criteria of the assignment were defined and whether there was an order of importance between them by determining the frequency of

their mentions, based on existing student works. The data coming from an assessment practice in which students also participated, added new layers at some points to the data previously obtained from the interviews and course documents. For example, the fact that the professors expressed their tacit knowledge here, which they did not express openly to the researcher as well as among themselves, helped to clarify the definition of some criteria.

Lastly, this research employed unstructured and participant observation through questions and field notes at the instructors' meeting on the assessment of the *assignment 4*. The purpose was to develop a balanced approach to rubric design according to the compatibility of the previously predicted criteria and their descriptions in practice, revealing implicit or explicit appliance of the criteria. The assessment was made by physically examining, comparing, and categorizing the assignments one by one by the studio executives anonymously as student names were written on the back of the 2D design field. Considering the letter grades to be given, eight categories were created in parallel, one of which included assignments that were out-of-requirement and were not included in the assessment. As the number of examined assignments increased, the consistency of the criteria in comparison was checked by returning to the assessed assignments in certain periods. When different opinions emerged at these stages, the assessors reviewed the existing arguments and agreed on the judgment that was in line with the majority's point of view. The researcher did not participate in the assessment with any comments, and only asked a few questions about the assessment of the assignments that were added to the existing categories without comments. In the assessment made by comparison, it was noted that the time allocated for each assignment decreased gradually and the time taken for consensus among the assessors became shorter. After all assignments were handled, eight different categories were reviewed as a whole by reminding the criteria, and it was decided to change the grades of a few of the around 120 assignments. The meeting lasted a little over an hour.

4.5 Data Analysis and Rubric Development

In the data analysis phase, the researcher brought together all the collected information both with a holistic approach and taking into account their own limitations individually. The audio recordings of the interviews were transcribed and combined in a computer environment with observation notes from the research journal. Data analysis was performed inductively and comparatively, without any predoded categories or descriptions. The coding process started with open coding by grouping data into separate quotes that can create any possible codes regarding assessment criteria. As the number of codes increased, similar ones were clustered and labeled. After the initial criteria were created, the code list was re-examined to organize the similarities and repetitions. While reducing the code list at this stage, the researcher took care to preserve the meaning of participant expressions because some of them could come up with codes pointing to more than one criterion. Here some codes that fell outside the scope of the assessment criteria of this assignment were reduced. To conclude the data analysis, the researcher carefully re-read the entire dataset to ensure that all the meanings gained from the interviews and observational field notes were retained. In addition, it is checked whether the codes met common measures and built the relevant criteria and descriptors. As a result of the coding, six categories expressing the assessment criteria and codes gathered around these criteria were obtained.

The next step was to write the descriptors using the codes and determine the scale of the rubric. Initially, a three-point scaled template was created and different levels of features were defined for each relevant criterion using existing codes. When descriptors occurred for half of the criteria, a four-point scaled grading was performed, deciding that three levels were insufficient. The fifth level was a descriptor that was valid for all criteria since it referred to studies that were excluded from the assessment, which was any representation out-of-requirement. The resulting work was a five-point scaled rubric including six criteria. Both score and performance indicator options were created to indicate the level of

achievement. The first draft was revised in terms of format and content after a discussion with the supervisors. The considerations included: the relevance of the dimensions to the aim and scope of the assignment, the clarity and diversity of the descriptions, and the fairness of the overall rubric not containing any biased or discriminatory statements. The researcher then consulted two experts who were research assistants at the studio. Refined through the feedback received from all experts, the rubric took its final form, as shown in Table 4.2.

The final stage of this study was feedback from the studio executives about the existing assessment tool developed. This incorporated the answers obtained through a metarubric, a closed questionnaire of yes/no questions (see Appendix H), and the tool testing done with two instructors and one research assistant of the course. Although the metarubric presented a non-interpretive assessment, most of the participants placed a question mark for the questions that they could not answer with a definite yes or no, or marked a place between the two options. They also commented on their markings, either verbally or in writing. Tool testing, on the other hand, was carried out by selecting ten samples from different grade levels among the assessed assignments, and then individually assessing the assignments that were examined anonymously and without grades. The sample student work and the assessment template for tool testing are shared in Appendix I. Although they were reviewing these assignments for the second time, the time factor was also taken into account so that they could make a more unbiased assessment. Since the rubric was developed after the assignment was assessed, a certain amount of time had passed since the beginning of the study when these feedbacks were received.



Table 4.2 Assessment Rubric for METU Arch101 Basic Design Studio

CRITERIA		KEYWORDS	NA	BEGINNING	DEVELOPING	GOOD	EXEMPLARY
ORDER	ORGANIZATION AND REFERENCE SYSTEM Presents balanced and harmonious organization with a lucid and coherent reference system through a legible set of rules, repetition, and variation in a 2D composition	Set of rules Unity in diversity Harmony Repetition	No work or not addressing the task requirements, i.e. submission on time, 27X37cm white design field, 4 different shapes of colored elements from transparent, semi-transparent, or opaque papers, multiplication of elements 5-7 times	Demonstrates no or little evidence of a search for and application of a legible set of rules to achieve a holistic composition Introduces no or weak/inconsistent reference system for unity presenting arbitrary/unbalanced/discordant and/or non-abstract/symbolic/figurative/iconic organization Has no or random repetition and variation in identity, shape, scale, and relations of the design elements	Demonstrates basic mastery in defining and applying a legible set of rules to achieve a holistic composition Introduces partially developed/supported reference system for unity presenting simplistic/monotonous/symmetric organization Has loosely consistent repetition and variation in identity, shape, scale, and relations of the design elements	Demonstrates adequate mastery in defining and applying a legible set of rules to achieve a holistic composition Introduces adequately developed/supported reference system for unity presenting a balanced and harmonious organization Has consistent repetition and variation in identity, shape, scale, and relations of the design elements	Demonstrates outstanding mastery in defining and applying a legible set of rules to achieve a holistic composition Introduces comprehensively developed/supported reference system for unity presenting original technique/interpretation for design solution in a balanced and harmonious organization Has lucid and consistent repetition and variation in identity, shape, scale, and relations of the design elements
	FIGURE-GROUND Reflects a holistic view of the design field through visual balance and the relationship between the white background and 2D colored elements with different transparency	Design field Visual balance		Reflects no or little evidence of a holistic view of the design field, resulting in no or weak visual balance and the relationship between the white background and colored elements	Reflects basic/progressing holistic view of the design field, resulting in partial visual balance and the relationship between the white background and colored elements	Reflects sound holistic view of the design field, resulting in clear visual balance and the relationship between the white background and colored elements	Reflects a remarkable holistic view of the design field, resulting in exemplary visual balance and the relationship between the white background and colored elements

