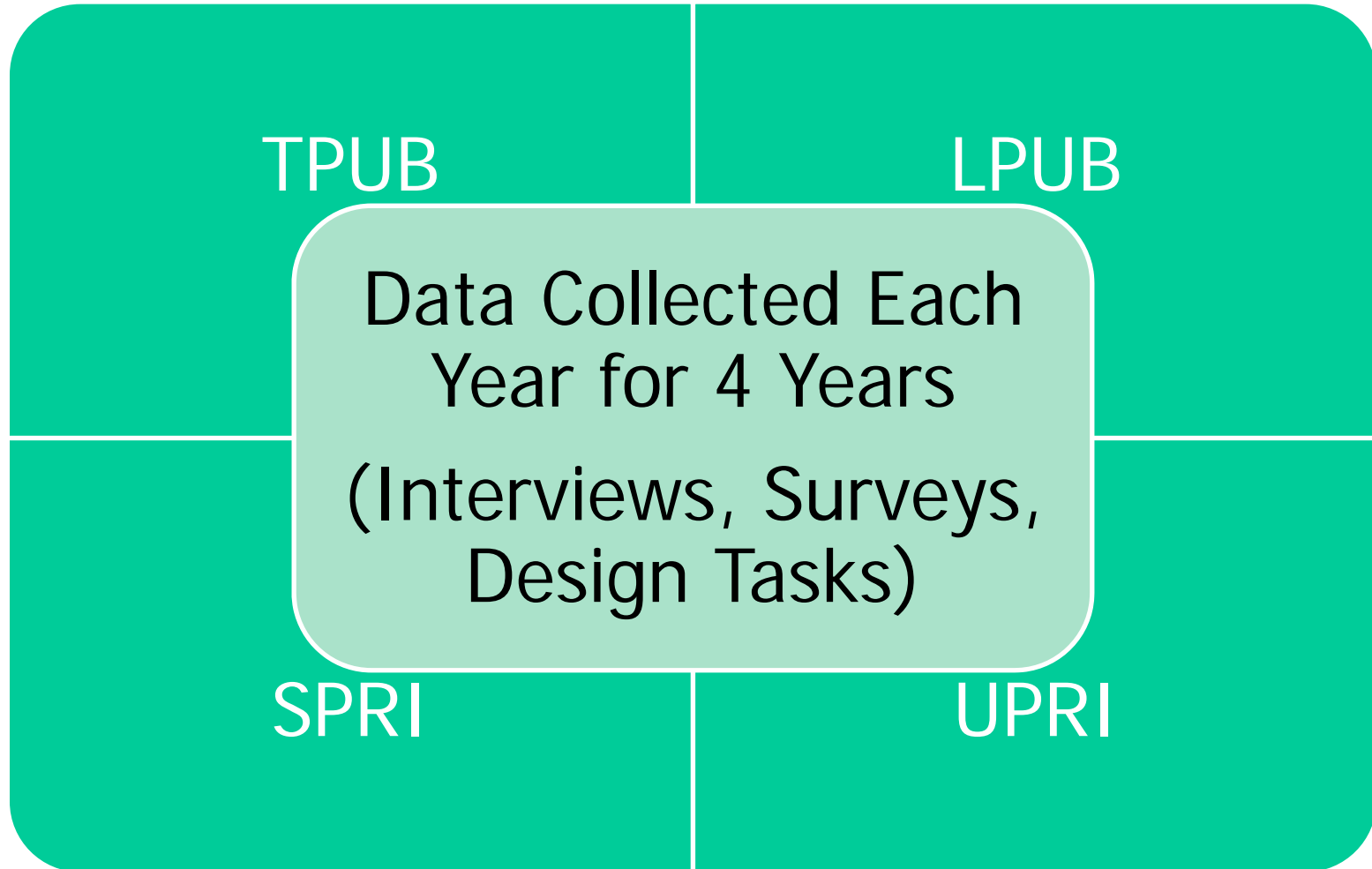


# I'm Graduating This Year! So What IS An Engineer Anyway?

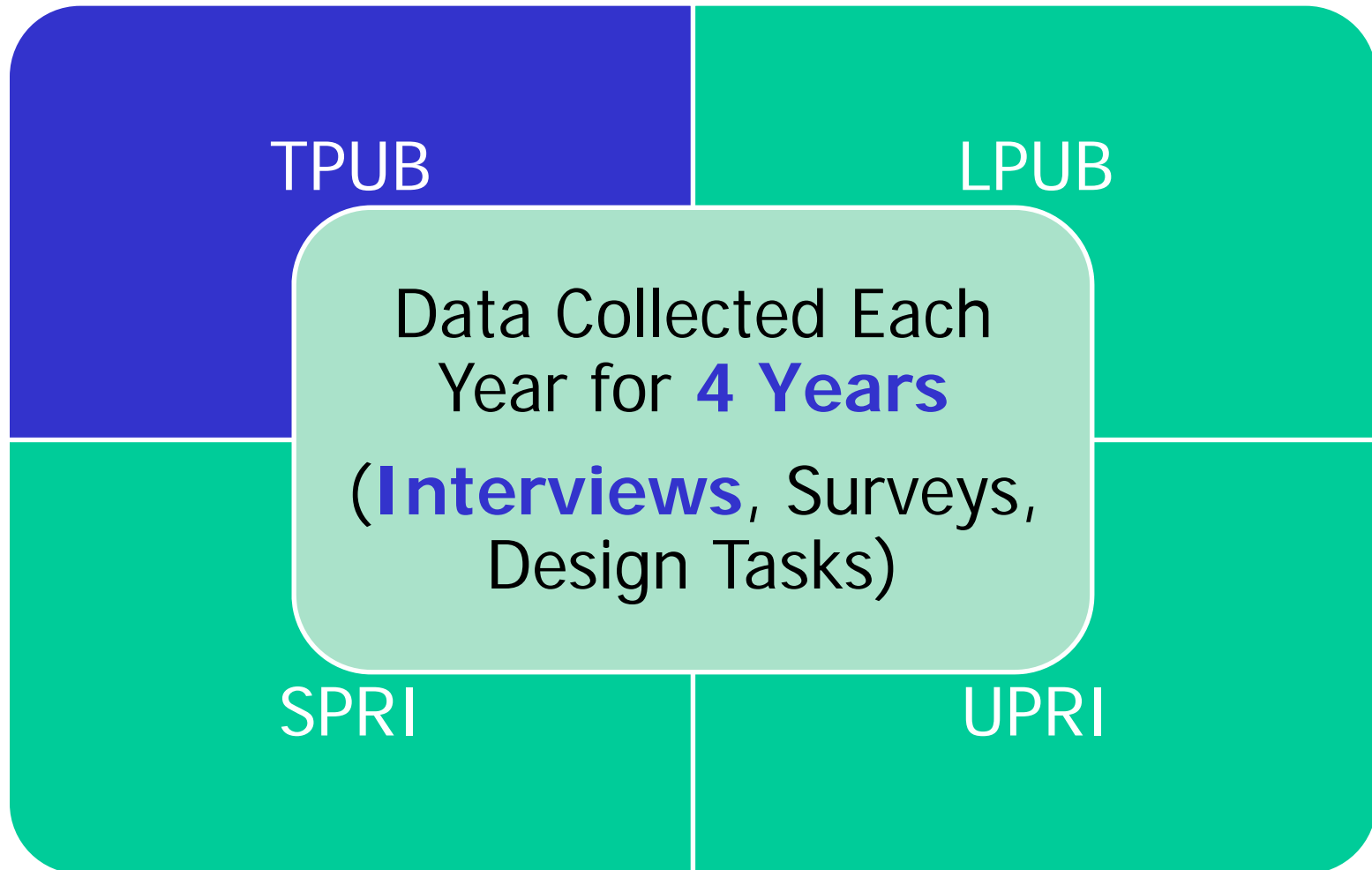
Center for the Advancement  
of Engineering Education

*Holly Matusovich, Virginia Tech*  
*Ruth Streveler, Purdue University*  
*Ronald Miller, Colorado School of Mines*  
*Barbara Olds, Colorado School of Mines*

