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GILT 515:

**Science Across Content Areas: A Penguin Project**  
**Evaluation: “E” in ADDIE MODEL**

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## Introduction

The unit taught was a science content unit for kindergarten students on penguins that involved four phases. The phases included research, report writing, quizzes, and resulted in a culminating activity of the creation of a class book on penguins. The students were given a pre and post science content quiz that was ten questions long and they were also rated with a rubric on two technology standards. The images below show the quiz and the rubric are pictured below:

### Pre and Post Quiz:

<p>Student #: _____ Student Score: _____/10 Date: _____</p> <p><b>Penguins Pre-Test</b></p> <p>1. Can penguins fly? Yes ☺ No ☹</p> <hr/> <p>2. What do penguins eat? Meat (Krill, Fish, Crab, Lobster)  Plants (Seaweed, Grasses, Leaves) </p> <hr/> <p>3. Penguins live... In cold and warm locations near the water  On land near trees and forests </p>	<p>4. Penguin feathers have oil to make them repel water. Yes ☺ No ☹</p> <hr/> <p>5. Penguins have blubber to help them survive when they are unable to hunt for food. Yes ☺ No ☹</p> <hr/> <p>6. Penguins lay _____ eggs. 1 to 3 eggs  5 to 8 eggs </p> <hr/> <p>7. Penguin chicks eat food that was already eaten by their parents. Yes ☺ No ☹</p>	<p>8. Penguin chicks have lots of feathers to keep them warm. Yes ☺ No ☹</p> <hr/> <p>9. Which animals are water predators of penguins? Killer Whale (Orca), Sharks, Leopard Seals  Jelly Fish, Barracuda, and Sting Rays </p> <hr/> <p>10. Penguins black and white color helps them avoid predators while swimming. Yes ☺ No ☹</p>
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### Technology Rubric:

	<b>Below 1</b>	<b>Approaches 2</b>	<b>Meets 3</b>	<b>Exceeds 4</b>
Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.				
Students apply digital tools to gather, evaluate, and use information				

## Pre-Test and Pre-Rubric Results: (administered 2/3/15)

Student #	Pre-Test (10pts)	Pre-Rubric(1) (4pt)	Pre-Rubric(2) (4pt)
1	8	1	2
2	6	1	2
3	8	1	2
4	8	1	2
5	6	1	2
6	7	1	2
7	7	1	2
8	6	1	2
9	7	1	2
10	9	1	2
12	9	1	2
13	7	1	2
14	8	1	2
15	8	1	2
17	9	1	2
20	9	1	2
21	4	1	2
22	7	1	2
23	7	1	2
25	5	1	2
Average	7.25	1	2
Percentages	72.50%	25%	50%

As shown in the table, the students started the unit at an average score of 72.50%. This was a higher score than was initially anticipated. Below you will see that the design was changed to include more information in the initial presentation to allow students to extend their learning further than the initial plans. The pre-administration of rubric indicated a lack of experience in the area of using technology to collaborate and present learning content. This was rated at a score of 1 for all students. They have never used the iPads in this way, however they had collaborated on a Promethean board, but not for a finished product. This was something new that would require support for the students. The students had basic research experience using QR codes and the internet with support, thus a rating of 2 was appropriate for basic skills being in place.

## Implementation Summary

Based on the initial results, the children had some background knowledge of penguins. The content that was initially designed was changed to include more detailed content on penguins. This was done due to the higher than anticipated score on the pre-test. This was done to extend the activity further than initially planned based on the higher than expected scores of the students. The Nearpod presented to the students covered much more than the initial content to provide this extended opportunity to learn for the students. The first phase of the unit involved the first half of a lesson that covered penguin's habitats, food, young, adaptations, predators, and young. The second phase was part two of the Nearpod lesson that focused on a variety of penguin

species and specifics about each species' habitats, physical characteristics, food, predators, and young. The third phase involved group work for groups of 5 or less children, in which each group was assigned a penguin species to research more about through the use of facts sheets, websites, and videos that were linked to QR codes. They had to complete a graphic organizer as they completed their research that would be used to write a report. The report writing was completed in this phase as well, but on a second day. Students took their graphic organizers and created individual penguin reports on the species their group researched. They also colored illustrations to go with their reports. In the final phase, each group worked with me to use their reports as a source to author and illustrate a class book on penguins. Each group met with me and brought their reports and illustrations to the group work session. Each child was responsible for typing in one or two sentences from their own report into our class book in Book Creator on the iPad. We also took camera photos of their illustrations for the book as well. Each group had one or two children who recorded the narration for their pages. Each group made two pages on their specific species and it was merged to create a class book of 10 pages. The book was then presented to the class on the Smart board and also shared with parents via the class web page. At the conclusion of the unit, students were then given the same pre-test as a post-test. This was done to analyze student learning through a comparison of the results to see if there was a difference or increase in student science content knowledge on penguins.

## Post-Test Results

Student #	Pre-Test (10pts)	Pre-Rubric(1) (4pt)	Pre-Rubric(2) (4pt)	Post-Test (10pts)	Post-Rubric(1) (4pts)	Post-Rubric(2) (4pts)
1	8	1	2	8	4	3
2	6	1	2	7	3	3
3	8	1	2	10	4	4
4	8	1	2	10	4	4
5	6	1	2	8	3	3
6	7	1	2	10	4	3
7	7	1	2	10	4	4
8	6	1	2	10	3	4
9	7	1	2	10	4	4
10	9	1	2	10	4	4
12	9	1	2	10	4	4
13	7	1	2	10	4	4
14	8	1	2	10	4	4
15	8	1	2	10	4	3
17	9	1	2	10	4	3
20	9	1	2	10	4	4
21	4	1	2	9	3	2
22	7	1	2	10	4	4
23	7	1	2	10	4	3
25	5	1	2	10	3	3
Average	7.25	1	2	9.6	3.75	3.5
Percentages	72.50%	25%	50%	96%	93.75%	87.50%
Increase %				Increase 23.5%	Increase 68.75%	Increase 37.50%

### **Did the students learn and what items in the data provide evidence of student learning?**

Student scores on increased by 23.5% from the pre to the post-test (from 72.50% to 93.75%). So this would indicate that some substantial learning occurred in the lesson. They did start at a higher level than anticipated, so the growth is actually less than I would have hoped. Starting at 72.50% as an average left little room to grow.

After watching the students use the technology for research purposes, they proved to be able to use the iPads and QR codes independently. These observations of individual students provided ratings of 3-meets or 4-exceeds for a majority of the students.

In observing the collaboration and group creation with technology, the students did a surprisingly good job. They were able to decide content of the book pages as a group, take turns in typing in text, and decide who would narrate the project as well. They were careful to be sure each student had contributed in a few ways and that their work as a group was well represented. They were able to use the iPad Book Creator app with minimal support, but editing photos and moving text boxes were done with assistance. For this reason, most scores given were 3-meets and some were given 4-exceeds.

### **What needs changed?**

In the future, the content may need to be changed if a class enters the lesson with such a high pre-test score. Initially, the lesson was planned at a much more basic level. However, upon the pre-test administration it was realized that the students had much more knowledge about penguins than anticipated. If this happens in the future, choosing a new animal, or creating a pre-test with more intricate facts may be needed. This would allow the content to be more challenging if necessary and allow the children the chance to be more challenged in their content knowledge.