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Research Article

Design studio final product evaluation rubric in interior architecture education: Eskişehir Technical University case

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Abstract
This study aims to develop an objective evaluation tool to evaluate final products in interior architecture design studios. Design studios generally apply personal evaluation methods or those predetermined by institutions to evaluate final products. However, such evaluations are often known to be far from being objective. In such evaluations, final product information might lead to a different value judgement that changes from person to person. Thus, a clear, accountable, fair, and objective evaluation tool developed according to this purpose might enable students and course instructors to evaluate themselves. In addition, subjective evaluations can be avoided. This study aims to develop a rubric to ensure an objective and fair evaluation of students' products. Thus, the evaluation criteria used in this rubric were determined through the analysis of the data obtained from the forms sent to the instructors working in different universities and from the evaluation criteria used by the jury members. Under the light of these data, a new rubric was developed for each design studio group. Different jury members in different juries were asked to use two of these rubrics to provide some feedback about them.

Keywords: Design Studio, Value and Evaluation, Final Product Evaluation, Measurement and Evaluation in Education, Rubric

Extended Abstract

Introduction: In design studios of interior architecture education, students produce interior design projects about given space, user, and function. The instructor or a jury member evaluates produced final projects. Evaluations can be subjective and cannot be questionable and fair. So, this study needed to prepare an objective, fair, questionable and transparent evaluation criteria tool. The grade is a sort of evaluation information due to the interaction and relationship between the subject and the object. The subject uses objects when he needs them, which is meaningful because of their relationship. The subject uses object when he needs it, so this is meaningful because of the relationship between them. At this time, we can talk about value. Kuçuradi (2016: 9) emphasizes this value characteristic: "Value is subjective and the value of an object changes from person to person. Value of an object is something that evaluator assigns to it; when evaluator and time of evaluation changes, the value of this object may also change". All abstract and concrete objects might have a value or not, depending on the evaluator. For example, there is a pencil on the table. If the pencil on the table provides convenience for the user, that pencil is valuable for the user or evaluator. The situation is a bit different for abstract values.

When we talk about the value of an artwork, we refer to its technique, style or other characteristic properties. Social, political, and cultural contexts involved in the work of art and the date when it is created may lead to the subject perceiving the work as a value and evaluating it differently. So, an objective evaluation of one particular action by more than one person is possible only when they use a common measure or criteria.

The course instructor often uses either his or the institution's method while evaluating. However, positive or negative personal relationships with students affect this evaluation process. Evaluation is an important part of education. In education, it is named measurement and evaluation. The study examines the educational process of the design studio, the development of the final product and its evaluation, and measurement and evaluation methods used in education. Shepard (2000: 4) sees evaluation as a teaching process that supports and improves learning. The concrete result of evaluation in education is grade. The essence of grade in education is due to the necessity of evaluation. Therefore, the evaluation process, i.e. grades, has the following functions in education. It informs students about how to change their behaviors; motivates students for school work; forms a basis for the decisions about students; informs teachers about the effectiveness of teaching; guides teachers and the counseling unit while designing their services and their contents; helps students evaluate their development (Turgut and Baykul, 2015: 354). An accurate decision in evaluation depends on error-free and objective measurement. Therefore, examining measurement and evaluation tools in line with teaching objectives and deciding on the most suitable tool can be the right action to take in educational program design. Performance-based measurement and evaluation differ from other measurement tools; it is especially difficult to evaluate music, sports or art achievements or those involving visual components. Since technical skills, use of equipment and reflection on one's learning is quite important in achievement-based educational programs; it is also difficult to measure and evaluate such skills. Alternative evaluation methods (achievement evaluation) can focus on students' aesthetical, critical and creative thinking skills ranging from understanding design to practicing it (Mamur, 2010: 184). The research on evaluation reveals that using a rubric is the most objective method in evaluating final products in art education. Rubrics are classified into two categories according to their purpose of use. Holistic rubrics evaluate achievements from a holistic perspective without considering subcomponents. Analytical scale rubrics are more detailed than holistic ones. Each task or responsibility is evaluated according to certain criteria. Errors and missing information cannot be ignored because they are very detailed. Therefore, they are more objective. Based on the idea that rubrics are objective evaluation tools, this study aims to develop a rubric to evaluate the final products of design studio courses in interior design education.

Purpose and scope: The aim of this study is to ensure that instructors make transparent, objective, fair and accountable evaluations, encourage them to evaluate their teaching methods, give students the opportunity to evaluate their development, to see their rank in the classroom and realize their shortcomings and mistakes, guarantee a healthy evaluation process. Internal architecture design studios have developed an evaluation tool based on the abovementioned aims.

Method: In accordance with this purpose, the study is designed the study was designed as qualitative research in four stages. In the first stage, the "Final Product Evaluation Criteria Information Form for Design Studio Course (ECIF)" is formed to receive the instructors' opinions about the evaluation criteria of design studios in interior design education. Secondly, it was planned to observe a design studio in interior design education and save the instructor's evaluation criteria. So, it was recorded as a video with a camera. In this part, the evaluation criteria were coded and analyzing with Nvivo12. And then, the rubrics were developed according to the data gained in the first and second part of this study. Seven jury members used the prepared rubrics were used in the final juries of five project groups at Eskişehir Technical University. Lastly, the researchers prepared semi-structured interview questions to obtain the seven jury members' opinions about the rubrics. The rubrics were revised according to their feedback.

