**Molloy College**

**Division of Education**

**Lesson Plan**

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Course: EDU 521 03 Date: 4/11/13\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Grade: 2 Topic: Dinosaurs\_\_\_\_\_\_\_ Content Area: Science\_\_\_\_\_\_\_\_\_

**Instructional Objective(s)**

After participating in a class discussion about what a fossil is and viewing an education video online, students will be able to compare and contrast three different types of fossils, identify at least two conditions that are necessary for fossils to form, and create a cast model of a dinosaur fossil in a well-constructed level of performance.

Key Concepts-Students will demonstrate their understanding that models are simplified representations of objects, structures, or systems used in analysis, explanation, or design.

**STANDARDS AND INDICATORS**

**The Arts Standard #2: Knowing and Using Arts Materials and Resources**

Students will be knowledgeable about and make use of the materials and resources available for participation in the arts in various roles.

*Indicator:*

* This will be evident when students create a cast model of a dinosaur.

**English Language Arts Standard #1:** **Language for Information and Understanding**

Students will listen, speak, read, and write for information and understanding. As listeners and readers, students will collect data, facts, and ideas; discover relationships, concepts, and generalizations; and use knowledge generated from oral, written, and electronically produced texts. As speakers and writers, they will use oral and written language that follows the accepted conventions of the English language to acquire, interpret, apply, and transmit information.

*Indicator:*

* This will be evident when students participate in a class discussion about what a fossil is, when students create a Venn diagram to compare and contrast the different types of fossils, and when students construct sentence strips to list the different conditions necessary for fossils to form.

**English Language Arts Standard #4: Language for Social Interaction**

Students will listen, speak, read, and write for social interaction. Students will use oral and written language that follows the accepted conventions of the English language for effective social communication with a wide variety of people. As readers and listeners, they will use the social communications of others to enrich their understanding of people and their views.

*Indicator:*

* This will be evident when students collaborate with partners to construct a Venn diagram to compare and contrast the different types of fossils, and when students work collaboratively to construct sentence strips listing the conditions necessary for fossils to form.

**Mathematics, Science, and Technology Education Standard #4: Science**

Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

*Indicator:*

* This will be evident when students participate in a class discussion to discuss what a fossil is.

**Social Studies Standard #2: World History**

Students will use a variety of intellectual skills to demonstrate their understanding of major ideas, eras, themes, developments, and turning points in world history and examine the broad sweep of history from a variety of perspectives.

*Indicator:*

* This will be evident when students collaborate with partners to construct a Venn diagram to compare and contrast the different types of fossils, when students work collaboratively to construct sentence strips listing the conditions necessary for fossils to form, and when students present their cast model dinosaur fossil to the class.

**ELA & Literacy Standard: Reading; Speaking and Listening; Comprehension and** **Collaboration**

Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

*Indicator:*

* This will be evident when students collaborate with partners to construct a Venn diagram to compare and contrast the different types of fossils, and when students work collaboratively to reach consensus in cooperative learning groups constructing sentence strips listing the conditions necessary for fossils to form.

**ELA & Literacy Standard: Writing; Research to Build and Present Knowledge**

Participate in shared research and writing projects.

*Indicator:*

* This will be evident when students present their cast model dinosaur fossil to the class.

**NETS for Students Standards:**

1. **Creativity and Innovation**

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

1. Apply existing knowledge to generate new ideas, products, or processes.
2. Create original works as a means of personal or group expression
3. Use models and simulations to explore complex systems and issues
4. Identify trends and forecast possibilities

*Indicators:*

* This will be evident when students review facts learned about the dinosaurs using the SMARTBOARD.
* This will be evident when students use Microsoft Excel to create a Venn diagram to compare and contrast the different types of fossils learned.
* This will be evident when students work collaboratively in groups and use the App Sentence Builder to create sentence strips describing the conditions a fossil needs, to avoid decaying.
* This will be evident when students write 2-3 paragraphs describing their fossil casts using Notability on their iPads.

