INQUIRY-BASED LEARNING

Inquiry-based learning (IBL) is a teaching method that engages learners in knowledge-building process through generation of open-ended answerable questions, ideas and analyses. This approach is related to problem-based and project-based learning which allows learners to develop an investigative approach to develop strategies for solving problems. