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Engineering-Education Collaboration – Virginia Tech

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In fall '03, a group of engineering and education faculty received a planning grant called Bridges for Engineering Education- Virginia Tech (BEEVT) under NSF's Bridges for Engineering Education program. The goal of this planning project is to initiate long-lasting collaborative relationships among Virginia Tech Engineering and Education faculty, K-12 educators, corporations, and policy/decision makers throughout Virginia. The specific objectives are to: i) develop a new Masters Technology Education Teaching Licensure Option for engineering graduates, ii) create a contemporary framework for undergraduate engineering pedagogy, beginning with freshman engineering experiences, and iii) initiate the "Virginia Engineering /Education Collaborative" to ensure stakeholders' ownership of project outcomes.

A number of initiatives have been taken to achieve the goal of the project. A new 15-month Technology Education Masters / Licensure Program has been developed. To our knowledge this is the first graduate program designed specifically for licensing engineering graduates in Technology Education and will train educators for engineering/technology education in K-12. A number of data collection and analysis activities are ongoing in support of the objective to create a contemporary framework for undergraduate engineering pedagogy. Data on student GPAs, graduation rates, SAT scores, and student migration from engineering to other programs at Virginia Tech have been analyzed and are made available to potential users through BEEVT web site (www.beevt.ef.vt.edu). A web-based tool has been developed that allows faculty in different engineering departments to provide feedback for designing freshman year engineering courses. A number of engineering students from freshman to graduate levels participated in a pilot study on use of electronic portfolios in fall '03 and their experiences will be used to design activities related to utilization of e-portfolios in engineering curriculum. In order to better integrate the freshman engineering program with other engineering departments, the collaboration has recently submitted a proposal to the NSF for reformulating the freshman engineering and bioprocess engineering curricula using a spiral curriculum approach.

The paper will discuss progress of various activities and share experiences/efforts of authors leading to this engineering-education collaboration.