Setting Expectations About Feedback in Dental Education
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Abstract

Introduction: Many dental students find the amount of direct feedback they receive in dental school to be both unfamiliar and uncomfortable, as many new hand-skill courses are added to familiar lecture courses and traditional paper-and-pencil tests. In turn, when students react poorly to routine professional feedback, dental school faculty often complain they are too fragile. To address this clear gap in expectations between students and faculty in regard to feedback activities, this half-day workshop was developed for use during student orientation.

Methods: In this workshop, students learn the theory of deliberate practice and the role that professional feedback will play in their training. Small-group workshops discuss past student experiences with feedback and use an origami exercise to explore student reactions to feedback. As is commonly done in technique courses, discussions about self- and peer assessment raise students’ comfort levels with respect to sharing their work with their peers. Additionally, addressing feedback issues early in their professional education makes students aware of feedback’s necessity in their professional development and helps them to deal with the emotional impact.

Results: When we evaluated this course in 2014 and 2015, students rated this activity significantly higher than other orientation activities.

Discussion: After several years of working with students who have had this orientation, faculty and administrators consider it highly valuable for setting expectations about feedback. They have also experienced fewer student concerns and complaints regarding feedback issues.

Keywords
Feedback, Stress, Dental

Educational Objectives

By the end of this activity, learners will be able to:

1. Explain how being prepared for constructive feedback is crucial to learning clinical skills in dental school through an understanding of the principles of deliberate practice.
2. Understand that certain myths about learning, such as that some people are naturally skilled or can only learn if teaching matches their learning style, will hinder their success in skill acquisition.
3. Recognize the difference between previous student experience with undergraduate feedback characterized by intermittent and emotionally loaded high-stakes grading as compared with the ongoing, face-to-face, professionally developmental feedback that is common in dental schools.
4. Examine individual preference for feedback, including how well accepted it is, in the context of previous experience and future expectations of professional growth.

Introduction

Students arrive in dental school expecting a demanding curriculum. However, they are not often prepared for educational activities that are qualitatively unlike anything they have encountered. Primarily, developing hand skills to surgically alter and recreate lost structures is inherently challenging and requires face-to-face feedback weekly during laboratory simulation exercises. Faculty often observe dental students reacting poorly to this feedback, in some cases by dismissing it and in others by seeking nearly constant affirmation of their performance. End-of-term student evaluations often indicate a misunderstanding of the
level of constructive criticism that is inherent in preclinical courses. Anger is apparent at both ends of the spectrum: Some students complain that they did not get enough faculty assistance while others resent the corrections and appear to take them personally.

To address this mismatch in expectations, we began with a search of literature but found no existing programs that would address our interest in increasing student acceptance of feedback. There are, however, many studies on dental student stress. Faculty interactions are listed as a significant source of stress in nearly half of the studies evaluating the preclinical years. Stress management training and meditation, both useful life skills that showed efficacy in some studies, have been proposed as means of alleviating dental student stress. However, neither seems to focus on what we perceive to be the root concern. To address this need, we designed and developed a half-day workshop for beginning dental students to set realistic expectations about the role and importance of professional feedback.

We determined that it would be helpful to offer early in dental school a workshop clearly outlining the role of feedback in dental education skill attainment while at the same time allowing for self-reflection on students’ past experience of feedback. We wanted to create an opportunity for students to explore how their own attitudes towards criticism might inform their emotional reactions and receptivity to this new experience. We included an origami exercise as a stand-in activity for dental hand-skill techniques, which may have not yet been taught. While at least one other study has used origami as an educational resource, there it was used as a vehicle for clarifying teaching methods, with the instructor teaching the student how to fold the paper.

Often, students dismiss or gloss over the need for thoughtful self-evaluation, preferring the expert, who they know will be doing the final grading, to just tell them what is needed. Instead, we established a framework of skill acquisition that includes the functional importance of self-evaluation in the educational process. In the past, students have been unreceptive and sometimes even openly hostile to any form of sharing projects with their peers for evaluation, even informally. This attitude has thwarted many opportunities to evaluate and verbalize their observations on preclinical laboratory simulation projects, thus eliminating valuable teaching moments. We felt that setting the expectation of sharing their work, even in preclinical labs, would open teaching opportunities and establish comfort with the peer evaluation and review that will play an important role in their future professional lives.

