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Abstract

Many funded programs such as that of the Southeastern University and College Coalition for Engineering Education (SUCCEED)\(^2\) have addressed teaching and pedagogy as have seminars established by professional societies – ASCE (Excellence in Engineering Education - ExcEEd\(^4\)) and ASME (Essential Teaching Seminars - ETS). These programs address the fundamentals of teaching in a student centered environment where intellectual excitement and rapport with students provide the basis of student centered learning. While these seminars meet the needs of some of our faculty (those who attend), how do we reach the rest of the faculty and who has the responsibility for teaching and pedagogy on a grand scale? Some respond that the responsibility for teacher training and pedagogical development rests with the Faculty Teaching and Learning Centers, where they exist, while others just throw up their hands because they have no idea. Clearly, the responsibility lies with the leaders of academic departments, schools or colleges and with the faculty who present the instruction. Abdication of this responsibility creates an environment where instruction is of concern when there is a complaint. This paper addresses the responsibility of leaders and followers in the development of the teaching practices and pedagogy that are the basis of a learning environment that is rich in context, welcoming to students and success oriented. The information presented is based on previous and on-going studies concerning faculty roles and student reactions to their classroom experiences. Discussion will include the role of the leadership, faculty and students and how they should team to produce an effective and success oriented learning environment.

Background

There have been many efforts to describe the need for teaching as it stacks up against other functions that a faculty member is required to perform. Research and service are often quoted as just as important, or more important, than teaching. The then president of Stanford University, Donald Kennedy stated: “It is time for us to reaffirm that education – that is, teaching in all its forms – is the primary task.”\(^1\) The counter argument is that the “..faculty reward system does not match the full range of academic function and that professors are often caught between competing obligations.” Those obligations are often weighed heavily in favor of research even at undergraduate teaching institutions. Boyer introduces a model that may be acceptable at all levels of academe; one that includes the fours types of scholarship. Scholarship is divided in the following areas: discovery, integration, application and teaching. He concludes with the following: “What we urgently need today is a more inclusive view of what it means to be a scholar – a recognition that knowledge is acquired through research, through synthesis, through practice, and through teaching.” There is no intent to eliminate scholarship; just a redefinition. There is no attempt to make teaching paramount; just an emphasis that is necessary. Finally, there is an attempt to satisfy the needs of academe at all levels by proscribing a methodology whereby teaching and pedagogy take their rightful place.

The SUCCEED coalition, established in 1992, conducted a survey to ascertain the importance of teaching at several levels. The following extract of their results identifies why academic leaders
should be concerned with teaching. “In 1999, the survey respondents rated the importance of effective teaching to themselves very high, averaging 6.5 on a 7.0 scale. They rated its importance to their colleagues, department heads, deans, and top institutional administrators significantly lower, with the averages ranging from 5.1 to 5.6. Their ratings of the importance of effective and innovative teaching in the reward system were still lower—3.7 and 3.5, respectively. Significant differences in ratings were found by gender, primary academic function (teaching, teaching/research, and administration), involvement in SUCCEED, rank, and Carnegie Foundation classification of the institutions. All significant changes from 1997 to 1999 were in the negative direction. Our conclusion is that while SUCCEED’s faculty development efforts have had noteworthy positive effects in changing faculty instructional practices, much work still remains to be done to create a sense among the faculty that efforts to improve teaching will be appreciated or rewarded.”

They conclude their discussion of the survey with the following:

“We infer from these findings that professors who spend time and energy participating in faculty development programs and learning and implementing new methods do so despite their general belief that their efforts will neither be appreciated by their colleagues nor rewarded by their administrators. (There is some comfort in the fact that respondents gave department heads the second-highest rating after themselves, indicating a belief that those who rise to that level feel that teaching is more important than it is to most rank-and-file faculty.) Nevertheless, the study shows that many of them choose to make the effort anyway, which we regard as a tribute to their dedication. The dramatic advances in the quality of American engineering education that might result from putting teaching and research on a more equal footing in the faculty reward system can only be imagined. Our hope is that the next survey administration in 2002 will reveal movement in this direction.”

The fact that improved regard for teaching might happen and that such an improvement “can only be imagined” does not speak well for engineering nor higher education in general.

The picture painted is of a system that needs additional emphasis on teaching, in part to enrich academe. There is also an emphasis on the rewards system that requires balance to place teaching at parity with other functions. Tenure and promotion, merit, and other rewards need to include teaching as part of the evaluation system. This is necessary since it is the student who is impacted the most by a lack of concern about the quality of teaching and the lack emphasis placed on effective teaching. None of this can change until the leadership of academic centers, the faculty and the students demand that teaching be elevated to a parity level.