Table 4.2 Continues

CRITERIA		KEYWORDS	NA	BEGINNING	DEVELOPING	GOOD	EXEMPLARY
ORDER	ELEMENT IDENTITY AND ELEMENT RELATIONS Introduces 2D design elements modified by rotating, scaling, stretching, and overlapping 4 different shapes of colored elements from transparent, semi-transparent, or opaque papers Displays legibility and consistency in the exploration and application of strategies/rules for well-defined and complex 2D element relations	Abstract shapes Design operations (rotating, scaling, stretching, overlapping)	No work or not addressing the task requirements, i.e. submission on time, 27X37cm white design field, 4 different shapes of colored elements from transparent, semi-transparent, or opaque papers, multiplication of elements 5-7 times	Reflects no or limited understanding and use of different abstract shapes and their modification by rotating, scaling, stretching, and overlapping Presents 2D design elements with no or little potential to establish well-defined and complex relations with one another Shows no or limited exploration, mastery, and application of strategies/rules for element relations, making them ambiguous/weak/inconsistent	Reflects basic understanding and use of different abstract shapes and their modification by rotating, scaling, stretching, and overlapping Presents 2D design elements with the basic potential to establish well-defined and complex relations with one another Shows fundamental exploration, mastery, and application of strategies/rules for element relations, making them simplistic/monotonous/partially coherent/consistent	Reflects clear understanding and use of different abstract shapes and their modification by rotating, scaling, stretching, and overlapping Presents 2D design elements with a certain potential to establish well-defined and complex relations with one another Shows considerable exploration, mastery, and application of strategies/rules for element relations, making them clear and consistent	Reflects thorough understanding and use of different abstract shapes and their modification by rotating, scaling, stretching, and overlapping Presents 2D design elements with high potential to establish well-defined and complex relations with one another Shows advanced exploration, mastery, and application of strategies/rules for element relations, making them precise, strong, consistent, and complex
	COMPLEXITY Shows legibility and consistency in the exploration and application of methods/rules for variation in element identity and/or element relations in a 2D composition	Variation		Shows no or limited exploration, mastery, and application of methods/rules for variation in element identity and/or element relations, creating no complexity in the composition	Shows fundamental exploration, mastery, and application of methods/rules for variation in element identity and/or element relations, creating a simplistic/monotonous/static composition	Shows considerable exploration, mastery, and application of methods/rules for variation in element identity and/or element relations, creating an adequately complex composition	Shows advanced exploration, mastery, and application of methods/rules for variation in element identity and/or element relations, creating an original/novel/highly complex composition

Table 4.2 Continues

CRITERIA	KEYWORDS	NA	BEGINNING	DEVELOPING	GOOD	EXEMPLARY
DEPTH Demonstrates overlaps of adequate number and area of elements with different levels of transparency according to certain consistent strategies in the use of color to achieve material variety and shallow depth	Transparency Color	No work or not addressing the task requirements, i.e. submission on time, 27X37cm white design field, 4 different shapes of colored elements from transparent, semi-transparent, or opaque papers, multiplication of elements 5-7 times	Displays no or limited exploration of transparency and color properties of materials through overlapping inadequate number and area of elements with different levels of transparency and no/weak strategy in the use of color, bringing no/insufficient variety of materials and no/weak shallow depth	Displays basic exploration of transparency properties of materials through overlapping moderate number and area of elements with different levels of transparency and partially developed strategy in the use of color, bringing a limited variety of materials and partially developed shallow depth	Displays considerable exploration of transparency and color properties of materials through overlapping adequate number and area of elements with different levels of transparency and clear strategy in the use of color, bringing a certain variety of materials and clear shallow depth	Displays advanced exploration of transparency and color properties of materials through overlapping sufficient number and area of elements with different levels of transparency and strong/consistent/original strategy in the use of color, bringing a high variety of materials and sophisticated shallow depth
WORKMANSHIP Demonstrates mastery of selection and use of materials and tools for representation in a 2D composition	Representation Materials Tools		Demonstrates careless and arbitrary selection and use of materials and tools	Demonstrates developing mastery of selection and use of materials and tools through certain concern for representation	Demonstrates adequate mastery of selection and use of materials and tools through care and clarity in representation	Demonstrates outstanding mastery of selection and use of materials and tools through care, consistency, and precision in representation



4.6 Feedback Results on the Developed Rubric

This section describes the results of the feedback given by three instructors and six research assistants through metarubric and tool testing to the developed rubric. It first provides qualitative and quantitative overviews of the metarubric feedback. Metarubric consists of five main sections: dimensions, descriptions, scale, overall rubric, fairness and sensibility. Table 4.3 displays the number of answers to metarubric questions, including question marks.

Table 4.3 Feedback Results

Rubric part	Evaluation criteria	Yes	No	?
Dimensions	Does each dimension cover important parts of the final student performance?	8	1	
	Does the dimension capture some key themes in your teaching?	9		
	Are the dimensions clear?	8		1
	Are the dimensions distinctly different from one another?	7	1	1
	Do the dimensions represent skills that the student knows something about already (e.g., organization, analysis)?	8		1
Descriptions	Do the descriptions match the dimensions?	9		
	Are the descriptions clear and different from each other?	8		1
	If you used points, is there a clear basis for assigning points for each dimension?	5	3	1
	If using a three-to-five level rubric, are the descriptions appropriately and equally weighted across the three-to-five levels?	8		1
Scale	Do the descriptors under each level truly represent that level of performance?	8		1
	Are the scale labels encouraging and still quite informative without being negative and discouraging?	9		
	Does the rubric have a reasonable number of levels for the age of the student and the complexity of the assignment?	7		2
Overall rubric	Does the rubric clearly connect to the outcomes that it is designed to measure?	9		
	Can the rubric be understood by external audiences?	4	2	3
	Does it reflect teachable skills?	8	1	
	Does the rubric reward or penalize students based on skills unrelated to the outcome being measured that you have not taught?	4	5	
	Have all students had an equal opportunity to learn the content and skills necessary to be successful on the assignment?	7		2
	Is the rubric appropriate for the conditions under which the assignment was completed?	9		
	Does the rubric include the assignment description or title?	8		1

Table 4.3 Continues

	Does the rubric address the student's performance as a developmental task?	9		
	Does the rubric inform the student about the evaluation procedures when their work is scored?	8	1	
	Does the rubric emphasize the appraisal of individual or group performance and indicate ways to improve?	7	2	
Fairness and sensibility	Does it look like the rubric will be fair to all students and free of bias?	6	1	2
	Does it look like it will be useful to students as performance feedback?	9		
	Is the rubric practical given the kind of assignment?	7		2
	Does the rubric make sense to the reader?	9		

Note. Adapted from *Introduction to Rubrics: An Assessment Tool to Save Grading Time, Convey Effective Feedback and Promote Student Learning* (p. 94), by D. D. Stevens and A. J. Levi, 2004, Stylus. Copyright 2004 by Stylus Publishing.

