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How Excellent Teachers Are Made: Reflecting on Success to Improve Teaching

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Abstract. The authors surveyed forty-eight distinguished teachers from clinical departments regarding the role of instructional successes in learning to teach. Using qualitative content analysis of comments, the authors identified nine common successes in clinical teaching associated with planning, teaching, and reflection. In anticipatory reflection used for planning, common successes occurred by involving learners, continuously innovating, creating a positive atmosphere for learning, considering the learners, engaging the learners, preparing adequately, and limiting content. When reflecting-in-action, the success experience most commonly mentioned was maintaining flexibility in action. Reflecting-on-action after a successful teaching event, they commented on the importance of thoughtful analysis and choosing an appropriate strategy. These teachers incorporated reflective practice into their teaching as an essential component of professional development and incrementally improved their teaching based upon successful instructional experiences.

Key words: medical education, reflection, success, teaching

1. Introduction

> One of the most important lessons I learned about teaching came before I was in medicine or had ever taught. While studying ballet, I saw that even the most talented dancer in the New York City Ballet had to work hard to succeed. Talent alone is not enough. Great teachers know this.

Popular myth argues that “good teachers are born, not made” yet the premise of faculty development is that teachers can improve. In the incident cited above, an excellent clinical teacher (Irby, 1994) alludes to the metamorphosis that is possible with hard work. The same arguments have been made regarding how physicians learn to become good teachers. Physicians report learning how to teach by emulating excellent teachers and by experimenting with new methods and reflecting upon their results (Irby, 1994). We wonder about the relative contribution of successes in teaching to future improvements in teaching methods. In our previous study (Pinsky and Irby, 1997), we looked at the role of failures in learning to teach.

Specifically, we are interested in the role reflection plays in this process of learning from successes. Reflection, the process of evaluating and learning from

experience, can be categorized as anticipatory reflection, reflection-in-action and reflection-on-action (Shulman, 1987; Irby, 1992; Schon, 1983; Eraut, 1994). Anticipatory reflection involves preparation prior to teaching while reflecting-in-action refers to on-the-spot monitoring and modification while teaching. Reflection-on-action is analytic evaluation and strategic planning for improvement after the teaching event.

In this model, learning to teach from experience might start with a successful teaching episode. Through reflective observation and abstract conceptualization, the teacher may gain new insights from the experience and develop new strategies to use in subsequent teaching (Smith and Irby, 1997).

2. Methodology

Physicians involved in medical education who were identified as excellent teachers by student and resident ratings and/or were participants in Teaching Scholars Programs were queried regarding the role of instructional successes in learning to teach. Two of these faculty members were part of Irby's prior research on distinguished clinical teachers in internal medicine (Irby, 1992, 1994). Participants in the Teaching Scholars Programs at the University of Washington and the Medical College of Wisconsin were also surveyed. These faculty members applied to these programs and were selected in large measure because of their passion for teaching. Specifically, those surveyed were asked, "In terms of teaching, is there an example of some way you are a better teacher now because of something you tried that succeeded?" They elaborated on their answers in a survey questionnaire and, in most cases, in a follow-up interview.

Forty-eight physicians were surveyed, 31 responded. Twenty-two of the teachers who responded were from academic settings, two from the military, and seven from community-based settings. Their academic appointments included nine instructors or assistant professors, 13 associate professors, and two full professors. Seven of the physicians had less than four years of teaching experience, nine had a moderate amount of teaching experience (defined as 4–8 years of teaching experience), and sixteen were highly experienced (greater than eight years of teaching experience). Twelve of the respondents were women and nineteen were men.

The respondents represented a wide range of disciplines; 21 were from general internal medicine or family practice, five were from medicine or pediatric subspecialties, two were from surgery, and one each from radiology, anesthesiology, and neurology.

Responses to the survey were sorted into the three phases of teaching and their associated type of reflection: planning (anticipatory reflection), teaching (reflection-in-action), and reflecting (reflection-on-action). Comments were first sorted into the most appropriate type of reflection. Then similar comments were clustered together to create themes within each type of reflection. Next, individual comments were coded by two different investigators using these themes (Glaser

Table I. Medical School Faculty Comments Regarding Success Contributing to Teaching Improvements

	N
PLANNING AND ANTICIPATORY REFLECTION	
Involve learners	17
Create a positive atmosphere	13
Consider learners	12
Innovate	12
Engage learners	10
Prepare adequately	10
Limit content	5
TEACHING AND REFLECTION-IN-ACTION	
Maintain flexibility in action	5
REFLECTION-ON-ACTION	
Engage in thoughtful analysis	6
Use appropriate strategies	2

N = number of respondents citing this type of success.

and Strauss, 1967). Agreement among the coders was 87%. Disagreements were resolved through consensus. Comments were edited for readability.

