The engineering undergraduate curriculum presents substantial opportunities for improvement. Society is calling for a transformation. As the culminating experience for undergraduate engineering students, capstone design team projects represent a window on the curriculum and a particularly fertile ground for understanding these opportunities. However, the factors that influence success and failure in capstone remain an area of inquiry. The work presented here proposes to help us develop a deeper understanding of these factors.

The research presented here uses a mixed methods analysis approach for identifying the critical factors impacting capstone design team success, where success is defined from both student and faculty perspectives. The framework for the research includes factors and their interactions in three fundamental areas: faculty mentorship, student backgrounds, and various contextual influences.

The research capitalizes on the use of survey tools and course data to conduct a mapping of faculty mentor beliefs and practices against student perception and recognition of those practices. In conjunction with student reflective memos containing self-evaluations of their project and team experiences, interactions with faculty mentors, and overall satisfaction with their educational experience, the data will combine to provide a multifaceted assessment of which factors are influential and are value-added to capstone courses. The mixed methods approach will include statistical analysis of programmatic data, student perception of instruction surveys, social network analysis of peer evaluations, faculty teacher belief self-assessments and case-study triangulation with student-authored reflective memoranda.

The ultimate objective of this work is to provide an in-depth understanding of the capstone design experience and insights based upon careful analysis and observations of engineering students working on "real-world" projects. It is envisioned that the results of the research will provide meaningful guidance to students, instructors and stakeholders for improved preparation of young engineers for the profession.

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The public is welcome to attend.