Regarding the descriptions part, a participant answered the question, “*Are the descriptions clear and different from each other?*” with a question mark, emphasizing that it could be improved in the proposed tool. While three participants answered “No” to the question, “*If you used points, is there a clear basis for assigning points for each dimension?*” one put a question mark. They explained that this was because the rubric expressed the level of achievement with adjectives instead of scores. In the overall rubric section, two participants answered “No” and three participants put a question mark to the question, “*Can the rubric be understood by external audiences?*” They stated that this was because the rubric was developed as case-specific. Two participants answered the question, “*Have all students had an equal opportunity to learn the content and skills necessary to be successful on the assignment?*” with a question mark, stating that they were hesitant. One of them commented: “*There are slight differences in the learning processes of students due to their varying skills that create advantages or disadvantages and by chance.*” For the last part, fairness and sensibility, one of the participants approaching the question, “*Does it look like the rubric will be fair to all students and free of bias?*” with hesitation stated the following: “*In some cases,*

there is an individual, unique quality that the student brings. This may broaden the scope of the rubric.” Two respondents answered the question, “*Is the rubric practical given the kind of assignment?*” with a question mark. The comment of a participant who answered “Yes” to this question was as follows: “*Yes, but it could be reductionist depending on how this rubric is configured by the viewer.*” Finally, one participant who answered “Yes” to the question, “*Does it look like it will be useful to students as performance feedback?*” added the following: “*But I believe there are more implicit things based on dialogue (critique sessions) in Basic Design education; therefore yes, but not entirely.*”

After the assessment with metarubric, this study was concluded with feedback on the tool testing. The assessment of ten student work for *assignment 4* using the assessment template took between 10 to 20 minutes for each of the three instructors who participated in this part of the study. All participants made some markings at the level expressing out-of-requirement studies in the five-point scaled rubric. When they were returned by the researcher about this, they revised their assessments by stating that the marking they had for the lowest level of achievement was not intended to be excluded from the assessment. After using the rubric, the answers received in the unstructured interviews conducted with the instructors to convey their experiences were as follows:

Participants found the rubric generally clear and understandable. They noted that the initial hesitations due to the length of the descriptors decreased as the assessment progressed. They stated that they were concerned that assessment using rubrics would take longer than current assessment practices and noted that a more accurate and rapid process could be possible when starting after examining the entire rubric. One of the participants emphasized the importance of reconciliation in assessment with multiple assessors, stating that individual grading experience is different from that. The participant also stated that when and how the design work was assessed affected the assessor’s perception: “*For example, two weeks ago, I could have looked at these works from a different perspective and found them more successful within the cumulative studio works. In particular, I could perceive the*

complexity criterion differently and give higher grades. This is because the order expectations two weeks ago and three weeks later are not the same in the assessment in the Basic Design studio. Additionally, physical and digital assessment can also change our perception at that moment.”

About the dimensions, two participants stated that although complexity and organization criteria are related like all other criteria, they can appreciate different values when assessed separately. They nevertheless agreed that they should be considered as different criteria. For the scale of the rubric, participants stated that they found the five-point scale rubric sufficient for this study in terms of performance quality levels. However, they experienced indecision during the assessment between two consecutive levels in the middle and one above (between *developing* and *good* in the rubric).

All the instructors stated that after a while, they started to make a comparative assessment between the assignments on a four-point scaled basis, instead of reading the descriptors and approaching each assignment individually. They noted that they did not give grades considering the letter grade system they were accustomed to, but still preferred a comparative method. One stated that: *“I felt the need to look at the assignments comparatively when assessing them. For example, when I looked at the overall result, if a good assignment did not receive the best grade, I could go back and make changes.”*

All participants also emphasized that this type of rubric was applicable to some assignments and could not be adapted to all studio work. They stated that the applicability of the rubric depends on the complexity of the assignment and what criteria it met. Linking the usability of the rubric to the predictability of the resulting student work, one participant said: *“What the class delivers overall is also important to consider.”* Additionally, an instructor added the following regarding when a rubric might be preferred in assessment: *“I can fill out the rubric depending on how I want to communicate with the student.”*

Table 4.4 Examples from the Assessment in Tool Testing

CRITERIA		NA	Beginning	Developing	Good	Exemplary
ORDER	ORGANIZATION AND REFERENCE SYSTEM		S7 S9	S10	S8	S3
	ELEMENT IDENTITY AND ELEMENT RELATIONS		S7 S9	S8 S10		S3
	FIGURE-GROUND		S7	S8	S9 S10	S3
	COMPLEXITY		S7 S10	S8 S9		S3
DEPTH			S7	S8 S9		S3 S10
WORKMANSHIP			S7 S8		S9 S10	S3

After the interviews, the researcher examined the individual assessments of the participants using the template and compared them with the grades they had previously given by discussing with other instructors. Table 4.4 presents examples from the assessment in tool testing. The common point of all was the assessment of the assignment they found to be most successful and least successful among the sample student work, as S3 and S7 in the table. These assignments were found to be equivalent to the highest or lowest performance levels in the rubric for each criterion. These were the assignments that had already received the highest and lowest letter grades in the previous assessment. The assignments on the scale between these two poles, according to the previous assessment, were generally found to fit in two or more different achievement levels for different dimensions in the rubric. The assessors marked two consecutive performance levels for different criteria in the assessment of most works. Furthermore, seven out of ten student works had more variety in ratings; that is, they were rated in three different performance levels for different criteria. For instance, S9 was at the beginning level

for *organization* and *elements relations*, at the developing level for *complexity* and *depth*, and at the good level for *figure-ground* and *workmanship*, as presented in the table. Finally, S10 was the only one rated in four different performance levels by one of the instructors. For example, while S10 was at an exemplary level in terms of *depth*, it was at a beginning level of *complexity*, at a developing level of *organization* and *element relations*, and at a good level of *figure-ground*.

The researcher also examined the ranking in the participants' assessments by comparing them to the previous grades for consistency. There were several cases where a student work that had been less successful in the previous assessment was more successful in terms of some criteria in the assessment with the rubric. For instance, although S8 had received a lower grade than S10 before, it had a better organization and reference system according to the rubric. Both of these works, which had previously received different grades, were assessed at various achievement levels for different criteria (three levels for S8 and four levels for S10) and were at the same level for one criterion. On this basis, the researcher examined the ranking of each participant's assessment within individual dimensions and identified both consistencies and inconsistencies compared to the previous assessment of the instructor team. For example, for the *figure-ground* criterion, sample student works in the table were ranked as S7 (*beginning*), S8 (*developing*), S9-S10 (*good*), and S3 (*exemplary*). These were in line with their grades on the *assignment 4*. The same applied to the dimensions of *depth* and *workmanship* while it partially applied to *element identity and relations*, as well as *complexity*. On the contrary, the ranking of the *organization and reference system* criterion was as follows: S7-S9, S10, S8, and S3, though that of grades was as follows: S7, S8, S9, S10, and S3. In all cases, the marking at the highest and out-of-requirement performance levels remained consistent with prior grading and across all raters.

CHAPTER 5

CONCLUSION

This study presents a framework for the measurement and assessment in (architectural) (basic) design education regarding relevant processes, practices, methods, and tools. It further focuses on challenges and potentials to analyze how it can be (more) effective. Addressing multiple research questions, the thesis incorporates multiple data sources through qualitative research methods in addition to a literature review. It further introduces an assessment tool and its development process through a qualitative study at the METU Department of Architecture Basic Design Studio. This chapter focuses on the results of the research through critical analysis of them and recommendations for future research regarding the limitations of the current study.

Regarding the challenges and potentials of measurement and assessment in architectural Basic Design studios, the interviews conducted with the instructors from different universities in Türkiye revealed multiple important results. One of the most notable points was the student-related dimensions of the assessment challenges attributed by the participants. Many of the studio instructors described these as a problem when talking about the difficulties of getting students into a new system of education, thought, and even behavior. However, in the context of Türkiye, since the pre-university education of beginning design students is known by higher education institutions, developing an approach accordingly would be more appropriate for student-centered design pedagogy. In other words, while design thinking and experience may be unfamiliar to first-year students, the students' background is familiar to architect-educators who develop assessment approaches, methods, and tools in the design studio. Thus, the beginning design studio can take this into consideration.

