Giving and Receiving Meaningful Feedback in Orthopaedic Surgery Training

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ABSTRACT

The process of giving and receiving feedback in orthopaedic surgery training programs is distinctly unique from any other job. Trainees are required to meet certain milestones, and faculty are responsible for the caliber of surgical skills of their graduating trainees, yet there are rarely standardized practices and guidance for providing real-time feedback. Furthermore, institutional educational programs for faculty on giving meaningful feedback are lacking. The purpose of this article was to understand how feedback is defined, how to appropriately involve the learner in the process to foster active engagement rather than destructive thinking, and to characterize important principles that can elevate one's learning and self-reflection to the fullest potential.

Feedback is defined as any communicable information regarding a person or their performance on a specific task, which can be used as a framework for improvement.[1] This information may be verbal, nonverbal, or observed. Individual-level feedback among surgeons has been shown to improve the quality of patient care.[2] Orthopaedic surgery residents and fellows in particular, hereafter referred to as 'trainees,' require feedback on a multitude of personal and professional characteristics, including but certainly not limited to fund of knowledge, surgical proficiency, professionalism, and interpersonal skills. Surgical educators, hereafter referred to as 'attendings,' have a vested interest in maximizing trainees' proficiency. Young surgeons entering the greater health care community provide a service that affects patient livelihood, and their global skills reflect on the institution where they trained. Receiving individualized feedback in a timely and productive manner is critical to improving one's performance.

Present Day Learners

Modern trainee learning styles differ from those of previous generations.[3] Sweeping changes to residency education, including the institution of the 80-hour work week and the orthopaedic in-training examination, have led to fundamental shifts in the way trainees are educated. Contrary to the more traditional Socratic method, recent literature has afforded insight into the characteristics of modern trainees. They are increasingly collaborative, technologically savvy, and feedback driven.[3] Moreover, they seek and are

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attracted to forms of learning that are engaging, team-based, and use technology. The problem is that there is very little education on how to educate. Amidst the modern practice environment with rising administrative and financial burdens, attendings must constantly evolve to tailor the educational experience such that it favors modern trainees' learning styles.

On July 1, 2014, to establish requirements for graduation, the Accreditation for Graduate Medical Education (ACGME) developed and implemented a set of milestones for orthopaedic surgery trainees.[4] The purpose of these milestones was to provide a structured framework for the evaluation of trainees, for what the ACGME defines as 'key dimensions of the elements of physician competency.' Milestones are categorized by levels of proficiency, level 1 (novice) to level 5 (expert), based on faculty evaluation of residents' knowledge, skills, attitudes, and other attributes. These evaluations are intended to be reviewed semiannually by a Clinical Competency Committee formed by the residency program directors, who are then required to compile a report for the ACGME. A major limitation of the milestones-based evaluation system is its objective nature and thus inherent inability to capture all facets of what it takes to become a competent and compassionate orthopaedic surgeon.

As a result, many educators have attempted to characterize requirements of delivering effective feedback. The American Academy of Orthopaedic Surgeons even offers an educator's course with the goal of providing insight into how the modern trainee learns and how to be a better teacher, but not every educator has the opportunity to attend. In this article, we present six principles of giving efficient feedback that we believe are tantamount to optimizing education for orthopaedic surgery trainees in a productive learning environment.

Principles of Giving Effective Feedback

Teaching and Learning Are Not the Same

'The ability to acquire and the ability to impart are wholly different talents,' said Horace Mann, an educator and founder of the first school for teacher education in the United States in 1839. Teaching is an art that should be adapted to the learning patterns of modern trainees and should ideally be reserved for surgical educators with an aptitude to teach. Teaching involves the transfer of information, but learning may or may not naturally follow. Genuine learning involves a connection between both parties based on relatable topics that have personal meaning or consequence for the learner. For surgical trainees in particular, attendings must first understand how the learner learns before trying to impart knowledge or technical training. Whether teaching toward a test, telling the learner 'this is the information you need to know,' or realizing that a particular attending always asks the same questions, surgical learners are most interested in gleaning only the highest yield, repeatable information. In orthopaedic surgery training programs, we must enable attendings to teach but more importantly enable our trainees to learn, by finding a balance between understanding overarching concepts and memorizing facts to pass an examination.

