The 7 Habits of Highly Effective Engineering Educators

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***Abstract*:** Covey's work on the 7 Habits of Highly Effective people has been influential and described as a "holistic integrated approach to solving personal and professional problems by becoming principle-centred". It is popular because it's a philosophy that translates to most fields and most walks of life. This paper explores the philosophy of the seven habits and utilising them in improving classroom teaching and making the classroom experience effective.

1.0 Introduction

What is a habit? According to the dictionary, a habit is a "pattern of behavior acquired by frequent repetition" and, according to Covey in "Seven Habits of Highly Effective People"[1], you need three things to create a habit: knowledge, skill and desire.

So when we define "effective engineering educators" - hereafter will be referred as Efeercators - we mean that they have been at it awhile, long enough to acquire and refine their habits and that they have knowledge-not only about engineering but about curriculum and teaching and learning and human development. They have skills - not only in using the technology and in choosing what is most appropriate to the problem but also skills in teaching and classroom management, in cooperation and communication. And they have the desire - as most effective educators do - to make the difference in the lives of students.

2.0 Seven Habits Of Effective Engineering Educators

So what are Covey's 7 Habits? And how do effective engineering educators use them? Let's take a look at the habits one at a time.

2.1 Habit One: Be Proactive.

Covey: *"There are some people who interpret 'proactive' to mean pushy, aggressive or insensitive but that isn't the case at all. Proactive people are smart, they're value driven, they read reality, and they know what's needed."*

Being proactive means you do not blame a situation for genetic, psychic, or environmental reasons. A highly effective educator looks at each student or situation in isolation and sees how he or she can choose to act proactively. Educators wanting to learn how to be an effective educator need to believe in themselves and look at their teaching situation from every angle in order to decide what action will head them in the right direction. Being proactive is something we must accomplish for ourselves. It is our responsibility. Responsibility = "Response + ability," meaning that we have the power to choose how we respond.

Efeercators don't wait for the perfect classroom, the perfect training, the perfect opportunity, the perfect lab or the perfect student. They do it. Proactive educators turn roadblocks into new avenues. They always seek for new ideas and effective methods for their classes. In 1987, American Association of Higher Education and the Education Commission of the States co-sponsored the work on – "Seven Principles for Good Practice in Undergraduate Education" [2] which should be implemented by Efeercators in their classrooms. This work, supported by extensive research and experience, came up with guidelines for lecturers for improving undergraduate teaching and learning. Nowadays, there are many other research which have been carried out in engineering education on topics like learning styles, active and cooperative learning, problem-based learning, assessment and evaluation of teaching [3][4][5][6][7]. Wankat and Oreovicz [8] listed down 10 proven steps that can bring classrooms back to life.

2.2 Habit Two: Begin with the end in mind.

Covey: *"To begin with the end in mind means to start with an understanding of your destination. It means to know where you're going so that you better understand where you are now and so that the steps you take are always in the right direction."*

All lecturers plan. But Efeercators plan, plan, plan and then, knowing what is expected of each lecture period, create a plan for effective teaching and learning. Ineffective engineering educators give lecture to the class because it is expected. It is keeping the students

occupied. It is a reward for doing good work or finishing an assignment or earning a grade. Lectures are the main method of instruction mainly because it is how they were taught.

Efeercators use constructive or active learning environment and always ask themselves before every class, “Do I know what topics I will cover in my class? Do I have an outline? Am I beginning with an end in my mind? Have I marked my lecture notes so that I do not fumble around to find them during the class? Am I going to assign homework in that class? Do I know what problems I am going to ask my students to do in-class to invoke a class discussion? What type of activities do I plan for my active or cooperative learning environment? Do I have usable whiteboard markers in my pocket or am I going to use the dried out ones available in the classroom!”

No matter how many times Efeercators teach the same course, they keep on reinventing teaching methods to make them more effective. Efeercators are continually learning new ways to teach through new textbooks, education articles, and new multimedia resources. Efeercators do not hesitate to call the alumni and ask them how they have used the course in their work. These queries allow them to bring contemporary real-life example into the classroom or develop a computer simulation to reinforce an idea or develop ‘what if’ scenarios. Most engineering students want to relate their classroom experience to the industrial world. If they do not see the connection, it is hard for them to be motivated.

2.3 Habit Three: Put first things first.

Covey: *"Don't prioritize your schedule instead... schedule your priorities."*

Put "First Things First." Seems like a simple rule, doesn't it? But, what is the first thing for Efeercators? Lesson plans? Technoglitches? Research and report deadlines? Committees? Making and returning phone calls? Installing hardware and software? These are things that are urgent and some are even important, so they get the bulk of our attention. If we have any time left over, we get to other things.

The first thing in education must always be our students. Universities exist for the benefit of students. Students are the heart of what we are about. The best and the brightest must be challenged. The disinterested learner must be motivated; the student with special needs must be enabled.

Efeercators understand the importance of first day of class. First impressions last a whole semester. Often, Efeercators see lecturers excusing the first day of class right after taking the attendance and passing their one-page course handout. However, for Efeercators, it is the most crucial day of the semester. After taking the attendance, they remember as many names possible and before giving the handout, ask students, “When you signed up for this class, what did you expect from this class?” Many will give that “that” look and he can read their thoughts, “Is it not what we are here to know?” Ask them then - imagine going to a movie and not know anything about the movie except its name.

As the students open up with their thoughts about the course, Efeercators dispel any rumours heard from former students and age-old myths they may have themselves developed about the course and its pre-requisites. Even statements like “I am never going to use this material” need to be answered carefully and passionately, but without unnecessary emotion. This is also, why it is of paramount importance to find industrial applications of the course material. Efeercators clearly explains the expectations and the goals of the course and its relation to the overall curriculum and education of the student.