# APS Research Study



# This Research Study

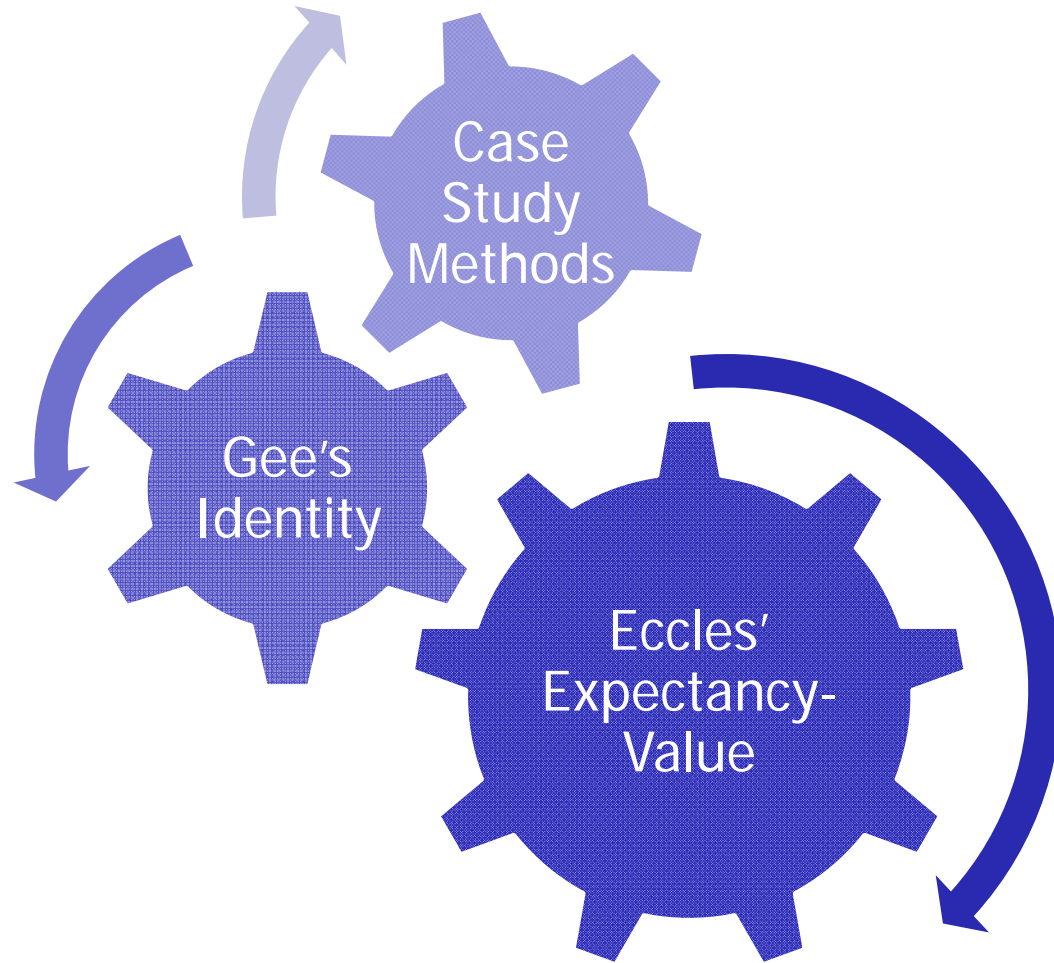


# Impetus for This Study

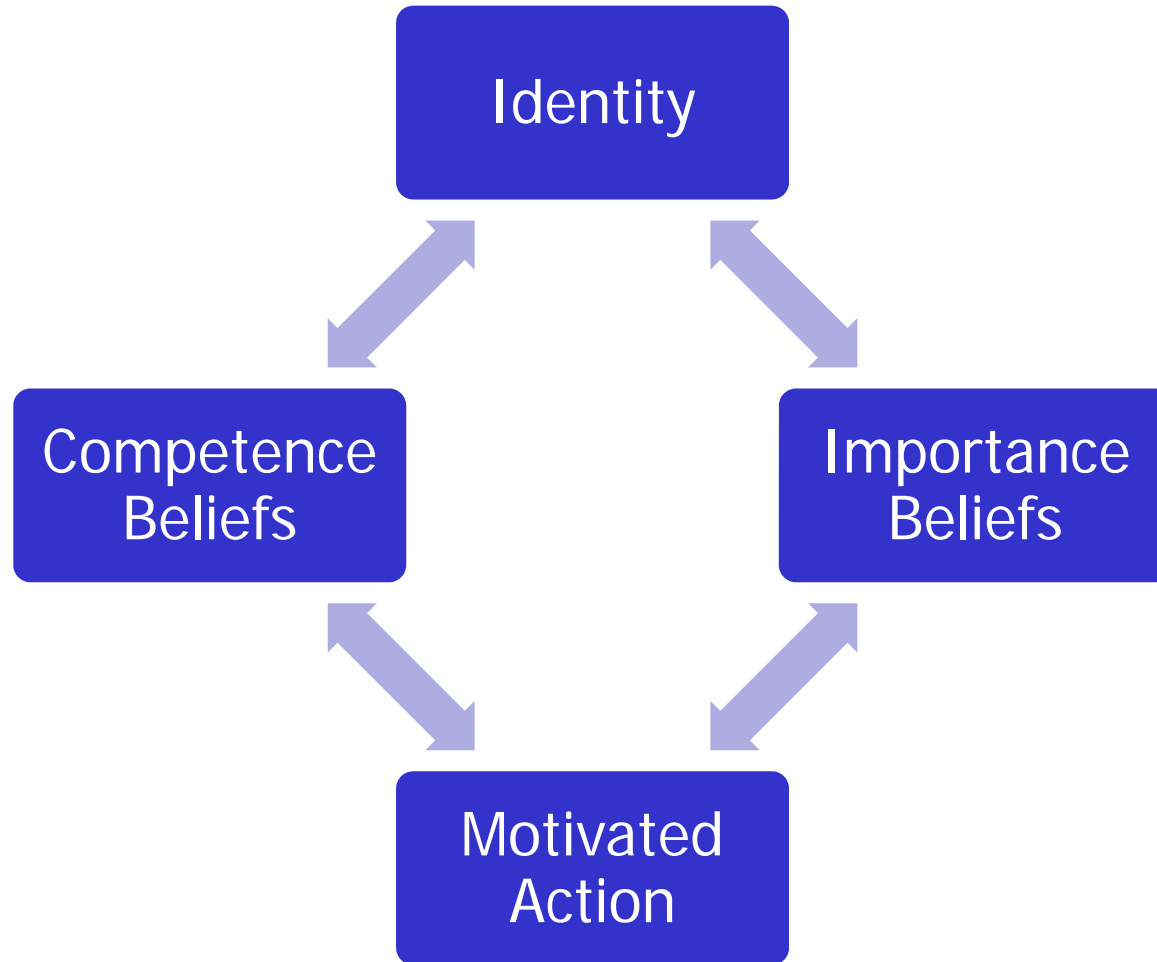
- Persistence (women) important issue
- Persistence from a motivational perspective
- Persistence from a student-centered perspective

How do students' beliefs about being engineers in the future contribute to their choices to pursue engineering degrees?