Findings and conclusion: At the end of this study, the evaluation criteria for Interior Design Studio 1, 2, 3, 4, 5 and 6 and prepared rubrics with the criteria. The criteria were grouped under three headings as design (50%), implementation (30%) and presentation (20%), and were proportioned according to the data obtained. After the jury members used the rubric which includes these criteria, their opinions were reached by semi-structured interviews. They used the following adjectives to describe the rubric: rational, fair, complex, objective, effective, time-saving, comprehensive, sufficient and up-to-date.

Keywords: Design Studio, Value and Evaluation, Final Product Evaluation, Measurement and Evaluation in Education, Rubric

INTRODUCTION

This study focuses on determining evaluation criteria to be used in the evaluation of final products of design studio courses in interior architecture education, which mainly aims to teach the basic practical processes of

the occupation such as design, application and organization. Therefore, design studio courses are the most comprehensive courses combining design and application practices in one final product according to the aim mentioned above. The name design studio comes from the place where these courses are given. *Studio* is defined as "the physical environment where both design education and teaching activities and cultural and pedagogical activities take place" (Crowther, 2013: 19). Schön defines a design studio as the heart of educational programs since it is based on the simulation of real problems and situations and *learning by doing* experiences (Schön, 1985). "Design studios are the environments where designers spend most of their time, talk and discuss about design methods and principles the most" (Ketizmen, 2003: 32). "In many programmes, design students take ten or more studio courses in preparation for entering their chosen profession" (Smith & Smith, 2012: 92).

In design studio courses, students design interior space for a predetermined user within a lesson plan framework to make it a functional, aesthetic and practical one. The final product is evaluated by the instructor or a jury which also involves the instructor. "Summative evaluation and assessment is a summation of achievement at the end of a process and/or the completion of a product" (Barrett, 1990: 301). Thus, students have the chance to evaluate their own developments and their positions among other students taking the course and realize their mistakes and shortcomings. In the end, the grade received here is a sort of evaluation information, due to the interaction and relationship between the subject and object. Of these two concepts, the knower is *subject*, and known or what needs to be known is *object* (Uçak, 2010: 709). The subject uses object when he needs it, which is meaningful because their relationship. As Ülken said:

> *We use some of them (things, entities etc) because they are useful for us; or when we use a hill as a landmark to find a specific destination, it is no longer "that-entity", it becomes "sign" of a direction or movement. That is why it gets a meaning... Thus, majority of particular and various empiric entities are classified as 'meaningful' and "understood" things depending on their relationship with us.* (Ülken, 2016: 20)

If known information about an object is meaningful for a subject, we can talk about its *value.* The presence of a pencil on a table is known information and does not need any interpretation, i.e. this information is objective and unbiased; however, *the presence of the pen on the table is useful for me* is meaningful for the subject. In other words, the presence of the pen on the table is assigned a value for the subject and it becomes subjective information. William Frankena explains *value* in two different ways: abstract and concrete. Accordingly, abstract value is descriptive, while concrete value is "evaluated or judged to be valuable" (Kılıç cited by Frankena, 1967). Kuçuradi (2016: 9) emphasizes this value characteristic: "Value is subjective and the value of an object changes from person to person. Value of an object is something that evaluator assigns to it; when evaluator and time of evaluation changes, the value of this object may also change".

All abstract and concrete objects might have a value or not, depending on the evaluator. The usefulness of the pen on a table is the value given to a concrete situation by the evaluator. The situation is a bit different for abstract values. A work of art might be perceived as a concrete product; however, the value given to a work of art is related to its technique, style and other abstract characteristics. Different values are due to the interaction between the subject- i.e. the one who consumes the object - and the one that has a relationship with it. Social, political, and cultural contexts involved in the work of art and the date when it is created may lead to the subject perceiving the work as a value and evaluating it differently.

Kuçuradi suggests that evaluation occurs in three different ways. First, the evaluator sees the value in the object, second he ascribes a value to the evaluated object and third he assigns a value to the object (Kuçuradi, 2016: 7). As for objective evaluation, Erinç (2004: 141) states: "It is not possible to talk about a criticism that is not based on criteria" and Aristoteles states: "No change is possible without equality and no equality is possible without measurability with a common measure" (Selik, 2016: 36). An objective evaluation of one particular action by more than one person is possible only when they use a common measure or criteria. In addition, it is impossible to make an objective evaluation without freeing oneself from his emotions and understanding the essence of a person/case and object and the situations it leads. Therefore, transition from subjectivity to objectivity in any evaluation process is possible with predetermined criteria.

Evaluation is an important phase of education that displays students' achievement. The course instructor often uses his or the institution's method while evaluating. However, positive or negative personal relationships with

students affect this evaluation process. This study aims to develop an evaluation tool that will enable course instructors or jury members to make unbiased, transparent, fair and accountable evaluations. Students question their scores and incomplete knowledge and skills, realize their mistakes and compare themselves to others. Accordingly, the study examines the educational process of design studio, the development of the final product and its evaluation as well as measurement and evaluation methods used in education.

Interior Design Studio and Final Product Evaluation

Design studios provide an environment where all the phases of the design process ranging from problem identification to the final product, are taught/learned according to *learning by doing* philosophy. The design studio is the central mode of teaching art and design today. "Essentially it remains a shared place in which students are given practical tasks and projects to solve either individually or collaboratively and where students share their solutions or development processes with other students" (Park, 2011: 177).

