USING A VARIETY OF CRITIQUE FORMATS FOR SUCCESSFUL LEARNING OUTCOMES

These examples of how critiques may be or are conducted were compiled from graduate student and faculty discussions. Different formats and different styles of critiques respond to students with a range of learning styles. How can a faculty member enrich a critique environment by diversifying formats, pacing, outcomes and clarifying competency levels? What is a generatively changing critique environment and can this advance student learning more substantially and lasting?

Single long critique of one person's work with a group.

Group critiques of a group of works from many students.

Rotating small-group critiques, alone with one faculty or several faculty.

Individual desk critiques; individual informal reviews.

Walk-through critiques, informal and optional, studio-to-studio, desk-to desk critiques.

Faculty going studio to studio visiting and critiquing only one student at a time.

Faculty and students moving studio-to-studio for solo individual critiques.

Guest critic visiting each studio for solo individual critiques

Guest critic and faculty and students are merged and discuss equally in a group critique situation.

Group critiques preceded by a group reading assignment used as a prompt for discussion in the critique.

Group critiques where the discussion identifies areas of strength and areas of weakness regarding an individual's pieces or a collection of pieces by a variety of students.

Critiques where two students lead a discussion about one piece, followed by two subsequent students until teams of two discuss all work.

Written and silent critiques of each individual's studio work or projects by each member of the group, collated and given to each student at the end of the session.

Critiques using metaphor, analogy and comparison as means of discussion.

Critiques where discussion of ideas and concepts is a priority over medium or technique.

Critiques where parameters and criteria of criticism are explained before an open discussion.

Critiques where goals of criticism are clearly stated at the outset and these goals grow and change during the duration of the class.

Critiques where a project's basic and advanced competency levels or levels of attainment are clearly stated at the outset of the critique and the discussions are based on these qualities.

Students arrange the critique pieces in order of resolution and the group begins the discussion from this starting point.

Critiques that consider different topics or themes: technical and/or conceptual growth, project-based goals, collaborative success, with team or external guide-lines.

Critiques with a guest panel of faculty and external artists or designers discussing the student work in front of the group.

Critiques where the student asks three questions to the group about his/her work and remains silent during the group discussion.

Critiques where one student describes and talks about the work of another student to the group: the maker then speaks about his/her work to the group.

Critiques where all the students look at all of the work and write anonymous questions about any work or works he/she would like, then these are collected and used as discussion points for the group.

Critiques where the qualities of surprise and difference are addressed first and then the areas of commonality are discussed secondly.

Critiques where the intellectual structure of the course moves in tandem with the questions posed in the ongoing critiques.

Staged critiques where sequencing of the elements of the critique lead to larger contexts and learning within a single critique or throughout the critiques of the term.

Critiques changing vantage points; a student interviews another student about that student's work and writes an artist statement for the student.

Critiques where equitable time is given to each participating student.

Critical readings and discussions arise from bi-weekly book reports originating from the students' own projects and research.

Critical discussions occur in small groups of mixed class levels formed by the faculty at the beginning of the term. Each participant in the group sends a one-page article or essay to other members before the group meets. In the group session each person is given ½ hour to lead a group discussion about the reading and how it relates to issues in the student's own work. Shared reading and discussion occurs ongoing throughout the term with faculty participating in the small groups.

ARTICLES

Ten Ideas for More Effective Critiquing

by Mario Estioko, John P. Forrest, Jr., Gwen Amos

INTRODUCTION

A couple of semesters ago one of my students visited me during office hours seeking a critique on a design project he felt was going nowhere. As he laid the piece in front of me, he quipped with resignation, "Okay, tear me a new one." Though mildly amused by his un-minced choice of words, I assured him I would do nothing of the sort. We proceeded to go over his work, but the way he prefaced the meeting caused me to reflect on this practice we call *critiquing*. Obviously he was joking, but it was apparent that his history with crits had not been painless — or at least he perceived it as being a less than friendly activity.

In this writing we will briefly examine the tradition of critiquing that's been handed down through the years, discuss the state of critiquing and students today, and offer some practical ideas to improve the practice altogether in the classroom studio setting.

ORIGINS

The relationship of art teacher and student has evolved over the centuries in Western civilization. The master-apprentice arrangement of early Europe employed an authoritarian approach to education. "From the moment that the trainee was admitted into the guild, he belonged to his master's household and had to submit unconditionally to its discipline." (Mitterauer, Sieder 105). Such a relationship, based in a commerce-driven setting, left little room for critical discourse in the transmission of a trade.

This system of training was innovated upon when the École des Beaux Arts was established in France in the early nineteenth century. It was the first example of higher education in the arts and changed the way the trade of architecture was passed on to successive generations. The academy brought with it scholarship, research and discourse. With the discourse came criticism. This new form of education eventually rippled to other forms of art and design and would be imported to the United States through students educated in Europe.

Chip Kidd's best-selling book, *The Cheese Monkeys*, satirizes the common style of design school critique found in America in the 1950s. The book takes on the point-of-view of the narrator who is "at art college ... and after failing to get the courses he wants, finds himself attending 'Introduction to Graphic Design,' taught by the inspiring, sadistic, and compelling Professor Winter Sorbeck. Through humiliation and excess he shows his naive young charges how to see the world through new eyes." (*The Times*, London).

Critiquing in the fifties, though centuries advanced from the European master-apprentice system, perpetuated use of an authoritarian style, do-as-I-do form of instruction. Half a century later, post-

modernism, MTV and the information age has emboldened students to become more inquisitive about feedback on their work, and less likely to simply accept pronouncements originating from the lectern.

With this evolution of the teacher-student relationship to our present day, the need for understanding critique from the educator's point-of-view becomes crucial. The underlying call to action is this: What are we doing in regard to critique in the classroom and how can we make it better?

STATE OF THE CRIT TODAY

Thinking back on my own school experience, I guess my attitude was the same as the student who instigated this investigation; crits could be briskly direct and required a thick skin. You either learned to deal with it or you selected another major. Perhaps it's true with all of us who've gone through the art/design school experience: to a greater or lesser degree, we've endured a few critiques that sent us packing with our tails between our legs. In fact, for many of us, it was probably viewed as a proud rite of passage; almost a prerequisite for saying that we have learned design right. But now that I've had some years of being on the other side of the crit, I've begun to question the structure of the practice altogether.

Obviously, visual communication design is not for the faint of heart. We should be prepared to explain or defend our work at any time. And we should be aware that clients and art directors will rarely sugarcoat feedback; it's business. However, in this writing, we refer to a different context. We're talking about crits in learning situations where students are acquiring the theory and craft of visual communication design, learning to produce work to a caliber where they *could* have a client meeting.

Most of us acquire a crit style through our own school experience. We remember those days of putting our work on a wall, waiting for judgment. After presenting our piece, the instructor would usually give verbal feedback and we'd comment where appropriate. Most of us who went through this were never given any formal instruction about the practice. We somehow were supposed to know what it was we were doing by instinct, though we no doubt tried to follow our instructor's example in talking about the work. We probably assumed that since they were successful in the profession, they must be right in their pronouncements. Furthermore, we never thought to question the manner in which they conducted the practice. They were *critiquing*; it was what it was.

Herein lies the problem. Nobody has set down guidelines for classroom critiquing. "It's important to acknowledge that there is no good definition of "art critique" ---no model, no history, no guide." (Elkins, 112). It's an activity that is common to any studio class, no matter the discipline, yet styles and approaches can range dramatically. And this is simply because the practice of critiquing has been passed down through a sort of unregulated osmosis.

In a recent poll of graphic design students at CSUS Sacramento, 92% of respondents ranked studio critiquing as a "very important" part curriculum of an art/design education (the remaining 8% ranked it

"important"). It's curious that something so critical to the learning process has been left to such chance in the academic environment.

It is with this fact in mind that we propose ten guidelines for the practice of studio critiquing. Though some may receive such a list with trepidation, the ideas put forth should be regarded as general principles for evaluating student work, allowing room for each instructor to maintain their own personal critiquing style.

"The greatest obstacle to the development of design studio instructional methods is the design instructor who often has difficulty dealing with education in any other terms than those they have experienced" (Malecha, 74).

TEN IDEAS

1) *Critique Prepared Minds: Prepare students by educating them on the critiquing process and motive.*

Laying groundwork ensures that students know what they are doing and why they are doing it. They should know that the overall objective of a critique is improvement of the work in the short-term, but also improvement of the student designer in the long-term.

2) *Critique Using Established Criteria: All feedback should be based on models and guidelines revealed to students in advance.*

"It is indeed ironic that while faculty routinely advise students to identify goals for their design projects, they themselves have rarely identified clear, obtainable goals for the jury process" (*Design Juries*, 30). The words critique and criteria share the same root. In order to effectively evaluate something, the conditions of its evaluation should be known up front. Obviously there will be times when a crit is used as a teaching tool to show how people would do things without a deeper knowledge of design, but sooner or later, all basic criteria should be known. Then a student can operate from a sense of foreknowledge instead of an "oh-I-didn't-think-of-that" mentality. Doing projects without criteria is like going to a shooting range with a blindfold on.

Sometimes an ordered list can help you address the most important areas of evaluation first. Start with general importance and descend to minute detail. For example, the fact that a headline is not kerned correctly in a particular spot pales in comparison to an entire composition being an inappropriate solution for its content.

3) Critique in Proper Context: *Feedback on work should match the stage of development that the work is in, from concept to final piece.*

Information is needed before any evaluation is undertaken. Whenever I am asked to crit a piece I have no knowledge of, I first begin by asking questions: What is the purpose of the piece? What is the intent

of the piece? Who is the target audience(s)? What other variables or parameters are there to consider? What phase of the process does this represent? What areas would you like me to address in this crit (i.e., type, color, concept, grid, hierarchy, craftsmanship, etc)?" Beware of anyone who charges into criticism without at least some background on a project.

