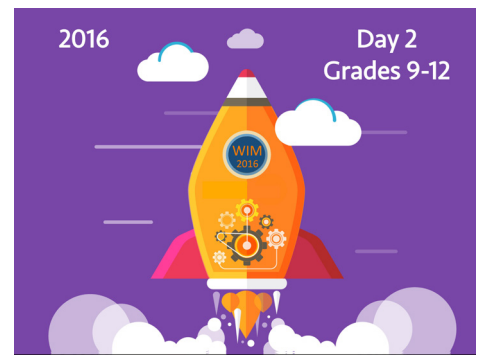


Introduction:

This activity is open and gives space for students to learn about representing in a graph with different dimensions but without numbers.

Agenda for the day:

Activity	Time	Description/Prompt	Materials
Mindset Video	5 min	Play the mindset video, <i>Mistakes are Powerful</i> https://www.youcubed.org/wim2-day-2/	Mindset Video day 3, <i>Mistakes are Powerful</i>
Emoji Graph	10 min	Read and analyze a graph 1. What ideas do you have? 2. What do you notice? 3. What questions do you have? 4. What information is this giving to you?	LCD projector Paper/journal Pencil/pen
Create your own graph	15 min	Create a graph with a partner or a team.	Poster paper Markers Meter sticks/Rulers
Interpret a graph	10 min	Interpret another team's graph 1. Study the graph. 2. Respond to what the graph is saying.	
Closing	5 min	You may like to close the lesson by reminding students of the importance of believing in themselves. When they believe in themselves their brains grow more when they struggle or make a mistake.	



Activity:

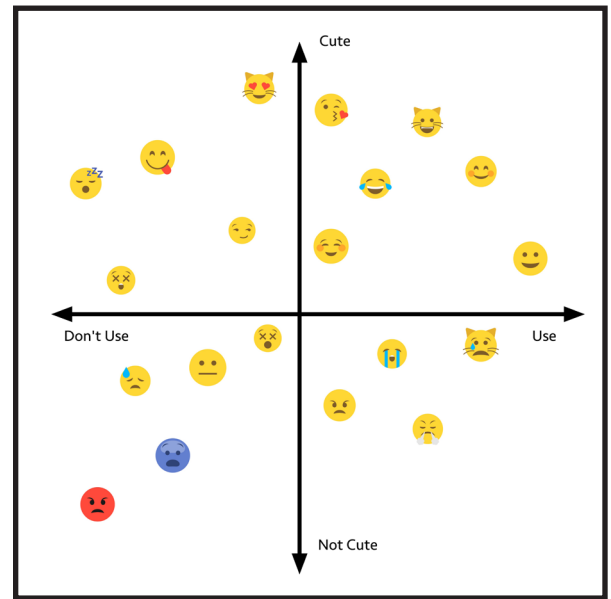
In this activity students discuss the ways that graphs can communicate variability along two dimensions.

Project the Emoji Graph and ask students to think about what the graph is saying. Ask students to record their answers to four questions about the graph in their notebooks or journals.

- What do you notice?
- What do you wonder?
- What questions do you have?
- What information does this graph provide?

The graph deliberately does not include numbers. Ask students to think intuitively about what the graph is communicating and not worry about labelling axes. If students want to assign a numbers when discussing what they notice, they can do so, but do not make this a requirement.

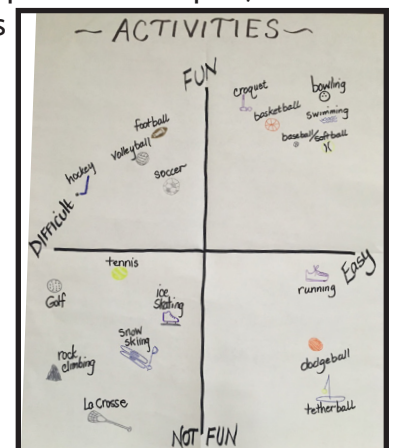
After giving individual time for students to think and answer the questions, ask students to share their ideas with their group. Ask students to make sure that every student has the chance to talk about what they noticed about the graph and one question. When groups are finished sharing, bring them together as a class and discuss students' ideas and questions.

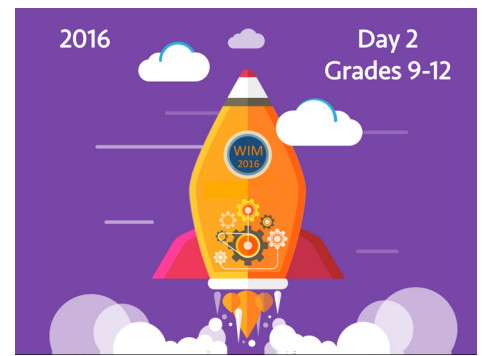


Jo's Emoji's

After the class discussion invite students to make their own graphs, choosing the topic of the graph and the 2 dimensions it varies along. In our summer school students chose topics such as ice cream, entertainment, desserts, and candy. It is important to leave the topic open for groups to decide upon, which increases students' interest engagement, and learning. The axes of the graphs do not have to have numbers, although they can if students decide this.

