**Introduction
to Inquiry Project**

Grade Level: 1st grade

Topic: Describe the life cycle of animals

Content Area: First grade science

Michigan GLECS

Science: L.OL.01.21 Describe the life cycle of animals including the following stages: egg, young, adult; egg, larva, pupa, adult.

ELA:R.IT.01.04 respond to individual and multiple texts by finding evidence, discussing, illustrating, and/or writing to reflect, make connections, take a position, and/or show understanding.

Tech: PK-2.TC.6. understand that technology is a tool to help him/her complete a task, and is a source of information, learning and entertainment

**Inquiry Project Task**

You and your classmates are butterfly farmers raising butterflies in hopes that Meijer Gardens will purchase them for their butterfly exhibit. Your job is to take care of ten caterpillars and raise them into adult butterflies. You will have to use books, magazines, and the Internet to find out what caterpillars eat, and how they need to be cared for throughout their life cycle. Your research will then be used to show that you understand how to take care of caterpillars so they not only survive, but thrive! You will be working in small groups. You will be creating a big book with words, pictures, and charts to use in your presentation to the staff at Meijer Gardens . Your book will explain the life cycle of butterflies and how you took care of them as they grew through each stage of the life cycle. Your job is to convince Meijer Gardens that your butterflies were so well taken care of, and are so special, that they should buy from you instead of a different group of butterfly farmers. If you convince them, your butterflies may be released into their garden for hundreds of people to see!

**Sources**

**Online Sources:**

1. Butterfly Song!

This website shares a fun song that describes the stages of the butterfly’s life cycle. You can also print out the lyrics. <http://havefunteaching.com/songs/science-songs/butterfly-song/>

1. Test me!

Click here to test your ability to put the butterfly’s life cycle stages in order. <http://www.sheppardsoftware.com/scienceforkids/life_cycle/butterfly_lifecycle.htm>

1. How do you say that?
Click here to learn how to say each stage of the butterfly’s life cycle and to put the stages in order.
<http://www.cookie.com/kids/games/butterfly-life-cycle.html>
2. Fun facts!

Watch a caterpillar do the “wiggle jiggle dance”!
Learn what to feed your caterpillar
Watch a butterfly emerge
How to tell if a monarch is a girl or boy

<http://www.monarchbutterflyusa.com/Wings.htm>

1. Butterfly fun!
Learn about a butterfly life cycle

Decorate a butterfly
Do a life cycle puzzle

<http://www.flashclassroom.com/docs/flash/79_butterfly_emma.swf>

1. Click here for butterfly Power Points, games, and videos
<http://animals.pppst.com/butterflies.html>
2. I would use the first two games to teach the life cycle and butterfly vocabulary.
<http://earthsbirthday.org/good-green-butterflies/butterfly-games/?/butterflies/bflys/games/index.asp>

**Videos:**

1. Watch and learn about the butterfly’s life cycle with amazing photos!

<http://video.nationalgeographic.com/video/kids/animals-pets-kids/bugs-kids/butterflies-kids/>

1. Ethan and Justin: Caterpillar to Butterfly

Two young boys share the life cycle of a caterpillar from larva to butterfly. Kids learning from other kids! <http://www.youtube.com/watch?v=mQOFh1exp3A&feature=related>

