

# ***Using Visual Data Sources to Explore Students' Perceptions of Disciplines***

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# *Our Plan Today*

- Introduce yourselves
- How do students talk about their perceptions?
- Drawing activity
- Our approach in Foundations of Engineering
- Q&A

# *Introductions*

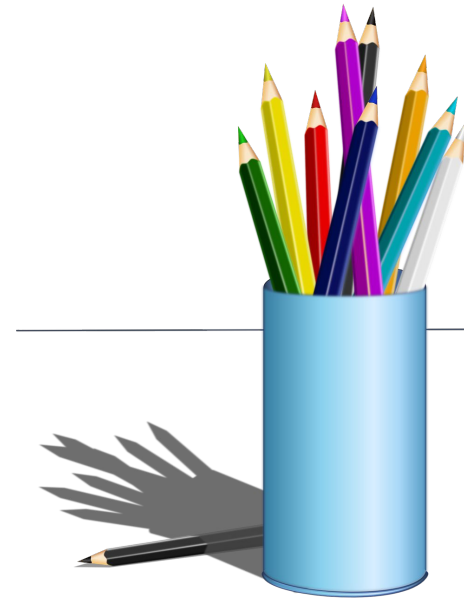
- About us
- Tell us about yourselves
  - Department?
  - Main role?
  - Something interesting about you

# *Student Perceptions*

- What have you done in your classrooms when you needed to share their thoughts about a “big picture” piece of the course material?
  - For example, for us, a big picture question is to ask them “what is engineering?” because understanding their perceptions of the field is really important for our class

# *Time to Draw*

- What is your discipline?
- Draw it.



# Methodology

- Arts-informed methods are usually approached as traditional forms of qualitative data (i.e., qualitative coding) (Shannon-Baker & Edwards, 2018).
- Visual methods used to complement, expand, and explain complex phenomenon
  - Communicate components of a phenomenon that are not easily verbalized
  - Participants might be more comfortable
- Concerns for rigor

# Methodology

## ● Stage 1: Initial coding

Research Question: Draw a picture the conveys your experiences and feelings about the after-school program (ASP).



*Note: Replicated from Edwards (2017).*

## ● Stage 2: Focused coding

### Initial codes

- Bright sun
- Blue clouds
- Small green trees



### Focus codes

Emphasizing natural surroundings

# Methodology

- **Stage 3: Separate / integrate coding**

Think aloud/reflect

- Group codes that have a common theme
- Separate codes that don't go together
- Provides patterns and an understanding of the phenomenon to generate knowledge



# *Trade with your neighbor*

- Let's go through the process together--what do you see?
- Look for initial themes

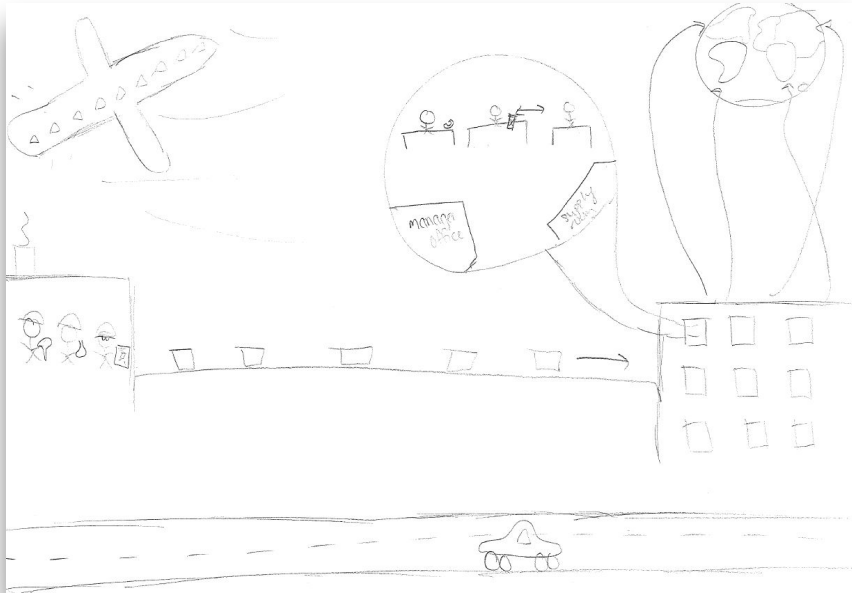
# Overview of *ENGE 1215*

- Required course for all first-year engineering students at Virginia Tech
- Covers a variety of outcomes:
  - Investigating specific engineering majors
  - Problem Solving
  - Teamwork, etc.

