

The Challenge of Systemic Change in Engineering Education

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In the late 1980's the National Science Foundation formulated strategies that would lead to the systemic reform in engineering education at the undergraduate level. Part of this strategy was to fund a small number of coalitions of colleges of engineering to take a holistic approach to curriculum reform. SUCCEED (Southeastern Universities and Colleges Coalition for Engineering Education) was one of the NSF's Engineering Education Coalitions and consisted of eight public colleges¹ of engineering located in the southeastern United States. SUCCEED completed its program of research and implementation in 2003 after devoting 11 years developing and institutionalizing a sustainable version of its curriculum model on each of its member campuses.

SUCCEED's curriculum model is based on the desired attributes of graduates for the next century. These graduates should be technically competent, critical and creative thinkers, life-long learners, effective communicators, team players, and globally aware. They should understand process and systems design and integration, display high ethical standards, appreciate the social context of engineering and industry business practices, and have a positive attitude towards life. The success of our model is measured by the extent to which our students have acquired these attributes.

The SUCCEED Coalition learned considerable about engineering education innovation and its institutionalization. To be accepted, systemic change must be data driven and cost effective. This presentation will reflect on four essential elements the coalition found necessary to sustain continuous improvement in undergraduate engineering education: faculty development, assessment and evaluation, a focus on student success, and partnerships. Examples of innovative programs proven to incorporate these four elements will be presented.

¹ The members of the coalition are: Clemson University, Florida A&M University-Florida State University College of Engineering, Georgia Institute of Technology, North Carolina A&T State University, North Carolina State University, University of Florida, University of North Carolina at Charlotte, and Virginia Polytechnic Institute and State University.