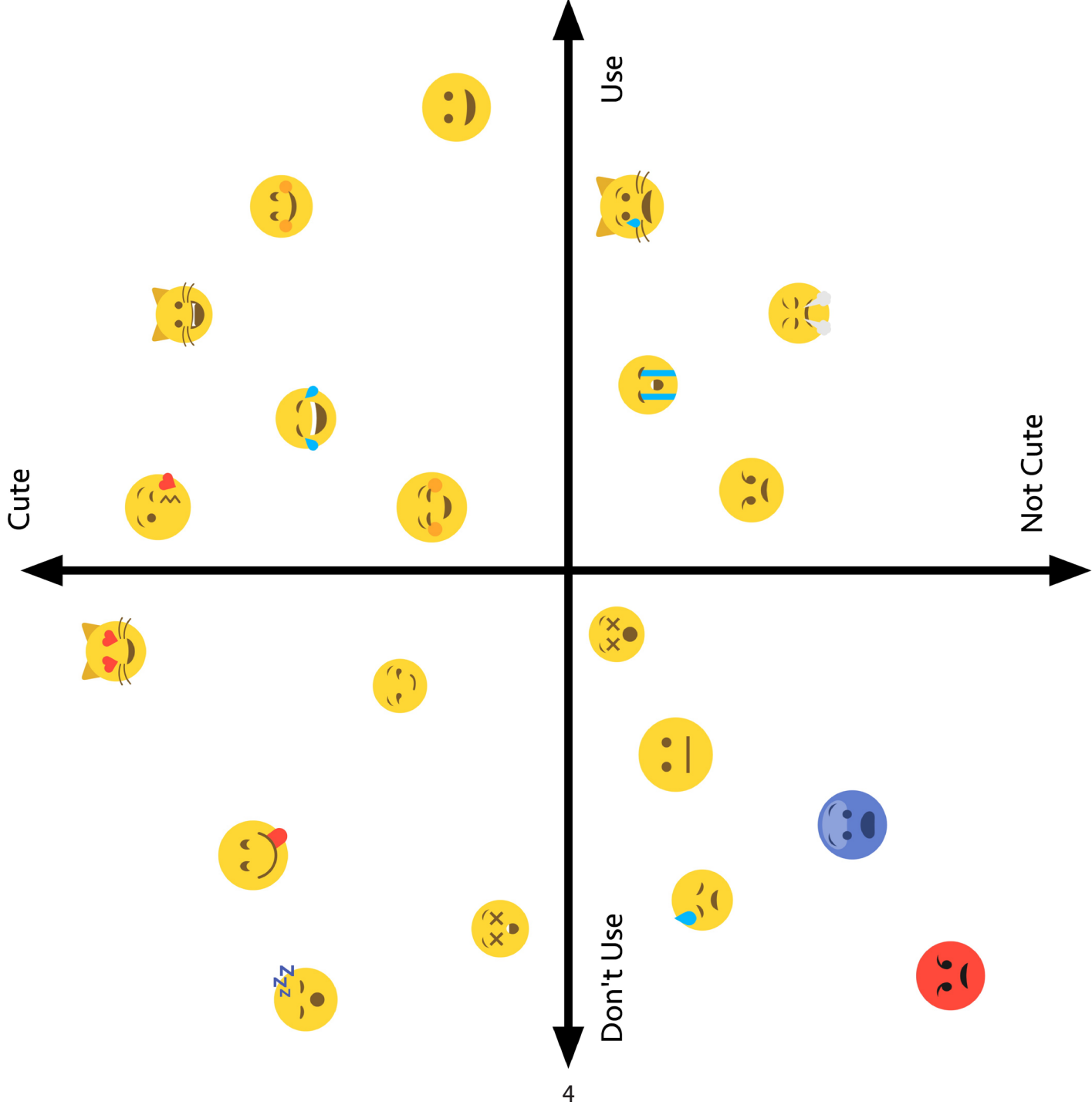
While groups work to make graphs, listen in to how they are coming to agreement about where to place items on the graph. As you listen encourage students both to share their own ideas and ask other's to share their ideas. If you notice individuals dominating what is recorded on the poster, ask them to share with you how they are deciding where to place items on the graph. If you ask about their decisions for a specific item you can join their discussion and model the kind of conversation that leads to making a collaborative agreement.





In the next part of the activity groups will read each other's graphs. When each group has at least 12-15 items placed on their graph hang the posters up around the room so they are located near to another group, that did not make it. Give groups time to study and discuss the graph made by another group.

Once groups are ready bring the class back together. Ask each group to describe what the poster they read, is showing. Rotate from group to group giving each group about 2-5 minutes to describe and respond to the graph poster they saw.



What do you notice?

What do you wonder?

What questions do you have?

What information does this graph provide?