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1. **Learning Context:**

   **School district:** Cache County School District  
   **Name of school:** Lincoln Elementary  
   **Title 1 school?** Yes  
   **Demographics of school:**

   Lincoln Elementary is a fully inclusive Preschool-6 Grade School. [See charts below for more information on student background] The school really focuses on meeting the individual needs of each student. Due to the low economic status for many of the students, teaching technology and social skills is very important. The school is led in a very caring and relaxed way. The focus is more on individual learning then treating all students in the same strict way. All teachers and staff communicate daily with parents. They make sure to station teachers by every pick-up location so there is someone for parents to talk with if needed. There are frequent evening activities for parents and families to attend. Parent Teacher Conferences are held over a few days so that parents have a chance to come at whatever time works best. Lincoln is in a small town, so the community is largely made up of parents/grandparents that are included in the aforementioned activities. The academic environment is very positive. Since the majority of the students struggle to reach proficiency, the focus is on improving and doing your personal best. Lincoln is really focused on Literacy currently. Due to an extremely high number of severe behavioral problems, there are two ‘time-out’ rooms, and five full-time behavior aids.

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1 White:75%, Hispanic:20%, Pacific:1.5%, Multiple:1.1%, Asian:0.4%, Indian:0.6%, Black:0.4%
Grade level: 2nd

Learning environment:

School attendance is a big issue in this class. There are only 20 students in the class, but 2 are chronically hours late, 1 attends a few times a month, and more often or not we have 3-5 students absent each day. The seating arrangement changes bimonthly. The desks are arranged in rows or some variation of that, with students seated by the teacher to mitigate distraction and consider all of the students’ best/accommodating interests. The management plan is based upon extrinsic motivators. All students participate in a Tier 2 management strategy with play coins. Students individually receive coins (1, 5, 10, or 25 ¢) for being on task and engaged. When they get a dollar’s worth of coins they can buy rewards or treats. If the students misbehave or need to leave class during a lesson they have to give coins back to the teacher. As a class, the Tier 1 management strategy is to have students work every week towards a ‘Mystery Motivator.’ If the students are behaving they get blue crystals in the jar, and if they’re misbehaving they get red crystals. At the end of the week all crystals go in a hat and a student picks one out. If it’s blue they get the reward, if it’s red they do not [However, the teacher always makes sure they pull out a blue one]. The only students with Tier 3 strategies are those enforced from their IEPs. Due to the number of motivators in class, the students are, in general, very engaged in the lessons. They are almost always listening and participating to try and earn rewards. If students start misbehaving, the negative consequences consistently bring them back and calm them down. Although they are engaged in the lessons, students aren’t always engaged in learning. This is because they often care more about the motivator than gaining the knowledge. The 2nd Graders are in a very safe learning environment, and feel comfortable participating. The teacher is very positive, and immediately steps in if anything occurs that could violate the safe space. Furthermore, the teacher works hard to reach out to parents and tell students how well they are doing. All students are expected to learn, but they also all have the right to be heard. If students bully or make fun of others’ ideas they are immediately pulled aside and receive an appropriate consequence so they know what behaviors they should be using.

Subject matter of lessons: Living & Non-living Things

Total number of students: 21
Students with special needs:

With IEPs:

D- This student has an IEP for Math classified under developmental delay. He is about to turn 8 and will no longer have an IEP. He is very capable, but gets anxiety when he can’t do problems quickly enough. He hates attention on himself, and gets very embarrassed whether it’s good or bad. If you slow him down and give him praise he is very proficient in Math. He is above proficient in reading and language arts.

A- This student has an IEP for Behavior. He is repeating 2nd grade because he didn’t attend enough days last year. He has been known to be extremely violent and run away from school. He has a full-time behavior aide in class with him. He is a very smart and capable student, but has undiagnosed attention disorder. He struggles with writing, but will do it when motivated. In all other subject areas he is proficient. He gets to leave early on Wednesday and arrive 45 minutes late every day to help him attend school regularly this year.

With Speech services:

W- This student receives 10 minutes of one-on-one speech twice a week to work on articulation. He is very bright with math, but struggles with writing and spelling. He often just talks or gets distracted when it is time to do work. He is a barely proficient student, but continues to show improvement on assessment.

K & C- These students receives 15 minutes of speech twice a week in a small group setting. They are working on pronouncing the /r/ sound. C is a very successful and proficient student otherwise. K is above proficient in reading, and does okay with other subjects. He takes longer than most children to process and say his thoughts, so that causes him to struggle with school sometimes.

D- This student receives 5 minutes of speech 3 times a week one-on-one to work on articulation. He also has a math IEP. He still struggles with medial /r/ sound, so he is working on that.

English Language Learners:

U- This student only comes a few times a month because his mother just keeps him home unless she runs out of food, then he can come to school. As a result, he is really behind. However, his scores on test don’t reflect his ability. He is very smart and capable. Because of his absences, he is always behind, but he learns very quickly. If he attends a few days in a row he can learn a whole unit of math. He attends ESL for 30 minutes a day, when at school, but he is not fluent in Spanish. His test scores reflect a lack of attendance, not a need for ESL. He can communicate in English better than many of his peers, and has English only writing skill. Because he is always confused and behind while at school, he will talk out a lot and distract other students. He sometimes becomes defiant because he is so overwhelmed.

R- This student is below proficient in English reading and writing. He has become dependent on the extra support and services, but as soon as someone sits by him he can perform at or very near a 2nd grade level. He attends ESL for 30 minutes a day. He is very capable, but often doesn’t listen to instruction and just waits for someone to come do it with him one-on-one. He does struggle with reading comprehension in English, but his
abilities in this area are rapidly improving. When there are story problems or prompts to read he reads it aloud to a teacher to aid with comprehension, and then has support with finding the answer.

**G**- This student is approaching proficient in both reading and writing. She has improved a lot with reading since the beginning of the year. She attends ESL for 30 minutes a day. She sometimes needs support with understanding a question or reading answer choices. She is quiet, but a hard worker. Sometimes she doubts her ability and needs positive praise and attention.