The design process occurs in three phases: problem identification, finding solutions and solution analysis. The process continues until the designer makes his final decision (Kurt, 2009: 403). Revisions might be made and changes might be applied until this final decision. The steps of the design studio course and design process are parallel. According to Botti-Salitsky's (2005) interior architecture education model, any design process in a design studio course starts with analysis, just like in all design processes, followed by planning based on feedback, schematic drawing, design development and application project. In the design studio, students are expected to find solutions to predetermined design problems, through which they learn about the process. In the end, they are evaluated to determine their knowledge level.

Variety in evaluation types and tools play a significant role in helping design students evaluate themselves in terms of their conceptual and practical knowledge. "A problem, task or project allows students to evaluate their own learning and creates a bridge between what students have learned and how it can be used in practice" (Park, 2011: 178). At the end, students are criticized for their final products. As for the historical development of such final evaluations, we know that evaluations used to be made behind closed doors and students took their projects back together with just some comments and a grade in Beaux Art while the evaluation process was more comprehensive and organized like an educational activity in Bauhaus (Botti-Salitsky, 2005: 32, 33). Today, the course instructor determines course objectives, outcomes, requirements and evaluation criteria for design studio courses. Kurt defines this process as *design of project evaluation*. The final product is evaluated through presentations and discussions at the end of the semester instead of assessing through assignments or tests (Oh et al., 2013: 302). In other words, such an evaluation process is quite different from other theoretical courses and different methods are used for evaluation purposes.

Juries and evaluation procedures replace theoretical exams in design studio courses (Martinez, 2003, as cited in Gül, 2016) Since the structure of design studio courses is quite different from other courses, a comprehensive and detailed evaluation is essential. "Evaluating design creativity is one of the most important issues in design and architecture programs" (Casakin and Kreitler, 2008: 666). Design studio instructors evaluate designs according to tools they use to represent and communicate information or according to their perspectives instead of evaluating the quality of designs (Casakin and Kreitler, 2008: 668).

Oh et al. (2013: 307) stated that juries are formed as an activity at the end of design studio courses. According to Çıkış and Çil, one student or a group of students presents their projects in front of a jury and receive feedback about them. Jury members are design studio course instructors or those who actively work as interior architects. The jury evaluates the final product according to course outcomes and asks some questions to students (Çıkış and Çil, 2009: 2105). The jury is considered the most practical environment that enables students to communicate with people working in interior architecture. Students come together with professionals and learn about design and application relationships.

The jury assigns a final product grade to students at the end of the evaluation; however, the only aim of jury evaluation is not to give a grade, it also aims to:

- Teach students how to evaluate their designs
- Encourage all the students to learn together

- Teach them how to make presentations, talk effectively and observe professional talents (Oh et al., 2013: 307).

Design-based disciplines use different evaluation processes from other disciplines, although the common aim for all disciplines is to determine students' knowledge level. This process is *called measurement and evaluation*. According to Aktaş and Alıcı (2017), measurement and evaluation aim to determine students' knowledge level before teaching, whether they have necessary knowledge and skills so that the course instructor can determine the content to be presented, diagnose problems and mistakes in learning and provide guidance when necessary. "Measurement, in the broadest sense, is about presenting observation results as numbers or other quantitative symbols. Measurement can be defined as "quantification of a quality" (Turgut and Baykul, 2015: 69). Observation can be defined as "information obtained through observations"; measurement results as "quantitative expression of the information"; the criterion as "a norm that help reaching a certain value judgement by commenting on measurement results"; and evaluation as "value judgement or decision made by commenting on measurement results according to certain criteria". This process, which starts with measurement and ends with evaluation, is called evaluation process. Evaluation is the last but the most important phase of teaching. Shepard (2000: 4) sees evaluation as a teaching process that supports and improves learning. The concrete result of evaluation in education is grade. The essence of grade in education is due to the necessity of evaluation.

Therefore, evaluation process, i.e. grades, has the following functions in education: It

- Informs students about how to change their behaviors.
- Motivates students for school works
- Forms a basis for the decisions about students
- Informs teachers about effectiveness of teaching
- Guides teachers and the counselling unit while designing their services and their contents
- Helps students evaluate their development (Turgut and Baykul, 2015: 354).

Griffin suggests that evaluation becomes more meaningful when it is integrated into the teaching process (Griffin, 1991: 4). Thus, it is possible to provide effective education by implementing an accurate and effective evaluation process.

Tekindal (cited by Ertürk, 2017) examined evaluation under three main titles; random and regular, goal-based and criterion-based evaluation. In random evaluation, evaluation is done without a predetermined plan and criteria, while regular one involves a more planned and more controlled evaluation. The goal-based evaluation aims to determine students' current status, make them aware of their mistakes and shortcomings and improve the process, make a final decision about the final product of the educational process or students' developments and provide them with necessary feedback. There are two types of criterion-based evaluation; absolute evaluation uses a predetermined criterion called 'absolute criterion' and evaluation result of each individual is independent from the community, class and group etc. In relative evaluation, "evaluators use a criterion determined in advance according to measurement results, and measurement result of each individual is affected by the class, community etc. Thus, each individual should care about other individuals' evaluations" (Güler, 2018: 13).

Many evaluation tools have been developed for different purposes in the abovementioned evaluation types. These tools are portfolio evaluation, self-assessment, peer assessment, group assessment, rubrics, concept maps, checklists and interviews. One or several of these evaluation tools might be preferred according to the content and objectives of the education program. It is also claimed that there are three different approaches to determining students' knowledge level; first, students evaluate themselves through self-comparison; second through comparison to other classmates; and third, by comparing to predetermined criteria (Mamur, 2010: 180).

