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# Kansas Corn: How Does It Grow? Breakout Box

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This breakout is made possible with the support and content contributions of the Kansas Corn Commission.



# Kansas Corn: How Does It Grow? Breakout Box

## Grade Level: 2nd Grade

### Overview

This lesson can be used as a standalone lesson to introduce inquiry and what a plant needs to grow. Alternatively, it can be tied in as an informal assessment for the Kansas Corn Lesson: How Does It Grow? (<https://kscorn.com/howdoesitgrow>).

The breakout lesson includes activities focusing on growing a plant, subtraction, plant habitats, and the corn growth cycle. This will help motivate and engage your students' interest in corn and planting in the classroom.

### Kansas College and Career Ready Standards

#### Science

- **LS2.A.** Interdependent Relationships in Ecosystems
  - Plants depend on water and light to grow
- **2-LS4-1.** Make observations of plants and animals to compare the diversity of life in different habitats.

#### Math

- **2.OA.1.** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking a part, and comparing, with unknowns in all positions.
- **2.MD.7.** Tell and write time from analog and digital clocks to the nearest five minutes.

### Learning Objectives

- Students will Identify different types of plants based on previous knowledge.
- Students will identify characteristics of different plant types.
- Students will propose answers to the question, "What do plants need to live and grow?"

### Materials

- 2nd Grade: 3-Digit Lock
- 2nd Grade: 4-Digit Lock
- 2nd Grade: Color Lock
- 2nd Grade: Word Lock

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### Breakout Edu Tips

If this is your first time using a Breakout Edu box, you are in for a treat. Once you've done one breakout box your students will be ready for the next time.

- You can use breakout boxes as a whole class, in addition to small group.
- You have the opportunity to give students hints. Every box comes with at least two hint cards. If you have a higher performing group, you may want to challenge them with less hints, while a different group may need more hints.
- Having a visual timer for students while they are working is really helpful. It allows them to budget their time and when they may want to use their hints.
- As the teacher, you have the discretion to hide things wherever best fit in your room. Feel free to make adjustments! Just make sure the clues for the locks don't change, otherwise students may not be able to get in.
- Do note, when programming the locks, there is a starter ring that has mini-teeth. This ring needs to come first.

### Background

*Kansas Corn Lesson: How Does It Grow.* Students work like scientists to test their ideas about what plants need to grow and live by using corn plants as model organisms. Students test growing conditions, such as amounts of water and sunlight. This is a hands-on inquiry-based lesson to have students investigate what a plant needs.

### Game Name

The Class Garden

### Game Designer

Kansas Corn Commission, Josh Runyan and Shane Fairchild

### Content Areas

Science

### Recommended Ages

2nd grade

### Ideal Group Size

Groups of 3-4

### Suggested Time

30 minutes

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### *Story*

Has your teacher ever tasked you with getting the daily lesson together? What about a lesson to prepare the class garden? That's just what happened to Lovell on a Monday. Lovell was minding his own business when Mrs. Young called on him. He wasn't sure how to respond to her task, other than with a resounding, "Of course!"

Lovell has 30 minutes to get all of the resources out and ready. The worst part is Mrs. Young forgot the answers! Lovell needs help. Are you up for the task?

### *Lock Combinations*

The following codes will open the locks on the box:

#### *3-Digit Lock - 3 Numbers*

5, 8, 3

#### *4-Digit Lock - 4 Numbers*

7, 8, 9, 4

#### *Color Lock*

Green, Black, Blue, Yellow, Orange

#### *Word Multi Lock*

WATER

#### *Key Lock*

Key

## **Setup Instructions**

### *Steps*

1. Print off the following pages: 2nd Grade: 3-Digit Lock, 2nd Grade: 4-Digit Lock, 2nd Grade: Color Lock, and 2nd Grade: Word Lock. The resources need to be printed in color and enough copies per the number of boxes you plan on using.
2. Change the locks to the appropriate lock combinations found in the lesson plan. If you are unsure on how to change the locks, please watch the official breakout videos on YouTube entitled, "Setting Breakout EDU Locks."

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3. Grab the small breakout box. If you are planning on a breakout reward (Twizzlers are a fun corn-based product to use), set it in the box before placing the 3-digit lock on the box.
4. Place the now locked small breakout box in the large box. Once complete, place the multi-lock mechanism on the bigger breakout box.
5. Once you have placed the multi-lock mechanism on the larger breakout box, you are ready to start placing the final three locks associated with the lesson. It is always a good idea to double check your locks before beginning the lesson. You should add the 4-digit lock, color lock and word lock at this time.
6. Students should have all of the handouts. Project the story to the wall or print a copy for each group.
7. The beginning. Read the story and go over the locks with the students. It can be helpful for a visual representation of the breakout timer to be running in the background. This can be found on YouTube by searching, "Breakout EDU Timer".
8. Once students have broken out and if you are willing, Kansas Corn would love if you would take a group picture with the breakout prize and mention @kansascornSTEM in a personalized tweet on Twitter.








## Reflection and Conclusion

### Questions

1. Can the outdoors be too dry or too cold for some plants, but not others? What about being too hot? (Note: Most houseplants originated in tropical or subtropical climates, similar to indoor conditions.)
2. What do all plants need to live and grow?
3. Do plants need the same things when they're just sprouting from the seed versus once they've grown leaves?
4. Can plants live in any environment? Why or Why not?