**MOTIVATION**

* The teacher will present the students with a slide show of pictures of dinosaur fossils.
* The teachers will pass around resin models of dinosaur teeth to the students.

**MATERIALS**

* Dinosaur fossil picture slide show, resin dinosaur teeth fossils, clay, plaster of paris, note taking *Notability* App on iPads for journaling, stylus, seashells, leaves, coins, *Sentence Builder* App for sentence strips, SMARTBOARD, “Digging up Dinosaurs” video, Finding Fossils fact sheet, and classroom set of iPads.

**STRATEGIES**

* Group Discussion
* Direct Instruction
* Teacher Demonstration
* Collaborative Groups

**ADAPTATIONS**

* The student who has a learning disability in writing will be provided with an iPad and prompted to use the Application Speak It! to dictate his/her notes.
* The student who has a disability in reading will be provided a tape of the reading lesson.
* The student who is an English language learner will be provided with pertinent vocabulary words prior to the lesson.

**DIFFERENTIATION OF INSTRUCTION**

The teacher realizes that not all students learn the same way.

* Visual aides will be provided for visual learners.
	+ The SMARTBOARD would appeal to these learners.
* Auditory students will be stimulated by spoken word during class discussion.
	+ The App “memo” on the iPad would appeal to these learners.
* Tactile students will be stimulated by the written portions of the lesson.
	+ The iPad would appeal to these learners.
* Kinesthetic learners will be stimulated by the movement during the creation of the Dinosaur fossil cast models.
	+ The iPad and SMARTBOARD would appeal to these learners.

**DEVELOPMENTAL PROCEDURES**

1. Students will participate in a class discussion and review the facts they have learned and know about dinosaurs. Using the SMARTBOARD, the students will take turns writing down the facts they are reviewing. The teacher will direct the discussion to focus on fossils and how they are formed. (*What have we recently learned about the dinosaurs? What is one way we can prove the dinosaurs existed? Who finds the fossils? Who can define the word fossil? What can a fossil tell us about the dinosaurs?* *What is a fossil made out of?* *Does anyone know how a fossil can form?)*
2. Students will view and take notes from the Reading Rainbow video on the SMARTBOARD titled, “Digging up Dinosaurs”. The students will use the note taking App *Notability* to compose their notes. (*What has this movie taught us about fossils? Is there something you have learned that surprised you from viewing this video?* *What does a Paleontologist do? Did this video show you how a fossil forms? How?)*
3. Students will observe and examine the fossil examples introduced by the teacher. The students will log their observations while passing around the resin dinosaur teeth models. (*What is being passed around?* *Besides inside the classroom where is another place we could find examples of fossils/resin model dinosaur teeth? How can we describe the fossil? How long is it? How heavy is it? Do we know where it used to live? Can a fossil like this be made today?)*
4. Students will form groups of three to four members and work collaboratively to construct a Venn diagram using *Microsoft Excel* on their iPads to compare and contrast the different types of fossils shown in the Reading Rainbow “Digging up Dinosaurs” movie. (*How many fossils did the movie show us? Who can tell us the different types? How are these fossils the same? How are these fossils different? Is there another type of fossil you know about which was not mentioned in the video? If so, what was it?)*
5. Students will continue to work collaboratively in their groups and will construct a list of the different conditions necessary for a fossil to form. Students may use the notes they have composed using *Notability* along with the Finding Fossils fact sheet to list the set of conditions they have found. The students will use the App *Sentence Builder* to create sentence strips describing the conditions necessary for a fossil to form. (*Did you find the fact sheet useful? Why or why not? What conditions are necessary for a fossil to form? What happens if these conditions do not happen? How can you use your notes to complete this activity*?)
6. Students will construct a cast model of a dinosaur fossil. Students using clay with create impressions with the resin dinosaur tooth model, and then fill in the impression with plaster of paris. (*Have you ever created a cast model before? How can creating a model help us learn more about the dinosaurs? Is there something else besides a dinosaur tooth that we could use to make an impression? Why do you think we need the plaster of paris? Are all of your fossils the same? Why or why not*?)
7. Students will present their fossils to the class. (*Do you like being the presenter or part of the audience? Why? Was it helpful to see the different fossils each of your classmates created? Why or why not? What are some of the features you saw and liked from the fossil presentations? Do you think fossils are useful?*)