Another important point was the studio instructors' approach to the experience of students. The ambiguity in assessment, which was described as a problem by both the literature and the interview results, was an example of this. The literature mainly defines this problem in terms of students encountering uncertain assessments while dealing with the uncertainties of design in the studio. On the other hand, most of the studio instructors pointed out an approach that would preserve the difficulty experienced by the student at the beginning of design education. They stated that the criteria were actually quite clear and that even if the criteria had been clearly presented, the students would not understand it. Similarly, the fairness concern was defined by the instructors as a conscientious responsibility or workload depending on the criteria and the number of students. However, it was not mentioned that this could be a problem even with a small number of students. The literature, on the other hand, discusses the reliability and accountability of assessment in design education in the context of unclear or non-transparent mechanisms and their effects on students.

In this sense, the important point that also emphasizes the limitations of the study is to take the perspective of the student in this type of research, just as it is supported for studio practices. Since the scope of the study aims to develop a rubric that can be used in the Basic Design studio, it has been determined primarily to approach it from the perspective of educators. Therefore, the qualitative research only presented the perspective of the instructors. The results of this study clearly demonstrate the need for a student perspective in further research.

The rubric development process was also a learning process for the researcher, who has just started teaching experience as a new research assistant. Working on an assessment tool by utilizing multiple data sources, she faced some challenges in the beginning architectural design studio context. These were mainly related to verbalizing considerations that are ambiguous or tacit in the design process or practice and difficult to define as assessment criteria while rating them at different levels as descriptors. The difficulty of this iterative process was to strive to render the criteria impartial by incorporating subjective views within the limitations of the

study. Although developed case-specifically for a particular assignment, existing concerns, and suggestions were reviewed with the understanding that the rubric would be adaptable. The assessment tool incorporates the main criteria for order, shallow depth, and workmanship in two-dimensional compositions. It is the dimension of *depth* that makes the rubric specific to the assignment being worked on; therefore, the adaptability of the rubric can be discussed outside of it. The criteria divided into four groups as part of the *order* are defined through two-dimensional design qualities and specific requirements due to the nature of the work. Except for the case-based limitations, most of the order dimensions are adaptable to other two- or three-dimensional design assessments. To be specific, the following criteria can easily be adaptable: *organization and reference system*, *element identity and relations*, and *complexity*. As another constituent of *order*, the *figure-ground* criterion defines a characteristic specific to two-dimensional compositions, but the visual balance within the design field it refers to reflects a holistic design view that is not limited to only two dimensions. Therefore, it is possible to say that this criterion is also adaptable for three-dimensional works or can be combined with different criteria. Besides, while the workmanship criterion is valid for physically produced two- and three-dimensional design works, it can turn into a dimension such as drawing quality in digital productions. Still, the conditions of the educational context in which the rubric will be used determine its use regarding the task, curriculum, assessment philosophy, and attitudes of students and instructors. Hence, this study received feedback on the created tool from studio executives, who informed the interviews and observations during the rubric development process.

The feedback received through metarubric was basically that the tool was applicable for this type of assignment, but it might fall short of measuring certain idiosyncrasies of design. Most of the participants' comments about the rubric were about the extent to which the rubric could respond to the tacit and subjective design criteria. This was also a factor considered by the researcher when developing the rubric. However, the purpose of this rubric was not to eliminate the human factor

involved in the assessment with the perception, knowledge, and experience of the assessors. The written expression of visual criteria leaves a field of subjectivity to the viewers within their perceptual field. Still, in cases where the rubric falls short of meeting this, it may be possible to develop the tool for some rather than all of the criteria in the assessment of a design work.

After the metarubric, the feedback obtained through tool testing revealed some results regarding the assessment philosophies and reflexes of the design educators, as well as the overall rubric design. During the assessment, the instructors moved away from reading descriptors and turned to the comparison they are accustomed to while using the rubric. This shows that habits cannot be easily left with the use of educational tools, and it requires training and practice. The thesis supports collaboration with educational sciences for architectural design education research on this basis. The remarkable point in the instructors' comparison of the two assessment tools, *rubric* and *comparison*, at the end of the testing was the importance of group dynamics in the assessment of design studio works. The instructors' concern was that the rubric lacked a holistic perspective as it assesses student work individually. This result had previously emerged in the interviews with Basic Design instructors, who stated that the average quality level of existing assignments in the studio determined the assessment criteria. This also reflects the communicative dimension of authentic assessment in the design studio.

Common feedback received via metarubric and tool testing was the difference in assessment perception that the rubric created, as it did not include grade weight or point. In the initial drafts of the rubric, both definition, score, and grade letter options were developed for the level of achievement. Further, grade weight distribution was made among the criteria in line with the purpose and scope of the assignment. However, since the relevant literature indicates that one of them should be preferred, the following three sources were evaluated to make a decision. These were interview results from the Basic Design instructors of different schools of architecture, supervisors' feedback on the proposed rubric, including all alternatives, and a comparison of scores obtained from the developed rubric and

existing grading. Here, it was prioritized to present the most appropriate option in terms of terminology and meaning to the students while evaluating themselves. The researcher first considered the statements of the interviewed instructors that oral or written descriptive critique was more effective and motivating than grades. Then, the assessment in tool testing was reviewed. Given that the same work appeared at different quality levels for different criteria, the researcher decided that descriptive naming could provide more effective feedback than scoring.

When the participants' assessments using rubrics were examined, the point where the most consistency was seen both among the instructors and with the previous grades was the assessment of the most and least successful works. The fact that more agreement was reached in the determination of these two groups was also a result that emerged in both sets of interviews conducted with Basic Design instructors. Some inconsistencies were detected among the raters' assessment of the works located between these two points (*beginning* and *exemplary*) on the rubric scale. A point that can be called inconsistency was the differences observed when the previous assessments of different assignments examined on a certain criterion and the assessments in tool testing were compared. This is because the design is actually a whole that includes the criteria expressed separately in the rubric, and these criteria may have different weights in the assessment of the assignment. For example, depth may have more weight than complexity or workmanship criteria for this study. However, a work with already weak complexity has little chance of achieving strong depth. At this point, the advantage of the rubric is that it provides the opportunity to assess the same study from different perspectives and understand the relationship between different dimensions by specifying the interrelated criteria separately. For example, when instructors assess students through rubrics and share their feedback through rubrics, students have more information about the assessment than receiving a single letter or numerical grade. Students' use of descriptors to see which performance levels indicate different dimensions of their work will help them understand the strengths and weaknesses of their work. In this context, the rubric can play a role as a

communication tool between instructors and students in the assessment in the studio.

Undoubtedly, there is much room for improvement in the development and use of criteria-based tools in (architectural) (basic) design education context. The scope of this study was limited to the perspective and experience of the instructors, but there is student experience, understanding, and use in practice. Both qualitative studies conducted in this study need to expand their scope with a student-involved process to test and improve the proposed tool. Since criteria-based assessment tools are created with a learner-centered approach to support student learning for (more) effective measurement and assessment, student experience will be a major feedback for implementation. If a rubric prepared for the design studio is to be used, it must be shared with the students transparently. While instructor feedback through testing in this study focused on rubric development, student feedback would incorporate different dimensions regarding students' perception and understanding of the assessment and rubric. Similar to the limitations of the current study, factors such as task type, assessment type, assessor, time, space, and researcher can affect student feedback. Therefore, it can be more effective to take the student feedback about the rubric on multiple occasions in various ways. This new group of participants would provide the analysis of the design students' perception and understanding of assessment rubrics in the studio under the changing profession and architectural education conditions.

