Making the Grade: Assessing Group Work in the Design Studio

[1]K. Thomas McPeek, [2]Laura Morthland

ktmcpeek@ucf.edu, laurab@siu.edu

[1]University of Central Florida (USA), [2]Southern Illinois University at Carbondale (USA)

Abstract

In recent years, there has been increased interest in expanding the use of collaborative techniques in the education of architecture and interior design students. Acknowledging that, while significant value is found in individualistic models of training, design students are often being prepared in a manner that is contrary to the highly collaborative nature of the design practice they will enter. "Students are supposedly being prepared for practice, but they are usually led to think of themselves as independent designers, which is a rare condition in real life…The larger, team-oriented form of practice is often poorly understood and sometimes denigrated, although it is now the dominant and most vital structure in the profession" [1]. In examining the inhibitors to collaborative education [2, 3] the authors discovered that difficulties associated with student evaluation in the group context were strong deterrents for employing collaborative techniques in the design studio. This research outlines the specific difficulties inherent in the evaluation of group work and explores techniques, including corresponding rubrics, which have been developed in response to the challenge.

1. Introduction

The formal education of an architect has long represented a unique pedagogy. When the training of architects was shifted from the office, a project based apprenticeship model, to the university over 140 years ago [4]. The first example of institutionalized project based learning (PBL) was established in the form of the design studio [5], a model later embraced by John Dewey, Donald Schön and others across the academe [6-8]. Other disciplines have been particularly interested in the open ended, project based problem, which each student resolves in their own way [9]. This approach educates students in a *situated learning* (SL) environment; one that emulates the working environment students will find as they enter into professional practice. In the case of architects and interior designers this is an environment that is collaborative, multidisciplinary and problem (project) based. The architecture and interior design classroom, referred to as the design studio, is an environment that closely approximates the manner in which architectural projects are conceived, investigated, and realized. The design studio is focused on the "how" of architectural education by giving the design student hands on experience in tactile application of the design process [10, 11].

While design education has been traditionally focused on the development of individual skills within this unique environment, there has been a trend in recent years towards a collaborative approach. Acknowledging that, while significant value is found in the individualistic models of training, design students are often being prepared in a manner that is contrary to the highly collaborative nature of the design practice they will enter. World-renowned architect Caesar Pelli notes:

> *"Students are supposedly being prepared for practice, but they are usually led to think of themselves as independent designers, which is a rare condition in real life…The larger, team-oriented form of practice is often poorly understood and sometimes denigrated, although it is now the dominant and most vital structure in the profession" [3].*

In a previous study examining the inhibitors to collaborative education [2] the authors of this paper discovered that difficulties associated with student evaluation in the group context were strong deterrents for faculty considering employing collaborative techniques in the design studio. This paper outlines the specific difficulties inherent in the evaluation of group work and explores techniques, including corresponding rubrics, which have been developed in response to the challenge.

2. Course structure

Students experienced in collaborative engagement, as well as those new to the collaborative process, will go through a learning curve as they engage with their teammates through the course of a design project. This struggle is often focused heavily on the development of the interpersonal skills required for successful collaboration, including leadership, teamwork and communication. Another distinguishing attribute for collaborative design is the need for a unified design process shared by each of the collaborators. In the traditional singular approach, the "process" of design is often as unique as a fingerprint. However, in the collaborative environment, a more unified design process is required.

Along with the need for a "new process" the authors discovered, through a series of experiments on the implementation of collaborative techniques in the design studio environment, that the traditional modality of assigning a project and letting the students work through the issues required some adaptation to insure a more complete picture of student performance. Traditionally students would be assigned between one and five projects over the course of the semester [3] with the total number of projects decreasing as the students progressed in their academic development; with a structure of two to three projects over the course of a semester being preferred for most faculty. A revised process of design described in *Exploring the Need and Means for Greater Collaboration in the Design Studio* [12] explains how the traditional approach of assigning a small number of unrelated projects over the course of a semester should be modified to incorporate a larger number of 'mini' projects, each a component of a larger singular project. These smaller projects offer different types of assessment opportunities and fall into three general categories: small group, large group and individual. Each of the small weekly projects represents a step in the revised design process.

For each of the thirteen 'mini' projects, students were given an initial creative brief which detailed work required for completion of the project along with presentation requirements. The presentation requirements varied from week to week but, on average, students were expected to create two to three boards and one small model each week. The students were given one week to complete each of the tasks as described, with the exception of the final project in which they were given two weeks. The assessment of the students work was undertaken utilizing four interrelated techniques including public critique, written assessment by the instructor, written assessment by the students peers and self-evaluation through reflective journaling; each described further below.

3. Instruments for assessments

In the collaborative classroom, parallel, redundant and triangulated grading systems are often necessary to insure an accurate overall picture when assessing classroom performance.

A primary consideration for any instructor choosing to incorporate the use of collaborative methods is to address issues of equity and accountability among the student groups. Barkley notes the importance of ensuring individual accountability while at the same time maintaining positive group interdependence saying that,

> "Individual grades provide a mechanism to ensure individual accountability but they may minimize the importance of the group effort... Group grades ensure that the group is held accountable and that members support each other's learning, but if individuals are not held accountable, group grades create opportunities for 'easy riders' to avoid responsibility" [13, pp. 83].

