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Panel

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## Experiences of an Engineering Education Coalition

Ten years ago 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 National Science Foundation's Engineering Education Coalitions and consists of eight public colleges of engineering located in the southeastern United States. Now in its seventh year of operation, SUCCEED has transformed itself from an incubator of educational innovations to an organization whose mission is to institute 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.

Our curriculum model proposes to achieve these qualities in our graduates through specific changes in the curriculum content and structure and, importantly, the implementation of processes by which the curriculum is delivered and managed. The key change elements in the curriculum content and structure are subject integration (knowledge structure and information processing), early and multidisciplinary design, explicit success skill development, and exposure to professional practice. While the desired attributes of engineering graduates and the curriculum change directions are recognized by many educators, it is a lack of processes to effect and to sustain change that has limited curriculum reform. In our model, the curriculum is dynamic and managed by quality-driven processes with strategic planning as a cornerstone. Our curriculum model incorporates processes and systems to enhance student learning through the use of technology-based delivery systems (e.g., multimedia, electronic delivery, electronic advising and mentoring), the development of faculty (e.g., teaching/learning style awareness, student performance evaluation, self-evaluation), the establishment of a learning support system (e.g., student mentoring, pre-season programs), and the institution of a continuous improvement culture (e.g., outcomes assessment tools, continuous curriculum renewal).

This presentation will review the major directions taken by the SUCCEED coalition. Selected results of our efforts to institute bridge programs, dissection labs, industry-based multidisciplinary capstone design course sequences, and integrated first years will be presented.