2.4 Habit Four: Think win/win.

Covey: *"Win/Win is a frame of mind and heart that constantly seeks mutual benefit in all human interactions."*

Efeercators create a win/win situation when they help students come to their own discoveries instead of spoon-feeding them information. Efeercators create a win/win environment when they create a safe climate that encourages and rewards both risks and accomplishments. Efeercators think win/win in all of their interactions with the university community. Nowadays, there are many tools available to Efeercators to make teaching effective. These include multimedia presentation software, videos, internet, mathematical packages, and interactive educational software, to name a few. Efeercators use these tools only when it is going to improve the understanding of the course material.

Understanding that the number of waking hours has not changed for either Efeercators or the students, they do not supplement subjects with these new tools but use to complement them. For example, if Efeercators want to start using projects as part of the subject, they know whether the usage of mathematical packages will compensate for the extra effort. Otherwise, expectations may turn unrealistic and turn the students off from learning.

Efeercators recognise that old teaching tools are still most effective - whether it is using the whiteboard to derive a formula and punctuating it effectively with underlying principles from previous courses, or if it is to maintain eye contact with the students. A remark by one student, "I never saw my lecturer for whole semester in my Fluid class." But, he quickly added,

"He was always facing the whiteboard." Efeercators should also encourage more of active or cooperative learning in the classroom as when they *lecture six minutes less, students learn more*[9]. Undoubtedly these results from two things: (a) the short lectures (12-18 minutes) are consistent with the research that suggests that students' ability to retain information falls off substantially after 10-20 minutes; and (b) by engaging in an activity that reinforces the information presented, student learning should be increased. A study carried out by National Training Laboratories in Maine, USA has highlighted that the least effective method of instruction given was shown to be for 'lectures' with a retention rate of 5% while 'practice by doing' achieved 75% and 'teach others' achieved 90% retention rate[10]. The last two activities could be carried out easily in either active and/or cooperative learning environments.

2.5 Habit Five: Seek first to understand, then to be understood.

Covey: *"Seeking first to understand, diagnosing before you prescribe, is hard...but it's the mark of all true professionals."*

Efeercators believe in the students. Efeercators treat and teach them the way they like to be treated and taught. They clearly respect students not only for being unique human beings but also show it through their preparedness of the lecture - how can they improve the understanding of the concepts of the course and teach them to apply this new understanding in solving problems. They respect the time of the students by coming to class on time and stopping at the scheduled time. In fact, coming early to class may open informal discussions with the students [2]. It also lets students pause their troubles through the class, as they may be just mad about parking or having problems with registration. Nothing is more annoying to a student if a lecturer habitually comes late to class or rushes through the material at the end, while he finds time to tell his "long herbal therapy" stories.

Efeercators gives attention to the students if they are having problems in the classroom. Although many of the cases do not seem to be emergencies, a few deserve Efeercators's full attention. Efeercators give the benefit of doubt to the student. As Efeercators gain experience, they are able to distinguish between genuine and lame excuses. Efeercators refer students to professional career counselling services on the campus who are experts on time management, study skills, personal or family crises and teaching balance between university, job and family commitments.

The contact with student during office hours is very important to Efeercators because it is an opportunity for teaching students how to learn on their own. Rather than just solving the problem they have come to you with, they guide them to find the solution themselves. Yes, it takes more time but Efeercators are interested in effectiveness, not efficiency. If criticism is warranted, it is gentle and never directed toward the student. Efeercators recognise different learning styles of the student [2][11]. Centuries ago, the teacher to student ratio used to be 1:1. Each student was tutored separately as each had a different way of learning. In our current environment of teaching sections with hundreds of students, we cannot afford to teach one student at a time, but we can account for different learning styles during class discussions and in our grading policy. The latter can be done by grading not only quizzes and tests, but also homework assignments, web-based quizzes, projects, writing assignments, class presentations and participation, reflective writing, and attendance.

Efeercators meet students outside the classroom in hallways, during class outing, and society meetings. It gives them a chance to learn about the students as fellow human beings. In such informal settings, students are more inclined to ask questions about their career goals and share their life outside of school. Knowing them as a whole person, Efeercators can give better advice about their curriculum and future career [2].

2.6 Habit Six: Synergize.

Covey: *"1 + 1 = 3 (or more)"*

The goal of habit 6 is cooperation. It takes time to build a cooperative relationship, but the end result of that relationship will be better than if you worked alone. This happens when two or more people work together and magic happens. For example, two thermodynamics or fluid mechanics lecturers may collaborate and create new instructional lessons or new approach of s difficult concept from which all students in the class learn more easily and meaningfully.

2.7 Habit Seven: Sharpen the saw.

Covey: *"This is the habit of renewal - a regular, balanced renewal of the four basic dimensions of life. It circles and embodies all the other habits. It is the habit of continuous improvement...."*

Efeercators preserve and enhance their greatest assets: themselves. Take care of yourself and your "tools" so that you can get the job done most efficiently and effectively. If you become too busy "sawing" to rest and sharpen your saw, you'll wear both out - your saw and yourself. This means taking the time to eat right, to get a physical, to participate in an exercise program, to learn ways to manage your stress.

Efeercators never stop learning. They read professional as well as educational journals. They attend workshops and classes to polish their teaching skills and learn new ones. They attend professional conferences and participate in professional activities. They take a few minutes each day to establish priorities. They find a few minutes for themselves no matter how hectic things may become. They have a great sense of humor.

3.0 Conclusion

For some, incorporating the 7 Habits into our teaching may take a paradigm shift, a change in the way we see or interpret the surrounding world or a given situation. However, by applying the 7 Habits to your career, Efeecators can achieve personal and professional goals; develop a better working relationship with fellow educators, administrators, parents, and students; and become more effective in all aspects of the classroom.

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