

MORE TO SAY

Analyzing Open-Ended Student Responses to the **APPLE** (Academic Pathways of People Learning Engineering) Survey

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Center for the Advancement of Engineering Education → Academic Pathways Study



APPLE (Academic Pathways of People Learning Engineering) **Survey**

10 minute online survey deployed in **Spring 2008**^{*}, paid \$4

BROAD NATIONAL SAMPLE

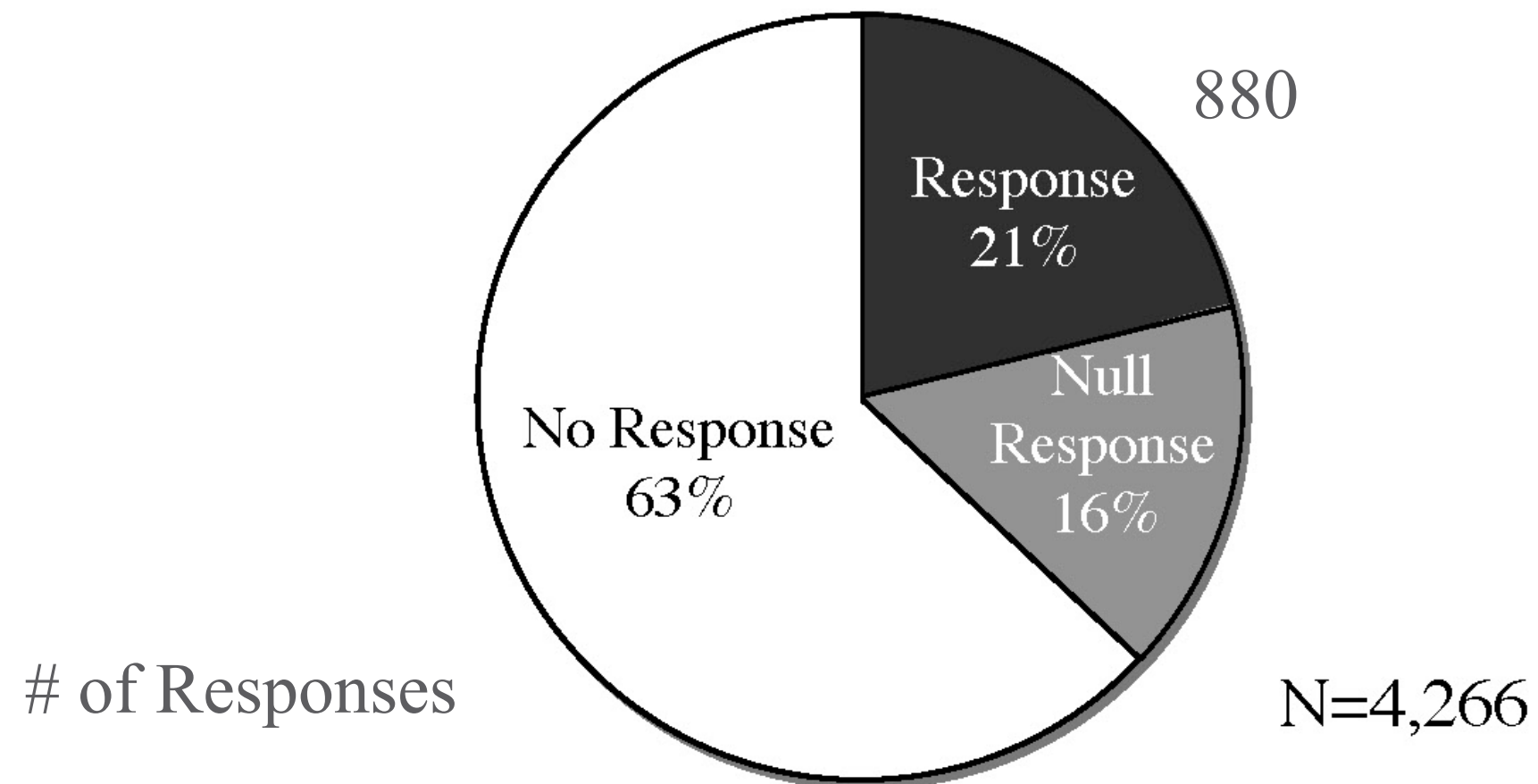
surveyed **4266** undergraduate students at **21** u.s. institutions

www.applesurvey.org

^{*}prior to economic downturn

OPEN-ENDED QUESTION AT END OF 50-ITEM SURVEY

Is there anything else you want to tell us that we didn't already cover?



For inter-rater reliability
between 2 coders,
Cohen's kappa:
moderate at .532

EMERGENT THEMATIC ANALYSIS

CATEGORIES:

School

Individual Beliefs

SUB-TOPICS:

- **Advising**
- **Gender/URM**
- **Social**
- **Curriculum**
- **Language**
- **Co-op**

- **Calling**
- **Challenge**
- **Future**
- **Understanding**
- **Lifestyle**
- **Money**

20% sampled for inter-rater reliability between 2 coders, Weighted kappa: **very good at .832**

School

- **Advising** - *student advising/mentoring, formal and informal*
- **Gender/URM** - *gender, under-represented minorities, “other”*
- **Social** - *social norms of engineering work*
- **Curriculum** - *teaching pedagogy and curriculum*
- **Language** - *English language proficiency*
- **Co-op** - *co-operative work arrangements with industry*

Individual Beliefs

— **Calling** - *as life's calling, meant to be or not meant to be*

— **Challenge** - *engineering is hard, or too hard*

— **Future** - *career placement, worries about after college*

— **Understanding** - *knowing what engineering is, practice of*

— **Lifestyle** - *work/life balance*

— **Money** - *financial concerns*

20% sampled for
inter-rater reliability
between 2 coders,
Weighted kappa:
moderate at .599

HOW NEGATIVE / POSITIVE WERE THE RESPONSES?

