

Editorial

Three aspects of engineering education receive continuous attention of engineering departments and administrators. First, the allocation and management of research, second, the allocation and management of courses and curricula, and third how to balance departmental budgets. Two of these, the management and reform of courses and the financial aspects of managing a department, are the theme of two papers in this issue, by Fournier-Bonilla, et al., and by Scott Snyder.

Fournier-Bonilla, et al., examine the traditional procedures of curriculum reform. This traditional model used in higher education has the following sequential stages for developing a new curriculum:

plan
prototype
assess
modify
adopt.

The focus of change is on the curriculum. First, a pilot group of faculty plan the curriculum, then they prototype, assess, evaluate, and revise the curriculum until it is adopted, or perhaps rejected, by the entire faculty. We recognize that at each stage various constituencies may be engaged, but the focus of the change effort is the curriculum. We also recognize that various iterations may be required in most developments. The focus is clearly on the development and refinement of the ultimate product to be adopted. This model has severe drawbacks especially through the resistance to change in curriculum reform efforts.

In the new approach 'champions' are focused on pushing the changes desired in prototypes, and change agents focus on reducing the resistance to change. A change agent focuses on *shepherding the change, maintaining the focus of the change, removing barriers to change, and rewarding effectiveness*. The change agent may also enhance the communication and trust among different people and be a catalyst for action.

The steps in a modified model of curriculum reform are:

- Identify whose behavior needs change.
- Work to unfreeze the resistance to change.
- Implement action required to change.
- Assess outcome and reward people.
- Stabilize changes.

The authors argue that the focus of this Curriculum Change Model (CCM) is the behavior of people, not the new curriculum. It aims to understand and reduce resistance. If faculty and administrators used the traditional model of curriculum, they would only take actions to improve the proposed curriculum without necessarily seeking to understand the sources of resistance. Using the CCM, by focusing on desired behavioral changes of all faculty, the CCM encourages champions and change agents to broaden their perspective for institutionalization efforts. This important realization by the Texas reformers was, I believe, implemented in a complex and long process. The results are an amazing consensus and a common basis for engineering courses. It will be interesting to watch other curriculum reformers adopt some of the methods the Texans used for creating really new ways with which students can be excited about studying engineering.

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