Also, it is important to crit from the standpoint of the user. If it is an event poster, view it from across the room, then up close. If it is a magazine spread, hold it in your hands, opening and closing it. If it is a billboard, walk past it to simulate the point of content transmission. The more contextual knowledge you bring to a crit, the more credible the feedback becomes.

4) Critique Using Comparison: *Besides individual evaluation, critiquing multiple pieces together can help students compare and contrast other approaches and solutions.*

5) Critique Articulately

Use concrete words, industry terminology and a neutral tone when giving feedback.

Watch the use of vague words in a critique. Words like *nice, good, beautiful*—though positive—are too general. Use words and phrases that specifically address areas and attributes being referred to. Instead of "this type is nice," and alternative could be, "the scaling and color of the body text is aesthetically effective in its weight." Conversely, avoid using terms that the recipient may not be familiar with (unless you define the words). Students will generally feel intimidated about asking definitions of unknown terms as they do not want to appear stupid in front of you and others.

"A critique can be imagined as a problem in translation, because for practical purposes the teacher may be speaking a different language from the student … Miscommunication is a trait of all communication, but it can derail art critiques in a way that doesn't happen in ordinary speech." (Elkins, 140).

Also, avoid the verb *like*. What we "like" personally often has little to do with the purpose of the piece and its target audience. Though it's almost impossible to eradicate this subjective term from dialogue, try to keep to its usage to a minimum. If you want to express a positive response to a design, use the words that best articulate what you find aesthetically appealing or resonating from a message standpoint (i.e., "the primary colors used in the composition, coupled with the use of diagonals in the composition create a subtle perception of fun and frivolity, much like a childhood visit to the circus.").

Purge personal references from the crit; this includes proper nouns and pronouns (i.e., you, he, she, etc.) Phrases like "*Johnny* isn't seeing the white space here" can be counterproductive to the process. If one points to the area in question and simply says "this white space needs further investigation in its proportion..." the diagnosis will have been made without losing the patient. Again, we're trying to use words that will keep the student open to feedback. Any dialogue that encourages defensiveness simply detracts from the objective.

In short, use tact and thoughtful word choice. Though critting like this can seem halting at first, it soon becomes second nature with effort. We simply have to adjust ourselves to a new language of critical review.

6) Critique without Imposing a Personal Style: *To encourage student creativity, comment on the work should be based on the needs and parameters of the problem, rather than the personal taste of the person critiquing.*

Solutions to any particular problem are myriad. Be sure in your feedback you are not confusing what you would like to see with what is actually working as a solution within the purview of the problem. This will allow the student designer to retain artistic originality yet ensure useful feedback to improve the solution.

According to Andy Grundberg, a critic for the *New York Times:* 'connoisseurs', be it of wine, photography, or design, make proclamations of 'good' or 'bad' based on their own particular tastes. The supporting reasons for these proclamations are rarely given, and without the benefit of explicit criteria, they are merely idiosyncratic, don't lend themselves readily to discussion, and are not informative. Unfortunately, designers often play the role of connoisseur while serving on juries. Relying primarily on criticism based strictly on their own personal taste can create chaos and confusion for students (qtd. In Anthony, *Design Juries*, 105).

7) Critique Work Candidly: *Deliver positive and negative comments directly and on equal footing. In the final analysis, all feedback is constructive and leads to the improvement of the work.*

A rounded crit should shed light on positive and negative aspects of the work. Avoid the urge to front load a crit with praise before dredging up the bad points. You've probably heard sentences like, "The image and type combination is nice, and the format seems to work, BUT..." We all know what follows syntax like that. It's probably a product of western culture, we tend to want to build up before we lower the boom. What seems polite comes off insincere. This is where thinking can be modified. Constructive criticism involves the good and the bad. But eventually, all feedback contributes to the overall betterment of the piece. Deal with all comments on equal footing: "If the gray scale of the picture is explored further, a more appropriate contrast can be found; the image and type combination is working in hierarchy; there's a spelling error in the headline; the drop cap creates an appropriate aesthetic for the needed message..."

Such a crit comes off matter-of-fact, honest and up front.

8) Crit With Explanation: *Give reasons as to why work is effective or ineffective.*

"This type is working in readability because its size, leading to column width ratio is appropriately set. It's also working aesthetically because it creates an appealing contrast to the headline and picture on the page. Message-wise, the choice, texture and structure of the typography reflects appropriate

connotative attributes needed in this cowboy resort brochure, traits such as: light, classic old west, earthy, rustic, fun."

9) Critique with Suggestions for Improvement: *The student should move forward from a critique armed with strategies for improvement.*

Citing problems without suggesting possible solutions is just complaining. Students should have a clear plan of action as they move forward from a crit session. This is tricky business as a teacher can simply resort to a "just do this" mentality. In the short term, such delegation enables the student to solve the problem sooner, but in the long term, it robs the student of the learning experience. Recommendations in a crit should leave room for student experimentation. We need to remember we are teaching a process and way of thinking, not just trying to get to the end of an assignment.

10) Crit Like A Good Coach: *Build a rapport to lay the foundation for results.*

We don't believe students are saying they want an easy time with critiquing. Quite the contrary. They simply want their instructors to be fair and even-handed as they demand excellence in performance. Just like a good coach or mentor, we can stretch our students successfully if our interactions are based on clear guidelines, mutual respect and we as instructors make it obvious that we have the student's best interests at heart. In such a climate, students not only can accept candid critiques, they can thrive on them.

This cannot be achieved without an effective teacher-student rapport. We must know a little about our students, find out what motivates them, know their strengths, their weaknesses and gauge critiques with the individual in mind. We must be quick to celebrate success, but, just as importantly, point out performance that needs improvement. With such a relationship in place, when we demand the best of students, they will, more often than not, give it to us.

CONCLUSION
Though the short term goal of critique is improvement of the work, the long term fruit is a better pupil.

"For me, the critique has two primary goals. The first is to advance the students' work. The focus is typically on a portion of a project that will be completed within the semester. The second goal of the critique has a longer time frame: to convey a structure that will sustain the work long after graduation." (Richmond).

Having a framework of the ten aforementioned ideas can promote a healthier execution of a practice students find so important to the learning. In this way, we can effectively use critiquing to mentor students into independent, creative, problem solvers.

WORKS CITED
Anthony, Kathryn H. *Design Juries on Trial: The Renaissance of the Design Studio.* New York: Van Nostrand Reinhold, 1991.

Anthony, Kathryn H. "Private Reactions to Public Criticism; Students, Faculty, and Practicing Architects State Their Views on Design Juries in Architectural
Education." *Journal of Architectural Education,* (Spring 1987): 2-11.

Attoe, Wayne. *Architecture and Critical Imagination*. New York: John Wiley & Sons, 1978.

Elkins, James. *Why Art Cannot Be Taught.* Urbana: University of Illinois Press, 2001.

Hopkins, John. "Critics' Forum." *Landscape Design*, (Feb. 1994): 24-25.

Malecha, Marvin J. *The Design Studio.* La Verne, CA: Architecture and Research Press, 1985.

Mitterauer, Michael and Sieder, Reinhard. The European Family, University of Chicago Press, Chicago, 1982.

Richmond, Wendy. "A Request: Your Reflections on the Classroom Critique." *Communication Arts*, 43 (May/June. 2001): 169.

_____

University of Washington Center for Teaching and Learning

https://www.washington.edu/teaching/teaching-resources/preparing-to-teach/critiquing-student-projects/

Critiquing student projects

Working with student projects in a studio, going over the planning stages of a research project, or working with students putting together a business presentation are all examples of situations in which you may need to critique student projects. Critiquing provides an opportunity to share with students what you know, to enable them to see various options, or to identify flaws in their reasoning or design.
General principles for critiquing student projects
These basic general principles will help you structure your approach to helping student from the start of a project to the end. Ushering students through the different phases of a project can increase their potential for success and aid your understanding of their individual working style.
Be sure students understand the requirements of the project
As students start a project, you must be sure they understand the goals, requirements and criteria for the project. Confirm that they understand by initiating discussion, asking questions, or brainstorming. Encourage students to express their understanding with statements such as: "Explain your understanding of the purpose of this assignment" or "Review with me the important criteria that you feel your project has to fulfill to be successful."
After projects are underway, having students work in pairs or small groups to provide feedback to each other helps keep students on track. However, it's also important that you provide feedback at key stages in the project as well.
Break the problem into manageable parts
As students begin to think about their projects, focusing on all parts of a project simultaneously can be overwhelming. For example, in Landscape Architecture there may be as many as 25 variables (everything from soil quality to desired aesthetic

effect) to consider in a project. Therefore, it can be useful, to walk students through a project slowly, encouraging them to consider distinct aspects of the project before deciding on a final approach.

As students work through projects in manageable parts, you can ask questions to see if they have familiarized themselves with the information relevant to the parts (e.g. colors and tones, soil types; discipline-specific conventions of the journal articles they are synthesizing; ways to construct a balance sheet).

Help the students move toward conceptualization

Once students feel comfortable with the requirements of the project and with specific parts of it, they are ready to conceptualize an overall design. As they begin to combine elements for their overall conceptualization:

- Help students see every stage of the project in terms of its contribution to the realization of the final goal. ("What are the important factors to be considered in achieving your goal?" or "In what ways might you combine those elements to achieve your goal?")
- Assist students in determining which parts of the concept are/are not meeting the criteria for the project.
- Conclude each session with a summary of the aspects of the conceptualization you have agreed would be enhanced by reconsideration or revision.