The workshop has been provided during freshman orientation for the past 4 years, the primary goal being to help dental students view constructive criticism in a positive light. Its secondary goal is to reduce dental student stress.

Methods
The target audience for this workshop is dental students in their first year. There are no prerequisite requirements.

Logistics
This workshop has been held at the beginning of the first year of dental school, during the orientation for freshman students, and is scheduled for 3.5 hours total.

In our implementation, a large lecture hall and 10-12 small conference rooms were booked for approximately 80 to 95 students, as dental school entering class size increased annually. We trained 12 full-time clinical faculty members who volunteered to facilitate small-group breakout sessions. Each class was divided alphabetically into groups of approximately eight students; folders with collated copies of all handouts and origami papers were prepared for each group.

Preparation
Exemption from oversight was obtained from our institutional review board. Dr. Ralph A. Gillies, a clinical psychologist with strong experience in graduate medical education, provided substantial contributions to the organization and development of instruments and active learning exercises to address student anxieties concerning feedback. These materials were designed to emphasize key learning points and provide discussion points during small-group breakout sessions.
For the entering classes of 2017-2020, an additional half-day covering on-campus information and this activity was added to the orientation sessions. Incoming dental students were electronically sent Ende’s classic four-page article “Feedback in Clinical Medical Education”\(^5\) to read as prework, along with three short essay questions designed to encourage thoughtful consideration of the topic (Appendix B). Each student was asked to print a copy of his or her answers and bring it to the workshop; the students’ answers formed the basis for the first section of the small-group discussion.

Faculty facilitators were volunteers drawn primarily from the restorative sciences department with teaching responsibility in preclinical technique courses. Additionally, two faculty members from the fourth-year dental clinic, both with master’s degrees in education, were also included. During the seminars, we rotated through the small groups and observed faculty interactions to ensure all students were receiving the appropriate training. Faculty participation has been consistent over the years, with nearly all faculty volunteering to participate every year.

Approximately 2 weeks prior to the workshop, we led a training session, which included a review of background theory and an opportunity to have any questions answered. Each faculty member was given a color copy of the faculty guide (Appendix A) and the resources used in the workshop (Appendices F-G and the first two pages of Boehler and colleagues’ article on medical students’ reactions to feedback\(^6\)). Clarification of the facilitator's role in each exercise helped to standardize each group’s experience.

**Group Lecture**

On the day of the event, students gathered in a common lecture hall and were given a schedule with their group assignments for the workshop (Appendix C). A welcome (Appendix D) was provided by the dean for student affairs, who started with a brief talk explaining that the path from novice to dentist requires students to move out of their educational comfort zone and that mastery of the skills central to dentistry involves receiving frequent, real-time, face-to-face feedback. A 30-minute lecture (Appendix E) on educational research followed. Several common student-held myths, including those surrounding learning preference styles\(^7\) and the golden hands or inborn talent myth,\(^8\) were addressed and debunked. The importance and validity of deliberate practice and the role of personal, real-time feedback in skills improvement were then stressed.\(^9\,10\)

**Small-Group Sessions**

Students were taken in groups by their assigned faculty members to conference rooms with whiteboards. Each group designated a scribe to record major points. Students were asked to define the words feedback and evaluation and cite examples from their prework assignment answers (Appendix B). They then discussed the emotional and stress complications associated with each. During this discussion, faculty emphasized to students that in dental school, they would be receiving far more personal, real-time feedback than was the case in predental education. The possible stressful effects of this were discussed.

**Origami Exercise**

Each student was given a piece of origami paper and printed instructions on how to fold a simple origami pattern (Appendix F), with 5 minutes allotted to the task. We chose a square crown shape we obtained with permission from the Web site PaperCraftSquare. No further assistance or feedback was provided to the students.

At the end of the designated time, each student self-assessed the quality of his or her product using an evaluation form (Appendix G) similar to the structured rubrics currently used in preclinical laboratory courses.\(^11\) Students were instructed to use a ruler and protractor to evaluate the items in the rubric. A group discussion addressed the key point that in dental school, in addition to the recall and integration of facts, an extensive and intricate hand-eye coordination skill set must be developed in which self-assessment is always a critical component.