1. Kids Learning from other kids again!

<http://www.youtube.com/watch?v=jY8bAQ5iz5s>

**Texts:**

1. From Caterpillar to Butterfly by Anita Ganeri Copyright 2006
2. National Geographic Kids: Caterpillar to Butterfly by Laura Marsh Copyright 2012
3. Time For Kids: Science Scoops: Butterflies by the editors of TIME For Kids with David Bjerklie Copyright 2006
4. I Wonder What it’s Like to Be a Butterfly by Erin M. Hovanec Copyright 2000
5. The Magic School Bus Chapter Book: Butterfly Battle by Nancy White Copyright 2003
6. Time For Kids Magazine September 30, 2011 Volume 2 Number 4 March of the Monarchs article and From Egg to Butterfly article
7. Monarch Butterfly by Gail Gibbons Copyright 1989
8. The Butterfly Counting Book by Jerry Pallotta Copyright 1998
9. Smart Start Reader: Insects by John Grassy Copyright 2001
10. Incredible Insects by Zoe Barnes Copyright 2009
11. World of Insects: Butterflies by Martha E. H. Rustad Copyright 2008
12. Bugs A Read-and-do-Book by Judith Moffatt Copyright 2000
13. Scholastic Encyclopedia of Animals by Laurence Pringle Copyright 2001
14. Insects and Spiders (no known author) Copyright 2000
15. A New Butterfly by Pamela Hickman and Heather Collins Copyright 1997
16. It’s a Good Thing There are Insects by Allan Fowler Copyright 1990