Teaching

The idea that teaching is important is not a new one. In 1969, Skilling started his book with the Eleven Commandments for Teachers. These commandments are paraphrased to eliminate gender references and in abbreviated form for easy learning. They are:

1. Students are the measure of your success.
2. Forget yourself – your excellence is reflected in your students.
3. Show your students the goal of your teaching – be visionary.
4. Accept your students – motivate them.
5. Show the practical as well as the theoretical.
6. Relate new information to known facts.
7. Repeat and renew – use different venues.
8. Let the student work – doing is best.
9. Let the student seek – lead them to new discoveries.
10. Provide a good learning environment.
11. Know your subject – present with interest and enthusiasm.

These are not new ideas and many reflect what is currently taught to new instructors as they learn to teach. Many are the way of ABET, faculty and student evaluations, and the expectations of ones peers. They have been updated to reflect the changing methodologies of teaching and the “student centeredness” of learning in Chickering and Gamson’s³ "Seven principles for good practice in undergraduate education."

1. Encourages contacts between students and faculty.
2. Develops reciprocity and cooperation among students.
3. Uses active learning techniques.
5. Emphasizes time on task.
6. Communicates high expectations.
7. Respects diverse talents and ways of learning.

Note that there is no reference to knowing the subject matter as this is certainly a given in academe. Also, the trend to contact and student cooperation, rather than a stilted lecture only format with little cooperation between faculty and students is readily discernable.

In much the same way, Lowman⁷ introduces the two-dimensional model of teaching. He espouses the notion that the two primary dimensions of good teaching are: intellectual excitement and interpersonal rapport. A teacher is intellectually exciting when the presentation is clear and there a level of emotional stimulation for the subject by the student. Energy and enthusiasm are coupled with expert knowledge to motivate the student to learn. A teacher has interpersonal rapport when there is awareness of general interpersonal phenomena and there is real skill in communicating with students to increase individual motivation and independent learning. Of the two, it is far better to have high levels of intellectual excitement than interpersonal rapport if only one is achieved. Even as a teacher increases interpersonal rapport, it should follow the development of intellectual excitement rather than precede it. The true master teachers have developed both skills to the maximum and are clearly visible to all who witness their teaching.

The last element in the process of teaching is the development of the pedagogy of teaching. As can be seen in Skilling’s Eleven Commandments of Teaching⁹ and Chickering and Gameson’s³ "Seven principles for good practice in undergraduate education" there has been a migration from teacher centered instruction to student centered learning. The pedagogy has changed but nothing has been eliminated from the menu of teaching methods. A short list of pedagogical methods includes: lecture, collaborative learning, cooperative learning, laboratory reinforcement, technology in teaching and learning, practical applications, student centered exercises, ongoing assessment, and student capstones. The use of any or all of these constitutes an environment that touches the learning style of students and the teaching styles of faculty. All cannot be utilized at
once, nor should one be utilized exclusively – thus, it will take some time to learn these and use the pedagogy effectively. Experiments should take place in the classroom – not discipline specific experiments; rather, experimentation on how to teach and what works. These can lead to pedagogical development that can be shared with teaching peers. Going back to Boyer\(^1\), there certainly is scholarship potential in teaching.

**Leadership**

The premise of this paper is that there needs to be leadership in the development of a good teaching environment and that leaders, faculty and students are all involved in the process. The leaders must establish standards and make them known to the faculty and the students. The first step is to decide what to look for in the instruction given by teachers. This should be considered a professional (teaching) standard with a keen eye on the view of the learner: the student. Students clearly state in their assessments of faculty that organization, structure, enthusiasm, and encouragement are important elements in their evaluations. It helps when the teacher can solve problems and knows the material – thus the leader should convey a coherent set of expectations that will be evaluated during in-class visits. These standards should make sense to the faculty member, establish an appropriate environment for learning, and that mirror the concerns of the students. The following are some points to consider:

1. Technical expertise – command of the subject matter.
2. Lesson organization.
   a. Learning objectives.
   b. Organization of the presentation.
   c. Class structure.
3. Presentation skills.
   a. Enthusiasm, energy, confidence.
   b. Providing a motivation for the subject.
   c. Present clearly.
   d. Precision of speech.
   e. Clarity of writing/slide/PowerPoint.
   f. Voice modulation and volume.
   g. Use of questions and clarity of answer.
   h. Contact with students – eyes and space relation.
   i. Use of visual aids, technology and laboratories as appropriate.
   j. Use of the textbook and notes.
   a. Present the rich context within which the theory is presented.
   b. Provide examples, discussion, pictures, models, films, and other visual stimulus to tie the theory to real devices.
   c. Tie every phenomenon to everyday life and how things work.
   d. Incorporate student’s views and experience into the teaching of complex subjects.
   e. Explain where students will experience the theory or device in industry or life.
5. Rapport.
   a. Be aware of cultural and gender issues in communicating with students.
   b. Know the students learning style patterns.
c. Incorporate teaching styles that increase success.
d. Be aware of individual difficulties with the subject – this will help all students.

