

Lesson Plan 2 Title: "Making a decision!"

Concept / Terminology / Topic to Teach: Decision making, brainstorming, constraint criteria.

Class Goal(s)/Objectives: Engineers usually brainstorm and then revisit their initial ideas to see if any new idea has appeared before coming to a final decision. After brainstorming and coming up with a set of new ideas or possible solutions, engineers have to also consider the constraints. These may come out of the materials, the cost the environment etc. Children in the class will get introduced to the idea of constraints before decision making.

Required Materials: 2 gender neutral puppets, a drawing representing the puppets talking about their constraints, a card board to place the image (the card board should be relatively big since more drawings will follow in order to finally represent the whole engineering cycle). A second cardboard (smaller or the same from Lesson1) on which children can draw their ideas/answers they may give in class.

Setting: Classroom, Large group time, small group time

Step-By-Step Procedures: During large group time you will start with revisiting the initial scenario (always using the puppets that are talking about it). You will remind the initial prior ideas to the children and then ask if anyone has any new ideas.

When children are done Andy, the engineer, can propose a couple of new ideas so that children will start realizing that it is ok to revisit a situation and add on it. Then Andy will tell to Sam that, before deciding, they have to think about their constraints, i.e. how many dolls, how many cars, what other toys are there to be "served" . A list will be created (i.e. 4 dolls might mean 4 beds, 2 cars might mean need for a garage). When children are finished with their ideas Sam can add new ideas in the discussion

Sam: I think it would be nice if my dolls could go to school. Do you think we can build a school too? Children what else do you think my dolls might need? Can you think of anything else my cars or the rest of my toys might need?

Use a part of the small card board to draw images of what an engineer might build (or let the children draw it themselves)

When the children are done proposing Andy can give more ideas, but should not come up with a final decision yet.

Plan For Independent Practice: During small group time ask children to discuss and draw a village, or buildings, that Sam's dolls cars and toys will live in. Then identify the buildings (or other items proposed) and write their names. Ask children to revisit the constraints list and see if their ideas meet the criteria.

Closure (Reflect Anticipatory Set): Revisit the buildings / object the children have selected to draw.

Assessment Based On Objectives: Children should appear to get familiar with the idea that an engineer has constraints and has to meet specific criteria before making a selection.

Possible Connections To Other Subjects: Math (count the buildings/ objects children are drawing), Language (learn new vocabulary), Art (drawing), Science (possible discussion regarding buildings and the weather or the seasons)

Terminology explanation:

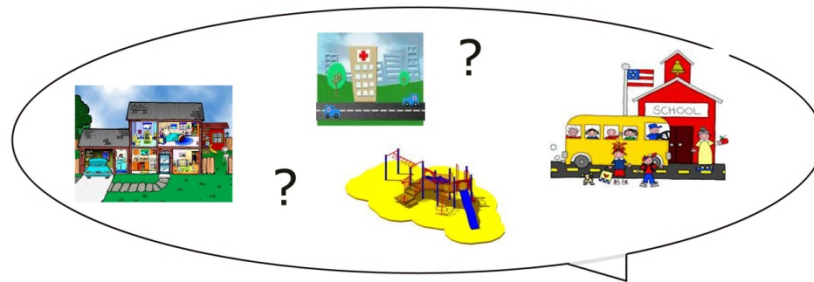
Brainstorming: A conference technique of solving specific problems, amassing information, stimulating creative thinking, developing new ideas, etc., by unrestrained and spontaneous participation in discussion.

It is very common that engineers, before considering the constraints criteria and examine a final solution to great depth, to note down all ideas that are instantly popping up even if they seem extremely impossible to implement. These ideas will get revisited by the engineers again in the future.

Constraints criteria: Criteria that lead to imitation or restriction.

Criteria that the engineer should meet in the final that work. Usually constrains criteria bring limitations to the final number of possible solutions.

Image to be placed on the cardboard:



Andy brainstorming and asking questions about the building