Life After Tenure: Improved Instruction

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ABSTRACT

Once tenure has been achieved, faculty should devote more attention to the students learning process. Innovative ways to package engineering instructional programs for increased student motivation are described. Certain types of technological problems are found to be more stimulating to the students than those addressed in the traditional lecture system. It is suggested that the student be introduced to real engineering problems throughout all four years of study. This style of instruction immerses the student in a learning environment where she or he can rapidly learn specific information, its relationship to other aspects of the problem, and the need for additional information. The professor then becomes more of a leader and stimulator, motivating the students, rather than serving as a traditional information delivery system. With this approach the professor deals with real world engineering discussions in the class room, and these discussions become the primary motivation for the student's learning process. In addition, such an approach becomes a motivation for the professor's learning process.

PROPOSED APPROACH

How are students motivated to learn? There are many ways to motivate students, but we have found that presenting them with challenging real-world problems is a much better approach than simply disseminating engineering information in a lecture format. Problems treating real-world engineering activities are particularly attractive to college students in that they take advantage of the students' desire to learn. Those problems that deal with new technological situations are particularly appealing because most young people wish to do their part in improving the world. For example: the development of more fuel efficient automobiles, collision avoidance systems, airline security systems, new biomedical assistive devices, the control of fire storms, or the control of environmental pollution are all situations that lead to alluring engineering problems that should be solved. A systems approach to formulating the problem and discussions of alternative solutions permit students to decide what information they need to know in order to intelligently proceed with an analysis. The students then have a rationale for learning. They seek information with a strong emphasis on the basic engineering sciences and their application. In order to obtain related information they must turn to the library and computer searches for knowledge dealing with economics, politics, culture, and other real-world data. The professor utilizing this approach becomes more of a coordinator of the students learning process rather than a supplier of factual information.

CONCLUSION

The improved instruction creates a learning environment such that information is presented in a way that motivates the student to learn. It puts challenge and satisfaction in the learning process. It also provides a synergism between fellow students that may not occur in traditional education delivery systems.

This approach certainly influences the faculty. In addition to having a specialization, faculty must broaden their outlook and be prepared to generalize in their discussions with students. Faculty may have to work cooperatively with faculty from other disciplines just as students will be put in a position where they must work cooperatively with other students. Students will become their own best teachers, augmenting the instruction provided by faculty.

Through this improved instruction the student develops five attributes:

. Creativity and inquisitiveness
- Knowledge of fundamentals, including communication skills
. Desire for continued learning
- Ability to work effectively with others in a group environment
- Ability to respond to change as well as adapt to change

Through this improved instruction the faculty develop a motivation to learn information outside of their specialties.

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BIOGRAPHICAL INFORMATION

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