



Beacon Media

Supporting Christian schooling worldwide

Inquiry-based learning

What is inquiry-based learning?

- Children find out through direct, hands-on experience rather than a lecture from the teacher.



- **Step 1:** Teacher introduces the science topic
- **Step 2:** Teacher finds out what the children **ALREADY KNOW** about the topic.
- **Step 3:** Teacher ask the children what they **WANT TO KNOW** about the topic.
- **Step 4:** teacher and children set up experiments or situations where they can **FIND OUT** what they want to know.
- **Step 5:** Children draw conclusions and record results
- **Step 6:** Find out more about the topic – teacher adds what they **NEED** to know.

Step 1: The teacher introduces the topic

- In a Christian school the teacher introduces the research project by explaining its connection with God and the Bible.



“For the next four weeks we are going to be learning about plants and how God provides for us through plants.”

Step 2: The teacher finds out what the students know

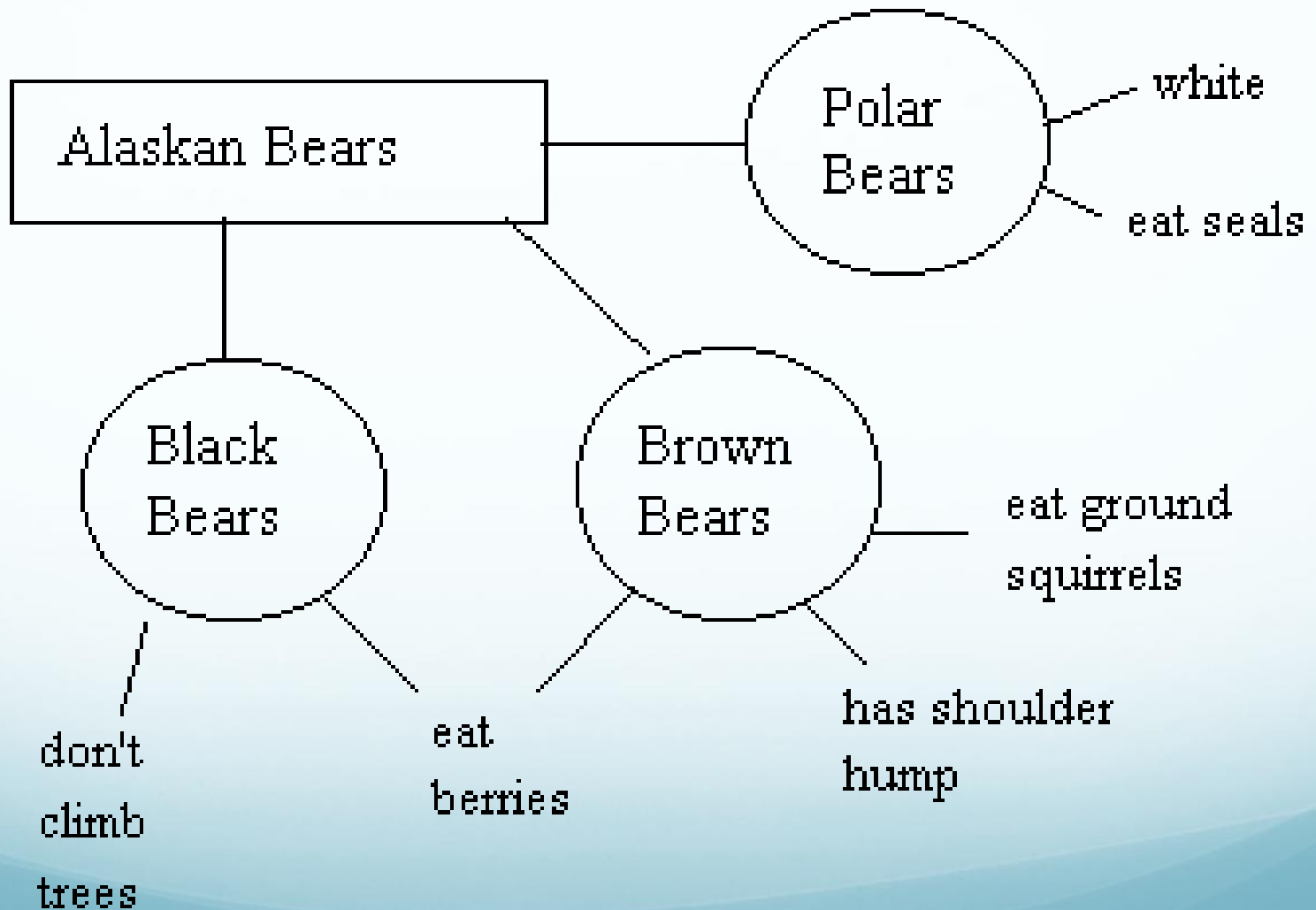
- The teacher can find out what the children already know by ASKING QUESTIONS.
- Or by inviting the students to explain what they already know about the topic.