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APPENDICES

A. A Rubric for the First-year Architectural Design Studio

Table 1. The Form of Criteria-based Module

Week	Learning outcomes	Criterion	Poor	Average	Good	Excellent	Final grade
1	• Understand the basics of surveying and the orthographic projection; • Produce architectural drawings using traditional techniques; • Collaborate effectively within teams.	Surveying Process 40%	Limited understanding of surveying process resulting in largely unsuccessful architectural drawing. Significant problems with scale, sequence and dimension	Basic functional understanding of surveying process resulting in fundamentally architectural drawings. Modest problem with scale, sequence and dimension	A Clear understanding of surveying process resulting in successful architectural solutions. Minor problems with scale, sequence and dimension	Advanced understanding surveying process resulting in exemplary architectural drawings. Effective use of scale, sequence and dimension	10%
		Complete drawings 40%	Significant problems with presentation techniques resulting in unsuccessful level of presentable drawings	Basic competence in presentation techniques resulting in an acceptable level of presentable drawings	Advanced achievement in presentation techniques resulting in successful presentable drawings	Exemplary achievement in presentation techniques	
		Communication 20%	A poor verbal communication inhibiting discussion beyond the rudimentary level	Verbal communication understandable resulting in basic discussion of task	Verbal communication well planned and executed and effective resulting	Verbal presentation resulting in highly effective design communication of clarity, detail, and precision	
2	• Understand the Principles of architectural design & human needs; • Think systematically about the small problem and human need and perform freehand sketch drawings.	Thinking Process 40%	Regularly fails to meet weekly progress, attendance and participation requirements	Regularly meets weekly progress, attendance and participation requirements	Consistently meets all weekly progress, attendance and participation requirements	Consistently fulfills and exceeds all weekly progress, attendance and participation requirements	10%
		Freehand sketch 40%	Significant problems with the freehand sketch. It is hard to know what the student is trying to express in his drawing	Basic competence in freehand sketch resulting in an acceptable level of presentable drawings	Advanced achievement in presentation techniques resulting in successful freehand sketch	Exemplary achievement in freehand sketch drawings	
		Communication 20%	Poor verbal communication	Verbal communication understandable	Verbal communication well planned	Verbal presentation resulting in highly effective design	
3	• Think three-dimensionally in a creative and innovative way in order to solve a small design problem; • Examine an ability to produce precise expressive illustration and interpretation of simple design ideas; • Communicate in group critique and discussion.	Development of design idea 40%	Regularly fails to meet weekly progress, attendance and participation requirements. Does not document or respond to critical input from class presentations in design iterations	Regularly meets weekly progress, attendance and participation requirements. Usually shows evidence of critical response through a basic level of iterative design development	Consistently meets all weekly progress, attendance and participation requirements. Consistently shows evidence of critical response iterative design development	Consistently fulfills and exceeds all weekly progress, attendance and participation requirements. Unfailingly shows evidence of self-disciplined critical response through exemplary iterative design development	40%
4		Drawings and study model 40%	Unable to complete design solutions. Significant problems with presentation materials and/or techniques resulting in unsuccessful level of design communication	Basic competence in presentation and techniques resulting in an acceptable level of design communication of general completeness. Presentation materials showing basic elements of design organized and comprehensible	Advanced achievement in presentation resulting in successful design communication of systematic consistency. Presentation materials comprehensive, detailed and well organized with minimal minor errors	Exemplary presentation and verbal presentation resulting in highly effective design communication of clarity, detail, and precision. Presentation materials at portfolio quality suitable for transfer. No errors or omissions	
5		Communication 20%	A poor verbal communication inhibiting discussion beyond the rudimentary level	Verbal communication understandable resulting in basic discussion of task	Verbal communication well planned and executed and effective resulting	Verbal presentation resulting in highly effective design communication of clarity, detail, and precision	
Final submission	• Adopt innovative design ideas and concepts; • Practice the neatness and aesthetics; • Communicate in group critique and discussion of formative assessment	Design solution 40%	Does not attempt or is unable to complete design solutions. Unsuccessful design solution due to lack of creative use of the concept, limited exploration of technique and/or application of principles	Fundamentally sound design solution with moderately creative use of the concept, fundamentally appropriate technique, and adequate application of principles	Interesting design solution showing consistently creative development of the concept, original development of technique and original application of principles	Compelling design solution showing the highly original creative development of the concept, innovative application of techniques and exemplary use of principles	40%
		Presentation 20%	Major errors, consistency or quality problems in drawings, process, and models	No major errors, omissions, consistency or quality problems in drawings or models	Minor errors and requiring no further explanation	No errors or omissions	
		Design process 20%	Does not attempt or is unable to complete critical iterative production. Inconsistent levels of critical iterative production resulting in a flawed and uneven design process	Consistent levels of critical iterative production resulting in a basic design development process	High levels of critical iterative production resulting in a mostly successful, thorough design development process	Excellent levels of critical iterative production resulting in a highly successful, comprehensive design development process	
		Communication 20%	A poor verbal communication inhibiting discussion beyond the rudimentary level	Verbal communication understandable resulting in basic discussion of the design solution	Verbal communication well planned and executed and effective resulting in further discussion of the solution	Verbal presentation resulting in highly effective design communication of clarity, detail, and precision	
Total							100%

Note. From Ragheb, 2016, p. 1023-1024



B. A Rubric for the First-year Architectural Design Studio

Table 2. Supportive Design Assessment Rubrics

Criterion	Indicator	1 Inadequate	2 Satisfactory	3 Meets expectations	4 Exceeds expectations
Function	Spatial Layout	Major problems in space design and the spatial refashions	Many spaces lack the right dimensions, proportions and exposure to natural ventilation and views or have weak spatial relationships with other spaces	Minor problems in space design and the spatial relationships	Spaces are well-designed in terms of function, proportion, views, natural light and ventilation.
	Accessibility & Circulation	Major errors in entry points allocation, hierarchy and emphasis, in exit point distribution, in indoor, outdoor, horizontal & vertical circulation elements or in BF solutions.	Frequent errors in entry points selection, hierarchy and emphasis, in exit point distribution, in indoor, outdoor, horizontal & vertical circulation elements or in BF solutions.	Minor errors in entry points allocation, hierarchy and emphasis, in exit point distribution, in indoor, outdoor, horizontal & vertical circulation elements or in BF solutions.	Entry points selection, hierarchy and emphasis are well designed. Exit points are well-located and spaced. All indoor, outdoor, horizontal & vertical circulation and BF elements are well-designed.
Form	Aesthetics	Many appearance & principles of composition problems. Form is not attractive	Minor appearance & compliance with principles of composition problems. Form is repeated in other similar buildings	Pleasant appearance that meets principles of composition with few exceptions	Pleasant appearance that meets principles of composition and provides attractive and unique forms
	Creativity, Novelty & Originality	The design is typical or similar to existing solutions	The design has some aspects of novelty, creativity or originality	The design is mostly creative and original except some aspects	The design is totally creative, novel and original
Context	Site Planning	Major problems in site planning, parking or landscaping schemes	Frequent problems in site planning, parking or landscaping	Minor problems in site planning, parking or landscaping	The building is well-placed on its site, the outdoor, parking & landscape elements are well-designed
	Urban & Environmental Fit	Major problems in the relation between the building & its surroundings and environment	Many minor problems in the relation between the building & its surroundings and environment including the environmental, social & cultural considerations	Minor problems in the relation between the building & its surroundings and environment including the environmental, social & cultural considerations	The relation between the building & its surroundings and environment are well-solved. The environmental, social & cultural considerations are well-incorporated in the design.