Gifted and talented:

This is not applicable because students are not classified until 3rd Grade as Gifted. However, my cooperating teacher and I agree that it appears no students in our class would qualify.

*Other:*

**L**- This student has a 504 Plan for Diabetes. He needs to go to lunch 10 minutes early so the Janitor can help with his insulin, and check his blood sugar before P.E.. If there are treats in class he can either take them home, or receive class money instead of the treat. If he has to go anywhere alone, another student in the class must accompany him.

**J**- This student has some hearing issues, so she must be seated near the front of the room. Furthermore, the person teaching must use a microphone. When testing, she needs to be checked on to make sure she is hearing all of the questions.

**Students’ prior knowledge for these lessons:**

All students have receive Utah 1st Grade Science Core instruction. This means they have had basic instruction on how to classify objects, moving nonliving objects, and living things. They can also read and write at least as well as approaching proficient 1st graders.

**Students’ background and interest for these lessons:**

The students really like to look at things over time. They keep track of the daily weather, and they all really love to see how it changes. They also do probability by drawing a daily card to see how often it is a heart or a star. Every student is completely focused and so excited to see the result. From this, I determined the students would enjoy watching Mealworms over a period of time. However, I also noticed the students don’t enjoy copying a lot of information down. From this, I decided to make all of the recordings and writing the students did very simple and open. That way they could choose how much they wanted to note, and the format they did it in. I knew that 2 students in the class had watched Mealworms in their 1st Grade class as part of their Living Things unit. However, they didn’t make observations. They only learned about the life cycle, and didn’t connect it to habitats or other living things. They also hadn’t learned background information on Mealworms. I decided that even though I used Mealworms as well, it was for a very different purpose, so it would be interesting for all students. Lastly, I did a pre-assessment on living and non-living things to ensure that part of my unit wasn’t on information the students already knew. The results were used to help me determine how much time to spend on the different parts of my unit.
2. **Focus Students:**

**Student 1 - Kaycin - Strong Support**

Kaycin is one of our students that receives speech services. He is very quiet because he has to process for quite a while before giving an answer. He is very good at math, excellent with reading, but struggles with writing sometimes. He doesn’t really participate in class discussion or give answers. He is very kind, but because it takes him so long to process his thoughts, others often think he is ignoring them or being rude. Like most 2nd graders, he is very active and loves to play sports and games. He was chosen as a strong support student because of his lack of participation in class and his struggle with writing. His slow processing prevents him from being able to write very many thoughts down, and many are not complete. A big part of science is working together and gathering evidence. He struggles with this because of his lack of communication. Science topics, like Mealworms, are things he would love to learn about, but he has a naturally negative attitude toward any sort of school work.

All of this information has led me to believe this unit will be perfect for Kaycin. First, I have made sure that no unnecessary writing is required, and the writing he does will be very simple and on topics we have talked a lot about. When we do the Habitat worksheet, I will highlight the essential information, so he doesn’t have to write down more than he wants. This should help him be more motivated to complete the works, since he knows it is only what’s important. Second, I organized his Mealworm group so that he is working with students he will feel comfortable talking to. This will help him open up about academic topics, since he can already talk to these students in a social setting. Lastly, the whole unit is based around a crawling bug, which is something he will love to observe. Being able to actually see and play with what he is learning about will help him recognize that learning can be fun.

**Student 2 - Brinkley - Less Support**

Brinkley performs at a 2nd grade proficient level in all subjects. She is very quiet, but will answer a question if you ask her to. She is always willing to help, and loves working with others to help them find the solution. She will run around and play, but mostly likes to talk, draw, or do similar activities. She isn’t at all familiar with Mealworms, but doesn’t like bugs at all. She is very dedicated to getting all her work done, and will do whatever you ask her to. She is the model student. However, she hasn’t really had opportunities to push her level of thinking to higher-order levels.

My knowledge about Brinkley has influenced a few specifications to my unit. First, because she thinks bugs are creepy, she is in a group with students who will love to touch them and be respectful of her wanting to stay away. This group will help her realize they aren’t dangerous are bad, and get her used to the Mealworms. Furthermore, her academic ability is slightly above her group so that she can enjoy the opportunity to work together with them and help them make their observations. The simple journal and worksheets will give her the chance to be creativity and really think about what she can write. It will give her more freedom with learning than she usually has, which will be good to push her level of thinking.
3. Lesson Plans:

Lesson 1: Pre-Test/What are Living Things?

Topic: Science, Writing  
Grade: 2nd  
Approximate time: 30 Minutes

Rationale for methods
From my Assessment course I learned of the importance to give Diagnostic Pre-Assessments so that your lessons are not above or below the ability of the students. Furthermore, you will be able to note what students are already familiar with, and what they will need more time to understand.

In my Science Methods course, we discussed the NGSS practices, and how to help students discover answers, rather than having the teacher give it to them. As a result, our rules for Living and Nonliving things will be determined by the students, with the teacher solely acting as a facilitator.

Content standards
Science 2.4 “Life Science. Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.”  
ELA 2.W.7 “Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).”

Academic language/vocabulary objectives
1. The language skill: The students will need to discuss with partners/groups the difference between a living and nonliving things.

2. The discipline-specific vocabulary: The students will need to know what a living thing is and what a nonliving thing is. Examples will be given, but the students must together come up with definitions or rules to differentiate.

