



# Utah's Engineers: A Statewide Initiative for Growth

**Goal:** Increase of 180 BS engineering graduates per year by 2012

## University of Utah Engineering - Undergraduate Enrollment and Graduation

	2005-6	2006-7	2007-8 Start NSF	2008-9	2009-10
Pre-major Enrollment	752	840	737	854	965
Undergrad Enrollment	2134	2000	2099	2167	2298
Graduation	380	360	375	407	???

## Increase in High School Students and Teachers Contacted Under the NSF Grant

	2007-2008	2008-2009	2009-2010 Fall only
Students	389	1197	1432
Teachers, Principals, Counselors	32	97	103

## Classroom Presentation Survey data, n = 1006

	% Strongly Agree or Agree
I am more familiar with engineering as a potential college major and career.	73.7
Engineering now seems like an exciting field to me.	61.7
What I am learning in my high school classes relates to engineering.	68.4
I now know the requirements for entering engineering as a college major.	47.8
I am more likely to choose engineering as a college major and career.	41.9

## 2-way ANOVA Results of 1006 Surveys

Significant differences (p < .05)	No significant differences	Differences across:
I am more familiar with engineering as a potential college major and career.		Gender, Religion
I am more aware of the ways that engineers improve our quality of life.		
The presentation was interesting.		Religion
Engineering now seems like an exciting field to me.		Gender
Engineers use a lot of math in their day-to-day work.		
What I am learning in my high school classes relates to engineering.		Gender
I now know the requirements for entering engineering as a college major.		Gender
I am more likely to choose engineering as a college major and career.		Gender
I would like to know more about engineering as a college major and career field.		Gender

## Getting the Word Out



Demonstrations



College PR



Summer Innovation Summit



Teaching modules

## Effective Recruiting Events

- School Visits
- Career Assemblies
- School / UU Engineering Days
- Meet an Inventor Night
- Summer Camps
- Girl Scout Nights
- Teacher Workshops
- Counselor Workshops (scheduled)
- Dept/College PR

## IMPACT OF PROGRAM ON TEACHERS' CLASSROOM EFFORTS

- Teachers feel pressured by a lack of time to integrate concepts.
- Teachers want more connections to biology and environmental issues.
- Teachers value hands-on nature of teaching modules.
- Teachers desire more collaboration with the University.
- Teachers want increased focus on how to relate math to engineering.

## TEACHERS' PERCEPTIONS OF PROGRAM EFFECTIVENESS

- Coordinate visits with math and science departments rather than individual teachers.
- Consider programming for middle school students
- One-on-one interaction with college students is essential.
- Think about how to reach students who haven't already decided to focus on STEM.

## PROGRAM IMPACT ON COLLEGE STUDENT PERSISTENCE

### Connecting with Engineering Faculty

"I didn't know the kinds of things our professors were involved in until I worked with the...team. They are doing really cool stuff, and important, too."

### Connecting with Course Concepts

"I like the opportunity to do hands-on things... It helps ideas we're talking about in class come to life, and makes me more excited about what I'm learning."

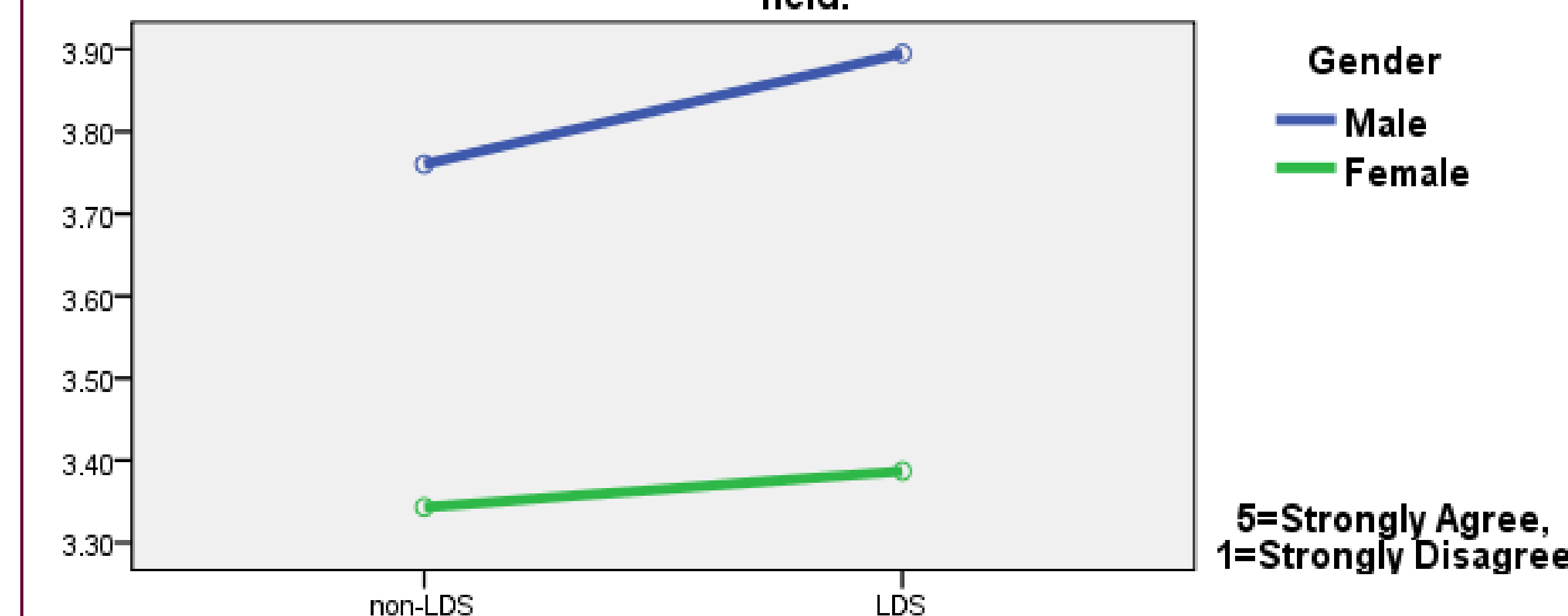
### Connecting with High School Students

"Talking about engineering with high school students has made me more excited about engineering."

### Connecting with Future Engineering Education

"[The program] has increased my interest in going to graduate school and becoming a teacher myself."

I would like to know more about engineering as a college major and career field.



Study data were collected and managed using REDCap electronic data capture tools hosted at the University of Utah. 1) REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies, providing: 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources. © Paul A. Harris, Robert Taylor, Robert Thielke, Jonathan Payne, Nathaniel Gonzalez, Jose G. Cook. Research electronic data capture (REDCap) - A metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform. 2009 Apr;42(2):377-81.

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