**ASSESSMENT**

Students will write 2-3 paragraphs describing their fossil casts using Notability on their iPads. The students are to compare and contrast their fossil casts to at least three (using a Venn diagram)of the casts created by their classmates, and apply their findings to the different types of fossils they have learned about. The students must identify at least two conditions necessary for their fossils to be found 100 years from today, and explain what can be learned from comparing fossils.

**Dinosaur Fossil Cast Model Rubric**

 Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| --- | --- | --- | --- | --- |
| CATEGORY | **4** | **3** | **2** | **1** |
| **Model Description** | Accurately describes model with supporting details and key information. | Describes model with some supporting details and information. |  Describes model with little supportive detail and information.  | Supporting details and information are typically unclear or not related to the topic. |
| **Compares & Contrasts****(Content)** | Accurately compares and contrasts model to at least three other models presented. | Accurately compares and contrasts model to at least two other models presented. | Compares and contrasts model to one model presented. | Writer does not compare or contrast model to other models presented. |
| **Fossil****Conditions****(Content)** | Identifies two or more of the necessary conditions needed for a fossil to remain.  | Identifies one necessary condition needed for a fossil to remain.  | Incorrectly identifies one or more of the necessary condition(s) needed for a fossil to remain.  | Writer does not identify any of the necessary conditions needed for a fossil to remain. |
| **What can be Learned From Comparing Fossils****(Content)** | Accurately describes what can be learned from comparing fossils. | Describes what can be learned from comparing fossils with some supporting details and information.  | Describes what can be learned from comparing fossils with little supportive detail and information. | Supporting details and information are typically unclear or not related to the topic.  |
| **Sources** **(Content)** | All sources used for quotes and facts are credible and cited correctly. | All sources used for quotes and facts are credible and most are cited correctly. | Most sources used for quotes and facts are credible and cited correctly. | Many sources used for quotes and facts are less than credible (suspect) and/or are not cited correctly. |
| **Grammar & Spelling (Conventions)** | Writer makes no errors in grammar or spelling that distracts the reader from the content. | Writer makes 1-2 errors in grammar or spelling that distracts the reader from the content. | Writer makes 3-4 errors in grammar or spelling that distracts the reader from the content. | Writer makes more than 4 errors in grammar or spelling that distracts the reader from the content. |

**INDEPENDENT PRACTICE**

Following the lesson on how fossils are formed, students will visit the Dinosphere website to find out how fossils become part of museum exhibits. Student may click on the “Dino institute” teacher dig to see an example of how teachers discover and dig real dinosaur fossils.” Students will write one paragraph describing what they have learned or what they enjoyed about visiting the Dinosphere website.

**FOLLOW-UP: DIRECT TEACHER INTERVENTION AND ACADEMIC ENRICHMENT**

Direct Teacher Intervention:

The student, under direct intervention with the teacher, will review the different types of fossils using the book, “Fossils tell of Long Ago” and create a story graphic organizer.

Academic Enrichment:

The student will construct a dinosaur informational booklet composed of drawings of their dinosaur fossil cast model, and facts learned from the Reading Rainbow movie and taken from their journals.

**TEACHER REFERENCES**

Aliki. (1999). Fossils tell of long ago. New York, NY: Houghton Mifflin.

Reading Rainbow. (1983). Digging up dinosaurs [VHS].

Scott A. Jones Foundation. (2013). Dinosphere at the children's museum of Indianapolis.

Retrieved from <http://www.childrensmuseum.org/themuseum/dinosphere/index.htm>