Required materials, resources, and technology
- Living/NonLiving PreTest & Writing Utensil [1 per student]
  This is important so that I can determine the unit is at the right level for all students, and base instructional decisions off their ability.
- Doc Cam
  This is for the teacher to display the pre-test while reading it aloud, and the chart while the students are sharing their responses. This is needed to help the English Language Learners and below proficient readers understand what is happening. Also, it helps all students stay caught up with the class because they can see where we are at.
- Living/NonLiving Chart & Writing Utensil [1 per student]
  This chart will let students keep track of their ideas and thoughts, but also give them freedom to format and write what they want. It’s important for them to have something to keep a record and remember what they learned, but also keeping it student-led.
1. Which two animals use sounds (echolocation) to navigate and hunt?
   - Bats
   - Sharks
   - Whales
   - Hawks

2. Circle the habitats that are very dry.

3. Make a wave under the habitats with trees.

4. Box the habitat that covers most of the Earth.

5. Cross out the grazing habitat with few trees.
   - Wetlands
   - Oceans
   - Grasslands
   - Tundra
   - Forests
   - Deserts

6. Which habitat is best for a beaver?
   - Forest
   - Desert
   - Wetlands

7. What special characteristic do many rabbits have to help them survive in their environment?
   - Long legs
   - Camouflage
   - Short whiskers
   - Padded feet

8. How have snakes changed since ancient times?
Name:

Living/NonLiving

Living

NonLiving
Lesson objectives

Science:
The students will complete the pre-test by marking answer choices for each question the best they can.

Science/Writing:
The students will be able to tell Living and Nonliving things apart by identifying at least three general thoughts for identifications through discussion in groups and partners.

Instructional Procedures

1. Pre-Test
Pass out a Pre-Test to every student. Make sure they have a writing utensil on their desk, but everything else cleared off. Explain to the class that this test will not count for a grade, but it will be used to see how much they already know about Living and NonLiving things. Ask them to quietly work and do their best. They should answer every single question. The teacher will read all the questions aloud and the students should just stay with the class. They can draw on the back of the paper in between questions if they’d like. Have them check that their name is on the paper. The teacher should reach each question twice, and then all the answer choices. Give students 10-15 seconds to respond as you walk around the room to check how they are working. Then go onto the next question. At the end, go back if some students didn’t hear one of the questions. When the students are finished, have them all place the tests in the same basket.

2. Living vs. NonLiving Chart
Pass out a chart to every student. The students should only have the chart and a pencil on their desks. Explain to the students that we are going to be talking about Living and Nonliving things in Science for the next couple weeks. Before we can start, we need to decide how to tell the difference between a Living and Nonliving thing. Ask students to freeze in their desks until you say ‘GO!’ after instruction is finished. The students will walk around the room until they find a partner. Then, the two or three of them will write down something they know about a living or nonliving thing. Remind the students we are using what they write down to make rules that we can use for any thing to tell if it is living or nonliving. Display a chart under the doc cam. Ask students to quickly give a few examples of living and nonliving things to get started. Pick 2-5 students and write their examples under the living or nonliving branch of the chart. Ask the students if they have any questions about what they should do. Tell them they will have 3 minutes to do this. Say ‘GO!’ and let the students begin working. As they work, walk around and observe. If students are stuck, ask them any of the following questions or others you can think of to prompt student response:

What are the differences between a doll and a human?
How do I know that a gummy worm isn’t living, but a real worm is?

Once students have had their time to discuss, give them 10 seconds to return to their seats and put their attention on the front of the class. Allow the students to take turns sharing with the teacher what they decided helps tell the difference between Living and Nonliving things. In the end, there should be a short list of the most popular ideas. Have the students circle these ideas and explain that we can use these rules to tell if any thing is living or nonliving. Some common examples of rules are:

They grow, they change, they die, they eat, they breathe, they poop, they make babies, they can move on their own
Adaptations/accommodations

**ELLs:** The Doc Cam is a good adaptation for this lesson because then all ELLs can hear and see the information we are learning about. This will help them be able to process it twice, and hopefully understand better. Furthermore, reading the PreTest aloud is an accommodation so that they don’t have to try to read the questions, just give their best answer.

**Gifted:** There aren’t any gifted students. A gifted accommodation in this lesson would be allowing the student to go at their own pace on the PreTest and during the chart activity.

**At Risk:** The Doc Cam is also an adaptation for these students because seeing the information twice helps them as well. Working as a class and in different groups is a modification that allows at risk students to hear the ideas of proficient and successful students. One accommodation here as well is to allow students that are really struggling on the pretest to leave an answer choice blank. If they really don’t know the answer it is better to let them skip it than have an anxiety attack.

**IEPs:** For A, the behavior student, his accommodation is that his aid works with him. She follows him around and provides all the necessary intervention and modification needed to succeed. Working as a class provides an opportunity for him to have positive social interactions with his peers. For D, the math IEP student, he really doesn’t need any accommodations with this assignment. He is really shy, but since he can present his ideas one on one, instead of to the whole class, he should be successful with this activity.

**504s:** For L, the student with Diabetes, no accommodations or adaptations need to be made. For J, the student with hearing difficulties, the teacher must talk in a microphone, and the students will need to keep appropriate voice levels so everyone can hear.

Assessment

The Pre-Test is a formal Diagnostic assessment for the lessons on Living and Nonliving things. The results of this assessment will be used to influence the structure of the rest of the lessons, and determine if the unit is at the correct level for the students. All the students need to do to complete this successfully is mark an answer choice for each question.

The Living vs. NonLiving Chart is an informal formative assessment. If the class can work together to come up with at least 3 rules about all living things they were successful with the lesson. This means they are on track to continue with the unit, and have begun their information gathering for the writing standard.

Lesson 2: Mealworms [Set-up & KWL]

**Topic:** Science, Writing, Math

**Grade:** 2nd

**Approximate time:** 40 Minutes

Rationale for methods

Mealworms are an inquiry based project we learned about in my Science Methods course. The students are able to learn about science by observing a specific living thing, and learning to ask and answer questions about what they see. From my Writing Methods course we learned that writing should use a variety of topics, genres, formats, and purposes. It should also be engaging! Researching, learning about, and observing mealworms provides the students a perfect opportunity to practice writing a mini-research paper. The students move around and switch to new tasks a lot in this lesson. This is an important classroom management strategy for students so
that they can stay engaged and on-task. Children in 2nd grade can’t focus for very long before they’re ready to move onto something new.

**Content standards**

Science 2.4 “Life Science. Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.”