6. The “R” word – retention.
a. Retention of qualified students is our job.
b. Retention does not mean keeping – it means success in attaining the next level.
c. Materials should be presented with an understanding that everyone can learn.
d. Treat all students with respect.
e. Above all – teach well.

The next statement is not meant to be inflammatory, although it might be. Leaders in academe need to realize that their position is not about them – it is about protecting the academy and providing a quality learning environment for students and a place of academic growth for the faculty. It is about the culture established and the change of that culture when change is necessary. It is the part of leadership most often forgotten: subjugating ones-self for the good of the organization. Yes, take the hits but make it work. The leader must stand up and be counted when change is in order and to do less weakens the leader’s place in the academic culture.

The organizational culture does not have to suddenly shift from one where teaching has been less than effective to the best teaching reputation at the college or university – it merely needs to make progress in that direction. The leader can help by having a vision that includes effective teaching, effective student learning, and a culture where this is considered important. Even research universities can benefit from an emphasis on effective teaching. Thus, the first step is for the leader to have a vision and get buy-in.

There are a lot of other things that the leader can do to assist in the culture change. Take the points from above and consider how to implement some or all of them over time. A few visits to a classroom where the emphasis of the visit is to determine how a student would learn in the class will go a long way to inform the leader about teaching in the organization. Make the points into a checklist and record the experience – not in a punitive way but as a coaching tool. Before any visit, provide faculty with what you will be considering during the visit – even if they know what you will be examining, most will teach as they always do – well or not so well. Newer faculty and those who demonstrate the need for assistance can be assigned a teaching mentor. In some organizations this works better than bringing in someone from the teaching center; in others, teaching center assistance is preferred. Another possibility is to send faculty to a teaching course: a sustained period where teaching is the primary focus. In cases where there is buy-in to the teaching and learning culture, bring in speakers or hold seminars right in the organization. (A word of caution – some faculty may not want to be there and will find all manner of reasons to be absent – encourage them to attend.) Finally, it is best if the leader can demonstrate good teaching practices and believes in the importance of good teaching as a faculty member. While many leaders are busy, it doesn’t take too much to teach a class every now and then – not a course – just one class session. Every leader has a specialty – this makes it easier to be excellent when teaching that one class. The word will get around that the leader is an excellent teacher – both within the student body and among the faculty. Leading from the front is really the best way.
A few words about students – they are very aware, they will let you know their concerns when
given the opportunity, and they will talk to each other and to other faculty about good and bad
teaching. If the leader begins to develop a culture that improves their learning environment they
will tell their friends, their teachers in other departments, and they will report how it is working
directly to the leader. And, if there is one bad apple in the organization, they will identify it and
expect action. Students will work better and appear to achieve at higher levels in an environment
where teaching is valued.

The last item that the leader needs to consider is the rewards system. While monetary rewards
may not be directly controlled by the leader, there are other rewards that can be developed.
Teaching awards that provide a small stipend are excellent motivators. Some awards come with
the promise of a conference attendance or funds to be used in such a way. Good teachers will go
to conferences and will be pleased that they did not have to seek funding or pay out-of-pocket to
attend. One system that works is an organizational teacher of the year. The ASME or ASCE
club sponsoring a plaque for the best teacher in the organization is certainly recognition at the
primary level – students.

Conclusion

The leader of an organization that demonstrates teaching excellence in a student centered
learning environment need not be lonely at the top. The leader must be willing to change a
culture to ensure that teaching and pedagogical advances are part of the growth process for the
faculty. There must be recognition that the scholarship of teaching is a viable mechanism for
professional growth and that the pursuit of grants in this area is worthy of rewards at all levels.
There must be a constant communication of expectations within the faculty and the student body
and the associated feedback to identify best practices and weaker areas. This communication
develops rapport that supports the Lowman model which in turn enriches the experience of the
students. This, coupled with a rich context in which students learn the theory and application
(motivation) makes the learning real and fun. Finally, when this culture is alive, the chances of
retention increase because everyone enjoys coming to school. The leader doesn’t do this alone –
it takes a team: a team interested in teaching and pedagogy, and learning.

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