

2015-05-12

# Engineering Leadership Education: A Review of Best Practices

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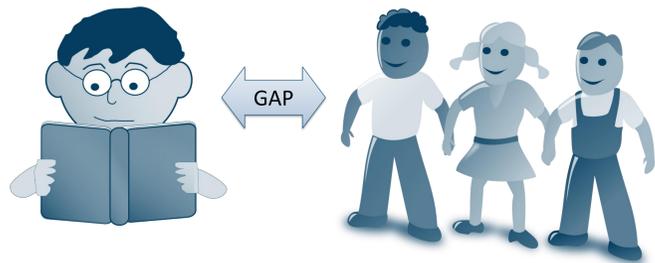
## RESEARCH QUESTION

Based on a review of engineering leadership programs' goals and competencies, what is the main focus of these programs?

## ABSTRACT

**Traditional Engineer**  
- technically competent  
- most University education systems

**21<sup>st</sup> Century Engineer**  
- technically competent  
- teamwork, leadership  
- most engineering careers



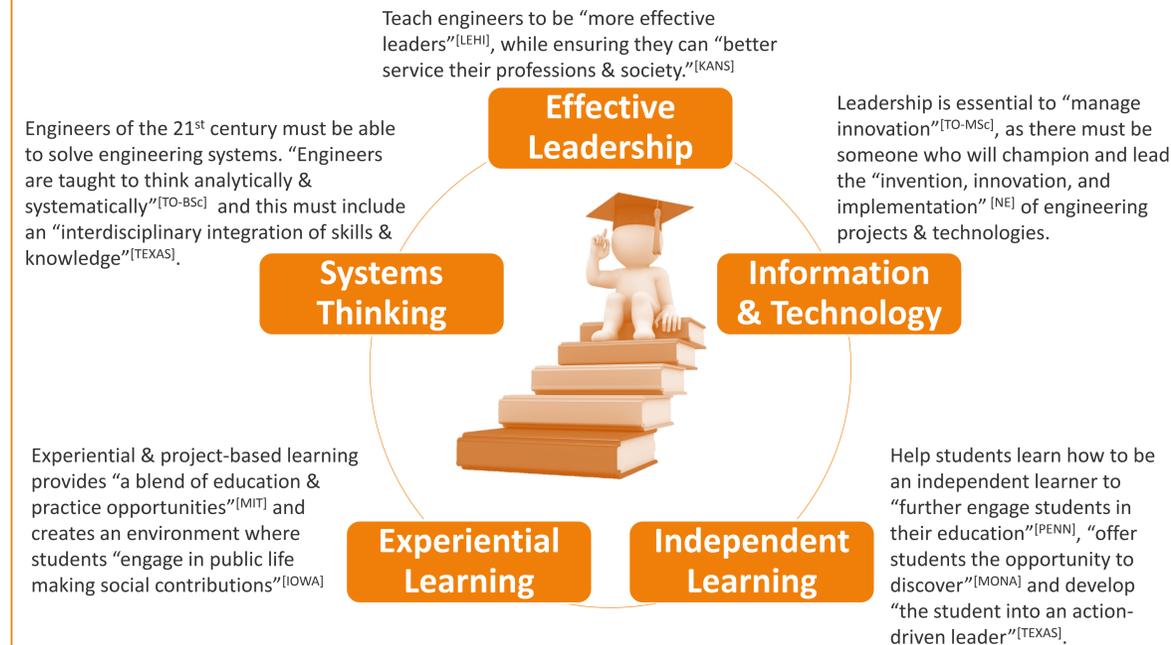
## Filling the Gap: Engineering Leadership Education

- Literature summaries outline existing programs<sup>[3],[5]</sup>
- These summaries provide an overview, but do not give comprehensive detail.
- Case programs were analyzed, including seminar courses, certificates, minors and bachelor programs.
- Specifically, the goal and competencies from each program were compared to determine consistencies and variations in the programs.
- Provides insight on the focus & design of engineering leadership programs, and the progress in the field.



## FINDINGS

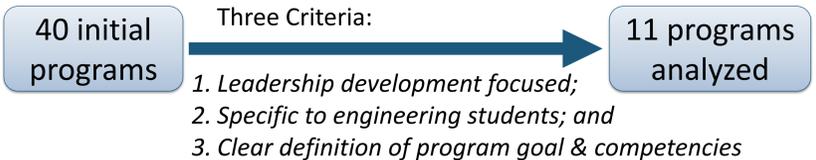
### Engineering Leadership Program Goals



### Engineering Leadership Student Competencies



## METHOD



Program Goals	Student Competencies
<ul style="list-style-type: none"> <li>Broken down into main concepts or ideas</li> <li>The incidence frequency of each concept was determined</li> <li>Five main themes were observed (see middle-top)</li> </ul>	<ul style="list-style-type: none"> <li>High level of diversity with 72 different competencies</li> <li>Frequency determined</li> <li>Six observed in at least 5 of the 11 programs (see middle-bottom)</li> </ul>

## DISCUSSIONS

### Conclusions

- Insight gained into the best practices surrounding engineering leadership program goals and competencies.
- The findings provide a starting point for engineering institutions looking to develop a leadership program.

### Engineering Context

- Engineering leadership and the findings from this study should not be separate from other engineering skills, but should be integrated in the engineering curriculum<sup>[2]</sup>.

### Dynamic Engineering

- Continuous program improvement is essential to success, particularly in the dynamic field of engineering<sup>[2]</sup>

### Programs Analyzed

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