ELA 2.W.7 “Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).”

**Academic language/vocabulary objectives**

1. **The language skill:** The students will need to read instructions, and follow through with what they say. They will also need to read an informational paragraph and decide what they have learned, and copy that information down.

2. **The discipline-specific vocabulary:** The students should already know the terms Living and Nonliving. The students will learn the terms Mealworms, KWL, Rotation, and Inches.

**Required materials, resources, and technology**

- 10 Mealworms/Superworms, 6 containers with holes in lids, 3 cups Oatmeal, 6 spoons, 6 inches rulers, 6 plates

These are the materials required to have the groups watch and observe Mealworms. To buy or create all of these items should cost less than $10, and you should be able to find many without having to purchase them. This is the cheapest way to allow students to watch a real living thing live and interact with nonliving things. It is inexpensive, easy to keep clean, and takes up hardly no room in a classroom

- Mealworm Information Paragraphs, Scissors, Tape

The paragraphs will be taped around the room so students can rotate and read. You’ll cut out each of the paragraphs so they are on their own. This will help them move around and also give them a chance to read in a different way than usual. Rotation reading as a group gives students a break from listening to the teacher, but still lets them learn all the information they need. All the information can be found easily online for free.

- Mealworm Booklet [1 per student, 1 for teacher]

These booklets only use a couple pages of paper, but provide a cohesive outline for students to keep track of their mealworms. Since the students are only in 2nd grade, they still need help knowing what to keep track of and how to keep their writing formatted. This journal will also reduce the chances that students lose their papers since they’re all together.

- Doc Cam

The Doc Cam is important so that all students can see what the teacher is doing. Also, if all the students want to look at mealworms they don’t have to fight to get a good view, you can just place them under the doc cam. It is very useful for students that struggle to understand such as ELLs, At Risk Students, or those with hearing difficulties.
Mealworms can be found throughout most of the world where they prefer warm, dark, and damp places like under decaying logs and leaves. Mealworms can be a pest to humans and can be found in cabinets, barns, cellars and basements or wherever stored grain can be found. They are designed for burrowing and eating and will feast upon grains, vegetation, or spoiled food. Mealworms can ruin stored flour, pet food, mill feed, cereal and other dry goods.

Mealworms get water from eating fruits and vegetables that have water in them. They also like to eat decaying matter like dead animals or dead plants. They won't eat anything that is living. Slices of potatoes, apples, carrots, lettuce, cabbage, or other fruits and vegetables can supply water to your worms. Potatoes are often best since they last a while and do not mold quickly. Do not use a bowl of water since mealworms will crawl in and drown.

Mealworms are also an important food for many animals. In the wild, birds, spiders, rodents, reptiles, and other insects eat them. Mealworms are eaten by many other animals, including some humans. In some cultures, mealworms are fried in a pan and eaten whole, as a snack. They are actually very nutritious and contain a lot of protein and no fat. Animals that eat mealworms are birds, rodents, spiders, lizards and even a few other beetles.

The mealworm container will need a screened lid to stop the worms from getting out and to let air in. Without enough air mold will grow. The bedding of the container will be the food. You can use wheat bran, oatmeal, cornmeal, wheat flour, Wheaties, Cheerios, ground up dry dog food, or a mixture of these dry foods. Fill the bottom of the container two or three inches deep with the food. You will have to add more food regularly since mealworms are big eaters. You will want to keep the container away from windows and direct sunlight to prevent it from becoming too warm. Mealworms do not need extra light.

A Mealworm is dark yellow with brown bands (or "stripes") down its body. It has two tiny antennae and six tiny legs near the front of its body. It has a hard body for burrowing called an "exoskeleton." The mealworm sheds its outer layer between nine and 20 times as it grows.
**This copy is just so you can see where I got the information from!**

“Mealworms can be found throughout most of the world where they prefer warm, dark, and damp places like under decaying logs and leaves” (1). “Mealworms can be a pest to humans...and can be found in cabinets, barns, cellars and basements or wherever stored grain (such as cornmeal) can be found” (2). “They are designed for burrowing and eating and will feast upon grains, vegetation, [or] spoiled food...Mealworms can get into and ruin stored flour, pet food, mill feed, cereal and other dry goods” (1).

“They get water from eating fruits and vegetables that contain water. They also like to eat decaying matter, whether that is a dead animal or dead plants. They won't feast on anything that is living” (2). “Slices of potatoes, apples, carrots, lettuce, cabbage, or other fruits and vegetables can supply water to your worms. Potatoes are often preferred since they last a while and do not mold quickly. Do not use a bowl of water since mealworms will crawl in and drown” (1).

“[Mealworms] are also an important food source for many animals. In the wild, birds, spiders, rodents, reptiles, and other insects prey upon them...” (1). “Mealworms are eaten by many other animals, including some humans. In some cultures, mealworms are fried in a pan and eaten whole, as a snack. They are actually very nutritious and contain a lot of protein and no fat. Animals that eat mealworms are birds, rodents, spiders, lizards and even a few other beetles” (2).

“The sides of the container only need to be a couple inches higher [than the food] in order to prevent the worms from escaping...The container will also need a screened lid to prevent other insects and creatures from getting in and to allow airflow... to prevent the buildup of humidity and mold growth. [The bedding] of the container will be the food. You can use wheat bran, oatmeal, cornmeal, wheat flour, Wheaties, Cheerios, ground up dry dog food, or a mixture of these dry foods. Fill the bottom of the container two or three inches deep with the food... You will have to add more food regularly since mealworms are big eaters... You will want to keep the container away from windows and direct sunlight to prevent it from becoming too warm. Light is not necessary. A normal day and night cycle of light will be fine” (1).

“[A Mealworm is] dark yellow with brown bands (or "stripes") down its body. It has two tiny antennae and six tiny legs near the front of its body. It has a hard body for burrowing called an "exoskeleton." The mealworm sheds its outer layer between nine and 20 times as it grows...” (2).

