

Representing the Life Cycle of Chickens

STEM: Science, Technology, Engineering, Mathematics



STEM Classroom Series

The STEM Classroom series features lessons that promote understanding of STEM content knowledge, integrate STEM with non-STEM subjects, and increase students' exposure to STEM-related career options.

About this Segment

Ms. Melissa Carter, a 1st grade teacher at North Elementary in Cedar City, Utah, integrates literacy-based activities with science content to engage her students in a lesson about the life cycle of chickens. The lesson culminates with students creating posters of a chicken's life cycle and getting to hold live chicks.

Application activities (complete all that meet your goals for viewing this segment)

A. Learn more about STEM education

1. Use the table on the next page to identify the elements of effective instruction, as well as the elements of effective STEM instruction, that you observed in this lesson.
2. How could the teachers enhance or add to the elements of instruction in their lesson?
3. How could the teachers enhance or add to the elements of STEM instruction?

C. Infuse STEM principles into your own lessons

1. Apply the six questions in the "Replicate this lesson" activity to one of your own lessons.
2. Determine challenges you might face in applying these STEM concepts to your own lesson. How can you overcome these challenges?

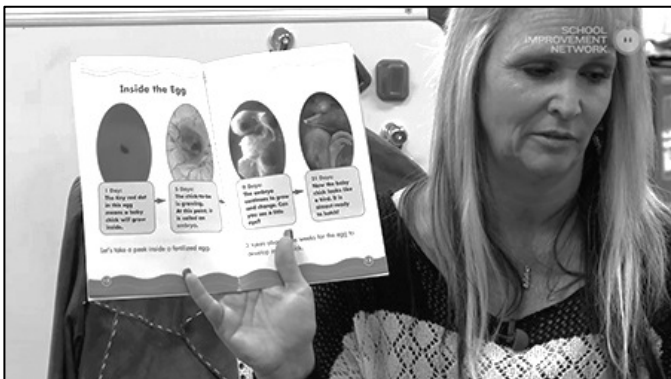
B. Replicate this lesson

1. *What are the learning objectives you want your students to achieve?*
How would you modify the lesson's objectives, outlined in the Lesson Plan below, for your own students and curriculum? What other objectives, if any, will you set?
2. *What content knowledge do you need to acquire or expand?*
This activity addresses the stages of various life cycles, including those for plants, insects, and amphibians. Which of these concepts do you need to learn more about? Visit the Resources to Support Content Knowledge links in the Lesson Plan section of this guidebook.
3. *How will you create the time and space to engage students in this lesson?*
How much time will this learning activity take to plan and carry out? How can you integrate the activity into your current curriculum map?
4. *What materials and other resources do you need for this lesson?*
What materials are needed for this lesson? See the Materials section of the Lesson Plan. What collaboration is necessary with administrators and other teachers?
5. *How will you assess student learning?*
In this class, the teacher assesses learning through progress monitoring during the group activity, as well as by checking for understanding at the end of the lesson. What are some other ways you could assess student learning for this lesson?
6. *How can you promote a STEM focus in your instruction?*
What STEM experiences were students engaged in during this lesson? (See the "Elements of Effective STEM Instruction" below.) What are some others that you could include?

Guidebook – Representing the Life Cycle of Chickens (cont.)

Elements of Effective Instruction	Elements of Effective STEM Instruction
<ul style="list-style-type: none">- High expectations for all students- Rigorous content- Authentic performance tasks- Real-time assessment adapted to student needs- Student-driven learning- Strong relationships among students and between teacher and students- Equitable, culturally relevant content and practices- Evidence of 21st century skills, e.g. critical thinking, problem solving, collaboration, creativity, communication- Technology that enhances learning- Cross-curricular (interdisciplinary) integration	<p><i>In addition to the Elements of Effective Instruction left, effective STEM instruction can include:</i></p> <ul style="list-style-type: none">- Teachers who develop solid STEM-related content knowledge- Hands-on problem-solving activities that have real-world relevance- Integration of STEM into non-STEM subjects, especially art and design- Use of industry-standard software, tools, and procedures such as the engineering design cycle- Increased awareness of STEM fields and occupations, especially among underrepresented populations- Enthusiasm about further STEM-related learning- Connections between in-school and out-of-school learning opportunities- Industry and higher-ed partnerships that encourage hands-on student exploration of STEM-related careers
<p>Sources: California Dept. of Education. (2015). Science, technology, engineering, & mathematics. Retrieved February 21st, 2015, from http://www.cde.ca.gov/pd/ca/sc/stemintrod.asp President’s Council of Advisors on Science and Technology (PCAST). (2010). Prepare and inspire: K-12 education in science, technology, engineering, and math (STEM) for America’s future. Retrieved from the Whitehouse.gov website: http://www.whitehouse.gov/sites/default/files/microsites/ostp/pcast-stemed-report.pdf</p>	

