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An alternative assessment scale for student work produced in the architectural studio

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Abstract

This paper investigates the utility of a scale specifically designed to evaluate work produced in the architectural studio. The primary aim of the scale is to provide design critique to students, while fostering motivation.
The data to be presented in this study were gathered during a studio class of the core curriculum from 20 undergraduate students of the Department of Architecture at Uludag University. Students were asked to compare two alternative evaluation processes, color-coding and smiley faces, both with verbal descriptions, to the conventional 100-point grading scale. The quality and effectiveness of the rating scales in assessing creative work was evaluated.

Keywords: Assessment scale; student motivation; architecture studio.

1. Introduction

Presenting assessment feedback to students in the architectural design studio is an integral part of the learning process. Most feedback is provided in the form of desk-side critiques, or as assessments during studio presentations of the student's work. While individual styles of instruction may vary, the critiques serve both evaluative and educative purposes. These qualities of feedback are not unique to architectural education, but to be more precise are fairly universal (Dochy & McDowell, 1997). In the architecture studio, feedback is not only a means to provide the student with information on his/her performance, but also becomes a tool for instruction, where theoretical material of other courses is blended, and reinforced through applied resolution of design problems.

In a significant book chapter, Birenbaum (1996) makes a distinction between a "culture of testing," where the teacher is responsible for instruction, and the psychometric expert is responsible for testing, and that of a "culture of assessment," where the emphasis is on integrating assessment and instruction. The author contends that this shift has occurred in the past few years. One can argue that a similar shift has occurred in teaching architecture students as well. The master-apprentice dialogue has begun to take place on a more level surface. In the information age, access to architectural precedents is unproblematic, thus the role of the instructor is more of a mentor that facilitates in

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setting guidelines, as opposed to one that simply funnels examples of "good" architecture into the students' heads that they then must memorize, and reproduce. Based on Birenbaum's evaluation associating the assessment culture to the constructivist approach to education, Dochy & McDowell (1997) suggest that assessment will take on new roles, in new learning environments.

In an article that investigates students' perceptions of effective assessment feedback, Lizzio and Wilson (2008) identify "performance-gap information, the inclusion of positive components, clarity, and a concern with fairness" as crucial characteristics. The authors contend that a 'perceived discrepancy' between current and desired performance is essential to motivating change or learning. In addition, they suggest that to minimize adverse effects of negative feedback on self-esteem and motivation, both positive and negative components should be included, increasing the probability of the student receiving negative feedback beneficially. Another critical component of feedback is identified as a need for it to possess clarity, not only following assessment but also prior to it. Finally, perceptions of fairness of feedback are pointed out to influence effectiveness and appropriateness. Two key concerns are identified as "distributive justice," the fairness of assessment outcomes, and "procedural fairness," the transparency and objectivity of assessment criteria. In an earlier article (Lizzio, Wilson, & Simons, 2002), the authors present their findings concerning academic outcomes, and convincingly argue that favorable study approaches are linked to appropriate assessment.

This article investigates the utility of an assessment scale to evaluate work produced in the architecture studio. The scale differs from traditional grading approaches not only in the dimensions across which it rates the work, but also in the visual and written tools the assessment is communicated to students. The scale was originally devised by Dr. Taneli during the Fall Semester of 2006 and was utilized to evaluate the progress of work by undergraduate architecture students in the design studio at Uludag University. Drawing its inspiration from multiple sources, it was initially an intuitively conducted experiment in communicating design critique to students to primarily foster motivation. This study builds on the early scale, and examines multiple assessment formats to devise an alternative that is clear, impartial, is an instrument for learning, and enhances self-esteem and motivation for the student.

2. Background

Evaluation of student performance is central to education, and its impact on learning and student performance indisputable (Natriello, 1987). The potential of a well-designed assessment tool has yet to be harnessed in schools of architecture. This is particularly important in design education; where creativity is involved, design goals can be achieved through multiple approaches, each valid in their own rights. The ideal assessment apparatus is both a tool to evaluate student work, and an instrument for learning.

Traditionally the classroom evaluation process is linear: (1) establishing the purposes for evaluating students, (2) assigning tasks to students, (3) setting criteria for student performance, (4) setting standards for student performance, (5) sampling information on student performance, (6) appraising student performance, (7) providing feedback to student performance, (8) monitoring outcomes of the evaluation of students (Natriello, 1987). Contrarily, in architectural education, especially in later semesters, the number of tasks assigned to students are seemingly infinite. The work of an architecture student is almost always evaluated in its entirety, a "sample" or smaller portion of the work rarely being evaluated out of context. Each design problem encapsulates a multitude of smaller design problems, with every one of them linked organically to one another. Higher order guidelines need to be established, in order for the student to comprehend and offer a concise design approach. This is best done through interaction with the students and obtaining their involvement in establishing those guidelines. Clearly linear approaches to evaluation do not suffice.