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1. [http://mealwormcare.org](http://mealwormcare.org)
Mealworm Journal

1. Get mealworms, spoon, and tape measure
2. Write today’s date
3. Put mealworms on lid
4. Count number of dead and alive worms
5. Measure each worm’s length in inches
6. Make your observation and draw picture
7. Put everything away
Lesson objectives
The students will have completed a KWL chart with at least 6 things they have learned about Mealworms. The students will be in their assigned science groups with a mealworm in their container and ready to continue with their observations. The students will learn about Mealworms in multiple ways to add to their knowledge about Mealworms for their research write-up.

Instructional Procedures
1. Mealworm KWL
Pass out the Mealworm journals to all students. They only need the journal and a writing utensil on their desk. Review the rules previously determined to tell if something is Living or NonLiving. Explain to the students that we are going to study a living thing to learn more about how they work. Say that we are going to study Mealworms and ask the students to turn to the very back of the journal they were given where there it says K, W, L at the top. Explain that this means ‘Know’, ‘Want to Know’, and ‘Learned.’ Display your KWL under the doc cam. Ask the students to tell you what they already know about Mealworms. The students who have already done this will know a few things, but the list should be pretty short so only spend a minute or less on this. Then, ask the students what they would want to know about mealworms. Give them 10 seconds to tell a neighbor, then have them bring it back to tell the class. List at least 5 but no more than 10 things the students would like to know. Then, inform the students that there are many ways to learn new things. We can learn from reading, from someone else telling us, or from watching, or observing, something ourselves.
2. Informational Rotation/KWL

Tell the students that we will start by learning about Mealworms through reading. Point out that there are 6 pieces of paper taped around the room and the students will be moving to each one to start filling out the L, Learned, part of the chart. Tell the students they will be doing a rotation, which means moving from one paper to the next in order. Assign the students in groups of 3-5 randomly, and tell them each which paper to start at. Explain that they will have just over a minute at each paper, and they should read it and write one thing they learned down on the chart. Then, they will rotate the direction the teacher points. Have the students find their group and paper, and have them begin. As they are reading and rotating, walk around and observe the groups. Make sure they are working together and remembering to write things down. When the students have gone to all groups, have them return to their seats and look at your KWL chart under the doc cam. Let the students tell you things they learned from each rotation to add to your KWL chart. Let the students copy what you write if they forgot to write something down.

3. Mealworm Set-Up

Now, tell the students they will set-up everything they need to start learning about Mealworms in another way, observation. Have them open their booklets and give them 30 seconds to read the instructions. Then, have the students choral read the instructions as you demonstrate what they will do and where they’ll write the information on your first observation page. Tell the students that you are going to put them in groups and tell them where to go. When they get to their group, they need to take their journal and a pencil and write down the name of their group. Then, they need to pick a container from the counter and put enough oatmeal in the container to cover half of their thumb. Next, they should pick up a ruler, spoon, and plate, and return to their table. Lastly, they should raise their hand because they’re ready for their teacher to bring them a Mealworm. As you explain the steps, right them on the board so the students can remember. Tell the students they only have 3 minutes to do this, so they should go quickly. The students should be in pre-assigned groups based on how they will work together. You should ensure that there are mixed abilities in each group.

1. Write group name on your journal
2. Get a container, add Oatmeal
3. Ruler, Spoon, Plate
4. Raise Hand

Once a group raises their hands, take them a Mealworm. Place it on their plate and tell them to measure it with the blue side of their ruler, where the inches are. They should just do their best guess with measuring. Tell them to quickly do that, put their mealworm back in the tub, and return everything to the back table. The students should then return to their seat to fill out their first mealworm observation. Give students and additional 5 minutes for this.

4. KWL Wrap-Up

Ask students if they learned anything new from looking at the mealworm. Add one or two more things to your L section of the chart. Inform students that they will start measuring and observing their mealworms as a self-start once or twice a week, so make sure they don’t lose their journals. Give them a few examples of things they can write as observations:

- Color, size, shape, movement, abilities, changes, information on what they do or how they look

Adaptations/accommodations

ELLs: The Doc Cam is once again an accommodation. They can hear, read, and see the information. Also, the mixed ability Mealworm group will provide other students to help them if
they are stuck. Lastly, the informational paragraph rotation group can read it aloud or offer ideas. If the students still aren’t sure, they can just copy down what the teacher writes. Gifted: Not applicable for this class
At Risk: The grouping for the Mealworms should minimize the behaviors from these students. Furthermore, providing a variety of different ways to learn information should help them better understand.
IEPs: A will have his behavior aid with him in his group. However, still letting him be in a group with other students will help him continue practicing appropriate behavior. The changing formats should help minimize his need to act out. D should be successful with this lesson besides the measuring of the Mealworm. Here he is accommodated by being in a group with others that can make the measurement. He will just be able to observe how they measure, and then write what they do down.
504s: L doesn’t need any accommodation with this lesson. J will need the teacher to use the microphone, and to make sure that all students speak at an appropriate level so she can hear her group. The doc cam is an accommodation for her in case she doesn’t hear what we say.

Assessment
The KWL chart is an informal diagnostic and summative assessment. In the beginning, the teacher uses it to see what the students already know about Mealworms. You can make sure that none of the students already know everything you want to teach about the Mealworms. It’s also a summative assessment for the lesson because if a student successfully fills out each column they have completed the objective to learn about mealworms and complete the KWL. The Mealworm Journal is an informal formative and summative assessment. However, in this lesson it is just formative. If the student can follow the directions and complete an observation then they are ready to continue with the Mealworms and have successfully completed that objective. If they haven’t, the teacher should review the steps, and do what is necessary to help the student to be ready to continue.
Successful completion of both assessments demonstrates the students ability to research and learn about Mealworms, aligned with the Writing standard, and completing the writing objective.

***Note: The students will now complete the rest of their Mealworm observations as a Self-Start once or twice a week, depending on time.

