The Team Approach to Developing Baseline Teaching Skills

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ABSTRACT

The United States Military Academy ran a short course entitled, "Teaching Teachers to Teach Engineering" from July 28 through August 2, 1996. This short course was made possible by a generous grant from the National Science Foundation.

The objectives of the short course included increasing the teaching ability of participants through a series of hands-on teaching experiences. This paper documents the experience of the six co-authors during the team events that occurred in the classroom. It is not the intention of this paper to describe the short-course or the assessment of that event.

Jerry Samples was the team mentor/facilitator with similar experience during ten years of new instructor workshops at the United States Military Academy. Brad Snowden assisted based on his recent completion of a similar program. Anu Maria, Peter Silsbee, and Valerie Young were program participants with limited teaching experience and no formal teacher training. Joe Newkirk had 10 years teaching experience, also with no formal teacher training. Joe brought a different perspective to the team.

The goal: enhance participant teacher skills while developing self-confidence in all phases of teaching.

The method: teach a series of classes to the group, each class being followed by an assessment period. The participants were exposed to several teaching styles via separate demonstration classes. The team was tasked with teaching classes to each other using methods presented in the demonstration classes. Participants took turns role-playing as teacher and students during these classes. Team members assessed their own teaching after each class and were then assessed by the full team.

The result: discussed in the individual self-assessment of the participants.

Mentor's overview: Being thrown into a room with total strangers and asked to teach classes from your specialty in a contrived classroom environment is a difficult task. There are the questions of ego, realism, peer review, video self-assessment, and the objectivity of the mentor that cause some concern. The response of this group was exceptional and the amount of learning that took place was phenomenal. Peer review was courteous, yet on target. Self-assessment was more critical, yet instructive. The participants worked well together, learned how to assess themselves and others in a manner conducive to learning. They also found that teaching technique has a profound impact on student learning. Some found little things that caused immense improvements

to occur in just three days. Of course, there was the underlying concern of the ability to transfer what was learned to the home institution.

This paper addresses the group dynamics, the learning, and the impressions of the participants exposed to this hyper-critical environment. The results are meant to help others understand that teacher training through peer review and mentoring is possible and with great benefit. Finally, the participants will discuss what they carried away from the short course.

INTRODUCTION

Twenty-four teachers were invited to the United States Military Academy to attend a short-course entitled "Teaching Teachers to Teach Engineering", T4E for short. The course was divided in two parts: demonstration/participatory classes conducted by the staff, and smaller group workshops. Each workshop was based on some facet of instruction and included teaching classes, role playing, and assessment. To facilitate this phase, the participants were divided into six, four person teams and assigned a mentor/facilitator and an assistant facilitator.

While there was a lot of learning in the classes presented by the staff, it was in these small group workshops that the difference between this short-course and other seminars became evident. The teams were learning by doing, by being evaluated by their peers, and through self-assessment. It is this team interaction that provides the basis for this paper.

As the mentor, Jerry Samples asked each team member to comment on various phases of the program by answering or commenting on the following for the time spent in the small group:

- Self assessment - utility in both group setting and when by yourself
- Peer review
- Role playing
- Ego -- how you felt throughout this experience?
- How was the peer review handled by the group?
- How did you respond to your peers?
- Does all this help you improve?
- Did you learn anything about yourself during the experience?
- Did our intelligent students (role players) identify idiosyncrasies previously identified by your students? If so, did these now become real to you?
- Does a facilitator help -- or can this whole thing be accomplished without one?
- What rules need to be established to make peer assessment work?
- List 3 things about yourself that made you go to the short course and 3 outcomes that you carried away that will help you in the future. How did any of these good things develop during the team events?

Their responses are shown below, attributed to persons A, B, C, D. This assignment is random, actually selected out of a hat. Not every question was addressed by each participant but, through their comments grows the message of the short-course: teaching techniques can be improved and the improvement is best accomplished through actual hands-on teaching.