An accurate decision in evaluation depends on error-free and objective measurement. Therefore, examining measurement and evaluation tools in line with teaching objectives and deciding on the most suitable tool can be the right action to take in educational program design. Performance-based measurement and evaluation are different from other measurement tools; it is especially difficult to evaluate music, sports or art achievements

or the achievements that involving visual components. Since technical skills, use of equipment and reflection of one's learning are quite important in achievement-based educational programs, so it is also difficult to measure and evaluate such skills. Alternative evaluation methods (achievement evaluation) can focus on students' aesthetical, critical and creative thinking skills ranging from understanding design to practicing it (Mamur, 2010: 184). The research on evaluation reveals that using a rubric is the most objective method in evaluating final products in art education. Güler (2018: 99) stated that rubrics are important because they make objective evaluation of subjective achievements possible.

Graded scoring keys (rubrics) consist of three sections; evaluation criteria, criteria descriptors and grading strategy:

- Evaluation criteria are about determining the objectives regarding the product or the process to be graded.
- Criteria descriptors define observable characteristics required in students' products or achievements
- Grading strategy is about defining and grading different levels of achievement (Popham, 1997: 74).

Rubrics are classified into two categories according to their purpose of use. Holistic rubrics evaluate achievements from a holistic perspective without considering subcomponents. They do not take too long to develop and are user-friendly. Some errors and missing information can be ignored due to the lack of subcomponents. It is more subjective compared to another rubric type. Analytical scale rubrics are more detailed than holistic ones. Each task or responsibility is evaluated according to certain criteria. Errors and missing information cannot be ignored because they are very detailed. Therefore, they are more objective. Based on the idea that rubrics are objective evaluation tools, this study aims to develop a rubric to evaluate the final products of design studio courses in interior design education.

METHOD

Aim

The aim of this study is to ensure that instructors make transparent, objective, fair and accountable evaluations, encourage them to evaluate their own teaching methods, give students the opportunity to evaluate their own development, to see their rank in the classroom and realize their shortcomings and mistakes, guarantee a healthy evaluation process. Based on the abovementioned aims, internal architecture design studios have developed an evaluation tool.

Methodology

This study was conducted in four phases according to the aims of the study by using qualitative research methods.

1. Developing "Final Product Evaluation Criteria Information Form for Design Studio Course (ECIF)", receiving feedback from experts and revision process
2. Observations through video recording in Design Studio 3 course and determining evaluation criteria used by jury members
3. Developing the rubric
4. Using the rubric in two different juries in two Design Studio courses and receiving feedback from jury members through semi-structured interviews.

Ethics committee approval dated 31.05.2017 and numbered 58061 was obtained by Eskişehir Technical University Ethics Committee.

Participants

The participants of the study are instructors and jury members. Instructors contributed to the study through their responses to "Design Studio Course Final Products Evaluation Criteria Information Form". The participant instructors were from 10 randomly chosen among 28 well-established universities (9 state and 19 foundation universities) that have been offering at least 10 years of interior design education, have competent

academic staff and play a leading role in interior design education. The criterion "10 years" was due to practicability of the study. The form was sent to 80 instructors in these ten universities. A total of 14 instructors responded to the form and the distribution of these replies for each university are as follows: Hacettepe University (1), Anadolu University & Eskişehir Technical University (1), Çukurova University (1), Çankaya University (1), Kocaeli University (2), İstanbul Technical University (3), Başkent University (2), Doğuş University (1), İzmir Economy University (2). Jury members were invited from different institutions to evaluate using the rubric developed for two different design studio course juries (Table 1).

Table 1. Information about the jury members

Jury member	The jury he/she attended	Work Place	Title
J1	Design Studio 2	Anadolu University	Research assistant
J2	Design Studio 2, 6	Self-employed	Interior architect
J3	Design Studio 2	Self-employed	Interior architect
J4	Design Studio 2	TOBB University	Assistant Professor
J5	Design Studio 6	Self-employed	Interior architect
J6	Design Studio 6	Self-employed	Interior architect
J7	Design Studio 6	Eskisehir Technical University	Assistant Professor

Overall Procedure

The study was conducted in four phases (Figure 1). In the first phase, "Design Studio Course Final Products Evaluation Criteria Information Form (ECIF)" was prepared. The form consists of three parts: the first part involves questions aiming to collect demographic information about the instructors; there are questions to obtain information about design studio courses offered in the university in the second part; and the third part involves open-ended questions aiming to obtain the instructors' opinions regarding final product evaluation criteria they use. The developed form was sent to experts for feedback, and later to the participant instructors via e-mail.