(continued on next page)

Table 2. Continues

Criterion	Indicator	1 Inadequate	2 Satisfactory	3 Meets expectations	4 Exceeds expectations
Performance	Building systems	Major problems in natural & engineering passive & active building system design & integration	Many minor problems or a major problem in natural & engineering passive & active building system design & integration	Minor problems in natural & engineering passive & active building system design & integration	Natural & engineering passive & active building systems are well designed and integrated
	Human factors & Social Interaction	Major problems in the anthropometrics, ergonomics, human & social factor considerations that may negatively affect the user experience quality	Many minor problems or a major problem in the anthropometrics, ergonomics, human & social factor considerations that may affect the user experience quality	Minor problems in the anthropometrics, ergonomics, human & social factor considerations that may affect the user experience quality	Anthropometrics, ergonomics, human & social factors are well considered and incorporated in the design to improve the end user experience quality
Concept	Identity & Character	Confused character and widely repeated design	Many similar designs exist and for various typologies	The design identity is not directly clear and may not be totally unique	Clear character and unique design
	Semantics (Emotions, symbols, impressions & vibes)	Serious lack of meanings and the design is similar to vacant sculptures	Minor stimulation of positive impressions and connotations	Frequent occurrences of elements that stimulate positive impressions and connotations	Strong stimulation of positive impressions and connotations
Skills	Presentation (Verbal, graphic, animation, model-making & writing). Each in terms of: Correctness, consistency & quality.	Major errors in verbal, graphic or writing presentations or poor presentation of the design.	Frequent minor errors or a major error in verbal, graphic or writing presentations	Minor errors in verbal, graphic or writing presentations, or the media is not effectively presented.	Drawings are correct in terms of scale, graphic representation & consistency between various projections. Verbal, graphic & writing presentations are correct. All media are well-presented.
	Development & Processing	Major errors in design development and processing and poor linkage of the various phases of design processing	Multiple minor errors or a major deficiency in the sequence of design development and processing	Minor errors in the sequence and linkage of the various phases of design development and processing	Fluent and articulate sequence and linkage of the various phases of design development and processing

Note. From Eilouti, 2020, p. 157-158

C. Interview Questions for Basic Design Instructors

1. How do you describe the aim, role and value of the assessment in Basic Design studio?
2. How do you define your philosophy of assessment for Basic Design course as a studio instructor?
3. How do you define the assessment philosophy of your institution for Basic Design course?
4. What are the current measurement and assessment practices in your Basic Design studio?
5. What type of measurement and assessment methods and/or tools do you use in your Basic Design studio?
6. Can you explain the measurement and assessment process in your Basic Design studio?
 - a. Are there multiple-assessors? If any, what are their responsibilities?
 - b. Are there any written and/or measurable assessment criteria for student works or performances? Why?
 - i. If any, how and by whom are they determined?
 - ii. If not, would you define them as a need?
 - iii. What do you think about using criteria-based assessment tools, such as rubrics, in Basic Design studio? Why?
 - c. Do you involve the students in the assessment process? Why? If so, how?
7. How do you describe the feedback from the students regarding the assessment processes and practices in your Basic Design studio? Or what are your observations about it?
8. How much the students are informed about the assessment criteria that you consider in your Basic Design studio? Why? Do you think it affects students?

9. How do you define the problems and/or difficulties that you confront in the current measurement and assessment processes and practices in your Basic Design studio? Why?
10. How do you define the positive aspects of the current measurement and assessment processes and practices in your Basic Design studio? Why?
11. How do you describe (more) effective measurement and assessment in Basic Design studio? Regarding the following
 - a. Measurement and assessment process and participants
 - b. Measurement and assessment practices
 - c. Assessment criteria



D. Approval of METU Human Research Ethics Committee

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER



ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

DUMLUPINAR BULVARI 06800
ÇANKAYA ANKARA/TURKEY
T: +90 312 210 22 91
F: +90 312 210 79 59
uesam@metu.edu.tr
www.uesam.metu.edu.tr

04 AĞUSTOS 2022

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Dr.Öğretim Üyesi Esin KÖMEZ

Danışmanlığını yürüttüğünüz Çiğdem ÇALIK'ın "Temel Tasarım Eğitiminde Ölçme ve Değerlendirme Metotları Üzerine Bir Çalışma: Odtü Mimarlık Bölümü Temel Tasarım Stüdyosu Örneği" başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay 0407-ODTÜİAEK-2022 protokol numarası ile onaylanmıştır.

Bilgilerinize saygılarımla sunarım.

Başkan

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E. Coding Table

CATEGORIES	THEMES	CODES	DEFINITIONS
Role of assessment			
Student engagement and progress			
		Student engagement	Assessment focusing on how they handle the design problem, i.e. <i>to get along</i>
			Assessment focusing on how well the students can internalize the discussions in the studio
		Learning-oriented assessment	Assessment is about how learning is constructed while measuring, or how measuring will contribute to learning.
		A tool displaying student progress	Assessment as a tool showing how many students can benefit from the studio dialogue, how much they can make inferences and how much they reflect on the process
			Assessment informing students about their path and improvement as designers
		Encouraging student adaptation and progress	Assessment encouraging students' transition to a completely different education system than pre-university education
			Assessment guiding students to the knowledge and skills they need to acquire
			Assessment changing previous learning habits and attitudes of the students to open a new perspective of perception
Self-regulation			
		Fostering self-awareness and exploration	Assessment making design education more individual, personal and focused on the person

		Assessment focusing on the student's learning process and awareness in this process
		Assessment allowing the students to become independent and manage their learning process
	Fostering self-assessment	Assessment helping students perceive their position relative to their peers, as a part of collective learning
Assessment philosophy		
Learner-oriented assessment		
	Constructive feedback	Providing both positive and negative critique
	Fostering self-assessment and process engagement	Informing students about the process and their progress while assessing
		Creating a learning environment for students to monitor, notice, and measure their own development
		Contacting as many students as possible, taking their experiences and encouraging reflection on them
	Considering individual differences	Providing students with the learning environment where they can express themselves best by giving them different opportunities
		Assessing student progress regarding individual characteristics and awareness, rather than comparing with others
Process-oriented assessment		
	Assessing student progress	Assessing students' progress from where they start to where they finish
	Appreciating student effort and risk taking	Assessment rewarding hard-working students who try, wonder, and even challenge the instructors

