

Lesson 4: Empathy-Define-Ideate

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Grade Level(s)

12th grade students enrolled in “Mathematical Decision Making for Life”

Lesson Overview

Students will walk to the neighboring elementary school and conduct the interviews. They will then pin down their insights in an empathy map, produce a needs statement, and brainstorm solutions for this need. A solution will be selected for prototyping in the next few days.

Learning Objectives

Students will now be working with a specific user in the space of educational equity. Students will be able to contextualize the ideas, conversations, and problem-solving experiences ahead of them within the needs of this younger student.

Standards

- How to construct viable arguments and construct the reasoning of others. In particular, how to:
 - o Use stated assumptions, definitions, and previously established results to construct an argument. (MDMFL IV.1a)
 - o Recognize and use counterexamples. (MDMFL IV.1c)
 - o Justify and communicate conclusions, and respond to the arguments of others. (MDMFL IV.1.d)

Preparation

Be sure your host classrooms are expecting you.

Materials and Resources

- Supplies for Interviews
- Empathy Map Template (see “Lesson 4 Supplemental Materials”)
- POV Statement Template (see “Lesson 4 Supplemental Materials”)
- Poster paper and post-its for ideating

Activity 1: Interview with Game (*one short day or part of a long day*)

- Play inspirational song and instruct students to gather their supplies for the interview including:
 - o Interview questions and note taking materials
 - o Cut-out tags of Mayan numerals
 - o Voice recording equipment (if all necessary parent permission has been obtained)
- Walk to the elementary school and conduct the interview. (Depending on the relationship that has already been established, this may involve meeting the host-teachers and younger students for the first time or reestablishing a preformed relationship.)

Activity 2: Empathy Mapping and POV Statement including Mathematical Insights (*30-40 minutes*)

- Pass out Empathy Map Template and remind students how it works. Explain that they will use their notes and their audio recording (if they made one). Explain that this is a little different than other design challenges they may have done in the past because it involves a highly specialized way of listening. Explain that you will be there to help them analyze the ways in which the younger students organized the tags and the statements they made through a mathematical lens and find the insights in their mathematical understanding. (This is why the audio recordings may be helpful.)
- Allow time for mapping and circulate to provide help. (~20-25 minutes)
- Pass out Point of View Template and remind students how it works. Allow time for teams to develop a POV statement. (~5 minutes)
- Ask teams to review their POV statement for accuracy. (~2 minutes)
- Have each team report their POV statement to the class. Give applause for their work. (It’s been intense!) Provide closure by remarking on the similarities and differences between their POV statements.

Activity 3: Ideating a Solution (*~15 minutes*)

- Remind students how brainstorming works (lots of ideas, even unrealistic or wild ideas are welcome, no censoring or judgment of ideas, build on the ideas of others). Ensure that each team has wall space and enough post-its and instruct them to begin

brainstorming. As they work, continue to encourage rapid-fire building on ideas and outside-of-the-box thinking. (~5-6 minutes)

- Stop teams and give instructions for voting (as coded on poster). Allow time for teams to select a solution for their user and record this on their POV statement. (~5 minutes)

Troubleshooting

- While there is a specific way that the Mayan numerals are ordered and placed in the Mayan numbering system, elementary students (and others) will come up with MANY different ways to do this assignment. It is very important that the 12th graders do not resort to showing their user how to arrange the tags “correctly”; they will get a lot of information by allowing students to work and observing their work while asking their interview questions. Once the user has made some progress in his or her strategy or has completed arranging the tags, it is helpful for gaining mathematical insight to try to figure out her or his way of organizing and asking if you are right. If you cannot figure it out, simply ask the user to explain. It might be difficult for 12th graders to resist telling them how to do it. (Many people feel so much empathy that they want to relieve the struggle they see in front of them and help others “get the right answer” But, this actually reduces empathy for the user!) It would be wise to discuss this with them ahead of time and remind them of this on the walk over.
- Recall that it is difficult to separate our observations from our inferences, even for people with a lot of practice. This is important to discuss in every empathy mapping experience. Also, be sure to emphasize the use of a verb in the POV statement. This will help to prevent an implied solution in their statement.
- At times, brainstorming can fall flat. Be prepared with encouraging constraints to introduce as a way to spark creativity when the energy in the room dies down. Possible constraints could be: Try to come up with solutions that may involve paper folding. Try to come up with solutions that may involve an iPad. Try to come up with solutions that may involve a trip to the park. Try to come up with solutions that involve a red rubber ball. Try to come up with solutions that involve karaoke. Try to come up with solutions that cost a million dollars. Try to come up with solutions that can only be used on the moon. (Remember that these last two may not seem viable, but the point is to get creative juices flowing!)

Assessment

Teams should have produced an Empathy Map, a POV statement and should have selected a solution.