Help students move from conceptualization to design

It is not uncommon for students to resist the move from conceptualizing to designing, from modeling to actual data gathering, or from brainstorming their approach to working out its sequence and emphases. Therefore, it is useful to:

- Use questions or probing statements to assist the students, such as: "Just show me what you have so far," or "What would you do to begin this design?"
- Be sure to approach students who haven't approached you. Ask non-judgmental questions: "Given your concept, I see you've done this here and that there. What effect can you achieve with that kind of contrast?"

Help students move from design to production

Since some students may spend too much time perfecting their approach and leave too little time for realizing the project, you may have to push students towards completion once the other major steps have been completed. One TA tells her students that neither the design nor the product will be evaluated as a lasting entity, so they should not place undue emphasis on perfection.

As you help students move through major stages of project development, the following additional ideas for constructive feedback may be useful:

- **Acknowledge differences in students' backgrounds and preparations.** Different students require different levels of explanation and prompting. Where you stop with some may be where you start with others.
- **Be sure your students understand the format you will use in critiques.** Some instructors prefer to begin the critique by having the students talk about specific strengths and areas for improvement. If you decide to do this, let students know beforehand.
- **View the critique as an interactive process.** It is often just as important to listen as to talk. The critique provides an opportunity for students not only to explain their thinking but also to use the language of the discipline as they talk about concepts, approaches, and ideas. Their talk about their projects helps them integrate course information and provides you with one more way of assessing how well they are applying what they are learning.
- **Make ongoing references to the criteria used to evaluate students' work.** ("Now when you are working on composition in your painting, remember that your project will be evaluated for balance, counterpoint, and weight. Let's talk about how your work is meeting those criteria.")
- **Try to be descriptive rather than evaluative in talking about projects.** One way to accomplish this is to describe your own reactions to the project. Another way is to be aware of the language that you and the students use during the critique. It is typically more constructive to talk about "strengths" and "concepts that worked" or "areas for improvement" or "points for further consideration." Especially when you are encouraging innovation and creativity, it is less helpful to make references to "weaknesses" or that which is "right" or "wrong."
- **Be as specific as possible.** Rather than saying, "I like the use of lines," it is more helpful to suggest that "The use of lines in your design provides a distinct emphasis and creates a better overall balance of the elements." Provide only the amount of information that your students can use. To overload students with feedback is likely to decrease the effect of information that could provide the most important insights for future use.
- **Help students come up with their own solutions rather than being directed to solutions by you.** If you have helped them articulate and sharpen their concepts and have discussed design alternatives and choices with them, then you have completed a major portion of your job. Students should base their work on informed choices, and they shouldn't come away thinking there is one "right" answer–yours–to a design problem, essay organization, experiment, or business presentation.
- **Try to begin and end each critique on a positive note.** Summarize and emphasize specific revisions or areas requiring elaboration or additional attention, but also single out those elements that show promise, even if they are limited to graphics or organization.

Be authentic in providing feedback. Students can sense false praise or vague positive reinforcement. Be specific about what does work in the project and also about what still needs further development or consideration. Remember that constructive feedback opens the way for instructor/student relationships that lead to personal growth and learning.

A theoretical framework of design critiquing in architecture studios

https://pdfs.semanticscholar.org/2a93/d602553162cf124fc98b5ada17390b2f0cad.pdf

Yeonjoo Oh, Samsung C&T Corporation, 1321-20 Seocho2-Dong, Seocho-Gu, Seoul 137-956, South Korea
Suguru Ishizaki, Department of English, Carnegie Mellon University, Pittsburgh, PA 15213, USA

Mark D. Gross, School of Architecture, Carnegie Mellon University, Pittsburgh, PA 15213, USA
Ellen Yi-Luen Do, School of Industrial Design and School of Interactive Computing, Georgia Institute of Technology, Atlanta, GA 30332, USA

While critiquing is generally recognized as an essential pedagogical tool in architecture design studios, no systematic attempt has been made to develop
a descriptive theory that can account for the complexity of critiquing. Various studies exist that describe the design studio, but many of these provide fragmentary descriptions of critiquing. In this paper, through a review of publications that are concerned with the architecture design studio as well as other areas of design, we identify a basic set of factors that enable us to articulate the variables that affect the practice of critiquing in design studios. Based on these factors, we then propose a conceptual framework that allows studio instructors to systematically plan and examine their critiquing practice. ! 2012 Elsevier Ltd. All rights reserved.

Corresponding author:

Y. Oh

ohyeonjoo@gmail.com

T he design studio lies at the heart of architectural education. Students devote a tremendous amount of time and academic energy into

their studio learning. Many students actually spend most of their time in the design studio, where they work, study, eat, and even sleep (Anthony, 1991; Cuff, 1991). A casual review of any university architecture curriculum will reveal that the studio is the central activity in every architecture student's life.

In most other disciplines throughout the university, lecture classes are the most common mode of teaching and learning. Instructors teach by lecturing, assigning homework, and assessing student performance through tests. The studio is different. Unlike a lecture course, in a design studio, students learn through working on projects, where the students are asked to provide an effective solution to the hypothetical design problem defined by the instructor. Rather than being assessed by tests and homework, students in

an architecture studio are evaluated through a series of presentations and dis- cussions. Through the processes of working on and presenting their work (often publicly) and receiving feedback from the instructor and classmates, the students reflect on and revise their designs. The instructordoften an experienced architectdprovides feedback on student work for the duration of the studio course.

This feedback is called critiquing, and it is the predominant way through which architecture students acquire design expertise from their instructors. In light of this, it is remarkable that we lack an in-depth understanding of critiquing in design education. Ochsner (2000) points out:

There has been surprisingly little examination in depth of design studio as an educational environment. In particular, there seems to be almost com- plete silence on two questions: (1) the precise nature of the creative process in which students are asked to engage in design studio; and (2) the charac- ter of the interaction between students and faculty that would best enhance the students' learning of design. Little is written on how faculty might enhance this interaction or how they might improve the quality of their design studio instruction.

We certainly can find studies about the architecture design studio, and many of these include fragmentary information related to critiquing. We know, for instance, that critiques are an essential pedagogical tool in the design studio, and that critiques are based on the instructor's expertise and professional experiences. However, we also find that theoretically or empirically informed discussions on design pedagogy are uncommon among the instructors of architecture studios.

1 Background

The instructional methods used in the architecture design studio have inherited the historical tradition of the Ecole des Beaux-Arts and its atelier model. Moore argues that instructors in architectural studios have followed ingrained conventions through generations without seriously examining the underlying pedagogy (Moore, 2001). While practicing architects no doubt bring a great deal of experience to the studio, their teaching methods are often based only on their own learning experiences or on intuition (Grasha, 1996). They often cannot articulate what instructional method they are using, or is appropriate, for a specific condition.

While we can continue to rely on the instructor's intuition or implicit under- standing of critiquing, we suggest that by providing instructors with a system- atic means of examining their own critiquing habits and strategies, we can improve the learning experience in the design studio. Our goal, then, is to de- velop a framework for describing and understanding critiques that take place in design studio. What do instructors do to convey their design expertise and

A theoretical framework of design critiquing in architecture studios 303

304

knowledge to students? What forms of critiquing are available? When is each form appropriate to use, and what are their advantages and disadvantages? Through this analysis, we can build a foundation for how the instructor might manage critiquing sessions to stimulate student learning. This in turn could strengthen the dialog between the instructor and the students.

We first reviewed the literature related to critiquing in architecture education. We looked through major design journals (Design Studies, Journal of Architec- tural Education, and Journal of Architectural and Planning Research), several key conferences (the Architectural Education Exchange, Design Thinking Re- search Symposium, and Common Ground Design Research Society International Conference), a PhD dissertation, The Digital Design Coach (Bailey, 2004), and recently published books, such as Dana Cuff's Architecture: The Story of Prac- tice (1991), Don Scho€n's seminal work, The Design Studio: An exploration of its traditions and potentials (1985), and Kathryn Anthony's Design Juries on Trial: The Renaissance of the Design Studio (1991). We found the literature by searching for the keywords: critiques, critiquing, studio learning, and archi- tecture education and pedagogy.

These published works include experimental data, protocol analyses, analy- ses and syntheses, criticism, and suggestions or proposals about design studio and critiquing. We believe that this literature review offers a representative, though not necessarily complete, picture of critiquing in current architectural education. Our literature review primarily focuses on the architecture design studio with a few exceptions, which will be indicated in later sections. These articles discuss various topics about design critiquing and studio education: studio teaching and curriculum (Salama, 1995; Wilkin, 2000), design knowl- edge transferred through critiquing (Uluoglu, 2000), teaching styles and roles (Attoe & Mugerauer, 1991; Dutton, 1987), formal reviews (Anthony, 1991; Dinham, 1986), and other general topics and issues (Argyris, 1981, pp. 551e660; Boyer & Mitgang, 1996; Cuff, 1991; Dannels, Gaffney, & Martin, 2008; Koch et al., 2002). However, each focuses on a specific topic or topics but does not attempt a systematic framework for design critiquing. Two interesting exceptions are Goldschmidt, Hochman, and Dafni (2010) and Scho€n (1985).

Scho€n (1985) provides the best portrayal of design critiquing to date. In The Design Studio, he attempts to describe what design knowledge is conveyed and what a studio teacher does in a desk-crit using the concept of 'repertoire,' that is, a collection of images, ideas, examples, and actions. As professionals, designers build up repertoires from their experience. When a studio teacher re- views student designs, the teacher scans their repertoire for similar situations, for example, a known building, or previously encountered problems. The teacher then shares knowledge drawn from his or her repertoire. The teacher seldom merely points out errors; he or she also describes examples or references

to similar situations from personal design experiences and demonstrates how to solve the design problems. Feedback helps students understand their problems, eliminate errors from their proposed solutions, and eventually construct their own repertoire. Although Scho€n's description seems reasonable and plausible, it does not provide a sufficiently detailed account of critiquing in design.