Active Engagement, Not Passive Understanding

Engaging in constructive and meaningful feedback is invaluable for surgical educators and trainees. From the trainee perspective, actively seeking feedback and being prepared to share a self-reflection or thoughts on self-improvement is worthwhile. Being disinterested in receiving feedback or taking a back seat and waiting until mandatory feedback is scheduled can be detrimental to the trainee's growth and improvement. Similarly, from the attending perspective, efforts should be made to actively engage the trainee into a productive feedback discussion. The attending can mention at the beginning of the rotation or even at the beginning of a long day of surgical cases that the trainee should keep in mind their performance, how they think they did, and what they think they can do differently in the future. A surgical debrief during closure of the incision can reiterate important aspects of the case, highlight areas for improvement, and allow both the attending and trainee to constantly appreciate the humility and fallibility of our craft.

The Hidden Curriculum

In the context of any teaching and learning environment, there is undoubtedly a hidden curriculum. These are the unwritten rules, unspoken expectations, and implicit academic, social, and cultural messages that govern any educational setting. The difficulty lies in the fact that trainees come from all walks of life, had diverse upbringings, and possess different cultural values that have shaped their worldview. Many trainees excelled academically in high school, college, and medical school, which ultimately led to their acceptance into an

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orthopaedic surgery training program. Yet, the emotional intelligence and situational awareness of this population can vary tremendously, which affects their ability to grasp 'the things you cannot teach,' better known as the hidden curriculum. These intangibles include behavior mirroring, mimetic impersonation, and vocational norms. Some trainees pick up these cues more quickly while others require a guided path in a nurturing environment. For example, many attendings refer to the mantra 'see one [case], do one, teach one,' without understanding that some trainees may need to see the same procedure 15 times before truly understanding how to do it. For educators and trainees alike, demystifying the hidden curriculum can benefit teaching and learning environments.

Negative Environments Inhibit Learning

A good environment for an effective feedback session involves several factors that facilitate open communication while maintaining respect, honesty, and confidentiality. The physical setting to conduct feedback should be appropriately private and allow for both parties to share their thoughts and experiences openly without concern that others may be listening. The timing should be such that both parties are not hurried so that appropriate time is given for discussion. The educator is encouraged to invite the trainee to share their thoughts about the experience because this will offer insight into how the conversation can be tailored to the individual's thoughts and concerns. Educators should address the trainee's comments while also conveying the message that they hope to impart on the trainee. Failure to create an environment that promotes effective feedback significantly detracts from trainees' education and can lead to frustration from trainees and educators.

Fear of Disappointment

Trainees need to hold themselves to a high standard. Having realistic expectations is important, yet trainees must not be crippled by anxiety or fear of not meeting the standards. The rigors of surgical training afford substantial educational and technical challenges that can lead to frustration and disappointment. It is crucial for trainees to not be defeated by experiences that fall short of their attendings' expectations and instead frame them as opportunities for growth. For example, if during a surgical case the trainee is asked a question about the surgical approach and does not know the answer, the mindset of the trainee should not be one of nonchalance or blissful ignorance, but rather a healthy disappointment and self-reflection that their preparation for the case could have been more thorough. Trainees should embrace these moments and remain motivated to then learn the required information for the next case. Educators are tasked with the challenge of fostering trainees' growth while maintaining a nurturing learning environment. Communication and setting expectations between the educator and trainee can avoid issues with fear of disappointment.

Accountability

Providing feedback empowers educators and trainees. A productive way of promoting a culture of accountability is to ask the trainee, 'what do you think went well and what do you think we can work on?' This initiates conversation that can then be directed into feedback in a tangible and direct way. Citing examples can give the trainee actionable things to address going forward. Having a sense of accountability can be empowering because it promotes responsibility for one's actions and their improvement. Attendings can provide trainees with assignments that can prompt and elevate their educational experience. For example, a trainee may be asked to present a preoperative plan and discuss it thoroughly with the attending before execution of a surgical case. Reviewing the plan together and subsequent discussion of what went well and what could be improved afterward is a productive exercise that can provide the trainee with a sense of responsibility while also giving the attending a sense of trainee preparedness and knowledge base to then structure their feedback and teaching during the case. A summary of feedback principles is shown in Table 1.

Characterizing Feedback Delivery Methods

Types of Feedback

As defined by Douglas Stone and Sheila Heen, there are three types of feedback based on the purpose of the evaluator: appreciation, coaching, and evaluation.[5]

Table 1. **Feedback Principles**

Principles of Understanding Feedback
1. Teaching and learning are not the same
2. Active engagement, not passive understanding
3. Demystifying the hidden curriculum
4. Negative environments inhibit learning
5. Fear of disappointment
6. Accountability

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Appreciation centers around acknowledging the efforts of the trainee, attempting to build trust, and motivating the trainee by celebrating worthy performances when they occur. This type of feedback is most effective when it is specific, affording the trainee a sense of the exact performance that led to the positive feedback. Ultimately, this allows the trainee to improve on their positive attributes. Most importantly, appreciation-type feedback should not be tokenistic. Routine thankyous and participation trophies that are not unique to the trainee or to the situation eventually lead to apathy and complacency in striving for growth and improvement.