# Frameworks



# Simplified: Eccles' Expectancy-Value Theory



# Gee's Identity Categories

## Discourse Identity

- Trait recognized through discourse/dialog

## Nature Identity

- Develops naturally, i.e. not a matter of choice

## Affinity Identity

- Engaging in activities believed to be characteristic of engineers

## Institutional Identity

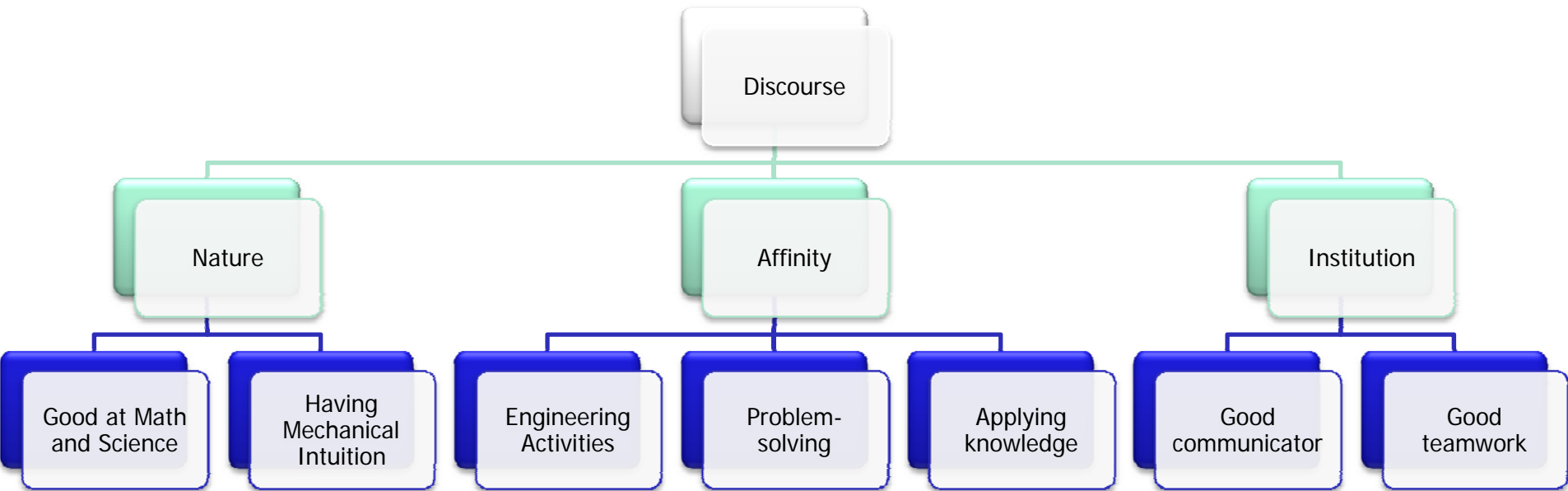
- Associated with being an engineer in a particular setting

