

Fish Kills!

Information About Your Task

Are you convinced that fish kills are worth investigating? Do you think a fish kill might affect you one day? What would happen if a fish kill happened today in your watershed area? What type of problems might it cause? What if you and your family had to pack up and move to a place where there was a constant threat of a fish kill?

During this investigation, you will focus on one specific fish kill. To be specific, you will pick a specific fish kill occurrence, place yourself in that location and time, and then determine the "effect" it would have on you!

Discuss with your group any specific fish kill that you have heard about including the fish kill that occurred in the Lake Iluka simulation. Do you remember any details or facts? Record these details in your journal.

The Inquiry Process

Before you begin your investigation, you should think about how you are going to accomplish this major task. Have you thought about the exact topic that you will explore? How about where you will look? Will all the information that you will find be worthwhile? How will you show the results of your investigation?

The following steps will help you with this, and we strongly suggest that you use them while you do your investigation.

1. Define Your Question:

Think about the specific question that your group will investigate for this project. Well... what do you want to investigate? It should be something that is interesting to you. Also, the question you choose will "drive" your investigation. Let's start by looking again at the main focus for our inquiry:

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OK. Now we have a point to start from. Remember to put yourself in that location and

time... use your imagination! What effect would that fish kill have on you?
To help with your question, think about these statements and record your ideas in your journal.

- Major or minor fish kill?
- Effect on property?
- Effect on life? Human? Animal? Plant?
- Effect on economics?
- Effect on water quality?

As you can see, if you try to put everything in your question it gets way to big. Try to focus in on the area that interests you.

Hopefully, after quite a bit of thought and discussion with your group, you will have one driving question. Record this question in your journal and draw a BIG box around it.

2. Plan Your Search:

Plan your search and think about the way that your group will carry out this investigation.

Remember, the purpose of a driving question is to help focus your investigation. Now that you have this question, you will have to spend a little time planning your search. To plan your search, work through these three steps:

1. Develop Sub-Questions:
 - What do you need to know to answer your question?
 - What do you already know about this question?
 - What smaller sub-questions can you ask to help answer your driving question?
2. Find Information:
 - What kind of information do you need to answer these sub-questions?
 - Where do you think you can find this information?
3. Divide Up the Work:
 - How will you organize your search?
 - Who will do what in your group?
 - When will you do your work?

Your Plan is very important! Record all of your ideas in your journal.

3. Explore and Locate Information:

Explore available resources and locate specific information on your question. Now that you have planned your search, let's explore and locate information on your driving question.

Information for your question can be found in many places. Think about this list:

- Magazines
- Encyclopedias
- Research Journals
- Books
- Multimedia CDs
- Laserdiscs
- Videos
- Television Programs
- Radio
- Internet
- World Wide Web
- Personal Interviews
- ... and your own experiments, measurements or surveys!

Sometimes finding information raises new questions. You may need to redefine your question or replan your searches. Don't worry if you do, the Define-Plan-Explore-Assess (Inquiry Process) is a common strategy that you will use over and over again during your investigation.

As you explore, keep track of your work in your journal. Include the following:

- Where did you search for information?
- What were the information sources you found?
- What search strategies/keywords did you use?
- What exactly did you find about your question?
- What is interesting about your findings?
- Who did what in your group?

You might also include these:

- What experiment, survey or measurement did you conduct?
- Explain how, when, who, and why about your work.
- What did you expect to find? Why?
- What do you actually find?
- How does this compare to other information resources?

4. Assess Your Findings:

Decide if your findings are worthwhile and apply to your question.
How did your exploration work out? Did you find enough information? Was all the information relevant to your question? Was all the information believable?

Here is some criteria that you can use to assess your findings:

Thoroughness:

- Did you find enough information for the sub-questions?
- If not, did you search in many different resources?
- Can you think of other resources you can use?

Accuracy:

- Do the resources provide updated information?
- Are the resources accurate?
- Does the information come from a reliable source (university)?
- Which type of resources provide more accurate information?

Multiple Resources:

- Did you use information from multiple sources?
- Did you cross-check the information that you found?
- Did you compare information from different resources?

This is quite a bit to think about. It would help to record some thoughts in your journal about your assessment process.

Presenting Your Information

At some point during your investigation, you will feel like you have collected and assessed enough information to present it to someone else. How will you represent your information so others can understand it? How will you let others know the methods you used to obtain your information?

For this investigation, you will represent your findings with a report and a presentation to others that might be interested in your project.

In general, a good report and presentation should include:

- What was your driving question? Why did you choose it?
- How did you collect your information? From where?
- What information do you have that relates to your driving question?

What conclusions can you draw from your research?
What part of your driving question needs more research? Why?

For your specific project, you'll need to include:

- The name of your particular fish kill.
- Specific background on where, when and why.
- A description of why you thought it was an important fish kill.
- Methods to prevent such a fish kill from occurring in the future.

Remember, you have to describe the "effect" it had on you as if you were actually there. The way that you represent this part is up to you. Be as creative as possible!