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# **Cornell University CUES Summer 2014 Focus Groups Preliminary Results**

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**Y-STEM, Inc.**

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# CUES Summer 2014 Focus Group

## Preliminary Results

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### INTRODUCTION

As part of the evaluation activities of the Cornell University Engineering Success program, focus group interviews were conducted July 21-22, 2014 at Cornell University (Ithaca, NY). Three focus groups (Fall 2013 Spatial Visualization, Summer 2014 Spatial Visualization and Engineering Summer Math Institute 2014) were scheduled prior to arriving and a fourth group (Tutoring) was convened after arrival. A list of participants for each group was compiled by the project coordinator, Dr. Tyi McCray.

### METHODS

Participants were informed about the purpose of the focus group and asked to read and sign an assent form to acknowledge voluntary participation in the focus group. The interviews were recorded using two recording devices. An interview guide was used during each session and follow-up questions were asked to provide participants with the opportunity to elaborate and clarify. The sessions, number of participants per group, and interview times are as follows: Fall 2013 Sp. Vis (7 participants, 79 min); Engineering Summer Math Institute (5 participants, 88 min); Summer 2014 Sp. Vis (9 participants, 77 min); Tutoring (3 participants, 55 min).

### PRELIMINARY RESULTS

#### DESCRIPTIONS OF ENGINEERING (General)

In every focus group the word “challenging” or “hard”, “hard work” or “difficult” was provided as one of the three descriptors related to engineering. “Rewarding” was another descriptor that was frequently used.

##### **Positive descriptions of engineering**

Incoming freshman responded with descriptions of engineering that included “innovative”, “futuristic”, “exciting”, “progressive”, “possibilities”

##### **Negative descriptions of engineering**

Workload or amount of work was mentioned frequently as a negative aspect of engineering

#### SPATIAL VISUALIZATION (Fall 2013 and Summer 2014)

There were notable differences in the perceptions of the two groups; one explanation for difference may be due to amount of time passed since course completion

##### ***Fall 2013 Sp Vis group provided reflections on the utility of particular aspects of the course:***

###### **Positive reflections**

- Interaction with professors as “clients”
- Favorable responses/feedback from “clients”
- Opportunity for practicing public speaking/presentation skills
- Opportunity to work on a complex project with a team
- Direct application to future coursework (i.e. Multivariable calculus)
- Provided more freedom to contact professors about future research opportunities (faculty seem less intimidating after Sp. Vis experience)

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### Negative reflections

- Scheduled time of course (Friday afternoon)
- Resource overload, particularly software (too many to explore more fully to develop proficiency)
- One credit hour not enough
  - the combination of the above three resulted in students feeling that most material and software apps had to be learned about outside of class meeting time; “teaching yourself” perception widespread in group

*Summer 2014 Sp Vis group provided reflections on the utility of particular aspects of the course:*

### Positive reflections

- Exposure to some of the fundamentals of engineering and software and programming apps

\*There were more negative than positive comments about Sp. Vis. in this group. However, Math 1910 perceived as a good refresher course and provides exposure to content not covered in high school

### Negative reflections

- Resource overload, particularly software (too many to explore more fully to develop proficiency)
- Course time not enough to adequately cover material; “teaching yourself” perception widespread in group
- Complex projects that are hard to understand
- Perception of disconnect between course content and project work
- Lack of engagement on projects that have a considerable bioengineering or biomedical engineering emphasis; most participants reported little or no interest in bioengineering or biomedical engineering
- Perceptions of projects having no use to “clients”
- Perceptions of bothering professors (“clients”)

## ENGINEERING SUMMER MATH INSTITUTE

### Positive reflections

- Opportunity to take a course in summer for the purpose of making academic progress
- Opportunity to take a course with smaller class sizes

### Negative reflections

- Misunderstanding of the nature of the summer research component
- Lack of engagement with project topics

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### TUTORING GROUP

#### Positive reflections

- Scheduling availability of tutoring
- One on one
- Peer tutoring highly preferred over TA sessions and faculty office hours

#### Negative reflections

- Receiving tutoring effectively without violating university academic code (not working on homework problems during tutoring sessions)
- Needing or receiving tutoring not something to “brag about” in an “environment like Cornell”

### ACADEMIC AND RESEARCH SKILLS

Participants did not or struggled to identify any particular skills as academic or research.

Skills noted: working with a team, leading a project, presentation/public speaking, time management; coding/programming/computer science skills; familiarity with industry-relevant software

#### Challenges to being successful:

*Balance* (coursework, extracurricular, social life); *competition* (comparing self to others based on high school preparation); *the dual perception of engineering as both versatile* (career) *and limiting* (academic coursework and campus life)

### RECOMMENDATIONS REGARDING CUES SUPPORT

#### *For further discussion:*

**Of the four focus group sessions conducted, the Summer Institute focus group stood out in tone and the nature of participant reflections.**

**The ESMI participants were the least forthcoming in their responses to questions that were initially posed per the interview guide. What seemed to be a lack of willingness to reflect began to dissipate when participants were asked about their expectations regarding the Institute. Participant comments indicated a considerable disconnect between what participants expected from and what they experienced during the Institute.**

**There is a need for continued follow-up of these participants and others who may fit a similar profile. Depending on summer course outcome and expected course load,**

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**these may be the students who can benefit from a proactive rather than reactive tutoring intervention. Additional academic support may need to be incorporated during any future summer institute participation.**

**The Spatial Visualization course does appear to have resulted in improved outcomes in at least one of the Math courses (based on self-report of the Fall 2013 cohort). We will need to confirm the self-reported outcome with course data. We will also track the Summer 2014 cohort to determine if there is a similar outcome for this group.**

**Based on the responses of the participants in the Tutoring focus group, this intervention resulted in the desired outcomes – primarily retention. Responses seemed to indicate that participants sought out tutoring in a proactive manner. Despite any “negative” perceptions associated with receiving tutoring, participants indicated overall success with the service and suggested more students may take advantage of the service if faculty referred to it more often.**