Comments by Brad and Jerry are at the end to sum up the utility of the course and the perception of its success based on their experience.

The comments provided below were received in December 1996 after the participants had the opportunity to teach using techniques developed during the workshop. Questions, and requested comments are followed by participant responses.

PARTICIPANT A.

Self-assessment - utility in group setting and when by yourself: Vital. Needs to be learned in a group setting. I am surprised at my ability to continue it on my own. Found it very hard to do at first, and still wasn't really good at it by the end of the workshop. Doing it at the workshop though started making it a habit after every lecture, and I'm getting better at it. I don't fill out the whole form (an assessment form provided at the workshop) after each lecture. But I ask myself how I thought it went, and any parts I felt uncomfortable with, I ask what I should have done differently. I find I often have an answer these days.

Peer review: Required at the workshop, because we're not good enough at self-assessment. Also, reviewing your peers is a necessary part of improving your ability to review yourself.

Role playing: Essential. Must be reminded to maintain it

Ego -- how you felt throughout this experience?: Initially very unsure. Will everyone else be a lot better than me at this? What do they mean by prepare two lectures? Before the workshop started, I found myself worrying about what the people at West Point and the other participants would think of me. Quickly, I felt more at ease after meeting other participants. Everyone was equally vague about what prepare two lectures meant, and many had done less preparation than I did. Started to focus on my performance, not on what others would think. Felt pretty comfortable standing up the first time. I don't have much experience teaching, but I've given quite a few seminars, and people always say I give a good talk, so I guess I'm a little cocky in that department. Role playing made it easier, because putting on the persona of a teacher in front of students is similar to the self-confident persona I put on when I give a talk. I had never tried to maintain this persona day after day, though. As the "summer sports camp" feeling developed, and I felt I knew these people remarkably well, I began to feel nervous and worry not just about doing well, but also about whether they would think I was doing well. I forgot about role-playing and started making too many jokes; being "cute" as Jerry correctly put it. I was rather embarrassed about having lost track of something as simple as role playing at the time. However, conversations with other groups later in the day revealed this was a wide-spread phenomenon. And as I have reflected on it, I think I understand better why it happened, at least for me.

How was peer review handled by the group?: I thought people gave honest critiques, and were careful to criticize what the person had done, not the person.

How did you respond to your peers?: What I learned about myself during the experience is that I am actually more nervous performing in front of people I know than in front of people I don't know. One of the reasons I fell out of "role playing", I think, was that I began to get nervous so I wanted to joke with the audience. At the beginning I wanted to do well; at the end I wanted them to think I was doing well. An important distinction.

Did role players identify idiosyncrasies previously identified by your students? Did these now become real to you?: My experience was very limited before the short course, but one of my idiosyncrasies which was pointed out in the short course was recently made clear to me in class by a student. I have a habit of chastising myself for spelling errors and such on the board. As part of my class this semester, each student taught for about 15 minutes, and one student filled his time with such self-criticism. It doesn't relieve the tension; it is distracting! Class goes much better if you just correct the mistake and move on. No need to draw attention to it unless you have written something that could cause confusion if copied incorrectly into a students' notes.

Does a facilitator help or can this be accomplished without one?: One experienced facilitator is necessary, otherwise it feels like the blind leading the blind. Once the facilitator had given his first critique, the light bulb of "this is what I should be looking for" started to go on. The facilitator's critiques were key to helping me move from a vague feeling of this class "didn't go quite right" to identifying specifically where the problems occurred and how I could remedy them. Certainly it is important for the facilitator to be an experienced teacher, but he must also be someone who is practiced at looking critically at his and others' teaching. It was through interaction with the facilitator that I began to learn just how high a standard I could place on my own instruction, and how to look back on my class, identify the bits that seemed awkward, and identify where my weakness lay.