3. Results

The relative importance of success to the improvement of teaching was assessed in the survey. The majority of these teachers (13) indicated that successful teaching episodes were equally as important as failure episodes in shaping their present teaching experiences, while eight noted that success were more powerful than failures, and nine believed that failures were more important. (One responder did not answer this question.) Successes were seen as a means for step by step improvement while failures were viewed as emotionally potent motivators for change.

There were 92 distinct comments regarding successes coded. The majority of the comments regarding success were related to planning (n = 79, 86%); followed by reflection on action (n = 8, 9%); and reflection-in-action during teaching (n = 5, 5%). When combined, 95% of the comments were associated with planning and reflective evaluation (Table I).

3.1. PLANNING AND ANTICIPATORY REFLECTION

Anticipatory reflection involves preparation prior to teaching including organizing and preparing content and materials, selecting teaching strategies, and considering how to tailor instruction to the level of the learners. Successes related to anticipatory reflection include involving the learner (n = 17), creating a positive atmosphere (n = 13), considering the learners (n = 12), using innovative strategies (n = 12), engaging the learner (n = 10), preparing adequately (n = 10), and limiting content (n = 5).

Involve the learner: (N = 17). Teachers noted that teaching is greatly improved by learner involvement. “The greatest teaching success I have had was a problem-based learning session where different students took the role of physician, patient, or family member. They experienced the different viewpoints. For many, it was the first time that they had understood them.” “My success was a neurology teaching conference where I had the resident question the patient about his history during the session, with the patient correcting the resident as he presented the case. I then had the residents comment to each other about effective and ineffective techniques.” “I try to ask people questions so no one stands around uninterested. For example, I might be going to listen to the heart, and I’ll ask what finding they expect or if this person had a certain defect, what would I hear?” “It’s important to involve the learners early. I get them talking right away, first to their neighbors, then to the group. Beginning with paired conversations relaxes the audience, gets them talking and reinforces to the learners the validity of their own opinions with another participant.”

Teachers noted their strengths as: “my ability to encourage general discussion”, “my willingness to let the learner make decisions”, “Getting the audience involve immediately, rather than starting with a lecture”, and “increasing fun and interaction when I do rounds.”

In summary, these teachers strongly believe in learner involvement: “The more you involve team members in *active* ways, the better the experience for all concerned.” “Residents learn best when they are put in the driver’s seat, all equally exposed and challenged in a non-threatening manner.”

Create a positive learning environment: (N = 13). Respondents noted that in order to encourage learner involvement, the teacher needs to create an environment conducive to learning. Enthusiasm and a sense of humor help to construct this atmosphere and defuse the tensions associated with learning. One teacher stated: “From the attending point of view, the most important thing is to make sure that a person isn’t ridiculed for not knowing an answer. Many of us don’t remember what we knew at a particular level in our training. In response to wrong answers I just say ‘well, that was an interesting idea,’ or ‘that was a reasonable consideration and that’s one of the things to think about but that wasn’t quite the idea.’ I often ask questions that I don’t really expect them to know the answers to completely. I

reward them by saying, ‘Well, try to figure it out the best you can knowing that you may not know it. But if you can’t, I’ll give you that information.’ ”

Admitting one’s own limitations contributes to a positive atmosphere. One teacher told of how: “in discussing the case, the residents focused too early on a single diagnosis. I disclosed that I had made the same mistake. The most important teaching came from examining how we had both made that error.” Another added: “It’s important for attendings to reveal when they don’t know the answer. ‘I don’t know that, I’m going to have too look it up’ or ‘I haven’t thought about that and I really can’t give you a good answer.’ In the process, everybody realizes there is nothing wrong with admitting ignorance.”

Teachers state that they create an atmosphere supportive of learning by showing that they “respect the learner”, that they “care about and enjoy the process of education”, and that they “publicly acknowledge their own limitations.”

Consider learners: (N = 12). By limiting the content teachers find that they are able to focus on the learner. “My greatest strength as a teacher is my ability to assess the level of current understanding and misconceptions of trainees and to raise their knowledge from there upward.” Another teacher noted: “My success comes from tying my learning goals to the learner’s personal goals.” One of those surveyed stated: “To be more effective in lecturing to large groups, I try to know ‘the audience’ usually by asking questions as people arrive or informally so I know what level/what kind of information I should deliver.”

These teachers concluded that effective teaching involves learning about the needs and interests of their learners and then tailoring instruction to meet those needs. “Know your learner’s capabilities.” “Learn to ask questions before talking and give answers to what you think someone wants to hear or know.” “Listen to the learner and incorporate their ideas.”