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Lock Type	Lock Combination	How will they know the combo?	Where will it lead?
 3-Digit Lock	5 8 3	Using the 2nd Grade: 3-Digit Lock Sheet, students will fill in the blanks with the answer and count the number of letters in each word to find the 3-digit combination. Example: Water has five letters.	This lock is on the small box located in the big box. By unlocking this lock, students will complete the breakout box activity.
 4-Digit Lock	7 8 9 4	Using the 2nd Grade: 4-Digit Lock Sheet, students will solve the word problems to determine the combination.	By unlocking this lock, they are one step closer to opening all of the combinations to the larger breakout box.
 Word Multi-Lock	WATER	Using the 2nd Grade: Word Lock Sheet, students will figure out the combination by determining the order of corn growth stages to get the word, Water.	By unlocking this lock, students are one step closer to opening all of the combination in the larger breakout box.
 Color Multi-lock	Green, Black, Blue, Yellow, Orange	Using the 2nd Grade Color Lock Sheet, the combination can be figured out by connecting the habitats to the different plants. Each habitat has a color box around them. Once matched, the colors are in order based on the plants starting with corn.	By unlocking this lock, students are one step closer to opening all of the combinations to the larger breakout box.
 Key	Key		
 Large Lock Box		Unlock the three locks that you have on the multi-lock.	The large breakout box leads to the little box which has been placed inside it.
 Small Lock Box			A corn product like Twizzlers can be placed in the box for a reward for breaking out.

## **How Does It Grow?**

Has your teacher ever tasked you with getting the daily lesson together? What about a lesson to prepare the class garden? That's just what happened to Lovell on a Monday. Lovell was minding his own business when Mrs. Young called on him. He wasn't sure how to respond to her task, other than with a resounding, "Of course!"

Lovell has 30 minutes to get all of the resources out and ready. The worst part is Mrs. Young forgot the answers! Lovell needs help. Are you up for the task?

## 2nd Grade: 3-Digit Lock Sheet

Plants depend on things in order to survive.

What are the three most important things every plant needs to grow?



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## 2nd Grade: 4-Digit Lock Sheet

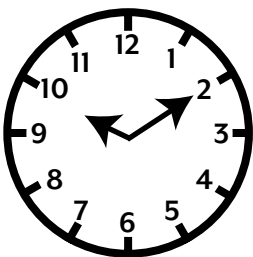
**Lovell was stuck. He thought he had everything ready for the class garden, but his teacher told him to recheck his work. Help Lovell find his mistakes.**

Lovell filled a bucket with 35 cups of water for the class garden. His teacher told him he only needed to have 28 cups of water.

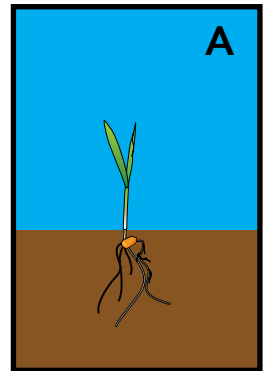
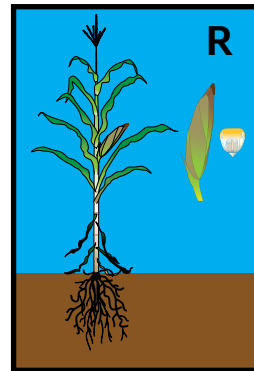
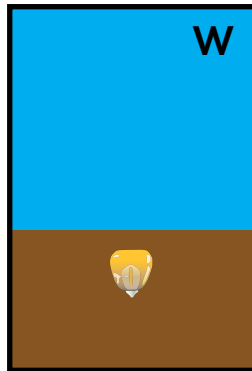
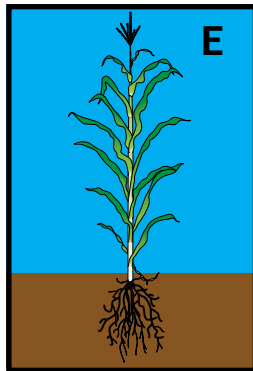
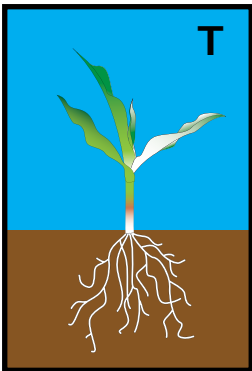
Lovell had carefully counted all of the corn seeds and laid them out. He counted out 20 seeds. His teacher told him to have one seed ready for each student in the class. If there are 28 students in his class, how many more seeds does he need to get ready?

There are 24 students in the class. Lovell grabbed 33 shovels for everyone. His teacher told him he had a few too many.

Lovell's teacher told him to have the supplies ready according to this clock. Lovell thought it said 2:10 pm. How many hours was he off?



## 2nd Grade Word Lock Sheet



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**CORN**GRATULATIONS  
YOU BROKE OUT!



## 2nd Grade Color Lock Sheet

Help Lovell unlock the habitat code. To solve the color lock, Lovell will need to use his knowledge of how different plants live and grow.

