

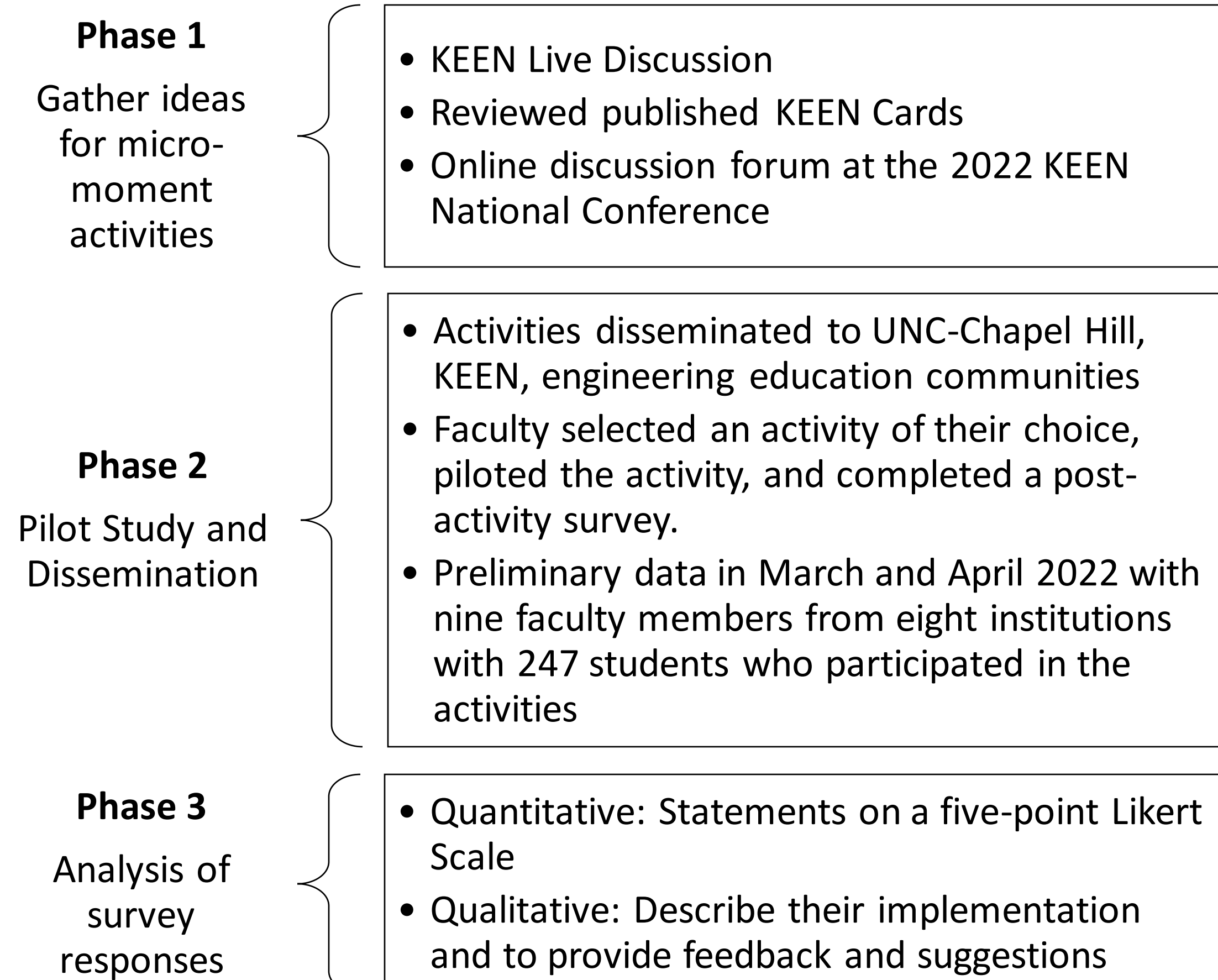


## Background

**Entrepreneurial Minded Learning (EML) Micromoment Activities:**  
Small-scale EML activities that can be completed in 2-30 minutes.

- EML is often associated with large scale project-based activities, which can be daunting for busy faculty to implement.
- To make implementation easier, we developed a set of 25 micromoment activities that faculty could immediately implement in their courses.
- Our hypothesis is that these "micromoment activities" will help students to develop their entrepreneurial mindset, while requiring minimal preparation and class time.