Constructivist education principles as described by Brooks & Brooks (1999) may offer hints in setting the ground rules. For instance increased student involvement that values students' opinions is in line with the current state of architectural education. The instructor is no more the "omniscient" master of all domains. Information is widely disseminated, works of "starchitects" are readily accessible, and locations previously accessible only to those who can afford to travel, can now be easily experienced through walks in Google Street View.

Commonly used scales that evaluate student work in the architecture studio assess the proposed designs on a 100-point grading scale. The value system of the instructor or of the evaluation process is rarely fully disclosed. Verbal descriptions of the evaluations are provided hastily, and are technically impossible to include in a final grade. The student is left with a single grade on a ratio scale assessment that purportedly describes his/her achievement. These

scales leave much to be desired. Poulos and Mahony (2007) indicate that feedback should not only function as a method for communication, but also encourage the student to achieve learning goals, and understand how to advance in terms of future tasks. Effective feedback should also present information on performance-gap, include positive components, be clear, and fair (Lizzio & Wilson, 2008). Use of humor as a strategy in teaching has also been explored to enhance learning (Berk, 1996; Bryant & Zillmann, 1988).

3. Methods

The data to be presented in this study were gathered during the senior year studio class of the core curriculum from a convenience sample of 20 undergraduate students (4 male, 16 female) of the Department of Architecture at Uludag University. Students were informed of the purpose of the study, and asked to compare a novel evaluation process to the conventional 100-point grading scale utilized in previous courses.

Two independent judges evaluated students' design work on a 5-point Likert scale, across 14 items: (1) Student has a concept. Design approach is not conventional; (2) Social / architectural fabric understood; (3) Design is integrated well into the existing fabric (buildings, roads, life, scale, nature, place memory), but may also consciously reject existing fabric; (4) Design idea and architectural approach concur; (5) Built environment and pedestrian & vehicular traffic integrated well; (6) Topography taken into account (student may consciously defy topographical conditions); (7) Design basics, massing of buildings successful; (8) Space allotment fits proposed function; (9) Spaces within buildings and the exterior connected well; (10) Urban spaces are sized appropriate to proposed function and are well-connected; (11) Buildings scheme "works" based on suggested use; (12) Public/semi-public/private spaces are legible; (13) Plan drawings contain adequate detail and appropriate scale is chosen to display relevant information; (14) Presentation is successful.

Once the work was rated, students were randomly assigned to one of three modes of communication: 100-point scale (n=6), smiley faces (n=7), or color-coded diagrams (n=7). The 14 items rated by the judges were conveyed to the participants through one of the three aforementioned methods, and an overall grade was included as part of the assessment. The overall grade was also represented through the respective mode of communication. In addition, half of the students (n=10) randomly received individualized humorous feedback regarding their design work.

Upon receiving their individual comments, student-participants were asked to evaluate the new assessment method on a 5-point Likert scale, across 16 different items. The questions included aspects pertaining to students' perception of the assessment, its clarity, fairness, whether it aided in learning, and enhanced motivation or not. The data obtained from the students were entered in PASW Statistics 17 for statistical analysis.

3.1. The Heuristic Use of Measurement for Objective Rating of Design [H.U.M.O.R. :D] Scale

The proposed scale attempts to address issues identified in literature. To emphasize the utility of humor in dampening the effects of negative feedback, thus allowing the student to be more receptive to criticism, an effort was made to determine the acronym as H.U.M.O.R. :D. The Heuristic Use of Measurement for Objective Rating of Design scale was proposed to have multiple components. Unlike the 100-point assessment that provides a ratio scale, the proposed scale measures student work only through an ordinal scale, and as a consequence negates the possibility of students making definitive comparative judgments that place them behind fellow students a certain number of points, often resulting in nothing but frustration. Students overlook a point grade that has connotations attached to their years of schooling. The two alternatives that were explored, the use of color, and smiley faces, were both enhanced through verbal descriptions.

The use of color is akin to the Homeland Security Advisory System which rates threat levels across green-blue-yellow-orange-red, a somewhat universally comprehensible 5-point scale. The colors were modified based on color association studies (Mahnke, 1996) to ensure that color-mood associations would be consistent from one individual to another, and even cross-culturally. Smiley faces were selected as an alternative to the 5-point scale (Table 1).

The Mercalli Intensity Scale inspired the verbal descriptions provided to students. The proposed scale that rates architecture students' work pays particular attention to making the descriptions along the scale humorous to allow them to receive the comments without frustration, thereby making them especially receptive to their unique/constructive evaluations.