	Assessment recognizing students who strive to go beyond their learning and take risks for creative contributions
Assessing attendance and participation	Assessment considering student participation to studio work and critique
Clear assessment process and criteria	
Planning assessment	Determination of assessment criteria and system before assessment
Transparent assessment	Sharing the assessment criteria and system transparently with the students
Multiple assessors	All the assessors taking responsibility and acting together as much as possible regarding the decision mechanisms of the assessment
Institutional requirements	
Numerical grade	Institutional policy for the use of numerical grades in assessment
Letter grade	Institutional policy for the use of letter grades in assessment
Measuring learning outcomes	Institutional policy for the measurement and assessment of learning outcomes in the course curriculum
Strict deadline and requirements	Assessment with strict adherence to deadlines and requirements
Assessment processes, practices, methods, and tools	
Multimodal assessment	
Self-assessment	Fostering self-assessment through regular critique environment
	Fostering self-assessment through assignment of written reflection
Informal peer assessment	Fostering peer assessment through in-class exercises making students work in the studio
Formal peer assessment	Fostering <i>intra</i> -peer assessment for group work through assessment forms

Multiple assessors		
	Discussion among assessors	Verbal determination of assessment criteria among assessors
		Written determination of assessment criteria among assessors
		Discussing individual assessments among instructors in assessment
		Consensus decision making when there is disagreement among assessors in assessment
	Multiple grading	Instructors assessing students in each other's classes in the studios divided into different classes
		Hosting jurors from outside the studio
	Rotation among assessors	Providing multiple critiques by rotating assessors
Transparency in assessment		
	Instructional materials informing about assessment	Syllabus involving which grade the student performances correspond to and/or the grade weight of student works and performances and/or assessment process and timetable
		Assignment sheet involving assessment criteria and process/timetable
	Emphasis on assessment criteria in the studio	Emphasis and attention to assessment criteria in studio critiques and discussions
Tracking student progress		
	Tracking student work and performance	Observing students and their work during studio hours
		Digital storage and assessment of student work to see progress in the process
		Distribution of responsibilities among instructors for student follow-up

Multiple assessment	Observation of student progress through assessments at multiple times
Cumulative assessment	Measuring student progress through assessment of successive exercises and/or assignments
Panel discussion and desk crit	
Questioning and brainstorming	Encouraging students to reflect on alternatives together for the co-production of ideas
Peer assessment	Encouraging students to comment on the work of their peers
Self-assessment	Encouraging students to comment on their work and process
Exhibitor review and design jury	
Closed exhibition review and jury	Non-presentational assessment of student work
Open exhibition review	Assessment of presented student work while visiting the exhibition
Interim and final jury	Organizing the interim and final jury for the final project
Product-oriented assessment	Assessment of the final product in the exhibition review and jury
Selecting jury members for external assessment	Hosting jurors from outside the studio in final reviews
	Hosting students from previous years on the jury for coaching by older pupils
	Not hosting non-studio jurors who are not familiar with the process
	Not hosting non-studio jurors to prevent students from worrying
Assessment tools	
Comparison	Assessment by grouping and comparing student work physically
	Assessment by categorizing and comparing student work in digital tools

	Criteria-based assessment tools	Assessment against predetermined criteria through written document
Positive aspects of assessment		
Reliable assessment		
	Transparency enhancing motivation and learning	Sharing assessment criteria and system transparently with students enhances their motivation and learning.
	Process-oriented approach for student tracking	Adopting a process-oriented approach enables a more reliable assessment of student performance and progress.
Multiple assessors		
	Getting multiple perspectives	Getting multiple views allows the student to grasp the subjectivity and plurality of design.
	Objectifying assessment	The co-creation of the assessment system and criteria by multiple assessors objectifies assessment as a control mechanism.
	Enhancing collaborative learning	Hosting students from previous years on the jury creates an atmosphere of democratic critique and collaborative learning.
Multimodal critique		
	Student observation in multiple contexts	Providing both group and individual critiques allows monitoring student progress and problems.
	Self-cultivation through multiple dialogue	Multimodal critique contributes to the self-cultivation of studio members through multiple different dialogue.
Student involvement		
	Improving self-assessment and learning	Student participation in assessment promotes self-assessment and improves learning.
	Promoting self-awareness	Student participation in assessment promotes self-awareness as a designer.

	Student recognition and tracking	Student participation in assessment ensures student recognition and tracking.
	Student feedback informing improvement	Student reflection on assessment provides feedback on their learning and difficulties to improve educational and assessment provisions.
Challenges of assessment		
Institutional policy		
	Numerical grading	The difficulty of converting the feedback into a grade
Instructor-related factors		
	Unconstructive assessment	Focusing on negative aspects demotivating students and hindering student engagement
	Fairness concern	Long and stressful assessment process due to fairness concerns over the multitude of criteria and the large student number
Workload		
	Tracking and critiquing a large number of students	The large number of students preventing all students from benefitting from assessment adequately
	Time problems	The difficulty of recognizing, monitoring, and critiquing a large group of students in a limited time
	Time-consuming and tiring process	Time-consuming and tiring assessment process due to the large number of students
Subjectivity		
	Subjective approaches against objective criteria	Individual approaches to design adding subjectivity to objective assessment criteria, perceived as inconsistent
Ambiguity		

	Absence of rational absolute truth in design assessment	Absence of absolute approaches/answers to the design process/problems
		Providing students with somewhat vague feedback due to the uncertainty of the design process
	Assessment limited to the framework of student work	Assessment failing to cover/deal with some criteria due to being limited to student work and responses
		Assessing the students in a design process where they do not fully grasp the assessment criteria
Student characteristics		
	Openness to learning through assessment	Student resistance to learning through assessment
		Student reluctance to speak and get critique in public
		Low student motivation on the subject hindering engagement in feedback
	Adaptation to a new educational system and learning style	Students' difficulty in understanding that hard work in the design process does not always yield successful results.
	Adaptation to new terminology	Communication problems due to students' lack of design terminology
	Formation of the studio culture	In-class miscommunication between students due to studio dynamics
Assessment literacy		
	Comprehending assessment	Students' difficulty in comprehending assessment system and criteria
	Grasping the meaning and source of assessment	Students' perception of assessment as a checklist
		Students' mistrust in instructors' expertise and fairness
		Students' perception of instructors' personal preferences as a source of assessment

	Acting upon assessment	Students who are not ready to take action on assessment
	Taking responsibility for assessment	Students not (accustomed to) taking initiative and responsibility for their decisions
	Managing emotional challenges	Impact of assessment on student psychology as fear, anxiety, embarrassment, fury, etc.
	Peer collaboration	Students inability to be objective in peer assessment due to solidarity
	Peer competition	Students' mistrust in peers' fairness
		Students' inability to make objective peer assessment with the motive of competition
Suggestions for (more) effective assessment		
Learner-centered approach		
	Multimodal assessment for different needs	Multimodal assessment for different needs regarding task characteristics and timing, student performance and feedback, etc. to support learning
	Effective communication	Teachers communicating with students one-to-one, showing that they know and follow them
Getting outside opinion		
	Contacting other courses	Supporting the understanding of the criteria by communicating with other courses feeding the studio conceptually
	Hosting outside jurors	Hosting jurors from outside the studio to get multiple views enhancing student understanding of design learning and assessment
(More) student involvement		
	Getting student feedback on the studio and assessment	Receiving student feedback on studio execution and assessment, including needs, problems, potentials both during

	practices	and at the end of the semester
		Receiving students' feedback on their learning experience and progress both during and at the end of the semester
		End-of-term colloquium to discuss problems and suggestions with students
	Getting student feedback before setting criteria	Receiving feedback on tasks and assessment while creating some criteria
	Implementing formal peer assessment	Integrating systematic peer assessment into studio practices
Transparent assessment		
	Clear assessment mechanisms and criteria	Providing clear learning outcomes and assessment criteria to both students and assessors
	Criteria-based tools	Using criteria-based tools to provide clear and objective criteria



F. METU Architectural Basic Design Studio *Assignment 4* Sheet

arch101 basic design

I1 – I2 – I3 – I4 *
R1 – R2 – R3 – R4 – R5 – R6 **|

4
fall 2022

21 October 2022

ASSIGNMENT 4

You are required to design a 2D composition in a 27X37cm white design field by using 4 different shapes of colored elements. Generate your elements from transparent, semi-transparent or opaque papers. This composition should reflect the theme of depth. You can modify your design elements by rotating, scaling, stretching, and overlapping. Each of the elements must be multiplied 5-7 times.