General Information About STEM/STEAM Education
<p>California Department of Education (n.d.). Science, technology, engineering, and mathematics. Retrieved January 23, 2015, from http://www.cde.ca.gov/pd/ca/sc/stemintrod.asp</p> <p>Math by Design (n.d.). On your own: A STEM project. Retrieved March 12, 2015, from http://mathbydesign.thinkport.org/stem/default.aspx</p> <p>STEM Education Coalition (n.d.). Home page. Retrieved January 23, 2015, from http://www.stemedcoalition.org/</p> <p>STEM to STEAM (n.d.). Home page. Retrieved January 23, 2015, from http://stemtosteam.org/</p> <p>US Department of Education (n.d.). Science, technology, engineering, and math: Education for global leadership. Retrieved January 23, 2015, from http://www.ed.gov/stem</p> <p>Utah STEM Action Center (n.d.). STEM Utah. Retrieved January 23, 2015, from http://stem.utah.gov/</p>



Representing the Life Cycle of Chickens

STEM: Science, Technology, Engineering, Mathematics

Lesson Plan

Teacher: Melissa Carter

Grade/Content Area: 1st Grade Science

School: North Elementary, Cedar City, Utah

Lesson Duration: 60 min.



Lesson Objective(s)

Students will understand the changes in organisms over time. Students will be able to describe similarities and differences between offspring and their parents. Students will be able to describe the life cycle of a chicken.

Key Concepts and Vocabulary

(See below for online resources that support content knowledge)

- Chicken body parts: beak, feet, comb, wattle
- Life cycle phase (embryo, chick, hen/rooster)
- Vowel teams
- Capitalization and periods at the end of sentences

Standards Addressed in the Lesson

- Describe and model life cycles of living things.
- Understand that adult plants and animals can have young.
- Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
- Know final -e and common vowel team conventions for representing long vowel sounds.
- Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).

Assessment

Teacher assesses student progress through observation and questioning during the lesson, and by reviewing their cloze (fill-in-the-blank) writing activity sheets and checking their chicken life cycle posters after the lesson.

Prior Knowledge and Skills

Knowledge: Understanding of the concept of life cycles, the chicken's life cycle in particular.

Skills: Reordering words in sentences, poster-making (scissors, glue) skills.

Materials

- Storybook: *Chick Life Cycle* by Elizabeth Bennett
- Pictures of various life cycles
- For reading/literacy activity: One plastic egg per student, one word with a vowel team in it (so that there are 4-5 groups, depending on the number of students in the class), one envelope per group with the words of a sentence in the book, a class pocket chart, and cloze writing activity (writing activity sheet included at the end of this lesson plan)
- For chick life cycle posters: One large piece of paper with an egg outline drawn on it; one small plastic egg per child, googly eyes, paper, glue, hot glue gun, scissors, crayons, real hay, live chicks (if possible)



Lesson Plan – Representing the Life Cycle of Chickens (cont.)



Differentiating the Instruction

Students will work in small groups. Teacher will circulate to monitor progress and provide assistance when needed.

Lesson Procedures

1. **Introduction:** As a whole class on the carpeted area, teacher reviews life cycles with students by showing them pictures of life cycles of plants, butterflies, frogs, ladybugs, etc., and inviting students to read or say the name of each phase in these animals' life cycles.
2. **Direct Instruction:** Read *Chick Life Cycle* by Elizabeth Bennett, asking and answering questions to reinforce key vocabulary (embryo, comb, wattle).
3. **Small-Group Activity:** Reading activity to piece together sentences from the book about the stages of a chicken's life cycle. Steps: 1) Each child picks a plastic egg, inside of which is a piece of paper with a word on it. Each word has a vowel team in it. Students determine the vowel team in the word, then find their place at the table designated for that vowel team. 2) Students at each table read their words aloud to each other. 3) At each table is an envelope filled with the words of a sentence from the book that need to be put in order. The first word is capitalized and the last word has a period, which can be a clue for students. Their task is to arrange those words in correct sentence order. 4) Each group reads their sentence aloud, adjusts the word ordering if incorrect, and then brings up the words to put into the pocket chart. 5) Each student will complete a cloze activity that reinforces the writing and vocabulary gained from the group word-ordering activity.
4. **Individual Activity:** Students each create a chicken life cycle poster by cutting out the egg outline of their paper, then bringing the paper to the table where the teacher will attach the plastic egg and hay to the paper with the hot glue gun. Students will then draw the remaining representations of the phases in the life cycle.
5. **Conclusion:** As a class, review the phases of the chicken life cycle, in particular the relevant scientific vocabulary. Then bring out the live chicks for the students to hold.

Resources to Support Content Knowledge

Enchanted Learning (n.d.). All about chickens. Retrieved April 23, 2015, from <http://www.enchantedlearning.com/subjects/birds/info/chicken.shtml>

Poultry CRC (2013, November 18). *Chicken embryo development* [Video file]. Retrieved from <https://www.youtube.com/watch?v=PedajVADLGw>

Related Video Lessons and Resources

1st grade: Researching earthworms. Edivate. <https://www.pd360.com/-resources/videos/8349>

4th grade: Cricket investigation. Edivate. <https://www.pd360.com/-resources/videos/5363>

English Language Instruction: Summarizing Passages About the Moon. Edivate. <https://www.pd360.com/-resources/videos/8220>

Name: _____

_____ **Life** _____

First a _____ lays an egg. Next an
_____ grows into a chick inside the
_____. Then the _____ pecks the
_____ and _____. Last the
_____ sprouts _____ and
grows into an _____.