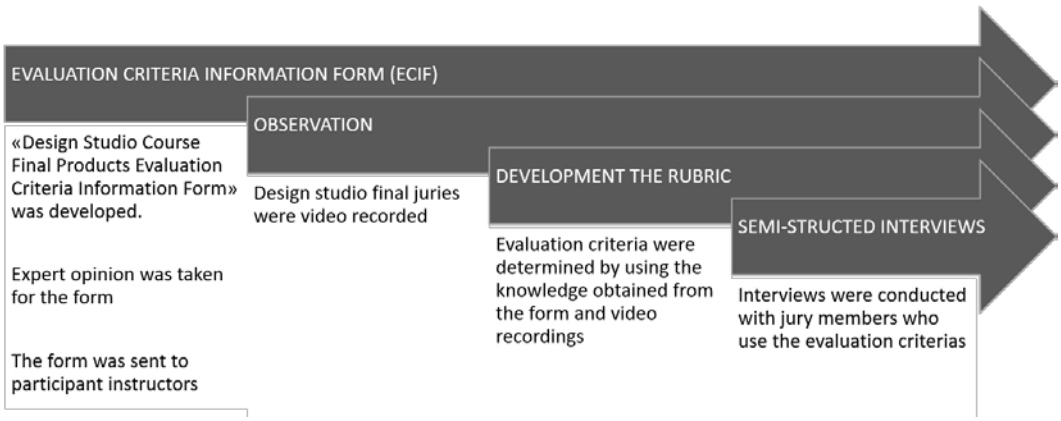

Figure 1. Overall procedure of the study

In the second phase, the final evaluation jury for Interior Architecture Project 3 (Design Studio 3) was observed in the 2018-2019 Fall Semester at Eskişehir Technical University Interior Design Department. The jury was also video recorded to avoid data loss. The video recording was later transcribed. In order to determine the criteria used by ten jury members, the data were coded and placed under certain themes by using Nvivo12 software.

In the third phase, the rubrics were developed to evaluate the final products of design studio 1, 2, 3, 4, 5 and 6 courses according to the data obtained in the first and second phases. Later, these rubrics were given to seven jury members in the final juries of five project groups in Eskişehir Technical University Department of Interior Architecture and an instructor who evaluated without being a jury member. In total, 7 jury members used the rubric.

In the fourth phase, semi-structured interview questions were prepared to obtain participants' opinions about the rubric. These questions were asked during the interviews conducted with 7 jury members. The rubrics were revised according to the feedback from the jury members and finalized accordingly.

FINDINGS

Findings related to Evaluation Process Information Form

The first part of the form collected demographic information about the instructors such as age, gender, graduation, work of place and work experience. The second part provided information about design studio courses. The average number of students in design studio courses is 25 (35.7%) and between 13 and 18 (28.6%). The weekly class hour is between 7 and 12 (78.6%). The content of design studio courses is determined by the instructors (78.6%). These contents often include topic, theme, function, goal, user profile, requirement program, location, requirements, study program, project outcomes, and evaluation criteria. Feedback during the course is+ often provided one-on-one (71.4%). Course instructors spend for each student 11-20 minutes (42.9%) and 21-30 minutes (35.7%).

The third part gives information about the evaluation criteria. As for evaluation methods, the following ones are preferred: individual (the course instructor) (7.1%); open jury (allowing other audience) (74.1%); closed jury (only jury members and design studio students) (21.4%). Percent 71.4 of the design course instructors who responded to the form stated that there is a relationship between the goal of design studio course and project final product evaluation criteria. Some of the comments regarding this issue are as follows:

> *Evaluation is done to make sure that targeted content is taught to students. In the final project of the semester, in which knowledge presented and practiced throughout the semester is applied as a whole, evaluation criteria are used in a way to test to what extent this information is acquired and applied successfully.*
> *Goal determines how evaluation will be carried out. For instance, if there is a conceptual goal in a project, detail drawings and technical drawings have only secondary importance in evaluation.*

The study revealed a direct relationship between course objectives and evaluation criteria. Among course objectives are transferring what students design to the plan and section; ability to think and draw in three dimensional way; understanding 1/50, 1/20, 1/10, 1/5, ½ and 1/1 technical rules and drawing; reading a project from plan and section; recognizing design colors, texture, material, accessory, lighting; understanding user-space-function relationships; working with a model; making presentations, developing their research methods, perceiving equipment elements; preparing installation and electrical system plans as well as lighting-ceiling plans; concept formation; designing an atmosphere; and forming material charts. According to the data obtained, this necessity of goal and outcomes becomes more important as we move from Design Studio 1 to 6.

Among the criteria are technical drawing rules, Presentation board arrangement, presentation, requirements, design idea, 3D presentation, cost, electricity, lighting, installation drawings, user-space-function relationship, model, detail information and applicability potential. It was found that cost criteria should be included in Design Studio 4, 5 and 6. The necessity of the presence of these criteria in Design Studio 5 and 6 is almost percent 100. It was found that these criteria should be considered together with objectives, and a criteria model should be formed accordingly. The design studio course instructors were also asked to report the criteria they think they should be included in the evaluation criteria. The suggested criteria included concept-final product relationship, project goal – developed concept and designed space relationship, interdisciplinary study skills, plans, section, views, ceiling design presentation board, wall building presentation board, flooring presentation board.

In addition, percent 85.7 of design studio course instructors stated that evaluation criteria should be included in students' project portfolio. Half of the design studio instructors stated that final product evaluation is both important and necessary, percent 28.6 necessary, percent 14.3 important and percent 7.1 not important. As for the replies by design studio instructors regarding the problems they face, percent 85.7 reported that they do not face any problems and percent 14.3 stated that they face some problems, which were quoted as follows:

> *I believe that the grade-range students are placed in do not reflect their real grade since grade ranges are quite narrow in our school. One of the biggest problems is that other jury members assign grades without taking evaluation criteria into consideration.*

As for the effect of final product evaluation grade on students, the most common response was "Students can compare their own developments to other students (their position according to other students)". The following other options were stated by equal number of participants:

> *Students can compare their own developments to themselves; grades increase students' motivation; and students can see that they can apply what they learn.*

Video Recording

After video recording data were transcribed, the sentences of jury members regarding evaluation were coded by using Nvivo12 software, which is used in qualitative research. The coding was based on the evaluation criteria used by jury members. The concepts related to evaluation criteria were first determined separately without main titles. Later, the related ones were placed under the code titles and a new code title was formed for each new concept. The criteria used by jury members are displayed in Table 2, which shows that the most popular title in the criteria are Design (44%). Application has a medium weight (30%) and Presentation (26%) is less important than other titles. These data were important in planning the rubric proposal.

