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Feedback Chats: Providing Individualized Feedback in a Construction Management Classroom

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Construction management (CM) students need more feedback from their teachers—feedback that is timely, individualized, informational, and edifying. Unsurprisingly, this is very difficult for CM teachers to provide given their constraints in both time and resources. This paper describes one way to offer CM students more feedback using a novel pedagogical method called "Feedback Chats" that applies elements of the flipped classroom and the fishbowl teaching strategy to free up class time for students and teachers to connect individually and regularly. Feedback Chats were first implemented in an undergraduate CM course called *Housing and Land Development* located at a major university in the southeast United States. Based on thematically analyzed data from end-of-course surveys administered by The University, students felt that Feedback Chats were effective, and they appreciated the direct and routine student-teacher contact that the teaching method provided. Key takeaways from this exploratory study are that feedback needs to be (1) timely, even before an assignment is submitted, if possible, (2) spoken, not written, and (3) committed to by the teacher ahead of time. (4) CM Teachers should recognize that even with Feedback Chats, class time will always be scarce.

Key Words: Construction Management, Construction Education, Feedback

Introduction

In 1999, John Hattie, a prominent scholar of education research, conducted a synthesis of over 400 meta-analyses, involving approximately 180,000 individual studies covering 25 million students, on the factors that affect student achievement (Hattie, 1999). The factors under review included socioeconomic influences, prior cognitive ability, homework, use of calculators, class size, direct instruction, reciprocal teaching, and over 100 others. Hattie found that student feedback ranked in the top ten most influential factors in student achievement. Hattie summarized the findings by stating "The most powerful single moderator that enhances achievement is feedback." (p. 9).

Feedback, as a pedagogical tool, currently operates under several definitions and descriptions. One highly cited definition comes from Sadler (1989) who described feedback as a formative assessment of how well something is being done. Feedback is closing the gap between teacher and student,

bypassing the “inefficiency of trial-and-error learning” (p. 120). Another definition comes from Winne and Butler (1994) who defined feedback as “information with which a learner can confirm, add to, overwrite, tune, or restructure information in memory" (p. 5740). Poulos and Mahony (2008) defined feedback by differentiating it from primary instruction. They state that for instruction to be considered feedback it must include: a comparison between actual and desired outcomes, appropriate and timely delivery, a sufficient and situational response, gender-specific delivery, and face-to-face engagement; it should also come directly from the teacher. In their definition, Wisniewski, Zierer, and Hattie (2020) emphasize that feedback is a function of its quality, and the quality of feedback corresponds to the amount of information provided to the student. The more information, the more effective the feedback. However, more information does not equate to longer explanations. Rather, it means direct, meaningful, focused “dollops of feedback” (Hattie, 1999, p.9) in place of lengthy, corrective lectures that tend to have steep diminishing returns. In construction management (CM), Sunindijo (2016) describes feedback as communication to students about their work that is timely, clear, and meaningful, and, like Poulous and Mahony (2008), emphasizes that it needs to come from teachers directly, not their assistants.

By almost any definition, quality feedback is, and always has been, conspicuously rare in the college classroom, particularly in medium-sized and larger classrooms in which teachers often experience greater constraints of time. John Hattie reported that the typical feedback that a student receives aggregates, at best, to mere seconds over a day (Hattie, 1999). Two decades later, Henderson, Ryan, and Phillips (2019) recorded one science education assessor’s statement that “workload allocation models provide only a few minutes per student[sic] per trimester/semester for feedback, encompassing all tasks” (p. 1246). Despite these realities, giving students feedback remains one of the most important elements of a complete education. But how can it be done? Teachers are already struggling to deliver primary instruction given their time constraints, let alone to provide timely, individualized, face-to-face, information-rich feedback. This paper provides insights into these challenges by reporting on the recent success of an exploratory and novel pedagogical method termed “Feedback Chats” which is capable of providing definitionally quality feedback in a typical, medium-sized CM classroom.