Submissions should also be made as a jpeg file to ODTÜClass.

Discussion themes: figure-ground, organization, order, element relations, reference system, complexity, repetition, variation, transparency, depth

Due: 25 Oct. 2022 at 09.00. Discussion at 13.40.

* instructors

** research assistants

G. Interview Questions for the METU Department of Architecture Basic Design Studio Executives

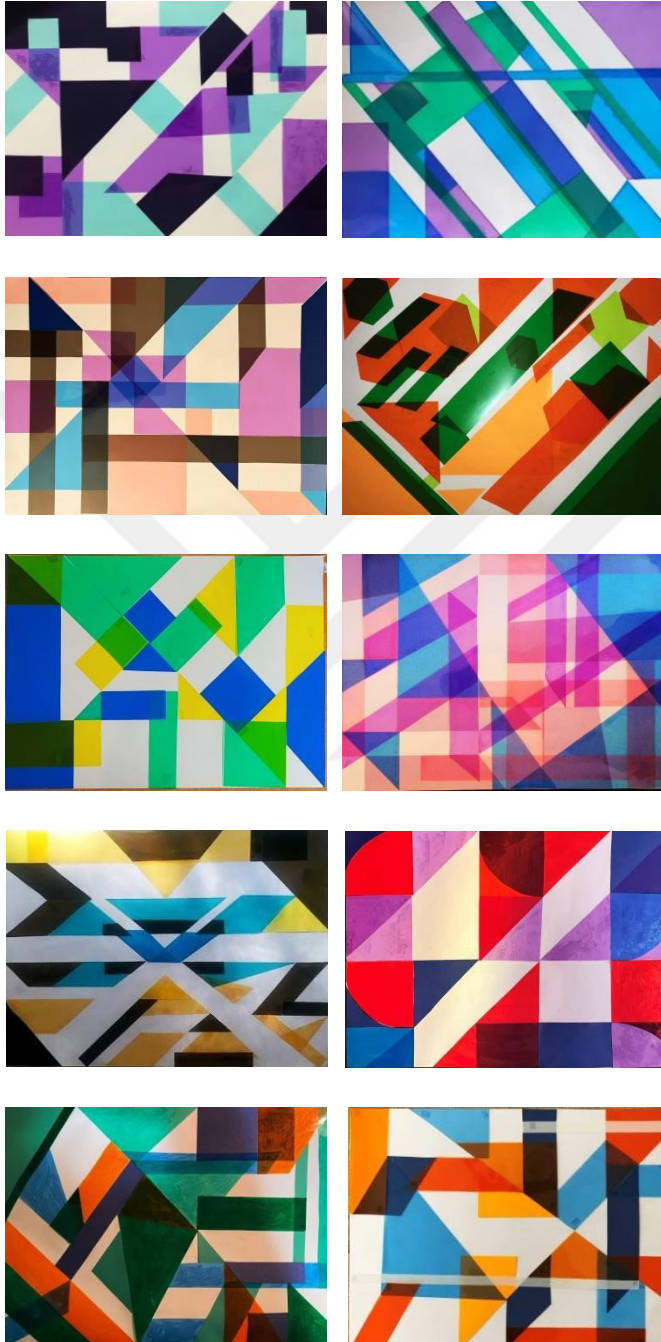
1. What would be the main dimensions/criteria for the assessment of this assignment? Let's list them first. Will they be of equally weight?
 - a. If not, can you rank them in order of importance, explaining your reasoning?
 - b. (In case of defining more than 6-7 dimensions) If you were asked to delete one of them, would you delete the last one or not?
2. How would you define each dimension/criterion in a measurable way?
(To be more specific) Let's say we have decided to use a 5-point scale. What would your expectations for a sample student work for *Dimension 1*? How would you describe a work that falls below expectations? How can *Dimension 1* differ from *Dimension 2*?
3. How would do you assess the extreme cases (For example, if a student work does not achieve *depth*, but comes up with a *creative* composition)? Could creativity or originality be a criterion for this assignment? If so, how do you define this criterion?
4. Are there any cases where you leave assignments out of assessment? If so, how?
5. Are there any methods or tools that you find useful in assessing these type of assignments?

H. Metarubric

Rubric part	Evaluation criteria	Yes	No
The dimensions	Does each dimension cover important parts of the final student performance?		
	Does the dimension capture some key themes in your teaching?		
	Are the dimensions clear?		
	Are the dimensions distinctly different from one another?		
	Do the dimensions represent skills that the student knows something about already (e.g., organization, analysis)?		
The descriptions	Do the descriptions match the dimensions?		
	Are the descriptions clear and different from each other?		
	If you used points, is there a clear basis for assigning points for each dimension?		
	If using a three-to-five level rubric, are the descriptions appropriately and equally weighted across the three-to-five levels?		
The scale	Do the descriptors under each level truly represent that level of performance?		
	Are the scale labels encouraging and still quite informative without being negative and discouraging?		
	Does the rubric have a reasonable number of levels for the age of the student and the complexity of the assignment?		
The overall rubric	Does the rubric clearly connect to the outcomes that it is designed to measure?		
	Can the rubric be understood by external audiences?		
	Does it reflect teachable skills?		
	Does the rubric reward or penalize students based on skills unrelated to the outcome being measured that you have not taught?		
	Have all students had an equal opportunity to learn the content and skills necessary to be successful on the assignment?		
	Is the rubric appropriate for the conditions under which the assignment was completed?		
	Does the rubric include the assignment description or title?		
	Does the rubric address the student's performance as a developmental task?		
	Does the rubric inform the student about the evaluation procedures when their work is scored?		
	Does the rubric emphasize the appraisal of individual or group performance and indicate ways to improve?		
Fairness and sensibility	Does it look like the rubric will be fair to all students and free of bias?		
	Does it look like it will be useful to students as performance feedback?		
	Is the rubric practical given the kind of assignment?		
	Does the rubric make sense to the reader?		

Note From Stevens & Levi, 2004, p.94

I. Sample Student Work and Assessment Template for Tool Testing



CRITERIA		NA	Beginning	Developing	Good	Exemplary
ORDER	ORGANIZATION AND REFERENCE SYSTEM	S2	S1*			
	ELEMENT IDENTITY AND ELEMENT RELATIONS			S1		
	FIGURE-GROUND		S1			
	COMPLEXITY		S1			
DEPTH			S1			
WORKMANSHIP					S1	

* student work