Through empirical experiments, Goldschmidt et al. (2010) attempt to explain one-on-one critiquing activities, specifically, teacher critiquing activities such as how they manage critiquing sessions, and how they respond to students based on their teaching profiles (we discuss these profiles in Section 2.2).[1]

We analyzed and synthesized a range of observations and findings about critiqu- ing with the aim of developing a descriptive framework of the pedagogy of cri- tiquing. The next section presents ten key factors, which we have identified. Based on these factors, in Section 3 we develop a framework of critiquing which the instructor can use for planning as well as self-reflection. We discuss how to plan studio courses by suggesting critiquing strategies. We introduce the concept of 'rhetorical situation' to look at critiquing factors from the studio teacher's view. Finally, we identify a process model for individual critiquing activity.

2 Fundamental factors of design critiquing

We identify eleven fundamental factors of design critiquing that are identified through the literature review. We then divide these factors into two groups: 'methods' and 'conditions' (Table 1). We define methods as the various ways that studio teachers use to convey their design knowledge and skills to their students. The five factors of methods are critiquing settings, teacherstu- dent relationships, communication modalities, delivery types, and delivery. We also define conditions as the contexts in which critiquing occurs. Studio teachers consider these conditions when selecting a particular critiquing method or composing a set of critiquing methods. The six factors of condi- tions: are design phases, individual differences, knowledge/experiences, stu- dent response types, design artifacts, and learning goals. This section describes each of these factors.

2.1 Critiquing settings

Design education researchers refer to several types or settings of critiques that an instructor uses to interact with students. (We shall call them 'settings' to

Table 1 Fundamental factors of design critiquing: methods and conditions.

Factors

Methods Critiquing settings, teacherstudent relationship, communication modalities, delivery types, delivery

Conditions Design phases, individual differences, knowledge/experiences, student response types, design artifacts, learning goals

A theoretical framework of design critiquing in architecture studios 305

306

distinguish them from the term 'delivery type'.) Bailey (2004) provides the most comprehensive list: desk crit, group crit, interim review, final review, and informal interaction. These derive from his analysis of the history of archi- tecture education as well as his interpretation of Scho€n's observations (Scho€n, 1985). The rest of this section explains these five critique settings and discusses three perspectives from which to examine them.

2.1.1 Desk crit(iques)

A desk crit is an individual critiquing session involving an instructor and a sin- gle student that is often held at the student's desk. Desk crits take place throughout the entire period (typically 12e16 weeks) of a studio course. Several researchers emphasize the value of desk crits in design studios. Goldschmidt (2002, pp. 430e437), Koch et al. (2002), and Scho€n (1985) all consider desk-crits to be an essential component of studio teaching. Koch et al. (2002) argue that desk crits are the most effective way for an instructor to monitor each student's progress over time. Uluoglu (2000) notes that the desk crit enables an instructor to lead individual students to see their design problems from the instructor's viewpoint. Goldschmidt (2002, pp. 430e437) found that desk crits transfer a wide range of critical design knowledge.

2.1.2 Group crit

Group crits engage a small group of four to six students. The instructor may schedule group crits frequently, as often as once a week. Students put work on the wall or gather around each student's desk with the instructor, where the instructor and students discuss each student's presented work. Group crits provide students the opportunity to see each student's approach to solving the same design problem.

Several studies point out the merits of group crits. For instance, Farivarsadri (2001) argues that group crits are especially appropriate for introductory design studios. They are valuable for students with little design experience because they expose students to multiple solutions to the same problem. Com- pared to larger reviews groups, crits tend to engage new students who may lack confidence to speak in a larger and more public session. Students can partici- pate more actively in the discussion because of the smaller group size and in- formal setting.

2.1.3 Interim review

Interim reviews involve the entire class at key milestones during a studio pro- ject. Instructors hold interim reviews when they think all students can benefit from sharing their progress and knowledge with others in the class, or when the instructor sees many students encountering similar problems or opportu- nities in their designs. The first interim review often occurs after students have performed an analysis of the building site. Students share their analyses of site and data such as historical background, urban conditions, neighbor- hood character, or environmental issues. Another common time for an interim

review is as students prepare for their final review at the end of the studio course. Each student presents his solution to a small jury group composed of other studio instructors, professional architects, and sometimes even clients. This serves as a rehearsal for the final review. During interim reviews, while one student's work is critiqued, other students listen to the comments made by the instructor and external reviewers and often provide their own comments.

2.1.4 Formal (final) review

The final review has the character of ceremony or ritual in the design studio, and some students dress up in formal or special attire. It is held at the end of the course and external critics are often invited. The 'jury' of critics typically consists of three to five local architects, the instructors from other studios at the same school, other non-studio faculty members (i.e., a structural engineer or an architecture historian), or representatives of the client if there is one.

At the formal final review, students usually prepare a large panel where they arrange the key drawings that describe their designs. Students present their drawings and physical models as the jury moves from one student to the next, commenting on each work publicly. Jurors are sometimes asked to fill out an evaluation form for each student, which is later given to the student along with the studio instructor's assessment of his or her performance over the entire studio course.

Researchers note several goals for a final review. For example, Dinham (1986) suggests three purposes:

1. (1) The jury can directly teach individual students by discussing and evaluat- ing their designs.
2. (2) The final review is a tool for teaching all students in the studio together. As the jury comments on an individual student's work, they often broaden the scope of discussion from an issue found in one student's work to a common issuedleading other students to learn from their classmates' work.
3. (3) A jury composed of professional architects who continually engage in pro- fessional dialog provides students the opportunity to hear challenging and inspiring conversation, observe professional skills, and perhaps acquire some of their expertise. Students can learn the prevailing culture of archi- tectural practice and professional experience. They can practice analyzing and evaluating the presented projects while referencing their expertise or experiences and observe how to conduct a professional presentation.

Despite its value, the formal review is often surrounded by what Argyris (1981, pp. 551e660) calls the 'mystery/mastery syndrome.' The term mystery/ mastery refers to the tendency of critics to use sophisticated words that convey

A theoretical framework of design critiquing in architecture studios 307

an aura of mystery in order to display their mastery of architectural expertise. This tendency can confuse students and make it more difficult for them to un- derstand professional discussions and comments. Another criticism of formal reviews is that the conversation can intimidate students. Formal reviews with juries are characterized by their open and public nature (Anthony, 1991). Juries may give serious and harsh criticism to students in front of the class. In- teraction between jury and students may become hostile or adversarial (Groat & Ahrentzen, 1996).
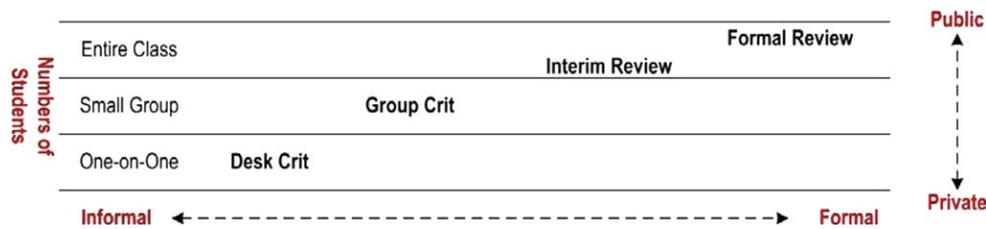
2.1.5 Informal interaction

Design studios are organized to foster informal discussion among students. In an open studio space, students naturally monitor each other's progress, com- ment informally on each other's work, compare design approaches, or learn certain skills such as drawing and modeling (Cuff, 1991). It is not unusual for students to benefit from overhearing other students' desk crits.

Cuff (1991) also reports that students are likely to form close learning groups after working together for long hours in a common studio space. Students ben- efit significantly from interacting with their peers as they share interests and problems (Scho€n, 1985).

We have listed five critique settings. As shown in Figure 1, we can discuss these settings from three perspectives: (1) number of students, (2) public/private, and (3) informal/formal. First, we can characterize a critiquing setting by the number of participants. In general, the instructor can expect more active participation from smaller groups of students. Second, a critiquing setting can be identified on a continuum between private and public. Desk crits are private, although in an open studio environment, students can easily hear an- other student's critique. The larger the group, the more public the critiquing session becomes. External judges and reviewers make this critiquing session highly public. Finally, a critiquing setting can be characterized by its formality. Informal critiquing sessions tend to be more constructive, and formal critiqu- ing sessions more evaluative. Some students may be reluctant to voice their opinions in more public or formal sessions. Compared to group crits, interim reviews are deliberately more formal, and less peer participation is expected.

Figure 1 Three perspectives of critiquing settings: (1) numbers of students; (2) publiceprivate; and (3) informaleformal.

Interim reviews are, in turn, less formal than a final review. The same jury members who attend an interim review may also attend the final review, but during an interim review their critiquing tends to be more constructive than evaluative (Anthony, 1991; Bailey, 2004). Highly regarded architects are often invited to the final reviewdadding to the formality. In addition, the final re- view often attracts a large audience of interested students and local architects who were not involved in the design project being presented.

2.2 Teacherestudent relationships

In design studios, students learn from instructor and peer comments. Several researchers note that the relationship between the studio instructor and stu- dents may influence student learning. They identify three types of relationships and report on the merits and disadvantages of each. These relationships are: master and apprentice, user and designer, and peer critiquing.

2.2.1 Master and apprentice

The most common model for the relationship between an instructor and a stu- dent in a design studio is the master and apprentice. The instructor plays the role of the master and the student plays the role of apprentice.[2] The premise of this model is that the instructor (the master)doften a professional architectd holds the knowledge and experience to solve all the design problems on which the student will work. Thus, the instructor can provide helpful feedback as the student develops solutions for design problems.