What rules need to be established to make peer assessment work?: Group must be self-selected. Would not work if people felt they were there under coercion. Majority of group should be similar in experience. You need a feeling of -- we are all in this together. If some or most of the participants had much more experience, it would have made everyone uncomfortable. I would be uncomfortable criticizing someone with much more experience. Experienced people might feel uncomfortable revealing their weaknesses to the newbies. (Mentors comment: It is a credit to the participants that this was not a problem.) As said above, a facilitator is necessary, but I would not mix lots of people of varied experience. Four participants in a group is ideal. More would mean too much sitting and listening. One additional member who had recently been through a similar training program was a good thing, too. Sort of a bridge between the newbies and the mentor. Most of the ground rules of the critiquing itself were unspoken, and I don't think need to be laid out explicitly for a self-selected group. Honesty and the criticism of what the person did, not of the person, were both followed by all participants as I remember.

Three things about me that made me go to the short course:
1. Wanted to get a head start on the teaching part of my tenure package. I have much more experience with research than with teaching.
2. Had some rotten teachers myself as an undergraduate and decided that teaching is an important part of the university mission and I wanted to do better.
3. My one semester of experience had taught me that I wasn't as good in a lecture situation as I thought I could be.

Three outcomes that will help me in the future:
1. Use of board notes (a method taught at the short-course) to organize the lecture. Not just a mechanical procedure, an invaluable tool. My lectures are much better organized and I can predict quite closely how much I can get through in a lecture. I am rarely off by more than a board (a few minutes).
2. Self-assessment. Rather than just a vague feeling of "that didn't go quite right", I usually have some concrete action I can take for improvement.
3. Resources. Members of the T4E Class of 1996 are keeping in touch by e-mail.

PARTICIPANT B.

My experience during the workshop: In my application for attending the T4E workshop, I stated my objectives as

a) to learn to better organize the courses I teach in order to balance theory and practice, and

b) to seek alternative assessment techniques.

Having completed the workshop I can confidently say that I have achieved both of these objectives. The quality of my teaching since the T4E experience has markedly improved. T4E was a most valuable exercise, early enough in my career that I will be able to benefit from it. Since the workshop, I have made use of the lesson organization and board organization techniques learned at T4E for preparing my classes, revised my mid-term assessment forms, made the first steps towards assessing myself, and written the department Chairman and the Dean of Engineering stating that I would like to share my experiences at the workshop via a trip-report-seminar to the engineering school faculty.

Self assessment - utility in both group setting and when by yourself: In group setting: This was the first time I was teaching to my dream class - each student above average and attentive. The important lesson that I learned was that the quality of my teaching is almost independent of the quality of the class.

By myself: I say a lot of okays. I need better material organization and board planning. Taking the time to write clearly pays off. I need more verbs in my vocabulary to write meaningful class objectives that address the questions: What are we going to do in this lecture? and, What will you be able to do at the end of this lecture?.

Self assessment is a double edged sword, however. While it is important to ask the question "How am I doing?", it can backfire where self-confidence is lacking.

Peer review: In actual class feedback the overriding problems are:

Misinterpretation of the questions,

Differing motivations on the part of students, and

Smart alecky and/or non-constructive criticism.

The peer review process at T4E was devoid of these problems. In addition, it prompted us to compare strategies as in: "What if I had done this instead of what I did before?". For instance, a fellow participant pointed out that if I had moved things around on a particular board, my lecture would have been clearer; and I agree.

Role playing: Was easy since I have been a student most of my life. What was interesting was that every now and then I saw a fellow participant do/say something similar to what I might do/say in a classroom but being in the students' shoes made me realize the problem with that action.

Ego -- how you felt throughout this experience?: I was there to learn and to get criticized, so I left my ego behind. Conversely, I criticized my fellow participants as much and as constructively as I could.

How was the peer review handled by the group?: The group developed a synergy right from the start. I think it was a combination of the participants being strangers to (and therefore, not in direct competition with) each other and a willingness to learn. Hence, the group used the peer review process to the fullest extent possible and each participant emerged a better and more effective teacher for it.