Literature Review

In construction management (CM), very little research has explored the effects of formative student feedback—feedback that is pensive and edifying, not torpidly corrective. This remains true when broadening to fields adjacent to CM like engineering (Das, 2023; Esterhazy, Nerland, & Damşa, 2021). Of the research on feedback does exist in CM, much is dedicated to design, operational performance, or process improvement (e.g., Pesämaa, Larsson, & Eriksson, 2018), or to behavior-based worker safety and health training rather than cognitive maturation, knowledge advancement, and educational achievement (e.g., Cameron & Duff, 2007; Golovina, Perschewski, Teizer, & König, 2019). One common theme throughout almost all the literature on formative student-centered feedback in the field of CM is the scarcity of time, which appears to be the single greatest barrier to students receiving and benefiting from feedback. Scott and Fortune (2013) found that a substantial majority of the construction educators they surveyed (86.0%) agreed that feedback was an important part of assessment; however, in practice, they struggled to provide it, having to spend more time measuring their students’ results rather than appraising their work with constructive feedback. Sunindijo (2016) examined longitudinal data from student satisfaction surveys covering six consecutive years of an undergraduate CM course. The study revealed that CM students are generally dissatisfied with both the quantity and quality of feedback, a situation caused in part by “unsuitable

assessment tasks [that] quickly consume lecturers' time, making it impossible for them to give adequate feedback" (p. 251). Wedawatta (2018) seconded the observations of Scott and Fortune (2013) and Sunindijo (2016) on the challenges of providing feedback. Their research on de-modularizing CM programs (i.e., making the CM curriculum more inter- and cross-disciplinary) reported no progress in providing students with more or better feedback; in fact, they noted additional deleterious effects on feedback due to their interventions. Nevertheless, like Sunindijo (2016), Wedewatta (2016) emphasized the value and benefit of providing timely and effective feedback to students. Lehtovaara, Seppänen, and Peltokorpi (2019) tried to solve the time problem by using team feedback to accelerate a construction design learning process. Their focus was on opening more advanced feedback channels between design and production team members to improve project efficiency and performance. The centerpiece of their research was a theoretical model demonstrating a way in which construction firms can provide continuous operational feedback. Most recently, Ren, Zhang, and Jiang (2021) used a novel method called automated activity-on-node calculation grading (AACG) that combined computer software technology and teaching strategy to remove barriers to student feedback and grading. They reported that the AACG method allowed them to provide simple, specific, and timely feedback that enhanced learning outcomes and experiences for their students. As a result of this literature review at the intersection of CM and feedback, no studies could be found that show the results of individualized, face-to-face, student-teacher feedback through a routinely graded assignment.

Methods

Designing Feedback Chats

This exploratory study on formative student feedback was conducted in an undergraduate CM course, *Housing and Land Development*, located at a major university in the southeastern United States in the fall semester of 2022. The course was designed around a series of graded assignments called "Feedback Chats" which were given in tandem with the students' semi-weekly class activity assignments. These Feedback Chats were intended to commit the instructor and students to interface with one another on an individual level repeatedly throughout the semester. Thus, eight times in the course, during class workshops, the teacher moved around the room, visiting each student one by one to discuss the student's progress on the semi-weekly assignments, providing insight, suggestions, and corrections. Grades were given for participation and awarded immediately after the chat concluded. For example, in Week 9 of the course, students were required to design a phasing plan for residential development. An independently graded Feedback Chat was given with this assignment requiring the students to discuss their work with the teacher face-to-face at some point during the week. In this regard, Feedback Chats were complementary assignments that were coupled with the primary assignments. In consonance with the literature on the subject (Poulos & Mahony, 2008; Sunindijo, 2016), they were spoken, not written, and done while class assignments were in progress, not after they had been submitted.

The theoretical design of Feedback Chats was grounded in two alternative pedagogical teaching approaches that have been successful at providing students with more teacher-student engagement and feedback both broadly and in CM specifically: the flipped classroom and the fishbowl strategy (Han & Hamilton, 2023; Lee et al., 2016). In a flipped classroom, lecture and homework are reversed, or flipped, so that homework can be done in class while the teacher is available to answer questions and offer guidance (Lee et al., 2016). Class time is a workshop, not a lecture hall. The fishbowl strategy is a constructivist approach in which the students in an "outer circle" observe those in a smaller "inner

circle" as they openly discuss course subject matter with their peers and the teacher watching (Han & Hamilton, 2023). Students in the classroom are encouraged to overhear each other, share their insights, and judge what ideas they want to adopt or reject. Teachers guide the conversations and mediate the discussions.