## Methods



## P1: Activity Examples

Title	Activity	Time (min)
<b>Question Frenzy</b>	Present a topic, image, or statement and ask students to list as many questions as possible surrounding the stimuli within 2 minutes. Encourage the crazy!	5
Developed from KEEN Cards [1, 2, 3]		
<b>What is at stake?</b>	Present a product, system, or process to students. Ask students to brainstorm 5-10 stakeholders and features of the product, system, or process. To create a Stakeholder-Feature Model use the list to draw a line between the stakeholders and their respective desired features.	15
Developed from KEEN Cards [4]		
<b>Bodystorming</b>	Meet with students in a public area that is a heavily populated area (ex. cafeteria, student union) in which students are interacting with a product. Ask students to observe the area for 15 minutes. In pairs, ask students to identify an individual who interacted with a product, what was the value of the product, and feedback to improve the product for that particular user. Bring students together to do a brief share-out for 10 minutes.	30
Developed from the Live Discussion		

List of all micromoment activities



KEEN Card #3080: Creating micromoments to develop a student's entrepreneurial mindset



Engineering unleashed account needed

## P2: Pilot Study

12 implementations for seven activities

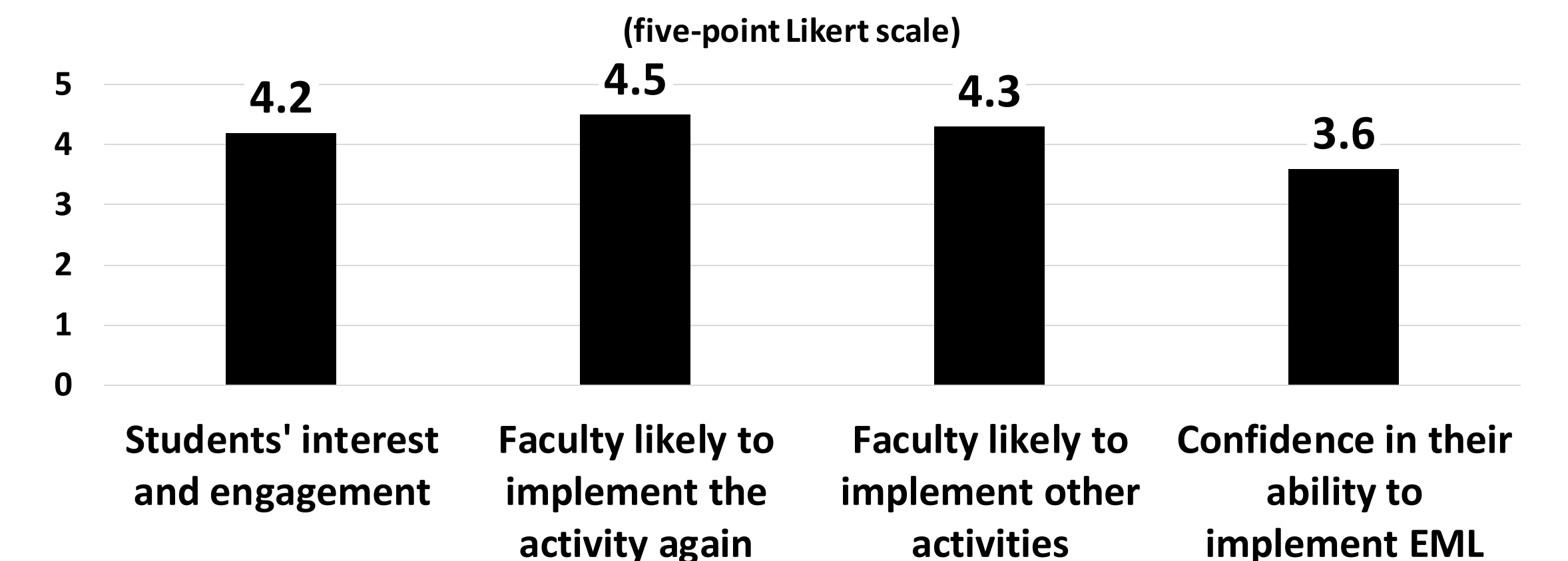
- Faculty information:
  - Type of position: Tenure Track (n=6), teaching track (n=2), clinical (n=1)
  - Range of experience: 1-5 yrs. (n=3), 6-10 yrs. (n=3), and 11-15 yrs. (n=3)

## P3: Results

"I used the micromoment activity to allow for further consideration of the concept of design."

"The activity helped students clearly recognize value by thinking and writing it out."

Influence of the micromoment activities



## Discussion and Future Work

- Micromoment activities are a useful tool for busy faculty to easily implement EML in the classroom
- Future work:
  - Further develop these activities, and seek feedback and ideas from engineering educators
  - Collect additional data in Fall 2022
  - Adapt to a physical card deck

## References

- [1] M. Daughtery, *Question Storming for Product Identification*, January 2021. Accessed on: January 10, 2022. [Online]. Available: <https://engineeringunleashed.com/card/2536>
- [2] A. Minigan & C.T. Garibay, *Implementation of the Question Formulation Technique as a Teaching Strategy in Renewable Energy Engineering Education*, June 2020. Accessed on: January 10, 2022. [Online]. Available: <https://engineeringunleashed.com/card/629>
- [3] G. Mowry & K. Nepal, *QFT in Circuits Analysis Course*, November 2017. Accessed on: January 10, 2022. [Online]. Available: <https://engineeringunleashed.com/card/1102>
- [4] A. Cheville, *Dr. Pivotlove - or how I learned to get students to unfreeze their thinking by talking to clients*, May 2019. Accessed on: January 10, 2022. [Online]. Available: <https://engineeringunleashed.com/card/1143>

## Acknowledgements

This work is funded by the Kern Family Foundation, KEEN Engineering Unleashed Fellowship.