“Who would like to tell me what they know about insects?”

- The teacher records the students' contributions by making a concept map.
- A large sheet of paper is preferable to writing the ideas on the board because you can keep it for reference in the next lesson.
- At this stage it doesn't matter whether the ideas are right or wrong. They will be investigated later.

Example of a concept map



Step 3: The children ask questions

- The teacher asks the children what they would like to know, or find out about the topic.
- Questions can start with:
who, what, when, where, why, how



- On another large sheet of paper, the teacher writes the questions as they are presented by the children. This is stuck on the wall for later reference.

- Children are more motivated and involved because they are going to find out answers to their own questions.



“Who has a question to ask about our topic?”

Step 4: Finding out

- The teacher sets the stage for an investigation.
- The children make predictions, then find out whether their predictions are right.



“I predict that the sugar will dissolve in hot water but will not dissolve in cold water.”

- Children conduct experiments or make observations to find out the answers to their questions.
- Children discuss and work with others.



- The teacher can facilitate the investigations by asking the children questions while they are working.



“What do you think is happening here?”

What other methods could be used for finding out?

- Observation of nature
- Excursions
- Information cards
- Books
- Guest speakers



Step 5: Drawing conclusions and recording answers to questions

Children can draw up a table and record their results:

My question:

My experiment:

I predicted that:

I found out that:

Ways of recording results

- Graphs
- Charts / tables
- Drawings
- Concept maps
- Writing

Table for recording science investigation

| What are you investigating? | Prediction | Results | Why do you think this happened |
|------------------------------------|-------------------|----------------|---------------------------------------|
| | | | |

Or make a chart / poster

FOOD

| | |
|--|--|
| <p>What is food?</p> <p>Food comes from plants.</p> <p>Food is something you eat and gives you strength and vitamins.</p> <p>Food is chunky and you eat it. It goes through your system and what is not needed turns to poo.</p> <p>• Edible material.</p> | <p>Why do we need it?</p> <p>We need food to live.</p> <p>We need food to keep our bodies healthy and give us energy.</p> <p>We need food to keep our bodies working and to grow to maturity.</p> |
| <p>Where does it come from?</p> <p>It come from plants.</p> <p>Food comes from the ground, trees and plants.</p> <p>We can grow food or we can make it, bake it or buy it.</p> <p>Food comes from farms, plants and animals.</p> <p>Harvesting, hunting, picking, making.</p> | <p>How do we get food?</p> <p>We pick food from trees or farm it.</p> <p>We pick food when it is ready to be harvested.</p> <p>We get food from shops or farms.</p> |

Evaluation of a science experiment

The teacher can guide students evaluate their results by asking:

- Were your results different to your predictions?
- Was it a fair test?
- Was there variation in results from different groups?
- Why might this be so?

Step 6: Is there anything else we need to find out?

- Teacher asks if the children have any more questions More investigations are carried out.
- Teacher adds any important information that has not been found out, i.e. what the children NEED to know.



Examples of activities

- Predicting and experimenting
- Problem solving
- Constructing
- Observing
- Weighing and measuring
- Discussing
- Drawing conclusions and recording results



What do we need to set up an inquiry-based learning environment?

- Groups of children working together
- Space for groups to work
- Equipment for devising experiments
- Rules for using materials and equipment

Assessment of the unit

- Towards the end of the unit the teacher can assess the extent of knowledge the children have gained.
- The teacher and students together can make a large chart summarizing what they have learned.
- A fun way to assess is to hold a quiz with teams.

Check:

Have questions been asked and answered about God and the Bible?



Summary

1. Introduce the topic... for the next 4 weeks we will be learning about ... and we will also be thinking about God who is a
2. Find out what the children already know – make a chart of what they know in dot points.
3. Ask what they would like to find out. Make a chart of their questions.
4. Ask how we can find out: reading books/information cards, science experiments, asking people, listening, using maps, pictures
5. Students get started with research. How will they present it?
6. Students share the information they have discovered
7. Has anything been left out? Evaluation

Discussion

- What are the obstacles to having inquiry-based learning sessions in your classroom?
- How could these obstacles be overcome?