**Process Page for Inquiry Project**

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| **Small-Group Inquiry Model For Inquiry Project** |
| **Stage** | **Teacher Role** | **Student Role** |
| **Immerse**Invite curiosity, build background, surround with materials, modeling, thinking-aloud | 1. Display butterfly books around the room.
2. Model Word Splash strategy with words from one of our daily poems. <http://eng.1september.ru/article.php?ID=200801322>
3. Hand out butterfly word splash papers. Tell students that they will be completing a Word Splash about butterflies. Every word they see in the box at the top is in our book. They are going to use the words to predict, or make an educated guess of what the book will be about. They can write a sentence for each word, a story, poem, or any other type of writing to explain what this story will be about. Allow students (especially ELL or struggling learners) to omit a word if they cannot figure out how to use it while still pushing students to use as many words as possible. Have students complete a word splash with the following words: egg, wings, patterns, chrysalis, monarch, leaf, skin, blood, straw, camouflage, butterfly
4. Have students share their Word Splash writing in groups of 3-4
5. Read National Geographic Kids: Caterpillar to Butterfly By: Laura Marsh stopping at each word from the word splash briefly explaining it.
6. Discuss similarities and differences from the word splash predictions and the book in groups of 3-4. During this time I will be assessing students based on their conversations and taking short anecdotal notes.
7. Watch the following video to excite the students about butterflies by learning from other children: <http://www.youtube.com/watch?v=mQOFh1exp3A&feature=related>
8. Facilitate a class discussion around the project task and what will be expected of students.
9. Ask students if they like to show their learning by drawing, writing, or speaking. Have them write their answer down on a sticky note and put it on the board under the corresponding category.
10. Create groups of four to five based on student’s choices. Try to have at least one of each type of learner in each group.
11. Present groups with caterpillars in cages. Remind children that the cages need to be cleaned daily and new food added. Model how to do this. Go outside and show children where to pick milkweed for the butterflies.
 | 1. Get excited about butterflies from word splash activity and complete activity
2. Share Word Splash predictions with group
3. Gain and verbalize new vocabulary knowledge from word splash activity
4. Gain excitement and new knowledge from butterfly video
5. Participate in class discussion regarding task asking specific questions
6. Select a method of demonstrating learning
7. Practice cleaning caterpillar cage and adding fresh milkweed to the cage. (Students will do this daily.)
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| **Investigate**Develop questions, search for information, discover answers, modeling strategies, guide discussions, conferring | 1. Model how to take photos with the classroom camera of the caterpillars in their cages, children cleaning cages, and children gathering and adding food to cage.
2. Model paragraph puzzles to improve student’s reading comprehension and help them remember more of what they read in the text by connecting text with corresponding photos. They will use this website: <http://www.monarchbutterflyusa.com/Wings.htm> I will model one or two matches depending on student’s level of understanding.
3. Learn butterfly song: <http://havefunteaching.com/songs/science-songs/butterfly-song/> and demonstrate learning by singing song
4. Model an I-Chart for students as we watch the video together. <http://video.nationalgeographic.com/video/kids/animals-pets-kids/bugs-kids/butterflies-kids/>
5. Show students how to access websites I researched to learn about the butterfly life cycle and how to care for butterflies. Also show them where the printed texts are for them to use in their research.
6. Explain to students that they will be filling out another I-Chart as they gather information from the following websites and printed texts:
* <http://earthsbirthday.org/good-green-butterflies/butterfly-games/?/butterflies/bflys/games/index.asp>
* <http://www.sheppardsoftware.com/scienceforkids/life_cycle/butterfly_lifecycle.htm>
* From Caterpillar to Butterfly by Anita Ganeri Copyright 2006
* National Geographic Kids: Caterpillar to Butterfly by Laura Marsh Copyright 2012
* Time For Kids: Science Scoops: Butterflies by the editors of TIME For Kids with David Bjerklie Copyright 2006
1. Students will be guided by the computer lab teacher and me throughout the process. I will demonstrate and model how to use the websites and then scaffold instruction by walking around and assisting students as they work in pairs or alone. We will also assess the learning of students while monitoring them.
 | 1. Students take photos for their groups of their caterpillars, cleaning the cages, gathering and adding food to the cage.
2. Complete paragraph puzzles
3. Learn butterfly song and sing it
4. Follow along and fill out I-chart with video <http://video.nationalgeographic.com/video/kids/animals-pets-kids/bugs-kids/butterflies-kids/> along with teacher
5. Use websites/printed text I researched to learn about butterfly life cycle and how to care for butterflies.
6. Students fill out I-chart to demonstrate learning. During this time students will be encouraged to confer with group members
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| **Stage** | **Teacher Role** | **Student Role** |
| **Coalesce**Intensify research, synthesize information, modeling organization and evaluating sources, identify key ideas, conferring | 1. Show/read the big book I created to students pointing out how I organized the content including illustration/diagrams/photos/text.
2. Model group tasks: organization/layout, writer, illustrator, materials gatherer.
3. Model collaboration and roles within the group.
4. Assist groups in assigning roles to individuals/partners within groups.
5. Explain that each page of the book will represents a stage of the butterfly life cycle and what was done to keep butterflies alive and thriving! (filled with illustrations/diagrams /classroom photos/text). Remind students that they will use the information gained from websites/videos/printed text to create their books. They are to refer to their word splash, paragraph puzzles and Inquiry Charts.
6. Create big books in groups- each page represents a stage of the butterfly life cycle and what was done to keep butterflies alive and thriving! (filled with illustrations/diagrams/ classroom photos/text). Model how to make an attractive cover with title and co-authors.
 | 1. Decide who will fulfill what roles within the group.
2. Groups will use collaboration and team work to organize big book content by page (each page is one stage of the life cycle). They will finalize the pages within the book.
3. Groups will design an appropriate attractive cover including an appropriate title, and co-authors names.
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| **Go Public**Share learning, demonstrate learning in a variety of ways, understand, reflect, create new questions | 1. Explain to students that each group will have approximately five minutes to present their book/butterflies and why their butterflies should be purchased by the Meijer Gardens. Not all students will be required to present if they choose not to and were a designated writer or illustrator.
2. I will model presenting my own big book/butterflies complete with illustrations/text/photos/diagrams. I will explain how to behave professionally when presenting information at Meijer Gardens.
3. Model how to use a checklist to rate presentations based on accuracy of information, quality illustrations/diagrams/photos, overall attractiveness of book as well as clarity, volume, and eye contact of presenters
 | 1. Students will plan each group member’s role in the five minute presentation (and/or decide who will not be up front presenting).
2. Groups will practice presentations to the class.
3. Students will rate other groups using checklist
4. Present books/butterflies at Meijer Gardens (if allowed). If not, present books/butterflies to class/principal/ guest classes.
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**Strategies and Differentiation:**