Table 1: 5-point scales used in communicating assessments to students.

Likert scale	Strongly Disagree	Disagree	Neither disagree nor agree	Agree	Strongly Agree
Color*					
Smileys**					

* RGB values: black (0/0/0), gray (153/153/153), purple (95/73/122), orange (227/108/10), green (0/128/0).

**http://commons.wikimedia.org/wiki/Category:Tango_project/smilies.

4. Findings and Discussion

Overall average grades on a 100-point grading scale as rated by the two independent judges were entered in PASW Statistics 17. For each individual group the means were as follows: 100-point grading scale (n=6), 50.71±11.71; color-coding (n=7), 47.55±17.57; and smiley faces (n=7), 52.86±10.66.

The 5-point rating used by the students was collapsed into a 3-point rating for a cross tabulation to be obtained, however the minimum number of cases could not be achieved for each cell. A few examples illustrative of students' reactions to the proposed rating scales are displayed below.

Students overwhelmingly shared the perception that the new assessment method clearly conveyed design priorities. This can be attributed to the fact that students received judges' evaluation across all 14 items regardless of the method of feedback communication. The exceptions were among the group that received feedback through smiley faces, hinting to some level of ambiguity (Figure 1).

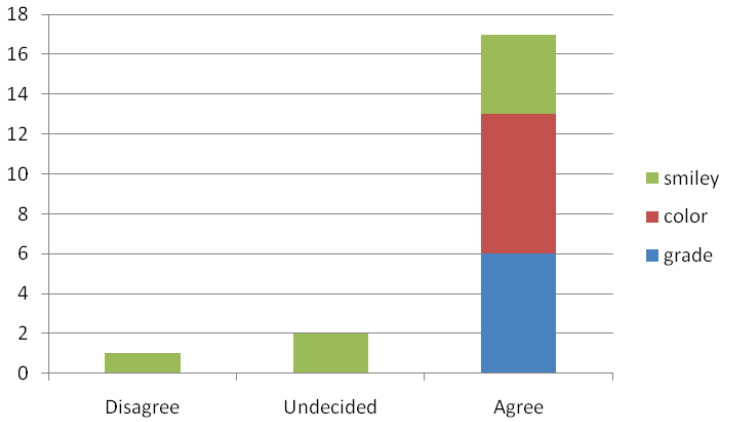

Figure 1: The review enabled me to understand priorities regarding the design process.

When asked whether the students wished another method was used in addition to the scale they received, surprisingly most of the students that received smiley face feedback disagreed. Smiley faces must have struck a chord with the group, possibly in terms of ameliorating tension associated with negative feedback (Figure 2).

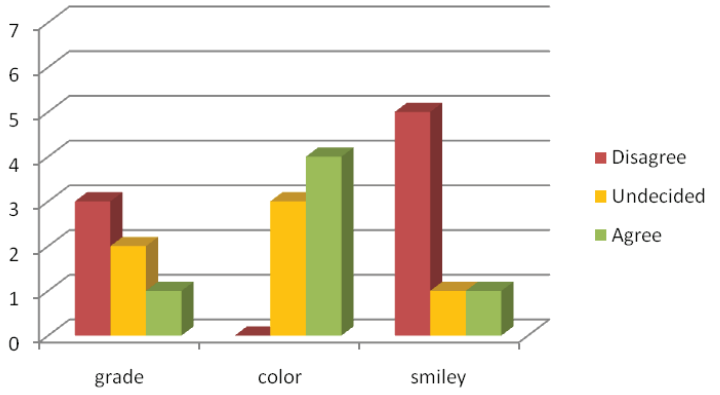

Figure 2: I wish another method was used in addition to this scale.

5. Conclusion and Suggestions for Future Research

While students were engaged in outlining the architectural program, they were not involved in establishing the rubric of rating criteria. Future studies are planned where students will collaborate in compiling the architectural program, as well as specifics of the dimensions along which they will be rated. A natural extension will be to allow for self- and peer-evaluation. Implementation of such practices have proven beneficial in numerous studies (Sluijsmans, Dochy, & Moerkerke, 1999). Currently, peer evaluation occurs only spontaneously. Structured participation of the student in assessment, as well as determination of criteria is crucial to genuine self-assessment. The ultimate goal of the instructor should be to create an environment in the architecture studio where learning, instruction, and assessment are integrated and students consequently learn how to learn.

Another avenue of research should be concerned with assessing the quality of alternative assessment tools, and determining their strengths. Each assessment format serves a different purpose and it remains to be investigated which ones would be most constructive in the architecture studio. A pluralistic assessment program needs to be developed in order for the final product to have widespread utility.

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