Lesson 3: Could a Mealworm Live Here?/Habitat Changes

**Topic:** Science, Writing
**Grade:** 2nd
**Approximate time:** 65 Minutes (this is one lesson, but made to split over a few days)

**Rationale for methods**
Sometimes, students need Direct Instruction, but it should be provided in an engaging format. The style of the powerpoint in a ‘game’ format should help the students enjoy the lesson. Also, providing them with a basic guided notes outline will let them keep on track, but not be overwhelmed with work.
Furthermore, this lesson is aligned with a full Science standard (2 objectives, 8 indicators). The co-teaching model was also used in preparing this lesson because I formulated it with the help of my cooperating teacher.
Content standards
Science 2.4 “Life Science. Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.”
ELA 2.W.7 “Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).”

Academic language/vocabulary objectives
1. The language skill: The students will need to read or listen to information from a powerpoint, look at the pictures, and write notes.

2. The discipline-specific vocabulary: The students will need to know what a Mealworm is, and basic information on the Mealworm that was learned in the previous lesson. The students will learn what a Habitat is, and about 6 habitats.

Required materials, resources, and technology
- Habits Worksheet & Writing Utensil [1 per student]
A specific worksheet is needed because 2nd graders are too young to just take their own notes. However, it’s in a simple format so that the students don’t have to record much, but will still remember what we’ve learned.
- Doc Cam
This will make it easy to show students how they can use the worksheet. It will make it easy to remind them to stay on task.
- Habits PowerPoint
This is a new format for gaining information. The students have already read and observed in this unit, now they will learn from listening to others, their teacher. The PowerPoint is useful because you can’t physically take students to all the habitats, but you can show them pictures. Also, students will get to see and hear the words, and then see pictures of specific examples.
- Computer/Projector
This is needed to show the PowerPoint. It is essential to have or the PowerPoint is useless.
<table>
<thead>
<tr>
<th>Habitat</th>
<th>What's it like?</th>
<th>What lives there?</th>
<th>Could a Mealworm live there?</th>
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Lesson objectives

Science:
The students will be able to recognize the habitats desert, tundra, wetlands, forest, ocean, and grasslands. They will be able to name at least one animal you could find in each. The students will be able to

Writing:
The students will be able to determine which Habitat Mealworms would live in.

Instructional Procedures

1. Review

Review how you can tell what a Living and NonLiving thing is. Remind students that plants are Living things as well. Quickly review what mealworms like to do, where they live, and what they eat.

2. Habitats!

Pass out the worksheet to students. They should only have it and a pencil on their desks. Explain that we are going to learn about Habitats, which are the different places that Living Things can live. Show the first slide with the title, and tell the students that every time we learn about a habitat we will complete part of the worksheet and decide if a Mealworm could live in this place or not. Start on the second slide with Wetlands. Say aloud the information from the powerpoint and then point out the pictures. Work with the students to fill in the habitat name and what it is like. [i.e. Habitat= Wetlands, What it’s Like= wet, swampy, trees] Then, go to the next slide and discuss the different living things you can find in a Wetland. Fill in the next box [What lives there?= Trees, moss, frogs, fish, snakes, etc…]. Then, tell the students to think about what we’ve learned, and decide if a Mealworm would want to live in the Wetlands or not. Have them give a thumbs up for yes, and a thumbs down for no. Explain to the students that no a Mealworm would not live here because they drown easily in water. Fill in the last box [Could a Mealworm Live Here?= No!]. Repeat this same process with the 5 other Habitats: Oceans, Grasslands, Tundra, Forests, Deserts. Feel free to let students respond in a variety of ways such as choral response, all-together, partners, groups, silently, standing in a corner based on their answer, or any others you prefer. When the worksheet is complete, pull up slide 14. One by one, read about the animal and then ask the students what habitat they would live in. Let them look at their worksheet for help and then use any appropriate technique to get their answers. Mealworms could live in the Forest or Grasslands, but the students can have their own opinions on this, since it is their learning.

3. When Habitats Change

Have the students flip their worksheet over to the six blank boxes. Each of these boxes will be used to talk about what can happen to a living thing if their habitat changes. They still only need the worksheet and a pencil. Start with slide 15 and Color changes. Use the doc cam to show the boxes. In one box write “Color Change”. Then read the slide and talk about why animals might change color. The students should notice that the changes shown happened because of the season change. Under “Color Change” write “Seasons” and then one to three examples of living things that change color. The students may want to discuss how some living things change color for safety, others to hunt, and others because they are changing. Make sure the students know there are many other animals and there could be other reasons for color changes, we are just talking about one example. Continue a similar process with the follow changes: Dormancy, Hibernation, and Echolocation [video optional]. For Extinction, the purpose is to notice that the Dodo Bird went extinct because the habitat changed when humans came. Humans ate all the Dodos because they couldn’t fly, and they lived in Grasslands where they couldn’t really hide or escape. The
pigeon is similar to the Dodo Bird, but it didn’t go extinct because they became pets, they’re smaller, and they can fly. Students should make their own reasons for why a pigeon isn’t extinct, but not a Dodo. They will also think of other examples such as giant sharks or dinosaurs. The last box is for the result of evolution with a habitat change. Tell the students all you mean by evolution is that the animal has changed over a really long time. Follow the same process to fill out that final box. Once complete, have the students fold it and put it in their science notebook so it is not lost.

Adaptations/accommodations

ELLs: The PowerPoint is a great accommodation since the students can see the picture, read the words, and hear the teacher say them. This is triple exposure to the language, so it should really help them understand. The Doc Cam is a good adaptation for this lesson because then all ELLs can hear and see the information we are learning about. This will help them be able to process it twice, and hopefully understand better.

Gifted: Not Applicable

At Risk: The PowerPoint will give the students multiple chances to catch the information. The Doc Cam is also an adaptation for these students because seeing the information the just heard and read written down will help them comprehend even better. The more interactive PowerPoint should help the students enjoy learning more.