All Feedback Chat assignments were programmed into Canvas (the learning management system used to host the course) before the course began. The instructions given to students for the Feedback Chats were:

> Chat with the professor one-on-one for about 1-2 minutes during class about your application activity. The professor will come to you. Work until he does. You will receive your grade during the chat.

In the event that a student was not in class to participate in the Feedback Chat, an alternative, written option was provided. The written alternative was not intended as an adequate substitute for in-person feedback from the teacher; rather, it was designed specifically as a deterrent to nudge students toward engaging in the Feedback Chats. Overall, the deterrent worked. Predictably, very few students chose the written option. The instructions given to students for the alternative, written assignment were:

> If you are not in class for a Feedback Chat, write a 600-word status update of your application activity and upload it to Canvas. You can discuss your approach to the assignment, describe what is challenging about it, what you are learning, provide insight, a concern, or anything else germane to the week's project. Type the word count at the top of the page you submit.

Evaluation of Feedback Chats

Students in *Housing and Land Development* were asked by the instructor to use their end-of-course student surveys to provide their perspectives on the course and the Feedback Chats. These surveys were useful for a basic evaluation because they were administered by The University (not the teacher) and focused on the delivery of the course and the performance of the teacher. Because they take this survey in every course at The University, the CM students in *Housing & Land Development* were familiar with the survey and were likely to feel more comfortable providing their honest opinions. To maximize participation, every student who completed the survey received 1.0% of extra credit on their final grade. The survey was administered electronically. The survey consisted of both closed-ended ordinal questions on a 5-point Likert scale and two open-ended questions. The first open-ended question was "What did you like best about the course and/or how the instructor taught it?". The second open-ended question was "What suggestions do you have for improving the course and/or how the instructor taught it?". Student comments from the open response sections of the survey were analyzed using conceptual content analysis, a technique in which the investigators identify a target theme in advance (Sunindijo, 2016). In this study, any mention of "feedback", "Feedback Chats", "talking with students", "talking one-on-one" or any of their various derivatives or related terms were scrutinized for insights about the teaching method.

Typical of all end-of-course surveys administered by The University, the data from student surveys in *Housing and Land Development* were shared electronically with the instructor at the end of the semester after grades were finalized. Each student who completed the survey was automatically assigned a random identifying number (e.g., Student 6). With the survey, The University registrar supplied demographic and academic information of all respondents in summary form, not as individuals. The end-of-course surveys were sent to all 33 of the students in the course. Nearly all of

the responding students in the course were male (93.9%, n=31). Female students comprised 6.1% of the respondents (n=2). A third (30.0%, n-10) were in the 3rd year of school. Of all students, 70.0% were in their fourth and final year (n=23). None were in their first or second year in school (n=0). Of the students surveyed, 6.6% of the students had a cumulative grade point average (GPA) in the 2.00-2.49 range (n=2); 42.4% were in the 2.50-2.00 range (n=14); 36.4% were in the 3.00-3.49 range (n=12); and 15.2% were in the 3.50-4.00 range (n=5). All data presented in this study were used in compliance with The University standards of anonymity of human subjects research and based on the United States federal definition of research. The University's institutional review board (IRB) verified its proper use in writing.

Results

Nearly all of the students in *Housing and Land Development* (30 of the 33) responded to the survey, resulting in a response rate of 90.9%. All information specifically about the Feedback Chats comes from the two open-ended questions; however, a few of the Likert questions (Table 1) provide some general insights about the structure and delivery of the course that was built around the Feedback Chats. All of the students (100.0%, n=30) who completed the survey strongly agreed or agreed with the way the instructor designed and delivered the course.

Table 1: General student perspectives on the course.