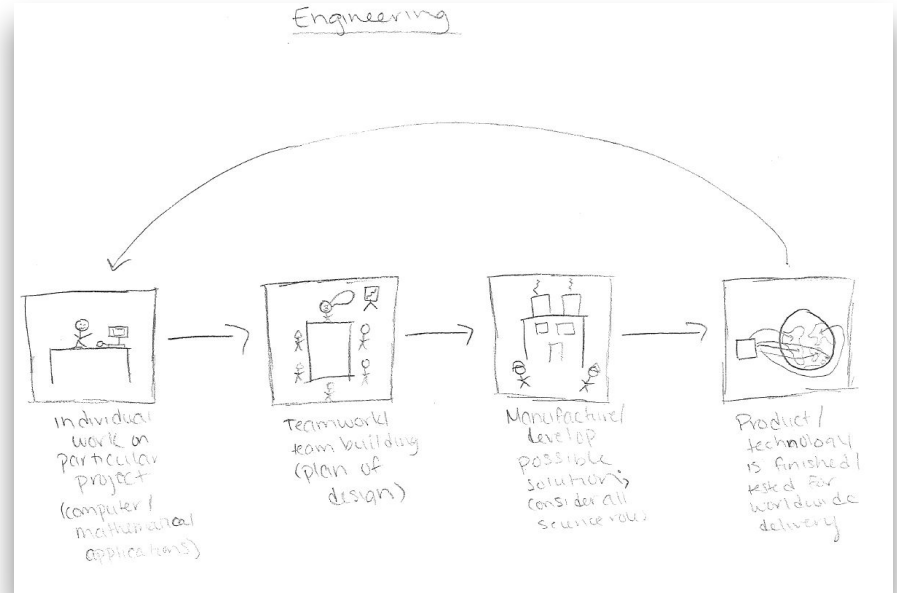
# *Examples*

- Let's look at a few examples of how students responded to this exercise in ENGE 1215