How did you respond to your peers?: I commented on what I liked about their class presentation. I pointed out what could have been done better and gave suggestions.

Does all this help you improve?: Yes. It was a humbling experience. I learned that mastery of the subject matter is of prime importance. I also learned that although good presentation techniques will not make up for lack of subject matter understanding, lack of good presentation techniques will not further the students' interest in the subject matter.

Did you learn anything about yourself during the experience?: Two things:

1. I am better than a lot of engineering teachers.
2. I am worse than a lot of engineering teachers.

Therefore, there is a lot of room for improvement to achieve my goal of being a top-notch engineering educator. My strong points in my fellow participants' words: has a well-modulated and enthusiastic voice, involves students, is confident, has lots of enthusiasm and energy, maintains good eye contact, provides good everyday examples students can relate to, handles confusion well. My weak points: engages in excessive questioning, exhibits lack of attention to some details (e.g. covering topics in an order different from the order in which objectives are listed, using acronyms before defining them), is very direct and therefore insensitive to students' feelings, is intimidating at times. I addressed some of these weak points and obtained a better assessment from my fellow participants towards the end of the workshop.

Did our intelligent students (role players) identify idiosyncrasies previously identified by your students? If so, did these now become real to you?: Some, yes. What can be more real than the gaffes getting captured on videotape? I think I am going to make it a practice to watch my "masterpiece" videotape at least once a semester! I am working on my sometimes illegible handwriting.

Does a facilitator help -- or can this whole thing be accomplished without one?: Absolutely. I don't think the exercise would have been as useful as it was with the facilitator to guide the role-playing, review, and self-assessment sessions. Our group was lucky to have a facilitator-assistant team that was most non-intrusive yet indispensable for encouraging the participants, providing serious criticism, and injecting levity into the rare dull discussion.

What rules need to be established to make peer assessment work?: Comments, especially when subjective, need to be accompanied by suggestions for improvement.

List 3 things about yourself that made you go to the short course:

1. My teaching philosophy is that a good teacher is one who can
   a) motivate the students so they take pride in their work and develop a work ethic for life,
   b) pique their curiosity to ask questions and seek solutions, and
   c) develop their problem definition skills.

I believe that these are the necessary and sufficient conditions for creating a strong and responsible engineering force to ensure a bright future for humanity. I went to T4E to become a better teacher.

2. I attended the National Effective Teaching Institute at the American Society for Engineering Education conference, June 1995, co-directed by Richard Felder and Jim Stice. It was a valuable experience and I have incorporated in my teaching at least two of the skills I learned there, namely objective-based-teaching and catering to different learning styles. I was looking for more tips on engineering pedagogy.

3. I actively seek feedback from the students via mid-term and end-of-term questionnaires and no-holds-barred discussions in class. Naturally, I was curious to see how I compared with the other inexperienced engineering faculty members.

List 3 outcomes that you carried away that will help you in the future:
1. Lesson organization and board organization techniques.
2. Assessing myself.
3. When and when not to use technology in the classroom. Since T4E, I have gone through a training program for teaching on television for my university's distance learning program. Because I strongly believe in the group dynamic, the synergy, and the collaborative learning paradigms that come into play in a classroom setting, I am not exactly sure of this phenomenon. For the same reason, I am amazed by the increasing number of instructors making their class notes available on the world-wide-web.

How did any of these good things develop during the team events?: The highlight of T4E was the "labs", otherwise known as "I-did-not-know-I-did-that-sessions". The 24 participants were divided into lab groups of four for discussion and critique following presentation of classes with emphasis on lesson and board organization, objectives, and questioning techniques. In addition, each participant was videotaped while he/she was lecturing for self-assessment.

PARTICIPANT C.