Coaching feedback involves synthesizing information gathered from periodic evaluations and, in conjunction with the trainee, devising a feasible plan for continued growth, improvement, and success that is focused on preventing behaviors that may hinder growth and maintaining effective behaviors that promote growth.[5] In essence, coaching means telling the trainee to keep doing what they are doing well while simultaneously giving them pointers for what they can do differently in the future. The goal is not to use phrases such as 'this is what you can do better,' or joining a positive comment to a negative comment with the word 'but.' Rather, establishing that the trainee can accept the limitations to their current knowledge and skills will instill a feeling of collaboration and growth rather than punishment or the need to be defensive.

Contrary to appreciation and coaching feedback, evaluation feedback is objective.[5] The primary goal of this type of feedback is to convey to the trainee where they stand with respect to their current performance. Often, this may involve comparison with a set of established standards by the institution or the residency/fellowship training program. Evaluation feedback is most effective when the expectations and standard are clearly defined, and the feedback is timely. Whether this type of feedback is anonymous should be at the discretion of the program director or the Clinical Competency Committee. Anonymous evaluations may afford more honest and authentic feedback, without fear of offending the trainee or tarnishing previously established relationships. A review of the three major feedback types is seen in Table 2.

Table 2. **Types of Feedback Based on Evaluator Purpose**

Type of Feedback	Description
Appreciation	Acknowledging the efforts of the trainee and motivating them by celebrating worthy performances
Coaching	Guiding the trainee to maintain behaviors that promote growth and prevent behaviors that may hinder growth
Evaluation	Objective feedback that conveys to the trainee where they stand with respect to established standards and expectations

Feedback Triggers

For both the recipient and the provider of feedback, it is important to understand what contributes to our perception of feedback. There are three common categories of 'feedback triggers' that negatively contribute to how recipients perceive feedback: the truth, the relationship, and identity triggers.[6]

Truth Trigger

The provider and recipient will likely have different interpretations or perspectives of the same event. This is to say that there are two different versions of what happened, and one is not necessarily truer than the other. An individual's experiences, personalities, and the information available to them all inform their perspective. Regarding what is 'true,' it is important to take into consideration what factors contribute to an individual's perception of what they believe to be true. Once the receiver interprets the feedback as untrue, they feel indignant or wronged, after which the relationship between the two parties becomes more contentious and defensive.

Relationship Trigger

Unconscious bias and the relationship between the provider and recipient can also determine behaviors and feedback interpretation. The exact same feedback can elicit a vastly different response for the recipient based on previous interactions with the provider and how the provider is viewed. If the provider is someone the recipient respects, admires, and views as credible, the recipient will be more open to feedback and is more likely to act on the feedback provided. The inverse is true for the provider because the actions of the recipient can be viewed differently based on some preexisting relationship and therefore may trigger different reactions. Understanding that the relationship between the provider and receiver is critical to how the information will be interpreted is imperative to how feedback is contextualized. The way

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that one perceives feedback is inextricably influenced by the preexisting relationship, positive or negative.

Identity Trigger

Receiving feedback puts one in a vulnerable state, potentially exposing them to hearing things that may conflict with how they view themselves. In cases where feedback is in direct opposition to the recipient's self-identity, the recipient may get overwhelmed or threatened. In these cases, recognizing that the feedback is not a criticism of their character or personality but rather their skills and understanding related to a specific task or action is critical for establishing objectivity. One provider's experience or perspective should not confirm or refute the recipient's identity.[7]

A summary of feedback triggers is seen in Table 3.

Present Day Challenges

Generational and Cultural Gaps

Attendings are often inclined to promote values and qualities that were instilled in them as trainees. This can be problematic because the attitudes and perspectives of trainees today can be different from their mentors because they are usually much younger. In this current generation, Millennials (born between 1981 and 1996) are thought to value work-life balance, regular feedback, and duty hour regulations. Conversely, the Baby Boomer generation (born between 1946 and 1964) is thought to be defined by their resilience, work-ethic, and the idea of earned respect and autonomy.[8] Because of differences in values and work-life mindsets, teaching methods must evolve to create an environment that is amenable to all.