Table 2. Coding data

Title	Frequency
DESIGN	70 (%44)
Integration of the idea into the project	27
Goal-concept-final product relationship	13
Originality of the Idea	12
Research and idea development	9
Creating Space-User-Function relationship	5
Problem Identification	3
Applicability	1
Interdisciplinary study skills	0
PRACTICE	48 (%30)
Plans	12
Conformity with technical drawing sizes	10
Sections	7
Lighting Plan	5
Details	4
Ceiling Plan	3
Material – Color - Pattern	3
Cost Sheet	1
Air Ventilation Plan	1
Electrical System Plan	1
Flooring plan	1
Installation Plan	0
PRESENTATION	42 (%26)
Presentation Board – Graphic Language	13
Perspective – Three dimensional drawing quality	13
Model	11
Presentation language	3
A Good Command of the Project	1
Requirements	1

The observation revealed that the jury members used the criteria under *Design* title the most, followed by *Application* and *Presentation* respectively. Also, the most commonly used three criteria under *design* title are integration of the idea into the project, goal-concept-final product relationship, and the originality of the idea. Similarly, the most frequently used three criteria under *Application* title are plans, conformity with technical drawing criteria and section. Finally, presentation board- graphic language, perspective-three dimensional drawing quality and model are the most common criteria under *Presentation* title.

Rubric

Following the analysis of the replies by design studio course instructors regarding evaluation criteria and the data obtained from the observation about the evaluation criteria used by jury members, rubrics were developed for design studio 1, 2, 3, 4, 5 and 6 (graduation) courses. The criteria for each project group were determined separately since each project group's objectives and outcomes are different. Design, Application and Presentation were determined as the main titles according to the criteria (Table 3).

Table 3. Design Studio 1 (D.S. 1), D.S. 2, D.S. 3, D.S. 4, D.S. 5, D.S. 6 final product evaluation criteria determined after evaluation criteria information form and observations.

		D.S. 1	D.S. 2	D.S. 3	D.S. 4	D.S. 5	D.S. 6
DESIGN	Problem Identification	✓	✓	✓	✓	✓	✓
	Research and Idea Development	✓	✓	✓	✓	✓	✓
	Originality of the Idea		✓	✓	✓	✓	✓
	Reflection of the Idea on the Project		✓	✓	✓	✓	✓
	The Relationship among Goal-Concept and Final Product					✓	✓
	Connecting Space-User-Function Relationship	✓	✓	✓	✓	✓	✓
	Material Selection		✓	✓	✓	✓	✓
	Design of Qualitative Elements				✓	✓	✓
	Applicability				✓	✓	✓
	Ability to Work Interdisciplinary					✓	✓
PRACTICE	Conformity with Technical Drawing Criteria (Sections)	✓	✓	✓	✓	✓	✓
	Conformity with Technical Drawing Criteria (Plans)	✓	✓	✓	✓	✓	✓
	Electrical System Plan			✓	✓	✓	✓
	Lighting System Plan			✓	✓	✓	✓
	Air Ventilation System Plan			✓	✓	✓	✓
	Ceiling Plan			✓	✓	✓	✓
	Floor Plan			✓	✓	✓	✓
	Installation Plan				✓	✓	✓
	Details			✓	✓	✓	✓
	Cost Sheet					✓	✓
PRESENTATION	Perspective / Render Quality	✓	✓	✓	✓	✓	✓
	Model Quality	✓	✓	✓	✓	✓	✓
	Presentation Order / Graphics / Language	✓	✓	✓	✓	✓	✓
	Ability to Express Oneself	✓	✓	✓	✓	✓	✓
	Requirements	✓	✓	✓	✓	✓	✓
	Good Command of The Project	✓	✓	✓	✓	✓	✓
	Forming Material Chart		✓	✓	✓	✓	✓

The percentages were determined as percent 50, percent 30 and percent 20 respectively according to the criteria obtained from observations and those used by jury members. It has been found that the outcomes and criteria of each design studio course differ according to the data obtained from the "evaluation criteria information

form". In this respect, a separate criteria list was formed for each design studio course (Table 4). The evaluation criteria rubric were formed according to five scale format:

0- If it lacks: If there are not any drawings related to the criteria or any presentation board that have knowledge value.

1- It exists but is not meaningful: When there is a drawing or presentation board related to the criteria but the content does not provide any information

2- Below average: if the drawing or presentation board related to the criteria have a value lower than average

3- Average: if the drawing or presentation board related to the criteria have an average value

4- Good but has some missing points: If the drawing or presentation board related to the criteria is good but not percent 100 correct and complete

5- Completely good: If the drawing or presentation board related to the criteria is percent 100 correct and complete.