Question	Strongly Agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly Disagree (1)	Mean
My instructor was well-organized and provided a framework conducive to learning.	83.3%	16.7%	0.0%	0.0%	0.0%	4.83
My instructor taught the course in a way that stimulated critical and creative thinking.	83.3%	16.7%	0.0%	0.0%	0.0%	4.83
My instructor provided useful feedback on assignments/tests.	73.3%	26.7%	0.0%	0.0%	0.0%	4.73

Approximately a quarter of the students (23.3%, n=7) who completed the survey made comments that met the thematic criteria in the open-response section of the survey. For the first question, "What did you like best about the course and/or how the instructor taught it?", most of the students (80.0%, n=24) provided responses. Four respondents (13.3%) specifically mentioned Feedback chats or its derivatives or related terms. Embedded in each of these students' responses is the importance of individualized engagement with the instructor. One student stated: "I valued the time [the instructor] spent every Tuesday to explain the project in detail and provide advice before starting. [The instructor] provided student feedback more than any professor I have had at [the university]. The time he spent on Thursdays to have a conversation one on one (sic) with each student truly enhanced my learning experience" (Student 26). Another student similarly reflected: "I really liked how he taught the class and how he would talk one on one with the students…." (Student 28).

The students also appreciated Feedback Chats as a means of transmitting information. One student commented: "Feedback chats were a great way to interact with the instructor, as well as learn additional information from them." (Student 8). Another student said: "...Assignments are helpful and useful. Class-time (sic) itself is informational and useful. Feedback chats should be kept around for sure." (Student 5). Another theme that surfaced was the schedule and timing of the course. One student wrote about this at length:

> I was able to bounce my ideas off him and receive constructive criticism BEFORE my assignment was due. What makes [The Instructor] elite and separates him from other professors was the timing of his feedback. Some professors may comment on your submission and tell you how it could have been better or why you were deducted points, but after the assignment is submitted most college students ignore that feedback. In their minds the assignment is done and unless the student has to redo the assignment the feedback loses its value. [The Instructor] gave feedback based on my rough drafts of assignments which not only motivated me to start early to show him something, but allowed me to consider his advice and improve my quality of work BEFORE it was due. These feedback chats drastically enhanced the amount of effort I put in as well as improved my grade…." (Student 26).

Another student agreed but was substantially more pithy. The student stated: "[The instructor] managed to hold my interest even though I don't want to work in residential [construction]. The schedule of the course is nice, and routine." (Student 5).

A total of 22 students out of 30 (73.3%) provided responses to the second open-response question, "What suggestions do you have for improving the course and/or how the instructor taught it?". Three out of 30 (10.0%) specifically mentioned Feedback chats or its derivative themes. All three of these students focused their comments on the limited amount of time for the Feedback chats. One student said: "The feedback chats were a good idea, but I was only able to do one or two of them. So it wasn't that helpful for me…." (Student 10). Another said: "The feedback chats were hit or miss[.] I feel there is a better way to do that. I think it's important, but it was difficult to get to everyone." (Student 11). The third student said: "[F]eedback chats are hard to time fairly when sometimes people at the beginning of the class get 5 minutes and people toward the end get 30 secs." (Student 24).

Discussion

This study confirms the findings from the literature that construction management (CM) students value and benefit from feedback (Sunindijo, 2016). The weekly Feedback Chat motivated students to pay attention and work while in class, made them eager to showcase their progress, taught them to receive constructive criticism, and gave them opportunities to receive affirmation and praise. Students 5, 8, 28, and particularly Student 26, made this clear in their survey responses. Even the students who were critical of the Feedback Chats in their survey responses implicitly expressed favorable opinions of them by stating that they did not get enough of them, not that they did not get enough *from* them. This qualitative result is supported by the closed-ended question, "My instructor provided useful feedback on assignments/tests," specifically mentioning feedback, in which the agreement is weaker than the other two questions. Considering this, CM practitioners who use the Feedback Chats method should carefully manage the expectations they set with their students regarding how much time and attention they are able to provide. Students who get less time or no time may feel left out or overlooked and have the potential to feel frustrated or even resentful.

Echoing the findings of Scott and Fortune (2013), Sunindijo (2016), and Wedawatta (2018), the results of the study indicated that *time* remains a substantial and persistent barrier to providing CM students with feedback. This became apparent during the administration of the Feedback Chats themselves. Classes would often end in a race against the clock to ensure each student was visited. Students expressed frustration with the amount of time they were able to spend conversing with the instructor, and one student's comments went further to express the importance of equal time between

students. This reveals an added complication for teachers who attempt to provide feedback in an open-class, fishbowl-style setting— they may be held accountable for equal time and attention by their students.