Each student then assessed another student’s origami project using a second copy of the same rubric. After this peer assessment, each student used a Likert scale to rate how receptive he or she was to receiving peer feedback both in general and on this specific task. This opened a discussion of students’
general secretiveness about graded activities and the negative effects upon learning that may accrue if students are not willing to allow other students to see and evaluate their lab projects. The importance of developing communication skills regarding descriptive terminology in clinical and lab communication was stressed in this discussion. The concept of peer review as a professional responsibility was also introduced.

Feedback vs. Praise
The first two pages of Boehler and colleagues’ pertinent article on feedback were distributed for students to read. The main point of this article is that praise, the kind of feedback students tend to like, does not tend to improve their actual performance, whereas the thoughtful feedback that is actually effective in improving student performance does not tend to be popular with students. A brief discussion linked these findings to the initial lecture concept of deliberate practice as the most effective way to improve performance, specifically emphasizing that effective faculty guidance and feedback may not necessarily always feel good.

Developing Independent Judgment
Students often have difficulty seeing beyond their grades in the current semester. We introduced the concept that above and beyond traditional grading activities, learning to self-assess and to create a personal capability for quality control, independent of supervision, is part of the career-long process of continuous improvement of a dental professional. By having students envision their own professional identity 5 years after graduation, the importance of continuous improvement through both self-assessment and receptivity to expert assessment was highlighted. Once again, using chalkboards, students were asked to generate words that they hoped would be used to describe their professional persona 5 years after graduation. The results were consistent; faculty leaders guided the discussion toward considering what activities would help students become the independent, confident, capable doctors they envisioned for their futures.

During this discussion, the positive contributions of small failures to the development of sophisticated skill sets were specifically addressed. The fact that many dental students have seldom failed at previous academic tasks can be a serious handicap, given that the development of both judgment and technical skills necessarily involves some level of controlled failure. An example used in the lecture was that of a figure skater who must fall repeatedly to master difficult jumps. The expectation that preclinical lab simulations are a safe place to try, fail, and try again was emphasized, as was the need for students to evolve the expectations of perfect performance that many of them may have internalized to include an expectation of excellent preparation.

Individual Desire for Feedback
To help students develop self-awareness about their reaction to feedback, the Determining Level of Desire for Feedback handout (Appendix H) was distributed along with instructions to consider and decide where they felt their internal self-talk was most aligned. Students were not asked to mark the paper or share their answers but rather to simply consider their own thoughts. An open discussion followed to address the appropriateness of different levels of seeking feedback at different times in a dental education depending upon the circumstances. The point was made that either end of the spectrum tends to be less adaptive than the middle ground.

Final Group Wrap-up
All participants returned to the lecture hall for a group review of the major points of each activity, with the scribes reporting for their respective groups. The purpose of this postactivity lecture was to ensure that despite each group’s individual discussion and experience, there would be consistent understanding of the key points.

All first-year students participated in this orientation activity and were then asked to rate their satisfaction with this workshop as part of their evaluation of all nine orientation activities for years 2014 and 2015. The other activities included lectures on accessing student services (counselling, health care, wellness resources), financial and student aid, diversity and inclusion, and clinical orientation to infection control,
safety, and professional ethics. These topics were all of immediate professional interest to the students and were presented by engaging speakers. All students but one turned in their surveys each year. The average scores on Courses 1-8 were calculated for each respondent. A paired difference was calculated for each respondent by subtracting this average score from the score on Course 9, which was the feedback workshop. This process was carried out for both 2014 and 2015. For each survey, the paired differences were tested for normality using the Shapiro-Wilk test. For both surveys, the assumption of normality was rejected ($p = .009$ for 2014 and $.005$ for 2015). Since the paired differences were not normally distributed, the Wilcoxon signed rank test was used to test for a significant difference between the score on Course 9, the feedback workshop, and the average score on Courses 1-8.

**Results**

The mean paired difference $\pm$ SD between the score on Course 9, the feedback workshop, and the average score on Courses 1-8 was $0.4 \pm 0.4$ for 2014 ($N = 83$) and $0.5 \pm 0.5$ for 2015 ($N = 86$). The median difference for 2014 was 0.25, and for 2015, it was 0.37. This difference between the score on Course 9, the feedback workshop, and the average score on Courses 1-8 was highly significant for both 2014 and 2015 using the signed rank test ($p < .001$).