Some researchers raise concerns about students feeling disoriented in their learning when their teachers act as a master. In the master model, the instruc- tor has power to control the student's work, so that it is easy for students to follow the instructor's direction without considering how they want to de- velop, or without fully understanding what the instructor's feedback means. A student might follow the master's critiques blindly without integrating the master's feedback into his or her own thinking. For example, a student might just follow the approach demonstrated by the master without reflecting on or understanding the suggestions. Dutton (1991), Koch, Schwennsen et al. (2002) and Odgers (2001) note that an overpowering master's feedback might impede the apprentice's learning and critical thinking. Likewise, Grasha (1996) argues that the instructor who is frequently overbearing while displaying his expertise can intimidate students.

Several researchers propose alternative strategies to studio teaching. For example, Dutton (1991) recommends avoiding desk crits and conducting peer review sessions instead because the overpowering authority of the instruc- tor discourages students in a desk crit from participating freely in debate, ask- ing questions, and reflecting on their own designs (Odgers, 2001). To empower students, Odgers (2001) proposes replacing individual critiquing sessions with asynchronous communication between students and the instructor using

a design journal. Students would be asked to record their design rationales and sketches and to describe their difficulties. Odgers argues that the journal would encourage students to participate in later public review sessions, such as in- terim and final reviews.

2.2.2 User and designer

Some instructors employ a useredesigner relationship (Dutton, 1991). In this relationship, the instructor refrains from judging student workdoffering nei- ther positive nor negative evaluations. Instead, the instructor acts to represent a user or a group of users and comments on the design from the perspective of a user. Although it is impossible to eliminate the instructor's role as an expert, the useredesigner approach provides a less intimidating, more constructive learning environment.

2.2.3 Peer critiquing

Peer critiquing may occur either in informal discussions or in group crits. Stu- dents discuss personal experiences and viewpoints with their peers who are en- gaged in solving the same design problem. Although peer-critiquing sessions do not involve the instructor, he can play a role by providing students with the opportunity to critique each other's work and by demonstrating how to critique appropriately. Several researchers detail the merits of the peer-to- peer critique (Bailey, 2004). Looking at their peer's work exposes students to alternative approaches to the same design project. Peer critiquing also en- ables students to participate more actively in debates or discussions. Students learn to formulate a critique and to take responsibility for what they learn. In addition, peer critiquing supports collaborative learning and encourages stu- dents to value peers opinions.

Actual interpersonal relationships between an instructor and her students are often more complex than the three forms described here. In Sections 2.4 and 2.5, we will discuss how subtle linguistic choices and the manner of a critique delivery can influence the instructorestudent relationship.

2.3 Communication modalities

Critiquing in design studios involves a wide range of communication modali- ties including speech, written comment, drawing, and gesture.

2.3.1 Speech

Speech is the primary communication modality used in all critiquing settings. For example, in the desk crit that Scho€n described in his book (Scho€n, 1985), the instructor (Quist) shows how to resolve the difficulties the student (Petra) faces, or indicate what is promising or problematic in her design. Anthony (1991) notes that speech is often accompanied by other modalities, such as drawing, because the instructor can deliver implicit meaning by drawing quick sketches (Ulusoy, 1999). For example, architectural drawings can deliver

Design Studies Vol 34 No. 3 May 2013

various design ideas such as forms of spaces, location relationships among spaces, physical connections, and adjacencies.

2.3.2 Written comments

Except for brief notes and labels that accompany drawings, written comments are rarely used in the design studio (Bailey, 2004). Still, some instructors make quick notes to accompany their desk-crit sketches and jury members are often asked to provide students with written feedback after a review. A written cri- tique has various advantages. As students read written comments they con- struct stories in their minds and interpret the text; these stories can then inspire design (Iser, 1978). Alon-Mozes (2006) reports on the use of stories in landscape architecture studios as a guide for student concept generation. Fi- nally, the written form serves as a permanent reminder of the critique so that a student need not remember everything the instructor says.

2.3.3 Drawing: graphic annotation and image

Instructors often draw during a design studio critique as they talk to demon- strate ideas (Scho€n, 1985). Drawing ranges from abstract diagrams to repre- sentational forms. As the instructor discovers the relationship between architectural elements presented in the student's

drawings (Ulusoy, 1999), he or she may make a simple diagram to illustrate the relationship. To suggest other building forms, the instructor may place tracing paper over the student's drawing and occasionally draw directly on the student's drawing. The instruc- tor may also make quick sketches on a pad of paper to show how the design might proceed or might have been done differently.

2.3.4 Gesture

Instructors gesture while they offer feedback on student work. These gestures are commonly regarded as a means to facilitate communication and play an important role in design thinking and collaboration (McNeill, 1992; Visser & Maher, 2011). The instructor may point to a part of a drawing or a model while referencing it in the discussion. Jared Donovan, Heinemann, Matthews, and Buur (2011) argue that pointing is not merely used for indexing, locating, or fixing a reference to an object; it can accomplish intersubjectivity and re- solve misunderstandings or disagreements that could happen in communica- tion. In addition, gestures can be considered 'invisible' drawings, that is, drawing actions that do not leave a permanent mark. For example, the instruc- tor may indicate the contour of a landscape with hand gestures.

2.3.5 Combining modalities

Critiquing communication seldom occurs in a single mode. Rather, instructors frequently use verbal and visual modes simultaneously to communicate their ideas to students. Multiple critiquing modalities work together and help stu- dents to understand the instructor's intentions. Bailey (2004) characterizes a good instructor as a critic who can clarify the relationship between verbal comments and visual representations.

A theoretical framework of design critiquing in architecture studios 311

312

2.3.6 Modalities in digital design studios

Many studio instructors and researchers have explored how to infuse a studio education with digital technology (Andia, 2002; Gross & Do, 1999, pp. 144e148; Kvan, 1997, pp. 163e177). These digital studios, which utilize both traditional techniques (e.g., one-on-one critiquing) and online tech- niques, are considered to be enhancements to studio education (Bender & Vredevoogd, 2006). This digital technology has radically changed the way studio teachers have conversations with students. Especially, critiquing modal- ities in digital design studios are quite limited compared to ones in traditional studios. Although students could use the same materials to communicate with teachers by uploading the images of sketches and physical models in digital design studios, the main modality teachers use would be text. These textual feedbacks have a couple of merits (Bender & Vredevoogd, 2006; Sagun, Demirkan, & Go€ktepe, 2001): (1) students have access to the offered feedback whenever they want; and (2) students have learning opportunities from feedback on their colleagues' work.

2.4 Delivery types

The language used by the instructor is essential to the success of the critiquing session. As a critiquing session takes the form of a conversation between in- structor and student, the instructor must select appropriate content, including the choice of examples and the level of abstraction in order to maximize the student's learning.

According to Bailey (2004), Goldschmidt (2003), and Uluoglu (2000), instruc- tors use two response styles while critiquing: facilitative and directive. This distinction follows a study of instructor's responses in English writing educa- tion by Straub (1996). The teacher's choice of response style makes a differ- ence to the students' subsequent actions and learning. Therefore, it is important for the teacher to be aware of different ways to communicate the same content. However, the design education literature does not address this distinction.

A facilitative critique encourages a student to elaborate on reasoning and de- sign decisions. While pointing at a specific part of a student's design, a teacher may ask 'Why did you place your gallery here?' or 'Why did you make this opening here?' Here the teacher helps the student reflect on the work, discover design problems, and articulate design rationale. In contrast, a directive cri- tique involves direct comments from the instructor rather than a series of ques- tions. This style reflects the teacher's judgment. For example, Scho€n observes the teacher saying to his student, 'It's a general pass through that anyone has the liberty to pass through, but it is not a corridor. It marks a level difference from here to heredit needs to have steps or a ramp.' Here, instead of reflecting on current problems, the student would focus on future solutions.

Bailey (2004) and Uluoglu (2000) both identify five delivery types that instruc- tors use in critiquing: evaluation (positive or negative) comments on a student's work, interpretation of a student's work, demonstration of potential solutions or other design solutions, introduction/reminder of issues or strategies, and de- scriptions of existing design examples or analogies.

2.5 Delivery

Critiquing delivery is different from the delivery types and communication mo- dalities discussed in the previous section. Delivery is the manner in which in- structors express comments based on their linguistic and modality choices. An instructor's body languagedfacial expressions and hand gesturesd communicate subtle nuances of the instructor's attitudes or decisions. The voice quality[3] of the instructor (e.g., such as intonation and loudness) as well as manner of drawing (e.g., deliberate and slow vs. rough rapid) are also part of delivery (Roach et al., 1998).

Anthony (1991) reports that these nonverbal aspects of communication are as important as the instructor's linguistic choices. She postulates that the effective use of nonverbal expression can deepen communication between an instructor and a student. She presents four distinct messages that nonverbal body lan- guage can convey: confirmingerepeating, denyingerefusing, strengtheninge emphasizing, and regulatingecontrolling. She argues that an instructor must learn what nonverbal expressions convey to the students.

Anthony also suggests that the instructor should try to be consistent in verbal expressions and nonverbal behaviors. When an instructor's verbal expression implies a positive connotation, body language, and facial expression should also communicate positive attitude. Otherwise, the inconsistency can confuse students or cause them to question what their instructor really thinks about their work. If an instructor frowns at a student and says, 'You are doing well in this part of floor plan, it looks interesting,' the student may wonder whether the instructor is actually entertaining a different thought than that which the words communicate.

2.6 Design phases

Critiques that students receive differ depending on the phase of design in which they are engaged. Uluoglu (2000) notes that instructors decide the purpose and content of a critique according to the design phase. She examined the syllabi of second-year studios at several architecture schools in the US (U.C. Berkeley, MIT, CMU, and Harvard) and Turkey (Istanbul Technical University). She identified a common six-phase outline:

(1) Introductiondintroducing studio goals and requirements
(2) Place/spacedinvestigating fundamental knowledge (e.g., site analysis)

A theoretical framework of design critiquing in architecture studios 313

314

3. (3) Settlement/buildingdearly stage designing and sketching design ideas to communicate
4. (4) Building (life/space)ddesigning by considering a building program, or concepts
5. (5) Supporting knowledgedstudying existing buildings and design theories
6. (6) Building (systems)dconsidering knowledge on building systems and

details.