Self Assessment - utility in group setting and when by yourself: This was very important as far as improving teaching goes. It certainly was for me. Several things, including the peer review and the role playing, helped to greatly increase my self-awareness of my teaching. This was very evident just after the course, and although it has faded somewhat with time and business, it still is very evident and guides me still.

Peer review: Getting different viewpoints was very useful to me. Rather than making one person happy, I needed to respond to several. This made the situation closer to an actual classroom, where there are many students and most of them aren't giving very much feedback to you, except later anonymously through your teacher evaluations.

Role playing: I don't know about everyone else, but this impressed me as one of the significant differences in the T4E course from other courses. Taking the role of the student opened my eyes in a way that made my own self assessment vastly better. Instead of looking with some satisfaction on what I was doing and thinking it was good enough, I began to constantly monitor what I was doing by looking at what more could I do to help them. The only way this can be done is to place myself in their shoes. Role playing as a teacher during the class room time was also good, as well as necessary, but didn't mean as much to me as putting myself in the student's place.

Ego -- how you felt throughout this experience?: At times very uncomfortable. I definitely wanted to do a good job, since I would be on display before my peers and my facilitator, all of whom would be evaluating me. Pride certainly was a goad, but also could have become a hindrance. As it turned out, it was mostly positive, and I later became more comfortable, even with the criticism. Criticism is something that I don't handle well.

How was peer review handled by the group?: The group handled the peer review very well at the end. In the beginning, however, we were all very uncertain as to what to do and how to handle things. Yet we learned quickly and didn't appear to let ego get in the way.

How did you respond to your peers?: All together I think that the peer experience was great and helped me improve immensely. My peers were not only critical as appropriate, but also supportive of me and each other.

Did you learn anything about yourself during the experience?: I guess the one thing that I learned about myself was that I was a bit arrogant in my estimation that the students didn't know what they were talking about when they criticized my teaching. I was doing some things right, but was clueless about what I might be doing wrong and I was blaming them for being unreasonable.

Did our intelligent students (role players) identify idiosyncrasies previously identified by your students? If so, did these now become real to you?: I don't think in my case that my peers (the intelligent students) helped me to identify any idiosyncrasies that I didn't already know about. My students hadn't really given me any significant feedback about that area.

Does a facilitator help -- or can this whole thing be accomplished without one?: I think that the facilitator is important, particularly at first. He provides the initial guidance to the participants as to what the expectations for the presenters are, what criticisms are useful and also what positive alternatives there are. He also has the important job of monitoring the group dynamics and defusing any personality conflicts. In our group we did fairly well on our own, but I am not sure that will always be true. The critical nature of the process could lead to resistance among the group to accepting the instruction being provided. I think that Jerry's attitude gave us a baseline for the procedure and facilitated our using the process constructively.

What rules need to be established to make peer assessment work? Emphasis on positive criticism is important. Peers need to understand what aspects of teaching to look for and also they need to have a benchmark of good teaching against which to compare the person being assessed.

List three things about yourself that made you go to the short-course: I think the biggest thing that brought me to the short course was a genuine desire to be a good teacher. Added to that though was my frustration in trying to improve my teaching by myself, which didn't work. Student feedback is too non-specific and unprofessional to be of much guidance. The third factor that led me to come was my experience, which told me that a seminar wasn't the answer. A more interactive course, which T4E was, would be necessary to actually make a difference in my teaching style.

List three outcomes that you carried away that will help you in the future: Three outcomes: I guess it would be first, a greater appreciation for the student viewpoint; second, a benchmark for my own teaching ability; and third, some techniques that I could use to try to achieve this benchmark. I have already talked about the first. The second involves being dissatisfied with where I am, because I have seen something better. The third is a way to get there.

PARTICIPANT D.

Self-assessment - utility in group setting and when by yourself: Of course self assessment is useful. I think not so much in terms of Wednesday's self-assessment having a material effect on Thursday's presentation; instead, self-assessment is a critical skill that I, at least, needed to learn something about. I don't recall this being emphasized by the instructors, but I feel it is on the same level of importance as the actual presentation skills.