Innovate: (N = 12). Respondents implicitly and explicitly recognized the role of innovation in successful teaching. One teacher recounted: “I was asked to do an unknown case as a Clinical Pathology Conference for Medicine Grand Rounds. CPC’s are fun and potentially great teaching tools but the actual knowledge gained by an audience from them may be limited. I came up with the idea of going one-on-one with a computer diagnostic program in discussing an unknown case to add the additional dimensions of illustrating computer versus human ‘logic.’ ” Others mentioned other innovations such as using slides of historical figures or video clips from popular media; having residents debate a position they disagree with; transforming lectures into real-time journal clubs; bedside presentations; creating their own videotape vignettes or videotaping actual patient encounters for teaching material; and teaching rheumatology CME in the dissection lab.

These teachers stated that their strengths lie in “a willingness to take chances that I hope others will emulate”, “creative thinking about how to get their attention”, and “experimentation.”

They recommend: "Be creative, have fun", "Invest in innovative activity", "Talk to colleagues, experiment, keep revising", and "Try to be creative!"

Engage the learner: (N = 10). Respondents mentioned the need to engage the learner in the teaching activity. One teacher elaborated, "I employ analogies, images (written, oral and visual), and metaphors quite often. Their use engages the audience and can establish the context or clarify the differences between different viewpoints."

Teachers reported success using cases to engage the learner: "I used a case of a young woman who presents to the ER with a fever and a rash and is dead within 12 hours from meningococcemia. The residents could imagine themselves as the doctor." "I wanted to educate the genetic counselors about a somewhat difficult concept; what negative consequences *might* result from widespread genetic testing? It was hard to convince a group so invested in genetic testing that the potential risks should be given the same weight as the potential benefits. I decided to begin with a case report – a man who was turned down for insurance, due to a *possible* family history of hemochromatosis, a history extrapolated erroneously from the information that his father had died of liver disease without a known cause."

Another approach to engaging the learner was: "I identify myself with the listeners. 'We know this doesn't make sense,' I stated, contrasting the group's (the audience and myself) understanding with that of the insurance company. I planned this remark ahead but only in retrospect realized why it worked. It places the audience and myself on the same side – and in a favorable light, of course!"

Successful teaching relies on connecting with the audience: "I had them. I could feel it. They were listening intently, and what I said made sense to them. I could feel them following me. By the time I got to my conclusion, it was just one more small step for them to agree with a position they hadn't held before."

Prepare adequately: (N = 10). Respondents provided multiple examples of the importance of adequate preparation: "I use a lot of techniques to get ready. I read; talk with my colleagues; collect examples from the medical literature, as well as from the popular literature; make slides – and write out what I am planning to say. Then I practice. I tape myself. I cut out more." "From the very beginning as an attending, I would call the resident-on-call at night and ask her/him what kind of patients the team had admitted so that I would know in advance what kind of things to think about." "I practiced the talk and it flowed smoothly and was the proper length. But, the order and the emphasis were wrong and so the overall message was less convincing. So I redid it, and practiced again." "There are some very common problems that occur on any service depending on which hospital you are in. It's useful, therefore, to be prepared for those specific problems so you can talk very authoritatively."

Using experiential learning techniques requires preparation before and debriefing afterwards. "To have Fellows be involved in family conferences in the Bone

Marrow Unit, I would prep them first, let them be the primary information giver and then debrief them afterwards." "I coached an intern on delivering bad news before we entered the clinic room and the intern told the patient that he had cancer."

Respondents agreed that good teaching requires a great deal of preparation, as represented in this summary comment: "You have to know your subject so well that you don't need to pay attention to it during the course of teaching."

Limit content: (N = 5). Teachers noted that by limiting the content they presented that they were more effective teachers. "I knew what points I wanted to make at grand rounds. Of course, I had too many points to make. The first time I practiced the lecture it was two and a half hours! I cut out *a lot*." "When precepting in clinic, one learns to make a few brief but useful points on each patient. These teaching points should be rewarding for the residents to know so they then can apply them to the next patient they see with a similar problem." "The workshop became successful by decreasing the volume of material delivered, making it more practical and relevant and presenting it entertainingly." One respondent cautioned, "Don't cram too much into a lecture." Another succinctly explained her improvement with "I try to use fewer words." In summary, teachers found that limiting content improves teaching.

3.2. TEACHING AND REFLECTION-IN-ACTION

Reflection-in-action refers to the process of thinking or problem solving while directly engaged in teaching. It includes moment to moment monitoring of action and making immediate adjustments to developments in the situation.