An instructor may help a student locate and form a building in a given site by asking questions and introducing alternative approaches in the third phase. In contrast, during the fifth phase the instructor may offer relevant precedents to lead the student to look at other architects' work with similar concepts or situations.

2.7 Individual differences

Although usually all students in a studio have completed a common set of re- quired courses, individual students bring unique qualities to the learning expe- rience, including spatial ability, gender, and cultural background.[4]

2.7.1 Spatial ability

In architectural design, both instructor and students often use visual represen- tations: sketches, 3D computer graphics, and physical models. Therefore, each student's spatial ability is a factor that influences learning. According to cog- nitive scientist, Richard Mayer (2001), learning materials that combine text and graphics (as opposed to text only) work better for learners who lack prior knowledge about the subject matter and for learners who have high spatial ability.

2.7.2 Gender, race, and culture

Some researchers argue that design studios should value diversity such as stu- dent gender, race, cultural background, and ideologies (Koch et al., 2002; Wil- lenbrock, 1991). Based on personal experiences in an undergraduate architectural program, Willenbrock (1991) suggests that a more equal ex- change between instructor, students, and peers is needed in design studio.

Several researchers point out that different student identities (e.g., gender, race, experience, and cultural background) may influence learning and dialog with instructors. Boyer and Mitgang (1996) note that (in the US) according to the statistical data on female and minority students and faculty in accredited architecture programs, architecture remains an undiversified professional domain dominated by white males. Some researchers report that the master- apprentice model reinforces the image of men as masters (Ahrentzen & Anthony, 1993). Most design studios follow the master-apprentice model and most architecture studio instructors are male, which frequently makes design studio teaching patriarchal (Willenbrock, 1991). Consequently, these researchers express concern that critiquing in a patriarchal learning climate

can disempower and discourage some students. Some students experience emotional difficulty and damage to self-esteem when subjected to fierce public criticism (Ahrentzen & Anthony, 1993; Anthony, 1991).

2.8 Student knowledge and experiences

Although we did not find any studies that attempt to establish the relationship between critiquing and a student's level of experience or knowledge, it is rea- sonable to assume that an instructor would consider what a student does (or does not) already know in critiquing sessions. In particular, it would be useful to understand what design experience and knowledge can be expected from a student based on their stage in the educational program.

Some studies compare the design processes employed by beginning design stu- dents and upper-level students. For example, Atman et al. (1999) analyzed ver- bal protocols of 24 seniors and 26 freshmen, who were given open-ended design problem and compared their design processes. They found that the de- sign processes of seniors and freshmen differ in several dimensions: scoping problems, considering multiple alternatives, transitions between design stages, and paying adequate attention to each design stage. Compared with beginning design students, experienced students considered multiple alternatives and could transition more rapidly between design stages while paying closer atten- tion to each stage. This and other studies suggest that it is important for the instructor to understand a student's level of experience and design ability in order to provide effective feedback.

2.9 Student response types

Critiques require students to reflect on instructor comments. Some students may grasp the feedback they receive; however, others have difficulty relating to the feedback. Rohrbach (2005) suggests that design teachers lack under- standing about how to reconstruct their teaching methods, specifically critiqu- ing, based on student responses. Student response is also an important factor in design critiquing because critiquing is an interaction between student and teacher. Teacher critiques would not be same if student responses were differ- ent. For example, if student responses are undesirable, then studio teachers would offer the same critique using other critiquing methods to help students understand the critique. Therefore, it is reasonable to assume that teachers consider student responses in order to reconstruct their critiquing methods.

Using interviews conducted after critiquing sessions, Kent (2001) identifies six types of students: thinkers, listeners, skeptics, followers, misinterpreters, and the affirmed. Thinkers reflect on what they hear and they have ideas about how to incorporate the feedback into their designs. Listeners hear and can re- peat the teacher's opinions but cannot come up with a clear plan to act. Skep- tics are cynical or skeptical about the teacher's comments and tend to discount the feedback they receive. Followers remember and use the teacher's concrete

comments. Misinterpreters misunderstand the teacher's feedback and turn it into what they want to hear. Finally, the affirmed feel that their teacher agrees with their ideas.

2.10 Design artifacts and learning goals

Two additional factors have not yet been discussed. The first is the variety of artifacts that students produce as they develop their designs. Design artifacts include diagrams, rough sketches, drawings, and physical models. Design ar- tifacts are the main results of design studios and

the communication tools be- tween teachers and students. Without these artifacts, teachers cannot understand and evaluate student design solutions and offer feedback based on these artifacts. Therefore, it is important for the instructor to understand the student's ability to produce them.

The second factor is the learning goals that the instructor must address. Re- gardless whether they are articulated explicitly, each studio course has a set of learning goals, and in order to provide students with appropriate feedback, the instructor must clearly understand these learning goals.

3 A theoretical framework of design critiquing

We have presented eleven factors that influence design critiquing, and we have analyzed a range of observations and findings about each factor. Based on these factors, we now develop a framework of critiquing for understanding the dependencies and relationships between the key factors of critiquing. Sec- tion 3.1 presents a process model of design critiquing for individual critiquing activity. Section 3.2 discusses a framework of design critiquing.

3.1 A process model of critiquing

We can describe what happens during critiquing as a sequence of steps or a process model (Figure 2). When a student explains his or her design work by showing the studio instructor drawings and physical models, the instructor listens and observes what the student has presented (observation). Upon notic- ing problematic and promising aspects of the student's work (noticing), the in- structor must clearly identify the issues and why they are problematic or promising based on understanding the immediate learning goals (identifica- tion). We separated the identification step from the noticing step because iden- tifying problematic or promising aspects of the student's work requires some

Figure 2 Critiquing steps: (1) observation; (2) noticing; (3) identification; (4) sequence; (5) delivery types and communication modalities; and (6) delivery.

deliberation, whereas noticing may be done intuitively. The instructor then considers the order with which to deliver feedback to the student (sequence). For example, the instructor may decide to begin critiquing by pointing out positive aspects, or the instructor may address critical issues first and leave other less important issues for later.

After the sequence of delivery is determined, the instructor must decide on de- livery types and communication modalities. The instructor can use many com- munication modalities to deliver comments to the student. The instructor may use hand gestures while talking or may sketch over the student's drawing. The instructor must also formulate the critique in an appropriate manner, or what we shall call 'delivery type,' (e.g., directive or facilitative). Finally, the instruc- tor delivers the critique (delivery). Here, linguistic choices and strategies are important (Torrey, 2009). Subtle differences such as language choices, facial expressions, and voice qualities, influence the relationship between instructor and the student and, hence, the effectiveness of the critique.

This analytical model describes a process for developing critiques and selecting delivery types and communication modalities through an analysis of the situ- ation. It identifies the detailed steps of individual critiquing, but it is not a cog- nitive model of critiquing, nor is it a prescriptive model. We do not mean to suggest that an instructor does, or must, follow these steps deliberately every time he or she critiques a student's design. However, this model seems to ac- count in a general way for what human critics do, and it helps human critics develop effective critiquing through the careful analysis of the situation in the design studio.

3.2 A framework of design critiquing

We have developed a framework of critiquing practice. This framework pres- ents relationships between the eleven factors of critiquing. Figure 3 illustrates how a critic can use these factors in deciding on a strategy to critique a student. The six factors on the left are usually the part of the pedagogical context in which studio instructors do not control or manipulate directly. Those variables constitute the situation on which critiquing decisions are based. The factors on the right constitute the variables that are determined by the instructor for a particular course. Among these factors, critiquing types and instructorestu- dent relationship can be decided as part of the course planning before the class starts. It is easy to think that instructorestudent relationships might be deter- mined by teacher profiles such as master, coach or parent and their own indi- vidual differences and characteristics. Although it is true in critiquing practice in some sense, we put the factor of instructorestudent

18

relationship into the group of critiquing methods. It is because we think that teachers better think about what other relationships could have with their students and (dis)advan- tages of individual relationships before the critiquing sessions. Studio teachers then consider having other relationships, not just insisting their own individual