Peer review: Peer review had a much more direct effect, but ultimately not as deep. The more general comments (about movement, speaking voice, etc.) I think have stuck with me; comments that had specifically to do with the class (organization of a specific board, for example) have, at this point, pretty much evaporated. Perhaps because I am not teaching that class this fall.

Of the two, the self-assessment is something that we can all carry away and use every time we teach (to mangle a well-known proverb: critique a man's class, and you'll improve that class; teach him to critique his own classes and you'll improve his teaching ability). The peer review helps to catalyze that process.

Role playing: The role playing is rather fun, but harder than I think we give it credit for. A "real" class is likely to have a number of students that need to be engaged every day or they will spend their time doodling in the margins of their notebooks (I know; I was one from time to time). This isn't to suggest that one of the role players should stare out the window and be unresponsive; just that it is not all that easy a role to play. It is too tempting to ask the question that a teacher loves to hear, that provides a segue into the next sub-topic (especially when the class is on a subject that one is familiar with or has taught). So I think the role playing is somewhat flawed. It is absolutely necessary, of course --- but I suspect that the nature of the "students" makes the class easier than it might otherwise be.

Ego -- how you felt throughout this experience?: Although I had some doubts about how the process was going to go, it was quite non-threatening. The only time my ego was in danger was when I watched the first videotape. Fortunately, I was alone.

How was the peer review handled by the group?: Everyone in our group was courteous and direct. The bulk of the comments, both positive and negative, fell basically on target, whether or not they were about things that I had noticed.

Does all this help you improve?: So far, it has helped to a limited degree. Comments and criticisms from my peers provide me with a mental list of performance aspects for which I need to be on the alert. To the extent that I can monitor myself, this has helped me. This gets back to the point about self-assessment being a very important learned skill. There are certain aspects of the workshop that don't translate well to my current classroom environment (next semester, I will be back in a "real" classroom with blackboards and no TV cameras; I am eager to have the chance to be more lively).

Did our intelligent students (role players) identify idiosyncrasies previously identified by your students? If so, did these now become real to you?: No.

Does a facilitator help -- or can this whole thing be accomplished without one?: Well, we haven't tried it without one. But it is my opinion that a facilitator is useful and can keep things focused.

What rules need to be established to make peer assessment work?: Rules? Well, politeness, of course, but I'm not sure that rules are needed. Guidance, perhaps. Seeing example classes, being given an idea what to look for, these are helpful. Role players should stay in their roles.

List 3 things about yourself that made you go to the short course and 3 outcomes that you carried away that will help you in the future. How did any of these good things develop during the team events?

Why I went:

1) I had a difficult time engaging students and keeping their attention;
2) I had had essentially no training in what is an important part of my job;
3) I was encouraged to go by my Department.

What I left with:

1) Increased enthusiasm about teaching. This, I think, is a natural result of spending an intensive week with a group of people focused on teaching.
2) Motivation to continue the self-assessment process and the peer assessment process. I am trying to organize a network of professors for ongoing (occasional) peer assessment. This simply comes from a belief that the assessment process was useful --- but is primarily useful if it is an ongoing process.
3) A set of skills.

BRAD'S COMMENTS: My perspective was that of a new instructor who had just completed a similar but longer engineering educator workshop at my home university. The Instructor Summer Workshop (ISW) I participated in at my home university had two primary purposes. One purpose was to develop (or hone) classroom skills. The second purpose was to help new instructors get oriented and learn about department and university policy.

There are two main differences between T4E and the ISW I attended prior to serving as a "junior mentor" for the T4E program. The first was that the ISW I attended was at my home university. The second was that it was longer and did not focus purely on teaching. I will address the positive and negative aspects of each of these differences.

