

## Lesson Plan for Henrico 21 Awards

Lesson Title: The Best Bait for Three Lakes

Target Grade/Subject: 3<sup>rd</sup> Grade Science & Math

Length: *(total class minutes required to complete)*

This project took 5 class periods, or 300 minutes.

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Summary: *(Summarize your lesson in 250 words or less)*

Each year the 3<sup>rd</sup> grade students at Holladay Elementary take a PE field trip to Three Lakes Park to go fishing. This year we were scientific and strategic about catching our fish! In groups we researched which kinds of fish are at the park and what types of bait to use. We developed our hypotheses about which type of bait would work best, and then we tested our hypotheses at the park by keeping track of which types of bait caught which kinds of fish. We also measured the fish as we caught them and took photos. Back at school we analyzed the data and drew our conclusions. We published our findings in a brochure for the visitors center at Three Lakes Park. We also created group presentations about the different types of fish using the program of our choice (Comic Life, Keynote, Pixie, and/or video). Our presentations were linked to the back of the brochure so visitors could view them and learn more about the fish they caught as well as what types of bait to use. We are hoping that visitors also leave us comments and suggestions. Finally, we scored our projects using a rubric. Now hopefully next year's 3<sup>rd</sup> graders can fish with confidence... as well as other visitors to Three Lakes Park!

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Essential questions: *(What are the foundational questions that students should be able to answer after this lesson?)*

Based on your research and experiments, which type of bait are you most likely to catch a fish with at Three Lakes Park? Least likely? (MATH SOL3.17-data & graphing; MATH SOL3.18-probability; SCIENCE SOL3.1-scientific investigation; SCIENCE SOL 3.5-food chains; SCIENCE SOL 3.6-ecosystems)

Based on your research and experiments, which kind of fish are you most likely to catch at Three Lakes Park? Least likely? (MATH SOL3.17-data & graphing; MATH SOL3.18-probability; SCIENCE SOL3.1-scientific investigation; SCIENCE SOL 3.5-food chains; SCIENCE SOL 3.6-ecosystems)

Why does one type of bait work better at Three Lakes Park than another? Why are there more of one kind of fish than another? How does this all relate to the freshwater lake ecosystem? How can we learn from other fishermen, and how can they learn from us?

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Lesson Development:

Process/Tasks/Assessment: *(Describe what the teacher and students are doing during this lesson. Include details about particular tasks and essential resources/tools. Include a description of the artifact that you will collect as evidence of content/skill mastery and state how you will communicate your assessment expectations to the students.)*

1. We started by **posing the problem**, Which type of bait will help us catch the most fish during our field trip to Three Lakes Park?
  2. We discussed ways to find out the answer. First we would have to research which kinds of fish live in the lake. Then we'd have to find out what types of bait those fish like. We surmised that there were **two ways to do our initial research**. We could read websites and books, and we could ask real fishermen (field research). So we did both. The websites we used are listed on the Google Doc (<http://tinyurl.com/3lakespark>) and the people we asked were our parents, friends, and neighbors. Most of our reading research was done in groups, while our field research was done individually.
  3. The four 3<sup>rd</sup> grade classes discussed their findings and narrowed the choices down to **four of the most common kinds of fish** (bass, bluegill, catfish, and crappie) and **three of the most common types of bait** (worms, crickets, and bread). Students developed their own individual hypotheses about which type of bait would catch the most fish.
  4. Now it was time to **test our hypotheses and gather data**. Each class went to Three Lakes Park and groups of students tried different types of bait. As they caught fish, they recorded the type of bait used and the kind of fish caught. They also measured the fish. (They had previously practiced this skill by measuring their fish rubbings in art).
  5. Back at school, we **combined the four classes' data and graphed the results** (all of this is in the Google Doc link provided in #2 above). We discovered that worms were the best bait to use and that a Three Lakes Park fisherman is mostly likely going to catch bluegill. We published our findings in a brochure that will be displayed in the visitors center at Three Lakes Park. It is also online <http://tinyurl.com/3lakesparkbrochure>
  6. Next, student-selected groups of 3-4 were **assigned a kind of fish to research**. They were told to **present their findings** in a creative way using one of the programs we have learned about so far this year (Comic Life, Keynote, Pixie, and/or video). All of their presentations are posted online and the links are on the brochure and the Google Doc. The shared settings for the document allow anyone with the link to comment, so we are hoping we will get some visitors' comments. For their projects they could use the pictures that parents and teachers took and posted to <http://comemories.com/2491b9>
  7. Finally, students evaluated their presentations and group work using a rubric. It is published online at <http://tinyurl.com/3lakesparkrubric.pdf>
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#### TIP Chart Assessment:

*(Using the TIP Chart, identify which level (e.g. entry, developing, approaching, ideal/target) your lesson falls in for each of the categories below and write a brief statement to describe what the students are doing as it relates to the indicators on the TIP chart.)*

#### Categories:

##### Research and Information Fluency: 6

In our **initial research** (#2 above), the students determined what would be the most reliable source(s) of information for finding out about the fish and the bait to use at Three Lakes Park. There were several websites about Three Lakes Park, but we determined that the most reliable one would be the one published by the Virginia Dept. of Game and Inland Fisheries. Through class discussion we also determined that for our field research, it would be best to ask real fisherman who have fished at Three Lakes Park. Other people could be asked, but they would not be as reliable. During the **experiment phase** (#4 above) the students gathered their own data, and then they analyzed it in class in order to determine the best type of bait to use. When

they researched a type of fish (#6 above) they selected their own resources and chose the type of digital tool they would use to present their information. Their findings were published online and at the Three Lakes Park Visitor Center in order to be authentic and helpful to other fishermen.

#### Communication and Collaboration: 6

Students asked for information from **real fishermen** and they shared their findings with fishermen using both print and digital means. They worked in **self-selected groups** and assigned each other tasks based on their various skills. For example, students who were good speakers recorded their voices, and students who were good artists drew pictures. They **published their presentations** online and invited comments from viewers. All **four classes** collaborated by combining and analyzing their data collected during the various field trips (not all classes went on the same day).

#### Critical Thinking and Problem Solving: 5

Students solved an **authentic and unique problem that was personally relevant**. They were going to be fishing at Three Lakes Park and wanted to catch a lot of fish. It was also helpful to others because no one has published a resource like this specifically for Three Lakes Park. They applied their knowledge of ecosystems, food chains, probability, data collection, and graphing to **analyze their data and draw conclusions** about the best kind of bait to use. They also determined what would be the most effective way of communicating their findings to the public.

#### Creativity and Innovation: 5

Students were given the opportunity to present their research in whichever way they believed would be most effective. As long as they met the requirements of the rubric, they had **complete freedom to be creative**. As a result there were many different projects: videos, drawings, slideshows, comics. A source of copyright-free images was generated by teachers and parents and posted to Comemories. Students made predictions and analyzed their self-generated data from Three Lakes Park to **create something new and useful to the public**, a Fishing Guide brochure and website (Google Doc).