In addition to the students’ initial positive responses to the feedback workshop, there have been many times when students have expressed gratitude for this preparation. In assessing the feedback workshop from the perspective of the faculty, one of its most useful contributions is that it has provided a common vocabulary in regard to seeking and accepting feedback that has often helped frame and defuse emotions in corrective discussions with students. An additional benefit is that certain exercises containing peer evaluation activities that had previously been dropped because of active student resistance were reintroduced without incident after this activity. Whole teaching units that involve sharing and critiquing of student projects were introduced and are now among student favorites. Many students have commented that they found themselves reflecting on the lessons learned in this specific orientation activity during stressful times in freshman lab courses.

Anecdotally, many faculty members unconnected and unfamiliar with our innovative feedback workshop have commented over subsequent years how unusually open and receptive participating students have been and what a pleasure they are to work with relative to the previous five classes of students. While not quantifiable, administrators judge that they have seen a reduction in overall stress levels. They consider the program very valuable and have strongly supported it over subsequent years.

**Discussion**

Dental school is recognized as a high-stress environment, and stress in dental students is a well-studied phenomenon. While academic performance is the most commonly listed stressor, the second most common relates to issues concerning faculty, including perceived unjustified criticism or inconsistent feedback.\textsuperscript{12,13} Traditionally, students arrive in dental school from a science-based curriculum where assessment is done primarily through paper-and-pencil tests that, while high-stakes and anxiety-producing, involve little face-to-face interaction or feedback. This experience is qualitatively different from the significant amount of formative feedback required in dental education, feedback that begins in early preclinical laboratory experiences. Even gentle corrective feedback can feel personal and threatening to students with little experience of this type of interaction. Add this to generational tendencies towards overconfidence or entitlement\textsuperscript{14} and a situation ripe for misunderstanding ensues.

Stress over feedback is a complex issue, since feedback involves communication between two people. Stress can be influenced by many factors, including threat to self-image, perceived high stakes, and level of experience in dealing with corrective feedback. Interestingly, medical students, who do not have graded preclinical laboratory exercises or requirements to perform independent procedures to the same extent as dental students, do not commonly report faculty feedback as a source of stress.\textsuperscript{13} In contrast, issues surrounding faculty feedback, particularly perceived inconsistency, are medium-to-strong stressors in nearly half the studies of dental students.\textsuperscript{1,15,16} These studies tend to support the hypothesis that...
medical students, who are essentially on an assessment track similar to that which they experienced during their undergraduate years, do not find the feedback they receive as threatening as their dental counterparts do.

Anecdotally, some dental school faculty have been distressed by reading student evaluations that appear to take routine guidance as a personal attack. A faculty perception that students only want to hear praise has been substantiated by at least one study showing that students rate feedback higher when they receive only praise rather than more balanced constructive feedback. Despite research suggesting that objectively, they learn more and perform better with the constructive criticism. Being able to reference this knowledge has been very constructive and positive in defusing frustration with students accustomed to a high-praise environment.

Although many studies have investigated the sources of dental student stress, very few have addressed specific remedies, much less documented results. Suggested remedies range from explaining expectations to encouraging students to access support services, recommending physical fitness activities, and advising students to “carefully select the instructor to be approached for comments,” an approach not feasible in many venues.

Our novel student feedback workshop during orientation addresses these concerns by explaining the research on deliberate practice and the importance of constructive feedback, not unremitting praise, in achieving results. The workshop also promotes vigorous student metacognition on the emotional pitfalls associated with this process, better equipping them to deal with challenging new experiences.

A drawback of this study is the lack of quantitative data demonstrating impact on stress levels, behavior, or performance by either the learner or the faculty. Follow-on studies measuring stress levels and comparing them with a similar institution’s would be helpful, although the nature of dental school is complex and multifactorial, making it difficult to completely isolate the impact of any exercise on reducing the stress of dental students.

During the 3 years we have conducted this orientation activity, few refinements have been required. Additionally, as this workshop primarily focuses on preparing students to receive feedback as part of deliberate practice, a follow-up workshop to consolidate student skills in receiving feedback in a constructive manner might be helpful, possibly just prior to student entry into the clinical environment.

In summary, the perceived gap between faculty and student expectations concerning performance feedback interactions is specifically addressed in a half-day orientation fostering discussions about expectations surrounding feedback and simulated stressful performance through a timed origami folding exercise, with self-assessment and peer assessment followed by small-group discussions of individual reactions to these situations. Students have responded very positively to the program, and it has allowed increased peer assessment activities to be implemented in our curriculum.

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