Home University vs. Remote Location: In the ISW, all of the mentors and student role players were from within the department I was joining. This can be both good and bad. It is good because it helps introduce a new instructor to the culture that exists within the academic department. It lets him know what the standards of classroom performance and behavior are within the department. It is bad for two reasons. First, departmental peers and seniors are likely to have preconceived notions about the participants, and may also be less objective and frank with newly assigned co-workers. The potential exists for toning down of remarks, or alienation of a new instructor if criticism is too blunt. Second, while communicating the standards of classroom performance and behavior, there is the possibility that creativity might be stifled. If a particular instructional style is offered to an instructor early in his career and that instructional style is the "standard" within the department, the new instructor may never develop a classroom technique that is uniquely his own.

T4E did not offer an opportunity for the participants to learn their department's culture since it took place away from the home universities. However, I think the standards and culture of a department can be imparted and experienced during an orientation that is completely separate from any teaching skills development workshop. Additionally, I think the increased objectivity of strangers is a big benefit.

Duration and Focus of Course: The second major difference between ISW and T4E was that T4E focused purely on teaching skills. The ISW at my home university was diluted by administrative classes, meetings, and orientations. I think the short duration

and single focus of T4E make it a better vehicle for development of teaching skills. If T4E had been longer or less focused on one primary objective, I do not think it would have been as valuable. Additionally, a longer course would mean increased time together which could lead to increased familiarity and reduced objectivity by the participants. T4E kept the participants busy and very focused on teacher development since the syllabus was so aggressive. I think T4E was a big plus for the participants.

JERRY'S COMMENTS: The core of the success that each participant enjoyed was the work accomplished in the four person teams. This highest order of collaborative learning was exciting to watch. Guided ever so slightly by the facilitators, the team accomplished much in a few days. Given the tasks, the time, the guidance, and with their desire to learn, these participants taught each other how to be successful in the classroom. They did this through demonstration, discussion, assessment, and desire to learn. In so doing, they discovered much about themselves and the view students have of their teachers. The latter is often disregarded, unless positive. After this experience, it is probable that the participants will more often heed the bad teacher warnings given by their students.

There is a need for this type of developmental work. It is difficult to accomplish in the normal university setting due to the daily distractions of research and other "important" things. The lack of dedicated teacher development programs and mentors further degrades the home university opportunities. Thus, it is almost imperative that the teacher seek a venue outside the home university to develop his/her trade. This is a sad commentary on the university system in this country.

The singleness of purpose of this program and its immediate and long-term effects on the participants indicate that a core issue has been identified: college teachers want to improve and can if given the tools. Just the demonstration of a standard, attainable by most, is a first step that many have not experienced. It is truly unfortunate that most have clearly identified how they do not want to teach, while most have not identified how they would like to teach. Establishment of an environment where all this can be accomplished is not difficult. It requires thought and concern. It requires a common goal and willing participants. Participants A, B, C, and D represent engineering faculties across the country. They have carried away something for now and for the future. With a little effort they will reach their goals to include tenure. Their ultimate reward will be the respect shown to them by their students: especially those from the past. It is this reward that each of us strives to achieve.

Finally, the question of creativity. This is one that often arises when we discuss any form of teacher training. The, "How can I be creative when you teach me your methods?" question is easy to answer given survey data that was collected over a number of years. It turns out that most program participants feel that they can move to creative methods more rapidly after attending this type of program. The reason is simple: they have a fundamental teaching methodology available to use as a starting point. They find they are confident in the classroom and that this allows them the luxury to experiment with other methods since they can always return to the fundamentals. This realization does not occur immediately after the teacher training program; rather, it comes after a few terms.

SUMMARY: There is room for improvement in the college teaching ranks. It can be done. It requires desire and reflection. Teachers must be technically competent. Look at yourself as your students do when you self-assess. Don't be ashamed of your teaching, but don't take it for granted either. The input from your students may be better than you think. Always be ready to compromise your direction, but never your standard.

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