Table 4. The first draft rubric for design Studio 1

	Design Studio 1 Evaluation Criteria	0	1	2	3	4	5
DESIGN 50%	Problem Identification						
	Research and Idea Development						
	Connecting Space-User-Function Relationship						
PRACTICE 30%	Plans						
	Sections						
	Conformity with Technical Drawing Criteria						
PRESENTATION 20%	Perspective / Render Quality						
	Model Quality						
	Presentation Order / Graphics / Language						
	Ability to Express Oneself						
	Requirements						
	Good Command of the Project						

The subtitles for each main title in Design Studio 1 evaluation criteria were determined as follows: problem identification, research and idea development and creating space-user-function relationship under *Design* title; conformity with plans, sections and technical drawing criteria under 'Application' title; and perspective-three dimensional drawing quality, model, presentation board / graphic language, expression language, requirements and good command of the project under "Presentation" title.

Mean scores were calculated by using different multipliers determined for each course. The multipliers for the criteria under main titles of each project group were calculated according to the following formula:

M=P/(NC×5) (P: Percentage, NC: Number of criteria, M: Multiplier)

There are three evaluation criteria under *Design* title of evaluation criteria for Design Studio 1 course. Accordingly, the multiplier was calculated as (50) / (3x5) =3.33. As for grading, when the points given for evaluation criteria under this title are added and multiplied with the multiplier, the result is the grade in percentages. According to this table, the scores of the student who got 3, 5, 4 from the criteria respectively are added as 3+5+4=12 and later multiplied with the multiplier 3.33; 12x3.33=39.96. Accordingly, the student gets 39.96 points out of 50 for design section. Instructors may round this value up or down. There are three criteria under the *Application* section. Since the percentage of this section is 30, the multiplier is calculated as (30)/(3X5) = 2 in the formula. There are six criteria under *Presentation* section, whose percentage is 20. The

formula calculates the multiplier; (20/(6X5) =0.66). The mean score is found by adding all the points in each section after they are multiplied with the multiplier.

MS= (g1+g2+g3)×DM+ (g4+g5gp6)×AM+(g7+g8+g9+g10+g11+g12)×PM

(MS: mean score, g: grade, DM: design multiplier, AM: application multiplier; PM: Presentation multiplier)

Semi-structured Interviews

Semi-structured interviews were conducted with the jury members. Since some jury members had a hectic schedule, the interviews were voice recorded with six members and one jury member answered the interview questions in written form. The findings obtained from the data were classified under two main titles: positive comments and suggestions.

The positive interpretations are as follows:

- Most evaluation criteria match the evaluation criteria of jury members
- The grade the jury gives according to the rubric is quite close to the grade they want to give by using their methods.
- The grades given to a student by several jury members are close to each other, with minimum differences among them.
- The rubric is user-friendly and time-saving
- A systematic evaluation criteria prevents details from going unnoticed by the jury
- It provides a background to give more detailed grades
- The rubric is systematic, objective and fair.
- *Interdisciplinary study skill* criterion is a positive approach since it should be taken into consideration in interior architecture education
- It is positive to have different criteria and multipliers for each project
- The followings are the suggestions for future applications of the proposed rubric:
- More clear universal criteria titles should be written
- 1/1, 1/2, 1/5 and 1/10 scales are not always required in *Detail* criterion. Therefore, *Details* criterion should be under one single title.
- Plans, sections and conformity with technical drawing rules should be revised since they seem to be quite interrelated
- If there is an undesired presentation board in these criteria, its multipliers should be practically changeable
- The subtitle *material* displayed under the *Application* title should be placed under another theme in a more clear way
- A users' manual should be prepared for jury members to guide them while using the rubric
- Guest jury members should not grade *Research and Idea Development* criterion if they have not witnessed project development process.
- It should be possible to give grade between the determined ranges as well
- The percentage of presentation might increase to percent 25
- *Cost sheet* might be removed from the rubric

The jury members were also asked to describe the rubric with some adjectives. They used the following adjectives to describe the rubric: rational, fair, complex, objective, effective, time-saving, comprehensive, sufficient and up-to-date.

CONCLUSION

The study aims to bring together comprehensively and systematically all the criteria used in the evaluation of interior space design, which is the final product of the design process in studio courses, In addition, it aims to contribute to interior architecture education through a rubric proposal that will ensure a transparent, fair and accountable grade for each student at the end of the semester. Therefore, rubrics are believed to be an appropriate evaluation tool for the evaluation of final products of design studio courses because of their

objectivity. A well-designed final product evaluation method positively affects students' motivation and increases their self-confidence as well their grades. It has been concluded that an instructor using rubrics evaluates students more easily and with a clear conscience. When a student objects his grade, jury members can access their evaluation details and clearly show the student his scores for each criterion. In other words, both students and instructors can easily question the evaluation process. Students might prepare themselves according to these criteria and know how their final products will be evaluated thanks to the introduction of the rubric to students at the beginning of the semester. In addition, it was found that jury evaluation can be more objective than individual evaluation.

The data that reveal the relationship between objectives-outcomes of design studio courses and final product evaluation criteria directly affect the evaluation of final products. The percentages (design percent 44, application percent 30 and presentation percent 26) obtained when the concepts in the observation were coded show that design elements of the final product outweigh and application is more important than presentation. Thus, the weight of *design* section in the rubric has been determined as percent 50, application percent 30 and presentation percent 20. Most of the jury members described the rubrics as systematic, user-friendly, less time-consuming and more detailed. Therefore, it has been concluded that this rubric saves instructors' time, makes grading easier and helps them assign fair grades. Jury members used the following adjectives to describe the rubric: rational, fair, complex, objective, effective, time-saving, comprehensive, sufficient and up-to-date. Such positive adjectives clearly imply that the rubric is effective in terms of its goals.