Table 3. Types of Feedback Triggers

Type of Feedback Trigger	Description
Truth trigger	Differing perspectives or interpretations of the same event may lead the recipient of feedback to become defensive if they feel their feedback is untrue
Relationship trigger	The perception of feedback is influenced by existing relationships between the provider and the recipient
Identity trigger	Feedback that conflicts with the recipient's self-identify, causing them to feel threatened or overwhelmed

However, the transfer of intangible values to the next generation clearly has a place in mentorship and training. Current trainees are requesting more from their attendings than previous generations were. One-on-one teaching, goal-oriented discussions, and personalized mentorship are basic expectations of trainees today. The age-old feedback 'you should read more' is no longer considered adequate.[9] One of the greatest challenges in orthopaedic surgery remains the lack of diversity and equity. Orthopaedic surgery remains the least diverse field in medicine, with 15% of trainees being female and only 1.9% of practicing orthopaedic surgeons identifying as Black or African American.[10,11] A recent study of African American orthopaedic surgery trainees demonstrated that most have experienced some form of racial discrimination or microaggression, with 50% receiving feedback perceived to be racially biased.[12] It is clear that just as trainees are craving feedback and mentorship, failure to deliver or receive feedback appropriately can be extremely damaging.

Having a Feedback Conversation

Feedback between attendings and trainees should occur frequently, in real-time, and candidly. For residents on a given rotation, the attending should establish early, mid-term, and late goals for the resident such that feedback sessions can be more informed and meaningful, rather than the unconstructive yet typical "you are doing great." Although conversations may seem awkward or add time to the day, the first step is to understand that feedback is necessary for growth and development. Before engaging in feedback, the evaluator should have a purpose for the conversation, outlining their goals and expectations for the direction and content of the interaction. Similarly, the trainee should understand what kind of feedback style works best for them and should relay this to the educator. In this way, their feelings of vulnerability may be assuaged, setting the tone for the interaction, conveying mutual understanding, and aligning the giver and the receiver.

The body of the conversation is a two-way exchange of information requiring both parties to listen, assert, manage the conversation, and problem solve. A common starting point for the feedback conversation is the use of the Pendelton rules:[13]

1. Trainee describes what went well during the rotation/interaction.
2. Attending describes what went well during the rotation/interaction.
3. Trainee describes what could have been done differently during the rotation/interaction.

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4. Attending describes what could have been done differently during the rotation/interaction.

These rules and the order in which they are discussed allow for a balanced conversation where both parties contribute and provide suggestions for improvement. Importantly, a focus on things to do 'differently' rather than 'better' removes the punitive connotation from the feedback being given as if the trainee was deficient in some way. Strengths of each party can be reinforced while areas for growth can also be equally evaluated and considered. One important tactic is to use connecting words such as 'and' instead of 'but.' If 'but' is used, the receiver may interpret some of their actions as bad or negative. The use of more acceptable words such as 'and' fosters a feeling of growth rather than judgment. For example, the following phrases convey similar information but can be interpreted very differently:

"Your use of the saw was very good, but you should maintain control to keep the saw collinear with the slot in the jig."

"Your use of the saw was very good, and you should maintain control to keep the saw collinear with the slot in the jig."

The second phrase is more inviting for the receiver to want to improve, rather than the first sentence which seems to highlight their deficiency. Naturally, differences of opinion will occur. In these cases, reframe the issue as a difference between the parties: 'I want to hear your perspective on this and then I'll share my view and then we can figure out where and why our views are different.' By doing so, the goals of the feedback are reinforced, namely understanding the perspective of the one giving the feedback and clarifying perceptions to increase the level of engagement.

Silverman et al[14] have described an alternative way of giving feedback known as agenda-led, outcomes-based analysis. Here, the learner starts by stating their agenda and then the educator asks them what problems they experienced and what help they would like. Then you look at the outcomes that they are trying to achieve. By encouraging the learner to first try and solve the problems themselves and later getting the educator involved, the learner feels a sense of empowerment to improve. Similar to the Pendleton method, feedback should be descriptive rather than judgmental, and it should also be objective and balanced.

In closing a feedback conversation, both the trainee and attending should discuss action items and steps for attainable, further growth. Setting up a follow-up for more feedback will then allow for a timeline to enact the items discussed. In a successful feedback session, the trainee should leave the conversation feeling humble, empowered, and comfortable asking for feedback; the surgeon-educator should feel respected, appreciated, and willing to help.

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