Group assessment often adds to the anxiety associated with grading because instructors try to use the same assessment tools used for individual efforts. The use of a collaborative model requires the development of new assessment tools for group assessment that includes: peer assessment, self-assessment, group assessment, instructor assessment, and reflective journaling. A holistic approach to the process of grading, tightly interwoven with the learning objectives of the course, becomes a critical element in the evaluating of collaboratively based courses [13].

This format employs a series of weekly deadlines, which break a project down into highly focused 'pieces' rather than allowing students to labor over a single large project for months. This revised structure provides focused attention on each stage of the building design and introduces the students to an alternative design process. The technique is particularly effective in collaborative studios because it maintains a high level of intensity throughout the semester and provides weekly formal feedback.

3.1 Public critique

The public critiques were conducted as weekly juries, a long standing tradition in architectural education, where each of students (or each student team) would present the results of that week's 'mini' project to their classmates and instructors. As a general rule, guest critics were not brought in for these presentations although general public attendance was welcomed. During these weekly juries students were encouraged to be leaders in the critique and actively question one another on the work being presented; instructors supplemented with questions as required. The weekly critiques were used as the foundation of the instructor assessment.

3.2 Peer evaluation

At the conclusion of each weekly critique students were given a peer evaluation form and asked to evaluate the members of their project team, including themselves, numerically from 0-10 (ten being perfect) on six areas of concern: 1) willingness to provide ideas, 2) willingness to use ideas of others, 3) willingness to work as required, 4) availability to work on project, 5) contribution to project, 6) contribution to material costs. The students were expected to assess themselves as well as their peers with this tool. This method of assessment was utilized to identify weekly anomalies occurring within the group and served as an important tool to keep everyone honest. While occasional points of conflict were expected to occur, particular attention was paid to consistent negative scoring. This helped the instructors to know what the area of concern was, when it occurred, and identify ways in which it might be addressed. The cumulative results of this particular tool were given heavy consideration when assigning the final grade for the course.

Figure 1 – Peer Evaluation Rubric

3.3 Instructor assessment

The instructors developed a series of rubrics specific to the project goals and objectives outlined for each discipline as well as the specific focus of the 'mini' project for that week. The instructors also revisited the overall composite of 'mini' projects as each of the pieces were brought together into a unified project during the final two weeks of the semester. This was done using a rubric similar to the ones used for the 'mini' projects assessing the work for issues such as rigor, creativity, unity of parts, presentation, composition, and overall professionalism. The students were given a breakdown of points based on individual instructor assessment as well as an averaged value from peer review scores. This format reinforced the importance of high individual achievement as well as strong collaborative skills.
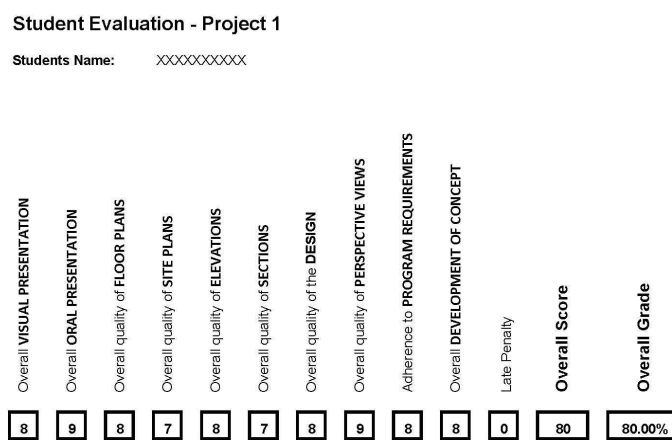
Student Evaluation - Project 1

Students Name: XXXXXXXXX

Overall VISUAL PRESENTATION	Overall ORAL PRESENTATION	Overall quality of FLOOR PLANS	Overall quality of SITE PLANS	Overall quality of ELEVATIONS	Overall quality of SECTIONS	Overall quality of the DESIGN	Overall quality of PERSPECTIVE VIEWS	Adherence to PROGRAM REQUIREMENTS	Overall DEVELOPMENT OF CONCEPT	Late Penalty	Overall Score	Overall Grade
8	9	8	7	8	7	8	9	8	8	0	80	80.00%

Figure 1 – Peer Evaluation Rubric

3.4 Self evaluation

The final component of assessment is the use of weekly reflective journal. While this tool has not been used in every iteration of the course it has proven to be helpful in gathering insight as to the inner workings of the student groups. Paired with the peer evaluation rubric, the reflective journals give an accurate picture of any issues that might exist.

4. Concluding Thoughts

Put simply, collaborative techniques require a different approach to grading and assessment. Assessment of collaborative work is, at a minimum, more complicated; due in large part to 'free riders'. This issue of students not wanting to carry their share of the responsibility on a collaborative project is one that needs to be identified and mitigated as quickly as possible. This is best done by utilizing the variety of techniques mentioned above: peer evaluation, journaling and the mixing of individual projects with group projects. While collaboration in the design studio is more difficult for both instructors and students, the reward is working experience more in line with the way design is practices and the production of work that typically exceeds what can be produced by a single individual.

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