Maintain flexibility in action: (N = 5). The ability to modify one's teaching spontaneously contributes to successful teaching. "Good teaching is somewhat like grant writing – a seamless argument that flows. In both cases, you are taking them on a trip – a trip with a beginning, middle and end. Both need a persuasive argument – a road map you have carefully devised. But when speaking to a group, you also need flexibility. To continue that analogy, you have the route planned for the interstate, but you have to also know the scenic route and when to take it."

Success comes from monitoring learner reactions and responding with an appropriate teaching strategy. "Do some homework, then 'seize the moment' when the opportunity arises."

3.3. REFLECTION-ON-ACTION

Deliberative reflection takes place after the teaching event and represents reflection-on-action that then leads to planning and action. Two areas were identified during evaluation and reflection: thoughtful analysis (n = 6) and selection of the correct teaching strategy (n = 2).

Engage in thoughtful analysis: (N = 6). In reflection-on-action, respondents considered what went well and how it could go better. It was through this process of analysis that experience was transformed into improved knowledge and skills. This is represented by an anecdote above where the teacher commented: "I planned this remark ahead but only in retrospect realized why it worked." Through this process of analysis, the teacher becomes aware of not only *what* was successful but *why* it was successful. This process allows educators to apply techniques to seemingly unrelated situations.

Use appropriate strategies (N = 2). In reflection-on-action, respondents considered whether the appropriate approach was employed. One teacher, repeatedly cited as teacher of the year, commented on the necessity to "focus on your strengths. I do much better at bedside teaching than didactic lectures so that is what I do." Another commented on the need to identify the problem accurately and to choose an appropriate strategy in response. Citing as a success what others might have initially thought of as a failure, he recounted: "I was supervising a resident in the operating room doing a fiberoptic intubation and assumed the resident knew the procedure. It turned out to be a false assumption. We ended up hurting the patient. I was able to reflect on what went wrong. I called the resident that night at home and we discussed it. It became a success as both the resident and I felt we had learned an enormous amount by analyzing what went wrong and devising a specific plan for preventing it from happening again."

In summary, teachers noted that finding an approach that was appropriate to the situation and to the teacher fosters successful teaching.

4. Discussion

The most remarkable finding of this study was the use of reflection on success for continuous, incremental, quality improvement of teaching. This finding is at variance with the often observed tendency of faculty members to ignore successes and focus their time and energy on overcoming failures. From our prior study, we did learn that failures provide a powerful emotional motivator for quantum changes in teaching (Pinsky and Irby, 1997). However, such emotional energy is often lacking with successes, which often leads to a feeling of satisfaction. Yet even in the absence of strong emotion, these excellent teachers used reflection on success to incrementally improve their teaching. This exemplifies their high standards and their willingness to invest themselves in the hard work of achieving even greater levels of excellence. Typical comments were: "It did go well but next time it will be even better." "I started out spending most of my time in the classroom. Eight years later, I saw the results of a survey of residents that requested more physical diagnosis on teaching rounds. So, I began to teach with the house staff doing the history first and then going to the bedside. It worked well. Then someone suggested that we should do the entire presentation [history and physical exam] at the bedside.

Now, I spend most of my time doing that." This illustrates the continuous openness to change and willingness to experiment even though teaching is going well.

General principles of teaching excellence can be derived from this study and from our prior study. These principles include: 1.) involve learners, 2.) innovate continuously, 3.) create a positive atmosphere for learning, 4.) consider learners and context, 5.) engage learners, 6.) make careful preparation, 7.) limit content, 8.) engage in thoughtful self-analysis, 9.) be flexible, and 10.) use appropriate teaching strategies. In our prior study (Pinsky and Irby, 1997), we found similar guiding principles that were derived from failures in teaching: 1.) Start by understanding what your learners need to know. 2.) Plan ahead, have clear goals, and use reflection to ensure that teaching meets the learners' needs. 3.) Limit your content to relevant material, and make it case-based. 4.) Keep things simple; learners are often overwhelmed, even if they don't show it. 5.) Teach with enthusiasm. The differences between these two lists suggest that successes resulted from more active involvement of learners, creating a positive atmosphere for learning and continuous innovation. Similar lists of general principles of teaching were found by Irby in his study of the knowledge required for teaching in distinguished clinical teachers in Medicine (Irby, 1992, 1994). These principles are derived from experience and reflection. While they are not content specific teaching methods (Shulman, 1987) nor case-based teaching scripts (Irby, 1992), they do provide general guidance for teaching.

Learning to teach is an on-going process of observing, reflecting and experimenting. These teachers incorporated reflective practice into their teaching as an essential component of ongoing professional development. Successful teaching experiences led to incremental quality improvement in teaching.

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