Table 5. The final version of Design Studio 1 Rubric[1]

	DESIGN STUDIO 1 EVALUATION CRITERIA	00	11	22	33	44	55
DESIGN 50%	Problem Identification						
	Research And Idea Development						
	Connecting Space-User-Function Relationship						
	Multiplier: 0.33						
PRACTICE 30%	Plans						
	Sections						
	Conformity With Technical Drawing Criteria						
	Multiplier: 2						
PRESENTATION 20%	Perspective / Render Quality						
	Model Quality						
	Presentation Order / Graphics / Language						
	Ability To Express Oneself						
	Requirements						
	Good Command Of The Project						
	Multiplier: 0.66						
TOTAL							

The content of this rubric (Table 5) can be extended by giving the information form to more design studio course instructors and observing different design studio courses. In addition, this rubric can be applied in different universities and its use can be evaluated by researchers and jury members. Students might be asked questions about the rubrics and their effects on design process and student motivation can be observed. Finally, technology might be used to develop a rubric system through mobile applications to make them more user-friendly.

[1] You can see only one sample Evaluation Criteria.

Authors' Contributions

The authors contributed equally to the study.

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Competing Interests

There is no potential conflict of interest

Ethics Committee Declaration

Ethics committee approval dated 31.05.2017 and numbered 58061 was obtained by Anadolu University Ethics Committee.

REFERENCES

Aktaş, M., Alıcı, D. (2017). Examination of scoring reliability according to generalizability theory in checklist, analytic rubric and rating scales. *International Journal of Eurasia Social Sciences, 8*(29), 991-1010.

Ayyıldız Potur, A., Barkul, Ö. (2010). Stüdyo: Tasarım eğitiminin kalbi. *International Conference on New Horizons in Education*, 738-743, Famagusta.

Barrett, M. (1990). Guidelines for evaluation and assessment in art and design education 5-18 years. *International Journal of Art and Design Education, 9*(3), 299-313.

Botti-Salitsky, R. M. (2005). *Evaluation of a virtual design studio for interior design education* [Doctoral Thesis, Capella University]. https://www.proquest.com/pagepdf/305358954?accountid=25089

Casakin, H., Kreitler, S. (2008). Correspondences and divergences between teachers and students in the evaluation of design creativity in the design studio. *Environment and Planning B: Planning and Design, 35*, 666-678.

Crowther, P. (2013). Understanding the signature pedagogy of the design studio and the opportunities for its technological enhancement. *Journal of Learning Design, 6*(3), 18-28.

Çıkış, Ş., Çil, E. (2009). Problematization of assessment in the architectural design education: First year as a case study. *Procedia Social and Behavioral Sciences, 1*, 2103-2110.

Erinç, S. M. (2004). *Kültür sanat sanat kültür*. Ütopya Yayınevi.

Gül, Ö. (2016). *Türkiye'de iç mimarlık lisans eğitiminde tasarım stüdyosu derslerinin yürütülmesine yönelik geliştirme modeli önerisi* [Doctoral Thesis, Mimar Sinan Fine Arts University].

Güler, N. (2018). *Eğitimde ölçme ve değerlendirme*. Pegem Akademi Yayıncılık.

Griffin, P. (1991). Literacy assessment: Merging teaching, learning and assessment. *Annual meeting of the international reading association*. Assessment Research Centre, Las Vegas, 1-13.

Ketizmen, G. (2003). Mimari tasarım stüdyosunda çalışma yöntemleri: Anadolu Üniversitesi mimarlık bölümü örneği. *Egemimarlik, 47*(3), 32-34.

Kılıç, R. (1996). Olgu ve değer problemi, *Ankara Üniversitesi İlahiyat Fakültesi Dergisi, 35*, 355-402.

Kuçuradi, İ. (2016). *İnsan ve değerler.* Türkiye Felsefe Kurumu.

Kurt, S. (2009). An analytic study on the traditional studio environments and the use of the constructivist studio in the architectural design education. *Procedia Social and Behavioral Sciences, 1*(1), 401-408.

Mamur, N. (2010). Görsel sanatlar egitiminde ölçme ve değerlendirme. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 28*(2), 175-188.

Oh, Y., Ishizaki, S., Gross, M. D., Do, E. Y.-L. (2013). A theoretical framework of design critiquing in architecture studios. *Design Studies*, 34, 302-325.

Park, J. Y. (2011). Design education online: learning delivery and evaluation. *International Journal of Art and Design Education, 30*(2), 176-187.

Popham, W. J. (1997). What's wrong and what's right with rubric. *Educational Leardership*, *55*(2), 72-75.

Selik, M. (2016). *Marksist değer teorisi*. Efil Yayınevi.

Tekindal, S. (2017). *Eğitimde ölçme ve değerlendirme.* Pegem Akademi.

Shepard, L. A. (2000). The role of assessment in a learning culture. *Educational Researcher*, *29*(7), 4-14.

Smith, K., & Smith, C. (2012). Non-career teachers in the design studio: economics, pedagogy and teacher development. *International Journal of Art and Design Education*, *31*(1), 90-104.

Turgut, M. F., Baykul, Y. (2015). *Eğitimde ölçme ve değerlendirme.* Pegem Akademi Yayıncılık.

Uçak, N. Ö. (2010). Bilgi: Çok yüzlü bir kavram. *Türk Kütüphaneciliği*, *24*(4), 705-722.

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