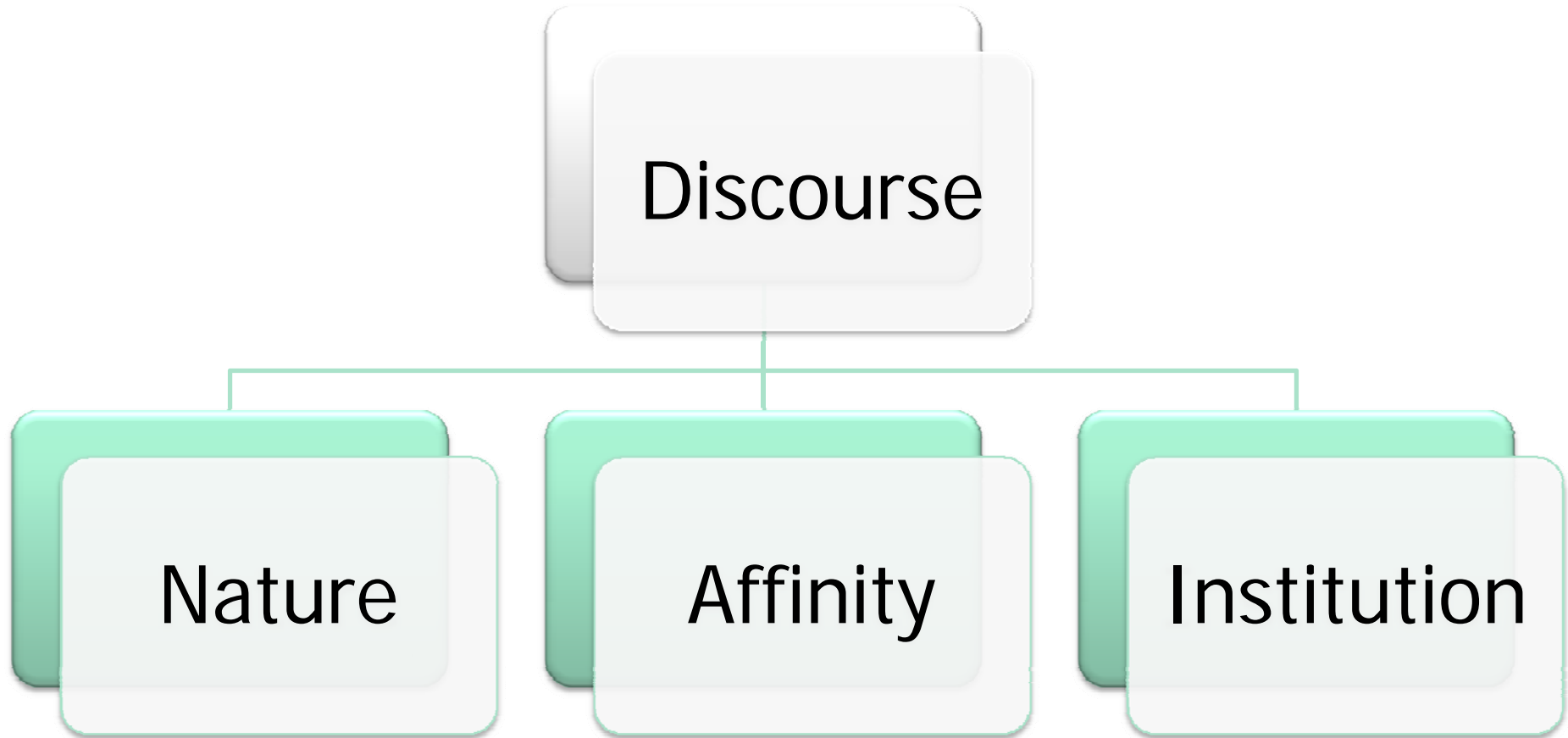
# Methods

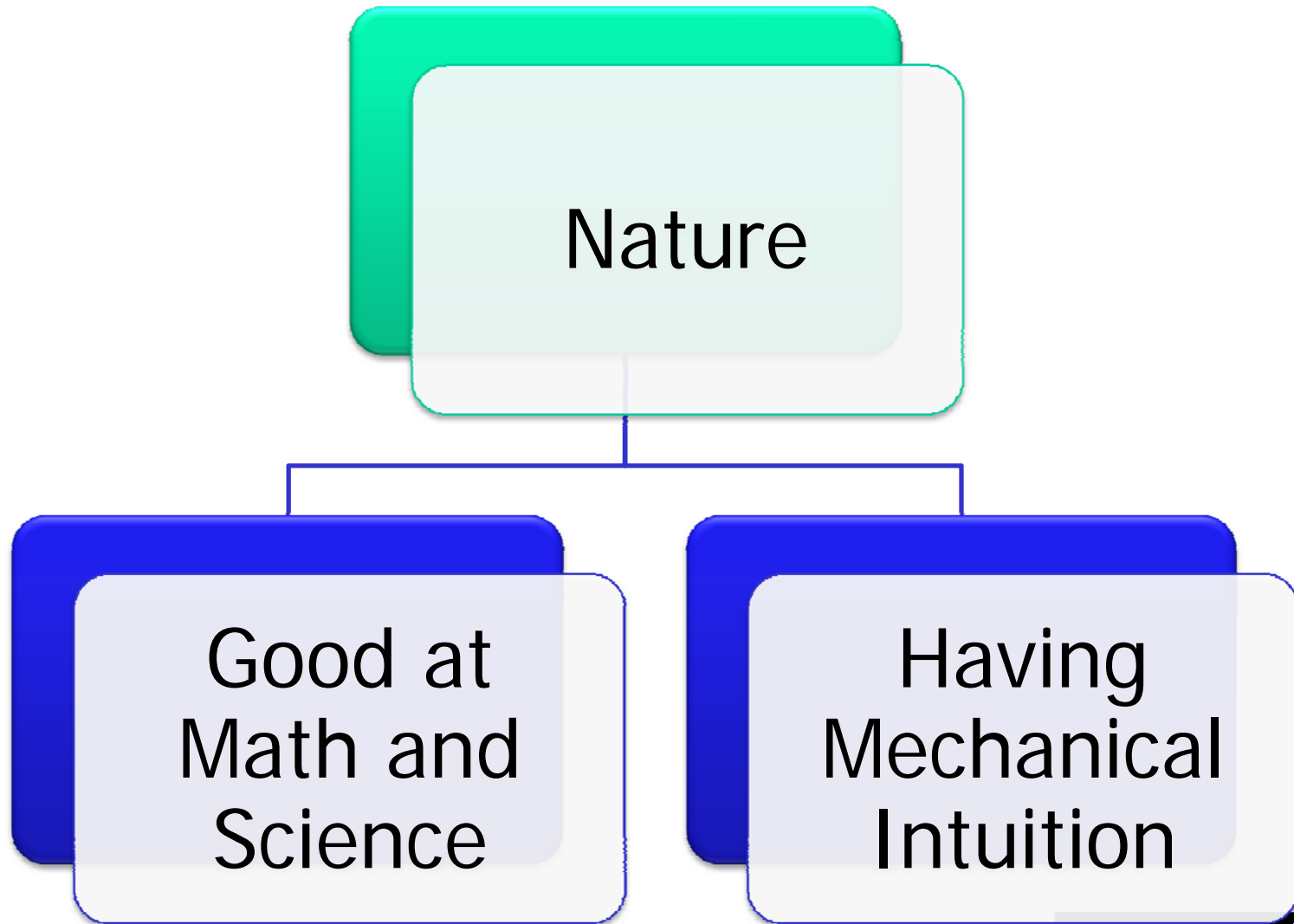
- Multiple Case Study
- 5 male and 5 female participants
- Semi-structured interviews conducted annually
- Recorded and transcribed
- Inductive and A Priori coding
- Patterns/Categories



