



Minds in Motion

Activity Title: Corn Cultivator

Activity Rundown:

There is so much to be thankful for around this time! With Thanksgiving just around the corner it's important to do our part in helping out! Today we will be building a new and improved corn cultivator to help us become more sustainable. You will be tasked with building a machine that can cultivate the farmland around you more efficiently. This will ensure that you have a tasty meal ahead of you for the holiday!



You will need:

- Large tin pie plate (dollarstore)
- Plastics utensils (forks, spoons)
- Flour, soil, or sand (your choice)
- Tin foil
- Pipecleaners
- Tape
- Glue
- Pencil
- paper
- Q-tips
- Additionally you may use other household items you see fit



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Let's do it!

- 1) We have been asked by the local community to create a new and improved way of not only planting new crops but cultivating the current ones. We will have to use the engineering design process to create a new machine in order to complete all of these tasks.
- 2) Before we begin it is important to think about what these tasks are and what the important processes that go into them include.
- 3) We will be focusing on three main components which include:
 - **Tilling**
 - **Digging/Planting**
 - **Irrigation**



- 4) Now, what do each of these mean:
 - A) **Tilling**: tilling is simply turning over and breaking up the soil
 - B) **Digging/planting**: digging will improve the structure of the soil making it easier for you to plant your seeds
 - C) **Irrigation**: irrigation is the water supply used to feed your plants/crops.
- 5) These are the three components we will be tackling. Now it is our job to create a machine that will help do all of these things more efficiently!
- 6) Before we begin creating a machine you must take out your tin pie plate and fill it with flour, soil, or sand (whichever material is easiest to find at home). This will be your farm!
- 7) Leave the flour as lumpy and as messy as possible. This way your machine's "tilling" ability can be tested.

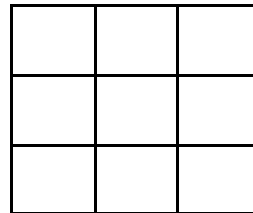


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- 8) Now we are ready to begin the process of building our machine. All engineers undergo the “engineering design process” when creating something new. This process uses the following sequence (please take out a pencil and paper to write these down):
- A) Identify the problem:** How can we more effectively and efficiently cultivate our crops?
 - B) Brainstorm ideas/possible solutions** (build a farming machine)
 - C) Design your solution** (with pencil and paper)
 - D) Build & Test**
 - E) Redesign** (How can we improve)
- 9) After you have researched, written out and drawn your solutions to the problem it’s time to start building.

Building

- 1) Tackling the first problem includes “tilling”. On your “farm” think about how you will be able to plant 3x3 rows of seeds at a time. This means your machine will most likely need to include three arms or tools to till the soil. Your plot of land should look like this:



- 2) Next your machine will have to include a component that allows it to dig up the soil in order to plant your crops! Think of materials that you have that would work well for digging up the soil and later dropping seeds into these holes.
- 3) Finally, once you have tilled your soil, planted your seeds and covered them up with soil (flour) you will need to create an irrigation system. This is a water system that will help feed your crops. This can be separate from your machine if you so choose.



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- 4) Once this is all complete be sure to test out your machine! If you see any ways you can improve it, go back to the drawing board and make additions to your machine!

Check out this example:





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Background:

- 1) For more information on activity please be sure to check out the following video:
https://www.youtube.com/watch?v=cmyHVxgr7q8&feature=emb_logo

Resources:

- 1) <https://www.feelgoodteaching.com/2016/11/thanksgiving-stem-challenge-corn.html>

Reach out!

We would love to hear from you about all the amazing STEM projects you are doing at home! Show us your finished products on any of the following social media platforms by tagging us or by using the following hashtags. We hope these projects have brought some excitement to your day during these difficult times.

Let us know how we did! Please [click here](#) to fill out a short survey on how well we did and what you would like to see more of in the future. Thank you!

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#ucalgarycamps #ucalgarytogether