A theoretical framework of design critiquing in architecture studios 317
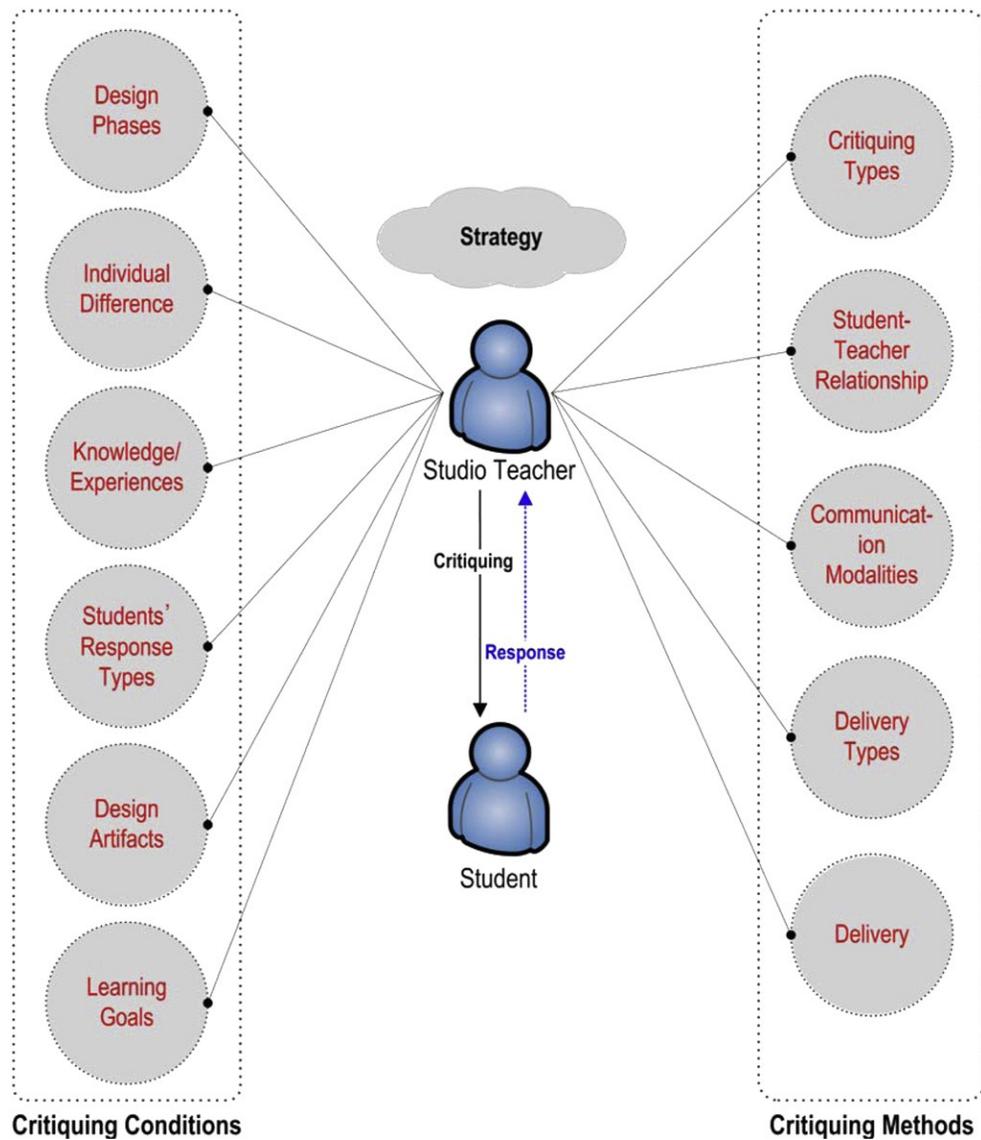

Figure 3 A framework for critiquing practice: conditions and methods. A studio teacher considers critiquing conditions and then selects a set of critiquing methods to offer feedback.

318

profiles. The other factors, modalities, response styles, and delivery styles are decided on the spot when instructors provide their student(s) with feedback.

This framework might be useful in developing a more formal and rigorous pedagogy for design education. As mentioned above, although critiquing is the backbone of studio-based education, design educators do not learn critiqu- ing formally, nor has critiquing been the subject of learning sciences research that could result in more effective teaching practice.

Design Studies Vol 34 No. 3 May 2013

Dimensions of rhetorical situation

Rhetor (speaker) Subject (content) Audience[a]

Context Purpose

Dimensions of rhetorical situation in critiquing

Instructor

What the instructor want the student(s) to understand Students

Circumstances that call for critiquing

To provide students with effective feedback that will lead to optimal learning

Relevant factors

Relationships between instructors and students, modalities, response styles, delivery Learning goals

Student level of experience/knowledge, individual differences, student response types, design artifacts
Design phase, critiquing type,

design artifacts Learning goals

The goal of critiquing is to provide students with effective feedback that opti- mally contributes to their learning. We consider this a rhetorical problem.[5] Charles (Bazerman, 1988) defines a rhetorical problem as 'the set of con- straints and goals recognized by a person framing a symbolic response within a rhetorical situation.' A 'rhetorical situation' is a context that demands com- munication. While the theoretical concept of rhetorical situation was origi- nally conceived to address social and political discourse, it has since been used widely in the pedagogy of speech and composition. Purdue's Online Writ- ing Lab (OWL), for instance, defines a rhetorical situation as 'any set of cir- cumstances that involves at least one person using some sort of communication to modify the perspective of at least one other person.' Rhe- torical situations are usually described in terms of rhetor (speaker), subject, audience, context, and purpose. Table 2 shows how these rhetorical situation dimensions map to the key factors of critiquing.

The instructor's task is to analyze his rhetorical situation of critiquing from the perspective of these dimensions and their relations, and then find the optimal way to communicate his feedback in order to provide students with the knowl- edge they need to learn. We believe the rhetorical analysis of critiquing pro- vides instructors with a way to systematically understand their critiquing performance, hence, providing them with an opportunity for critical reflection and planning.

3.3 Critiquing in course planning

In the previous sections, we mapped the identified critiquing factors into our framework of a rhetorical situation and proposed a detailed model of

[a] We should clarify how to define the term 'audience.' Audience is a student in a critiquing session. Audience is not only being influenced by a symbolic action but is also influencing the design/plan of a symbolic action (Benson 1978). In other words, students are not just recipients and but are implicit in critiquing conversations in which they act as a constraint upon making a plan for design critiquing. Studio instructors consider student design artifacts and student response (and further their response types) as important and then decide how to deliver their feedback to their students.

A theoretical framework of design critiquing in architecture studios

319

320

individual critiquing. Based on that section, this section provides a framework for developing an overall critiquing strategy for an entire studio course.

Careful course planning is important in education, and architecture studios are not an exception. Since critiquing is the primary means of interaction between the instructor and students, explicit planning with regard to critiquing would improve learning in design studios. However, as we stated earlier, the current literature does not provide a clear framework to help instructors develop cri- tiquing plans. The literature suggests that most instructors do not make ex- plicit plans or develop strategies for critiquingdeven though they may carefully plan their instructions in terms of other variables like the complexity of the project, phases, project description, and requirements.

Explicit plans for critiquing will also allow instructors to describe their teach- ing method clearly to students. While we did not find any evidence in architec- tural education, Goldschmidt (2002, pp. 430e437) found that providing students with the rational behind the instructor's teaching methods leads to better learning. Through several protocol analyses, she finds that 'the apparent lack of structure of crits' can be one point of failure of critiquing. Often, students do not understand why instructors are teaching in certain ways. How- ever, when students become aware of instructional methods (i.e., metacogni- tively), they can be more receptive to the methods and can develop a better relationship with the instructor.

We propose the following two steps to provide students with effective feedback that will lead to optimal learning, which is the purpose of critiquing. First, we consider two rhetorical dimensions in which to plan studio critiquing: audi- ence and context (see Table 2). The instructor needs to consider the use of cri- tiquing types according to the design phases as well as student levels of experience and knowledge. For example, in the analysis stage where everybody is looking at the same data, it may make sense to require peer group discus- sions so that each student can verify his or her research against others. As each student begins to develop an approach, it may make sense to conduct desk-crits. At this stage, it is also appropriate to consider the level of feedback that should be communicated to the students. For example, if you are planning to do a round of desk-crits during a week when students are producing initial sketches for the assignment, you may decide not to point out detailed design flaws that may become irrelevant as their design develops further.

Second, the instructor needs to consider the rhetor (speaker) and the audience according to his analysis of the previous step. Here, the instructor thinks about what kind of relationships the he or she wishes to have with the students. As we discussed in Section 2, the relationship between the instructor and students is often subtle, and it is primarily established through the choice of linguistic styles and delivery styles. One instructor may use multiple relationships in

a single studio course. For example, if the audience is a group of freshmen ar- chitecture students, the instructor may decide to be more directive in the early phases in order to help students focus on issues at hand, but the instructor may use more facilitative language later in the semester to encourage individual creativity. On the other hand, in a senior studio, the instructor may start a course with a facilitative approach, but use more directive critiquing at the final review to provide students with professional experience.

4 Conclusion

Critiquing is the critical and fundamental means with which to teach design in a architecture studio. We have demonstrated that the instructor in an architec- ture studio has a wide range of factors to consider and reflect upon to examine their critiquing practice. We also proposed that critiquing sessions should take place not only between instructors and students but also among classmates. Thus, it is the instructor's job to create opportunities for peer-to-peer critiquing.

We believe that just as in teaching writing or mathematics, there are better and worse ways of teaching design. Developing more systematic ways of critiquing may be integral for developing better teaching methods. However, the current practice of architectural design studio has an inherent problem arising from the fact that instructors teach students in ways that are derived primarily from their own academic experience and intuition. While instructors, who are often professional architects, can share their professional insights and practical knowledge, they tend to comment on student work without a clear understanding of critiquing or the pedagogy of critiquing.

In response to this problem, we presented a descriptive framework of critiqu- ing. Based on a literature survey, we identified eleven key factors that allow us to examine critiquing practices in an architectural design studio. We then developed a model of critiquing from the perspective of the instructor. The model is intended to be a conceptual framework with which the instructor can think about his/her critiquing, both during the course planning as well as during the interactive critiquing sessions in the studio.

We do not think that our framework improves critiquing practice or could be a direct solution to problems in the current critiquing practice. Rather, we ar- gue that the first step to improving critiquing practice and developing a critiqu- ing strategy is to suggest a systematic way to articulate design critiquing. Therefore, we have developed a framework of design critiquing, which helps us articulate and analyze individual critiquing sessions and propose further research into improving critiquing practice.

We hope that the framework presented in this article will facilitate the development of a systematic method for understanding, and comparing cri- tiquing practices in design studios. We hope it will provide a means for

A theoretical framework of design critiquing in architecture studios 321

evaluating the effectiveness of computational design tools such as intelligent critiquing systems. We also hope that that it will provide a means by which stu- dio teachers can plan and improve their critiquing strategies.