# Results







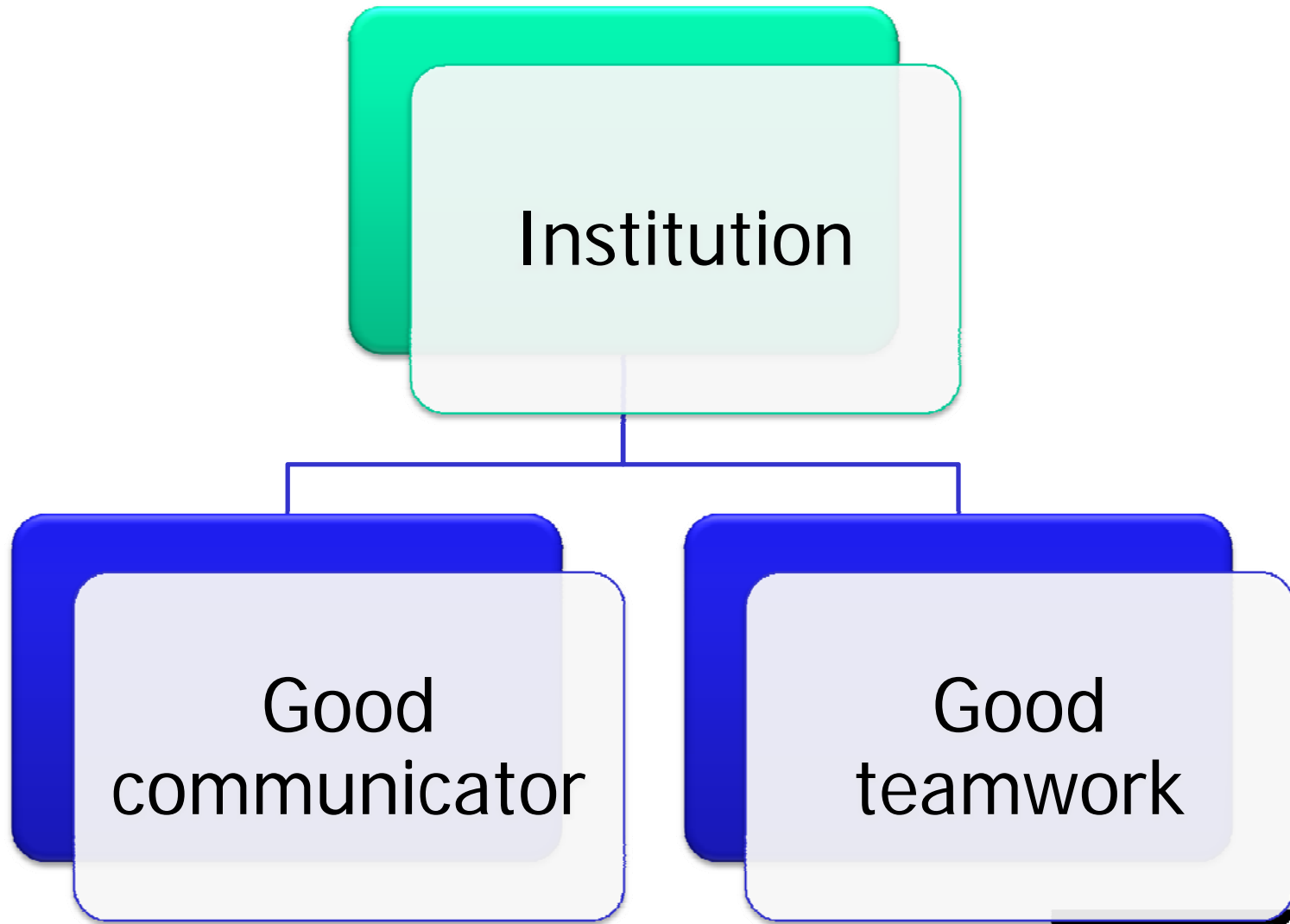
```
graph TD; A[Affinity] --- B[Engineering Activities]; A --- C[Problem-Solving]; A --- D[Applying Knowledge]
```