# Example 1

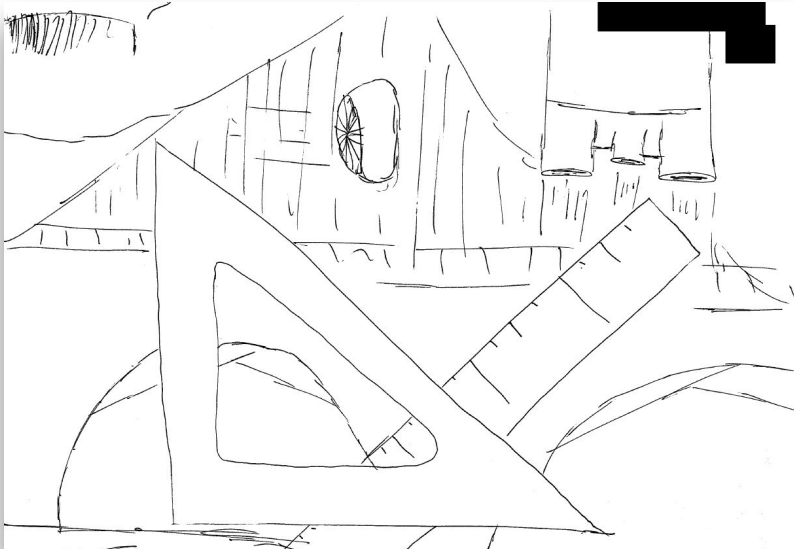


Beginning of Course

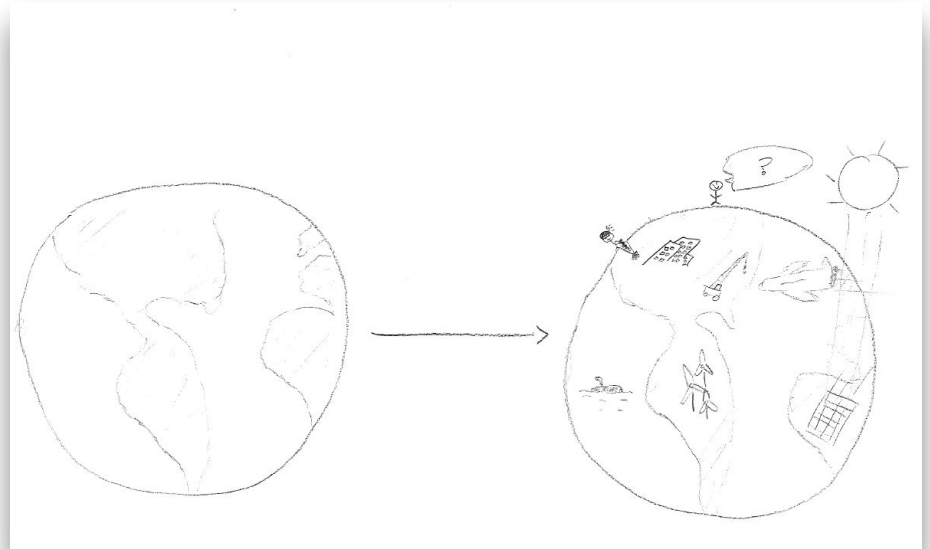


End of Course

## Example 2

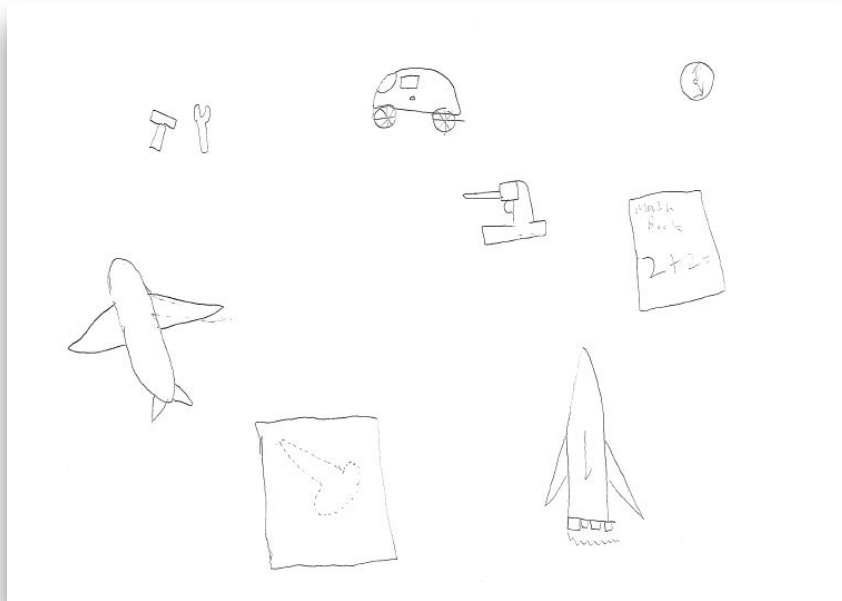


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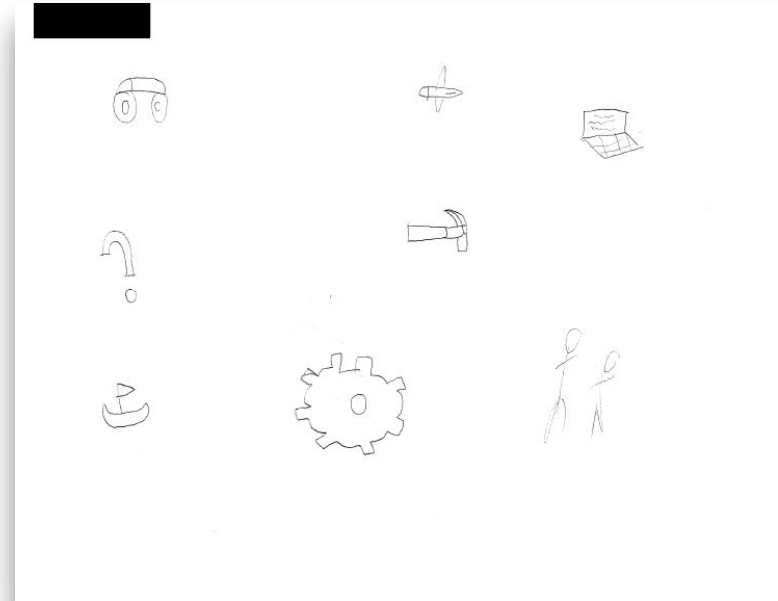