IEPs: The main accommodation for A is still having his aid. However, hopefully learning about so many living things will be fun for him. He really likes bugs and snakes and other creatures like that. The PowerPoint pictures should keep him interested. For D, he should successfully complete the assignment. The teacher should just make sure not to call him out or call on him specifically because he will get embarrassed and shut down.

504s: For L, the student with Diabetes, no accommodations or adaptations need to be made. For J, the teacher must talk into a microphone. The PowerPoint and Doc Cam are great accommodations so that she can see what she needs to do even if she can’t hear it.

Assessment

The PreTest Diagnostic Assessment results heavily influenced this lesson. Students really struggled (which isn’t a surprise since they hadn’t learned about habitats yet) so I knew they needed a lot of direct instruction to be able to learn about habitats.

The worksheet is the formative and summative assessment. This lesson will need to be split up, so in between teaching and while students are writing things down, the teacher should walk around and observe their work. This is the formative part because the teacher can see if the students are struggling or being successful, and base the pacing of the lesson off of that. The summative part is looking at the worksheets once they are complete and in their notebooks. Students should complete the entire worksheet, and then they have successfully met every objective. Once the worksheet is complete they have learned even more about Mealworms for the research write-up, and they will know about 6 habitats, meeting science standard 2.4.

Lesson 4: Mealworm Life Cycle/Write-Up

Topic: Science, Writing
Grade: 2nd
Approximate time: 45 Minutes
(15-20 Minutes are for the Write-Up, but this could be done during writing or Self-Start time instead of Science)
Rationale for methods
The Mealworm observations for Self-Start has been and inquiry experience for students as they’ve gotten to do it totally on their own, and decide what they wanted to observe and record. However, in 2nd grade the students still need the explicit instruction on what actually happens to Mealworms. As taught in every methods course, integration is key to connecting student learning to real-world experiences. The students will be able to recognize the integration of science and writing in this lesson as they use what they’ve learned to do a writing assignment. The write-up also promotes Metacognition as the students reflect on what they learned and how they did it.

Content standards
Science 2.4 “Life Science. Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.”
ELA 2.W.7 “Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).”

Academic language/vocabulary objectives
1. The language skill: The students will need to formulate a short write-up from everything they have observed, read, and taken notes on, concerning Mealworms.

2. The discipline-specific vocabulary: The students will need to know what a Mealworm is and the basic information on the Mealworm that was learned in the previous lessons. The students will learn the terms Life Cycle, Larva, Pupa, and Beetle.

Required materials, resources, and technology
- Life Cycle PowerPoint
The students need to be able to see many pictures of each stage of a Mealworm’s Life Cycle, this is the simplest way. Furthermore, as the students are creating the life cycle in their notebooks they will be able to still look at the powerpoint if they need help.
- Computer/Projector
This is needed to show the PowerPoint. It is essential to have or the PowerPoint is useless.
- Life Cycle Cards [1 set per student]
While it would save ink to have students draw each stage, it would also take significantly longer for 2nd graders to draw each stage, and in the end their drawings will not be very accurate or complete. The cards are a simple way for them to see a Mealworm in each stage.
- Science Notebook/Blank Paper [1 per student]
Each student needs either a blank page in their science notebook or a blank paper to glue the Life Cycle cards on. This is important so that they can keep better track of the information, and they won’t forget what order the cycle is in.
- Completed Habitats Worksheet, Living vs. NonLiving Chart, Mealworm Journal [every student should have this information from previous lessons]
This is needed so that the students can have the information they researched for their write-up. The purpose of the integration with the writing standard was so that the students could take all that they learned about Mealworms and write it in one page.
**Lesson objectives**

*Science:*
The students will be able to identify the four stages of the Mealworm Life Cycle: eggs, larva, pupa, beetle. They will have the Life Cycle in order in their notebook.

*Writing:*
The students will use all the information they have on Mealworms to write a 3 or more sentence write-up.

**Instructional Procedures**

1. **Life Cycle Introduction**
   Have a set of Life Cycle cards on each student’s desk when the lesson begins. Give them 1 minute to try and put the pictures in order of the Mealworm Life Cycle. Once the time is up, go to slide 2 and show the students the order is egg, larva, pupa, beetle. Ask the students to pat themselves on the back if they were correct.

2. **Mealworm Life Cycle**
Ask the students to get out their science notebooks and a glue stick. Give them 2 minutes to glue their cards on the page. Tell them they can choose how to do it, but it might be simplest to do it in a circle like the picture from slide 2.

Once students have the pictures glued, go to slide 3. Read the information and talk about the egg stage of Mealworms. Have the students write 1 on the card, and something about Mealworms as eggs [i.e. very small, only a few days]. Then, draw an arrow from Eggs to Larva. Go to the next slide. Repeat the process for each stage of the Life Cycle. Address student questions and comments, but move through at a steady pace.

3. Mealworm Write-Up
Go to the last slide, number 8, and have the students pull out their habitat worksheets, living and nonliving chart, and Mealworm journal. Tell them they should leave the papers out, but can put the notebooks away since the slide shows them the Life Cycle. Ask them to think about all the different ways they have learned about Mealworms [reading, from the teacher, from watching them]. Tell the students that we have done a research project on Mealworms, and now we are going to finish by writing about what we’ve learned. Have the students turn to the last two pages in their journal where there is two lined pages. Tell the students they can use all their notes and information from their research to write. They need to write at least 3 sentences, but can write as many as they want. Remind them to use capitals and periods. Let the students begin working. If many of the students are confused or don’t know what to write, here are some prompts you can write on the board to help them:

Mealworms are ___________________________.
What do you know about Mealworms?
What do you think about Mealworms?

When students are finished, staple the habitats worksheet to the life cycle page and have them turn in their write-up.

Adaptations/accommodations

ELLs: The PowerPoint pictures are helpful so that the students can see each stage of the life cycle, even if they don’t understand the words. Furthermore, the students will be able to use their notes to help them with writing. This is really beneficial since they can just take ideas they’ve already had to write about. The students can focus on the writing rather than thinking up ideas. The writing prompts will be very useful for ELLs.