**Strategy 1: Word Splash**

This strategy will spark excitement regarding butterflies, and assist students in recalling background knowledge, while learning new and necessary vocabulary for the task. I will use the book National Geographic Kids: Caterpillar to Butterfly, By: Laura Marsh, Copyright 2012. I will hand out butterfly word splash papers and tell students that they will be completing a Word Splash about butterflies. Every word they see in the box at the top is in our book. They are going to use the words to predict, or make an educated guess of what the book will be about. I will differentiate my instruction by allowing students to write a sentence for each word, a story, poem, or any other type of writing to explain what they think this story will be about. Also, students, especially ELL or struggling learners, will be allowed to omit a word if they cannot figure out how to use it while still pushing students to use as many words as possible. Next, students will complete a word splash with the following words: egg, wings, patterns, chrysalis, monarch, leaf, skin, blood, straw, camouflage, and butterfly. Then the students will share their Word Splash writing in groups of 3-4. Then I will read National Geographic Kids: Caterpillar to Butterfly By: Laura Marsh stopping at each word from the word splash and briefly explaining it. Finally, we will discuss similarities and differences from the word splash predictions and the book in groups of 3-4. During this time I will be assessing students based on their conversations and taking short anecdotal notes.

**Strategy 2: Paragraph Puzzles**

The second strategy I will use is paragraph puzzles. This will to improve student’s reading comprehension and help them remember more of what they read in the text by connecting text with corresponding photos. We will use this website: <http://www.monarchbutterflyusa.com/Wings.htm> . To begin I will model one or two matches. I will determine how much modeling I should do as I monitor student’s level of understanding throughout this process. Students will then work in pairs, individually, or with me depending on their level of independence to complete the strategy. Students with low reading decoding or comprehension abilities, including ELL students, will be partnered with students who are stronger in this area, or with the teacher to provide additional scaffolding as they complete the assignment. This strategy provides a fun and engaging way to partner new knowledge of butterflies with what students already know.

**Additional Differentiation:**

* Students will be asked if they like to show their learning by drawing, writing, or speaking. Their inquiry groups will be created based on student’s choices. I will try to have at least one of each type of learner in each group.
* I will demonstrate and model how to use the websites and then scaffold instruction by walking around and assisting students as they work in pairs or alone depending on their academic level and learning style. ELL students who are struggling with be placed with a linguistically strong partner to help them with vocabulary, decoding, and comprehension.
* Each group member will work on at least one of the following tasks alone or with a partner: organization/layout, writer, illustrator, materials gatherer.
* Not all students will be required to present if they choose not to and were a designated writer or illustrator.

**Formative Assessments:**

1. Review student’s word splash
2. I will be assessing students based on their conversations and taking short anecdotal notes while they complete their word splash predictions in groups. Students will show that they can respond to text by discussing, writing, and making connections to show understanding.
3. Assess paragraph puzzles as students appropriately find evidence, make connections and show understanding of text
4. Assess students ability to sing butterfly song accurately
5. Collect and evaluate I-chart for student’s ability to find evidence, write, make connections and show understanding of content
6. Observations of students in computer lab and using printed text to find evidence, illustrate, write, and show understanding of information learned. Observations of students using technology to complete their task learn information and enjoy the learning process.
7. Observation of group interaction and each member’s role within the group
8. Observations of students and groups throughout the entire inquiry project.

**Summative Assessment:**Students will be evaluated on their group’s big book and presentation. They will have this rubric to evaluate other groups and to know how they will be evaluated.

**Book**:

\_\_\_\_\_\_ Accurate Information of Butterfly Life Cycle

­­­­­\_\_\_\_\_\_ Quality Illustrations

\_\_\_\_\_\_ Quality Diagrams

\_\_\_\_\_\_ Quality Photos

**Presentation**:

\_\_\_\_\_\_ Clarity

\_\_\_\_\_\_ Volume

\_\_\_\_\_\_ Eye Contact

\_\_\_\_\_\_ Overall Attractiveness

WORD SPLASH!

**Butterfly:** An insect that has a thin body, antennae, and four colorful wings.

***Egg Wings Camouflage***

***Butterfly***

***Patterns Straw***

***Chrysalis Monarch***

***Blood Leaf Skin***