End of Course

## Example 3

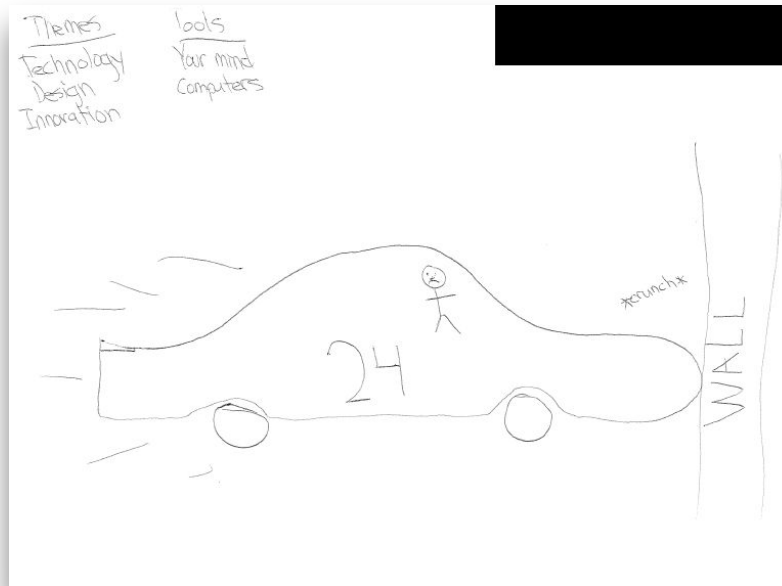


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# Example 4

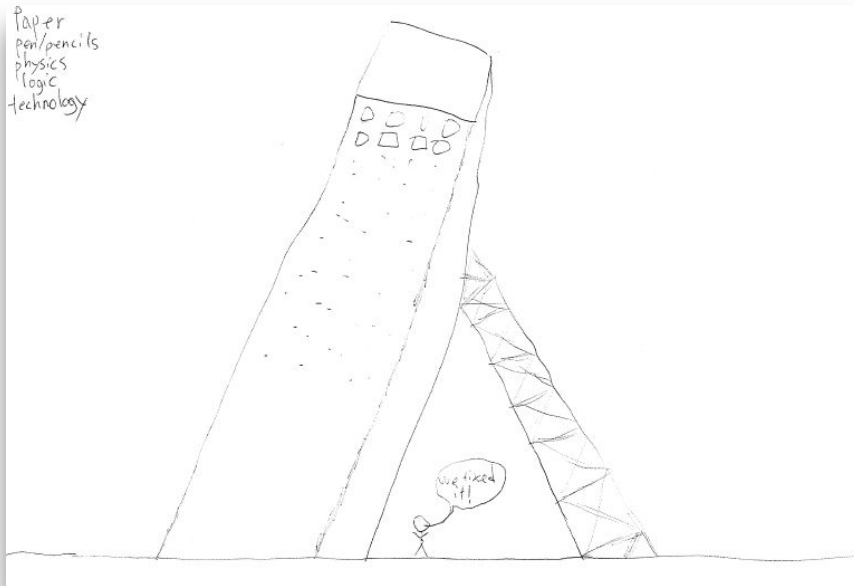


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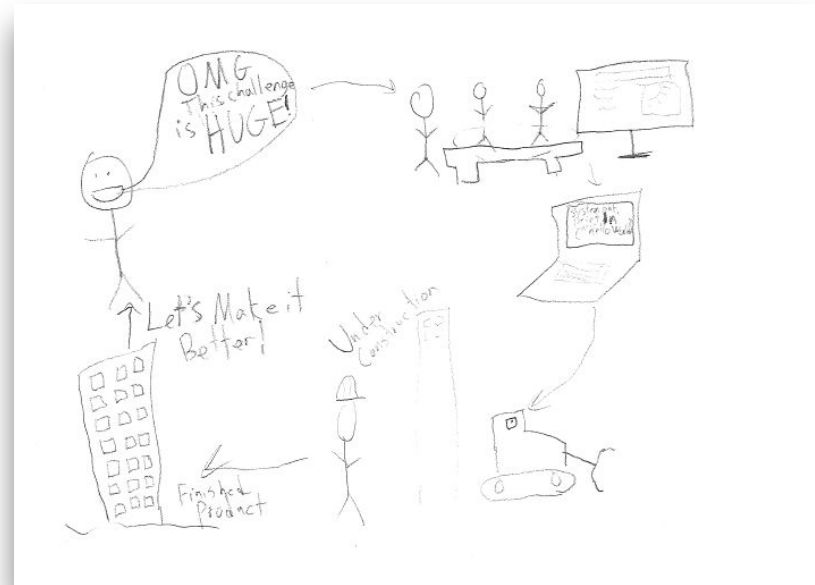


End of Course

# Example 5



Beginning of Course



End of Course



# *Helpful materials you can use*

- Cole, A. L., & Knowles, J. G. (2011). Drawing on the arts, transforming research: Possibilities of arts-informed perspectives. In *Methodological Choice and Design* (pp. 119-131). Springer, Dordrecht. [Chapter 11:  
[https://link-springer-com.ezproxy.lib.vt.edu/chapter/10.1007%2F978-90-481-8933-5\\_11](https://link-springer-com.ezproxy.lib.vt.edu/chapter/10.1007%2F978-90-481-8933-5_11) ]
- Shannon-Baker, P., & Edwards, C. (2018). The Affordances and Challenges to Incorporating Visual Methods in Mixed Methods Research. *American Behavioral Scientist*, 62(7), 935-955.  
[\[https://journals.sagepub.com/doi/abs/10.1177/0002764218772671\]](https://journals.sagepub.com/doi/abs/10.1177/0002764218772671) ]

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