Gifted: Not Applicable

At Risk: Having the students look at the PowerPoint, but also be creating a life cycle in front of themselves should let them really understand and bring to life the information. With the write-up, the prompts are an accommodation that will probably be needed immediately. Having the notes to help with writing will allow them to focus on making complete sentences.

IEPs: Giving A his own set of Life Cycle cards will allow him to stay busier and more focused. His aid will need to help him with writing. However, because he is so interested in Mealworms, the write-up should not be difficult for him. D may struggle a little with the writing. He will need reminders on making complete sentences, want the sentence prompts, and should receive praise. If all of these things happen he will do great!

504s: For L, the student with Diabetes, no accommodations or adaptations need to be made. To make sure J is successful, the teacher must talk in a microphone and make sure she can see the powerpoint. Being able to use her notes will be a good accommodation in case she didn’t hear something she was supposed to do.
Assessment
For the Life Cycle portion of this lesson, the initial card sorting activity is a Formative Assessment. For example, if the teacher walks around and notices many students already know the order, then students won’t need much instruction on the order of the Life Cycle.
The final write-up is a summative assessment of the Mealworm activity. If the students can use what they’ve learned to write 3 complete sentences then they have successfully completed the objective and met the writing standard.

Final Assessment
After all lessons are complete and the write-up is done, 5-10 minutes should be found to do the pretest again as a final formal summative assessment. The students should complete it with 80% or better to demonstrate proficiency and mastery of Science Standard 4.
4. **Reflection and evaluation of lessons, including analysis of assessment data.**

**Analyze student learning:**

**Kaycin.**
He did really well on this unit. I was working really hard to build a better relationship and help him comment. He completed everything he was supposed to, and never complained about science time.

On the pretest, Kaycin only got 27%, but he got 90% when he did it at the end of the unit. I was super excited to see this because he completed all the assessments for my lessons, and so he was prepared to do well on the final assessment. His scores show me that I taught all the information I wanted to, but also that Kaycin learned the information. One thing I noticed was that I accidentally made the test pretty confusing. On questions 2 and 3, the students are supposed to pick 2 habitats. Kaycin and many other students didn’t understand this. I wish I would’ve rewarded the questions to make it clearer they needed to pick both, not just one.

With the Mealworms, Kaycin did a great job keeping up with the journal entries. On the final write-up he wrote 4 sentences. I was very impressed that he wrote one more sentence than was required, showing that he was interested in trying hard with his writing, not just getting it done as quickly as possible.
You can see that his speech difficulties have manifested into spelling errors. However, he does have a capital and period for every sentence. He also wrote about things he had learned from observation, reading, and teaching without me asking him too!

**Brinkley-**  
Brinkley was also very successful with the unit. I was most excited that she ended up really liking observing and measuring her mealworm. One issue I had was that Brinkley, and many others, didn’t understand the idea of not having to write a specific thing down. They would erase something just because it wasn’t written on my paper. I had to work with the class to help them recognize that they could write down whatever they thought was important!
Another small problem we had was that she would sometimes just end up doing all the work for her Mealworm group since they were playing with the Mealworm. Once I went and worked with her group and helped them all understand what to do, it was much better.

On the pretest, she got 73%, which is below proficient. However, it’s still a good score. This showed me that she already knew some about habitats. She had a hard time with the habitat match-up though, so I knew that that lesson would be useful to her. On the final assessment she got 90%. This is proficient, so I know she learned and was able to improve. I was a little disappointed she didn’t do better, but she only missed points on the confusing habitat section that I mentioned above.
Mealworms are a insect that has six legs and two antennae and has 13 body parts. I know that a mealworm is a living thing because it moves, needs food and water and it can move on its own and need air. I know that a mealworm grows and it likes to burrow under
As you can see above, Brinkley loves writing! She did a very nice job with her write-up. I was impressed with it because she used clearer handwriting than usual. Furthermore, I was impressed with how she connected the Mealworm learning with living things. That showed the higher level of thinking I was hoping to get out of her from this unit.
Analyze teaching effectiveness:

- The one main thing I had to change was how I used the actual Mealworms. I was planning to have the students observe the Mealworms throughout the unit, and by the last lesson their mealworms should’ve turned into beetles. But, my teacher accidentally got Superworms instead, and Superworms take months to turn into beetles. As a result, the observations and measurements didn’t really change over time. However, I just let the students spend time playing with the worms and letting them watch them. They are going to get to keep watching them until they turn into beetles. In the future, I’ll definitely make sure I get real plain Mealworms.

- The Mealworm KWL with rotating paragraphs worked really well! I think they liked it so much because they hadn’t done something like that before. Everyone worked hard to learn, and actually followed my instructions. The students also really enjoyed the Mealworms! They would finish work early and beg to look at the Mealworms, and every single student was interested. The last thing that seemed to really work was using a variety of question answering techniques. The students liked when I switched things up and had them respond in new ways.

- The one thing that I really didn’t like was trying to cover so much information in so little time. Because of extra days off school and class parties, I combined two full units into one. It was okay, and the students did really well with it! However, I think it would be more effective as a teacher and as a learner if I could’ve taken more time. Covering 8 indicators in 4 lessons was crazy. I did my best connecting habitats with the Mealworms, but if I teach 2nd grade in the future, I would just do the one indicator in 4 lessons.

- Based on the focus students’ performance I would spend even more time talking about habitats and the living things that live there. There is just so much to learn, and habitats like forests and wetlands were really hard for them to tell apart. As I mentioned previously, I would also change the assessment to be easier for students to do on their own.

- In the future, I would do Habitats and Mealworms/Living & NonLiving separately. When I did habitats, I wouldn’t do them as a PowerPoint again, I would take the information and put it into 6 stations, kind of like how I did the Mealworm Informational Rotation. I would still have the students complete the same worksheet along the way, but take out the question about Mealworms living there. The students did well with the PowerPoint, but I think it would be more engaging and a better learning experience as a station activity.