*very
negative*

*slightly
negative*

neutral

*slightly
positive*

*very
positive*

1

2

3

4

5



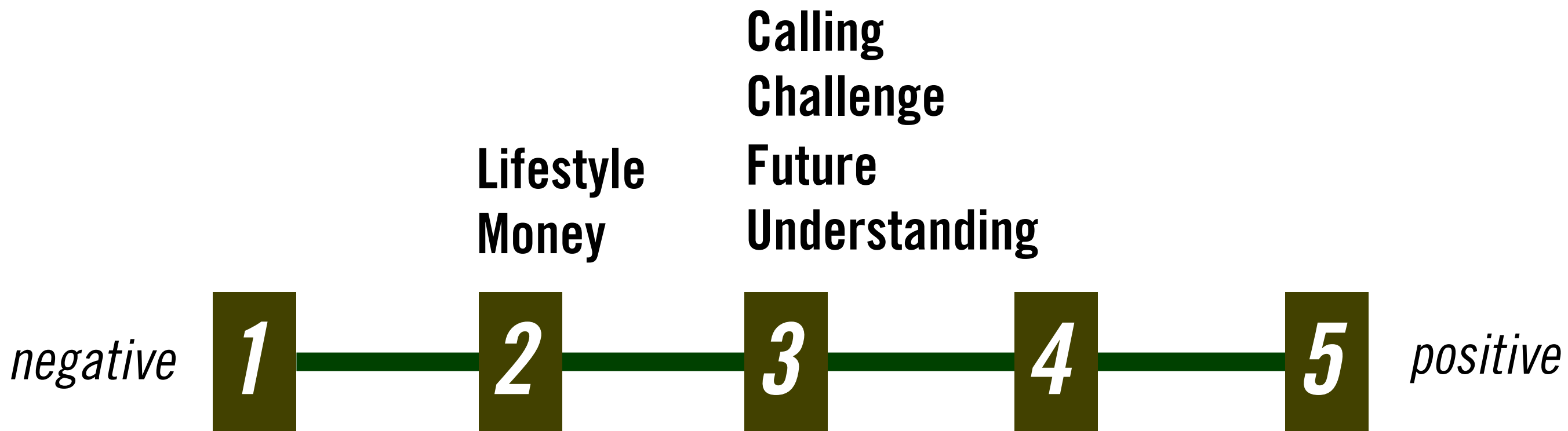
School

Advising
Gender/URM
Social
Curriculum
Language

Co-op



Individual Beliefs



EXAMPLE PARTICIPANT RESPONSES:

“*[my institution]* sucks”

“*[my institution]* rocks”

School : Advising

“... the academic advising from [*my institution*]'s *central advising has been incorrect, inconsistent, and typically rubbish (at best)*”

(2, Advising)

School : Gender/URM

“As a female engineering student, I have noticed that the engineering courses at [*my institution*] are generally not composed of more than 5-10% female students. For me, this can be overwhelming at times.” *(2, Gender/URM)*

School : Social

“... Engineers have poor social communication skills and don't get girls.”

(2, Social)

School : Curriculum

“Engineering classes should start as soon in the college career as possible and should largely consist of hands-on and industry-relevant activities”

(3, Curriculum)

School : Language

“It is very hard to learn from TAs who cannot speak English very well and who cannot understand our questions.”

(2, Language)

School : Co-op

“I had very little idea of what a job in engineering consisted of before I became a co-op student. I think these types of programs are crucial to creating capable engineers.” *(4, Co-op)*

Individual Beliefs : Calling

“... For me it was wondering who made cars... once I got into school I realized I was in the right profession... and I love it.” *(4, Calling)*

Individual Beliefs : Challenge

“Engineering classes are very hard; however I cannot picture myself studying another major...
Work hard or die alive!” *(5, Challenge)*

Individual Beliefs : Future

“I studied engineering to go into business. I feel a technical background with study in business will make my goals of company ownership a reality...”
(3, Future)

Individual Beliefs : Understanding

“Need to do a better job marketing engineering programs to students. Many people who would do well in engineering do not pursue a degree simply because of lack of knowledge and exposure.”

(2, Understanding)

Individual Beliefs : Lifestyle

“... I sometimes feel as if earning an engineering degree requires a lot of sacrifice especially in terms of social involvement and a healthy lifestyle.”

(2, Lifestyle)

Individual Beliefs : Money

“... School is too expensive. I would enjoy it much better if I wasn't financially stressed about it.”

(2, Money)

CONCLUSIONS



CONCLUSIONS

- + adding to quantitative findings from survey
- + adding student voices
- + adding issues in that not otherwise captured
- + inform future deployments of the the survey

CONCLUSIONS

What can the **School** change about **Individual Beliefs** ?

What can **Individual Beliefs** change about the **School** ?



ACKNOWLEDGEMENTS

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