Similar to the research conducted by Ren, Zhang, and Jiang (2021), reliance on learning technology (Canvas) was a key factor in the success of the Feedback Chats. Counterintuitively, the technology provided the instructor the ability to meet with students face-to-face. All announcements, assignments, and communications that could be done online were outsourced to Canvas, freeing class time for more student-teacher engagement and feedback.

To provide a word of interpretative caution, readers should keep in mind that this study relied on existing data from a single CM course using a generic survey instrument. Such methodological limitations are typical of inquiry using thematic trends (Sunindijo, 2016), particularly in an exploratory study such as this. A specific set of research questions will require a more precise and targeted method of data collection. A larger sample using multiple CM classrooms is necessary for findings to be more encompassing and conclusive. Thus, future research on Feedback Chats should examine their effects on larger samples in multiple courses at various institutions. Interviews should be conducted with CM students to precisely and thoroughly measure their opinions of the method. These results can be checked against quantitative survey data for more complete understanding of the pedagogy. For empirical research, Feedback Chats can be implemented experimentally as a direct intervention on a group of participants to examine any differences that may result between a treatment group and their counterparts in the control group.

Key Takeaways

CM teachers who are interested in improving the quantity and quality of their feedback should consider a few key takeaways from this study.

- Time. There will probably never be enough time. Feedback chats should be viewed as a treatment for the chronically low amount of individualized feedback currently provided to students, but not a cure. To illustrate, typical class time in a three-credit class aggregates to approximately 150 minutes (2.5 hours) per week. Dividing that time between 25 students leaves only 6 minutes per student per week if the sole objective of the course is providing feedback (i.e., no announcements, questions, quizzes, lectures, assignment overviews, etc.). Thus, if a teacher is determined to give individualized feedback, each student is likely to get only 2-4 minutes each week of direct, one-on-one interaction—not enough. In the event that time does run out in a class session before each student has been visited, missed students should be given full credit on the Feedback Chat assignments for their involvement as secondary participants in the classroom workshop, even if they were not able to directly interface with the teacher that week.
- Timing. Timing is key for feedback. Feedback has a short shelf life. If it is not delivered shortly or immediately after the schoolwork is done, it has the potential to lose its impact. Thus, feedback is most effective on assignments that are in progress, not after they are submitted. Teachers giving feedback in the midst of the assignment are effectively partnering with students to help them learn and achieve their goals. Feedback on submitted assignments can seem like postmortem critiques.
- Spoken. Feedback should be spoken, not written. Spoken feedback is far more likely than written feedback to be timely and dynamic, decreasing the possibility of miscommunication and increasing the likelihood that a student is and feels understood. Face-to-face feedback is ideal; however, using technology (e.g., Zoom, Facetime, Microsoft Teams, telephone) to

overcome distances between teachers and students can still be a useful way to provide spoken feedback.

- Committed. Teachers must commit themselves formally to providing routine feedback, ideally using graded assignments in which feedback is part of the rubric. Optional office hours and written commentary cannot substitute for timely and detailed feedback. Grading or measuring progress is not the same as feedback.

Conclusion

This exploratory study on Feedback Chats made two primary contributions. First, in confirmation of the scant literature on the subject, this study provides preliminary evidence that definitionally good feedback is operationalizable by CM teachers as demonstrated through the Feedback Chats method. Because of Feedback Chats, CM students in the course *Housing and Land Development* were able to talk with their teacher throughout the semester one-on-one, and receive immediate, individualized instruction, correction, and approbation. Second, this study provides evidence that CM students value the contact with their teachers that Feedback Chats facilitates. In their survey responses, the students agreed, most of them strongly, that Feedback Chats were an effective way to utilize class time. The students who expressed dissatisfaction with the method did so because they wanted more time with their teacher, not less or none. To minimize dissatisfaction, CM teachers can manage the expectations of their students using a carefully designed feedback strategy in which they begin with a plan, monitor their time, and are transparent with their own limitations. Most importantly, Feedback Chats demonstrate that teachers who show genuine interest in their students and make a concerted effort to connect with them one-on-one on a regular basis, will find that they are making a difference.

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