Notes

1. We use the term, 'teacherestudent relationships,' which could be selected based on the specific critiquing situation. However, we found a different position taken by Gold- schmidt et al. (2010). They use the term 'teachers' profiles.' They imply these profiles can- not be selected because these profiles are teacher characteristics. For example, a teacher with authority cannot be a teacher as a peer.
2. Besides the three instructorestudent relationships, there are other definitions of teacher roles. For example, Attoe and Mugerauer (1991) describe three roles: (1) coach, (2) coun- selor, and (3) parent. A coach is similar to a master in that he or she may be an author- itative figure who knows what excellence is, what the goal is, how to achieve it, and who may be a heavy critic. However, a coach is different from a master model in that he or she lets students choose their directions. A teacher as counselor plays a gentler role and aims to help students discover themselves. A counselor's goal is to lead students to think crit- ically on their own. In the parent model, a teacher is more comprehensive: nurturing and open to the student's academic growth. Attoe and Mugerauer argue that coaching and counseling should be replaced by the parenting role. Compared to the first two roles, the main character of parenting is caring. They describe caring as showing an interest in the student's individual life as well as work.

   In addition, Quayle (1985) identifies six different roles for teachers: (1) the expert who transmits factual information, concepts and perspectives; (2) the formal authority who sets learning goals and procedures by defining structure and evaluating performance; (3) the socializing agent who clarifies goals and career paths to prepare students for the future demands of their professional and personal lives; (4) the facilitator who promotes creativity and growth to help overcome learning obstacles; (5) the ego ideal who demonstrates the ultimate worth of personal commitment to material or edu- cational goals; (6) the person who conveys the full range of human needs and skills by being self-revealing, trustworthy, warm and open.

3. Voice qualities are often described in terms of prosodic and/or paralinguistic features. As these linguistic terms are not well defined, I use the term 'voice quality' in this work (Roach 1998).
4. We recognize that there are various individual differences between instructors, but our model does not explicitly include them for the following reasondour model is intended to cover all the factors of critiquing that would complete the 'space' of critiquing avail- able to instructors. While it would be interesting to consider how individual instructors with different personal characteristics could strategically choose specific critiquing ap- proaches, it is outside of the scope of this paper. In addition, there is no known research on individual difference among instructors.
5. While the term rhetoric today often has a negative connotation, we adopt the broader and traditional definition of rhetoric, that is, as an art of persuasion through a means of symbolic system.

References

Ahrentzen, S., & Anthony, K. H. (1993). Sex, stars, and studios: a look at gen- dered educational practices in architecture. Journal of Architectural Education, 47(1), 11e29.

Alon-Mozes, T. (2006). From reading the landscape to 'writing' a garden: using the text metaphor as a working design tool. Journal of Landscape Architecture, 1, 35e37.

Andia, A. (2002). Reconstructing the effects of computers on practice and education during the past three decades. Journal of Architectural Education, 56(2), 7e13.

Design Studies Vol 34 No. 3 May 2013

Anthony, K. H. (1991). Design juries on trial: The renaissance of the design studio. New York: Van Nostrand Reinhold.

Argyris, C. (1981). Teaching and learning in design settings. Architecture Educa- tion Study. New York: Andrew W. Mellon Foundation.

Atman, C. J., Chimka, J. R., Bursic, K. M., & Nachtmann, H. L. (1999). A com- parison of freshman and senior engineering design processes. Design Studies, 20(2), 131e152.

Attoe, W., & Mugerauer, R. (1991). Excellent studio teaching in architecture. Studies in Higher Education, 16(1), 41e50.

Bailey, R. O. N. (2004). The digital design coach: Enhancing design conversations in architecture education. Architecture, Victoria University of Wellington.

Bazerman, C. (1988). Shaping written knowledge: Essays in the growth, form, func- tion, and implications of scientific article. Madison, WI: University of Wiscon- sin Press.

Bender, D. M., & Vredevoogd, J. D. (2006). Using online education technologies to support studio instruction. Educational Technology & Society, 9(4), 114e122.

Benson, T. (1978). The senses of rhetoric: a topical system for critics. Central States Speech Journal, 29, 237e250.

Boyer, E. L., & Mitgang, L. D. (1996). Building community: A new future for ar- chitecture education and practice.

Cuff, D. (1991). Architecture: The story of practice. The MIT Press.
Dannels, D., Gaffney, A., & Martin, K. (2008). Beyond content, deeper than de- livery: what critique feedback reveals about communication expectations in de- sign education. International Journal for the Scholarship of Teaching and

Learning, 2(2).
Dinham, S. M. (1986). Architecture education: is jury criticism a valid teaching

technique? Architecture Record 51e53.
Donovan, D., Heinemann, T., Matthews, B., & Buur, J. (2011). Getting the point:

the role of gesture in managing intersubjectivity in a design activity. AIDEAM (Artificial Intelligence for Engineering Design, Analysis and Manufacturing), 25(3), 221e235.

Dutton, T. A. (1987). Design and studio pedagogy. Journal of Architectural Edu- cation, 41(1), 16e25.

Dutton, T. A. (1991). The hidden curriculum and the design studio. In T. A. Dutton (Ed.), Voices in architectural education: Cultural politics and ped- agogy (pp. 165e194). New York: Bergin and Gravey.

Farivarsadri, G. (2001). A critical view of pedagogical dimension of introductory de- sign in architectural education. Architectural Education Exchange. Cardiff University.

Goldschmidt, G. (2002). One-on-one: A pedagogic base for design instruction in the studio. Common Ground Design Research Society International Conference. Brunel University: Staffordshire University Press.

Goldschmidt, G. (2003). Expert knowledge or creative spark? Predicaments in design education. Presented at the Design Thinking Research Symposium 6. Sydney, Australia: University of Technology.

Goldschmidt, G., Hochman, H., & Dafni, I. (2010). The design studio "crit": teacherstudent communication. Artificial Intelligence for Enginering Design, Analysis and Manufacturing, 24(3), 285e302.

Grasha, A. F. (1996). Teaching with style: A practical guide to enhancing learning by understanding teaching and learning styles. Pittsburgh: Alliance Publishers. Groat, L., & Ahrentzen, S. (1996). Reconceptualizing architectural education for

a more diverse future: perceptions and visions of architectural students. Jour- nal of Architectural Education, 49(3), 166e183.

A theoretical framework of design critiquing in architecture studios 323

324

Gross, M., & Do, E. (1999). Integrating digital media in design studio: Six para- digms. Presented at the American College Schools of Architecture Conference (ACSA), Minneapolis, MI.

Iser, W. (1978). The act of reading. Baltimore: Johns Hopkins University Press. Kent, L. A. (2001). The case of Lucio Pozzi: An artist/teacher's studio critique

method. Teachers College. New York: Columbia University. PhD.
Koch, A., Schwennsen, K., Dutton, T. A., & Smith, D. (2002). The redesign of stu- dio culture: A report of the AIAS studio culture task force. The American Insti-

tute of Architecture Students.
Kvan, T. (1997). Studio teaching without meeting. Presented at the Conference on

Computer Aided Architectural Design in Asia.

Mayer, R. E. (2001). Multimedia learning. UK: Cambridge University Press. McNeill, D. (1992). Hand and mind e What gestures reveal about thought. Chi-

cago, IL: University of Chicago Press.

Moore, K. D. (2001). The scientist, the social activist, the practitioner and the

cleric: pedagogical exploration towards a pedagogy of practice. Journal of Ar-

chitectural and Planning Research, 18(1), 59e79.

Ochsner, J. K. (2000). Behind the mask: a psychoanalytic perspective on inter-

action in the design studio. Journal of Architectural Education, 53(4),

194e206.

Odgers, J. (2001). Authority, questioning and learning: Reflections on writing as re-

flective practice in the design studio. Architectural Education Exchange. Cardiff

University.

Quayle, M. (1985). Idea book for teaching design. Mesa: Arizona, PDA Publisher

Corporation.

Roach, P., Stibbard, R., Osborne, J., Arnfield, S., & Setter, J. (1998). Transcrip-

tion of prosodic and paralinguistic features of emotional speech. Journal of the

International Phonetic Association, 28, 83e94.

Rohrbach, S. (2005). Responding to the changing roles of designers: Fostering the

critical analysis and verbal communication skills of students through the evalua- tion of design work. Presented at the AIGA National Design Education Con- ference, Philadelphia, PA, USA.

Sagun, A., Demirkan, H., & Go€ktepe, M. (2001). A framework for the design stu- dio in web based education. Journal of Art and Design Education, 20(3), 332e342.

Salama, A. (1995). New trends in architectural education: Designing the design stu- dio. Tailored Text & Unlimited Potential Publishing.

Scho€n, D. A. (1985). The design studio. London: RIBA.

Straub, R. (1996). The concept of control in teacher response: defining the varie-

ties of 'directive' and 'facilitative' commentary. College Composition and Com-

munication, 47(2), 223e251.

Torrey, C. (2009). How robots can help: Communication strategies that improve so-

cial outcomes. Human Computer Interaction Institute (HCII). Pittsburgh, PA:

Carnegie Mellon University (CMU). PhD.

Uluoglu, B. (2000). Design knowledge communicated in studio critiques. Design

Studies, 21(1), 33e58.

Ulusoy, Z. (1999). To design versus to understand design: the role of graphic rep-

resentations and verbal expressions. Design Studies, 20(2), 123e130.

Visser, W., & Maher, M. L. (2011). Guest editorial e the role of gesture in design- ing. AIDEAM (Artificial Intelligence for Engineering Design, Analysis and

Manufacturing), 25(3), 213e220.
Wilkin, M. (2000). Reviewing the review: an account of a research investigation of

the 'crit'. In D. Nicol, & S. Pilling (Eds.), Changing architectural education:

Design Studies Vol 34 No. 3 May 2013

Towards a new professionalism (pp. 100e107). New York: Taylor & Francis

Spon Press.
Willenbrock, L. L. (1991). An undergraduate voice in architectural education. In

T. A. Dutton (Ed.), Voices in architectural education: Cultural politics and pedagogy (pp. 97e120). New York: Bergin and Gravey.