Affinity

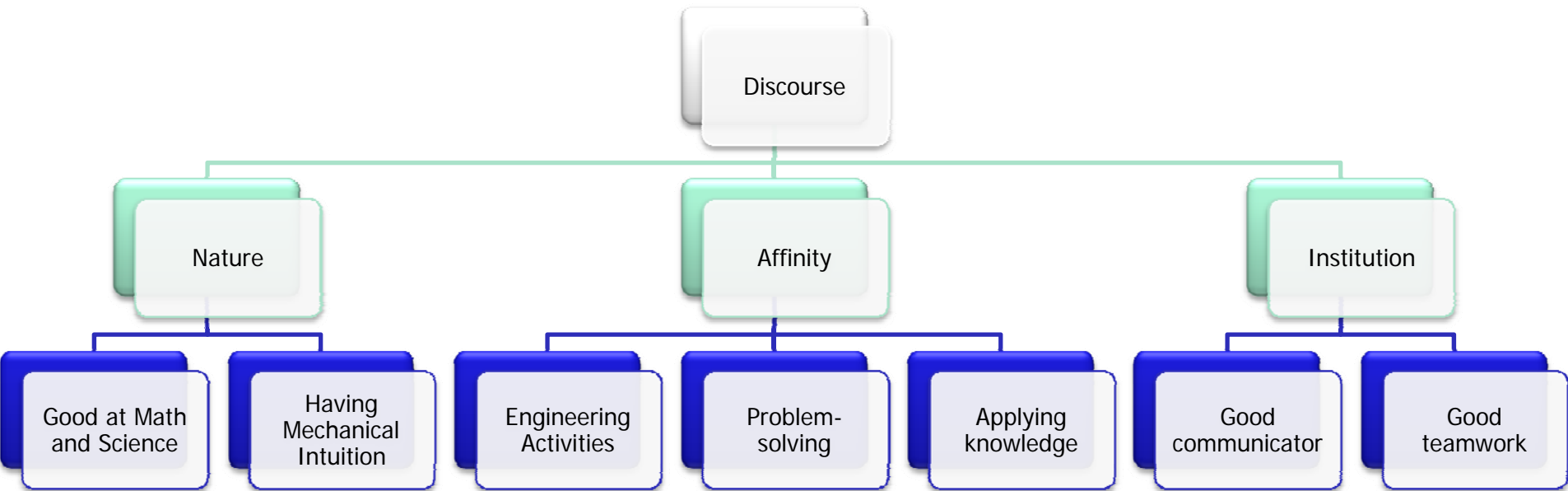
Engineering  
Activities

Problem-  
Solving

Applying  
Knowledge



# Results



# Uncertainty

**Tim**

“...**I don't know what I'm gonna' do as a [major]**. There are different options but the only reason I know that is 'cause of my internships.” (fourth year)

**Anna**

“**I don't really know what to expect** so it is hard to say for sure, like, 'Yeah, I'll be great.'” (third year)

**Marie**

“...and the whole deciding your life direction wasn't easy this year. 'Cause I'm **not** looking at a person who has a vision of me really ten years from now.” (fourth year)

# SO WHAT?



# More Questions

- How do our students learn what it means to be an engineer?
- What messages we are sending about being engineers? Are these the right messages?
- Why do some students remain uncertain?

# Suggestions for Practice

- Ground lectures and assignments in examples of engineering work
- Model and practice engineering work
- Represent a variety of engineering work

# Acknowledgement

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*CAEE is a collaboration of five partner universities: Colorado School of Mines, Howard University, Stanford University, University of Minnesota, and University of Washington.*

# Identity



What are students' perceptions of themselves as engineers in the future?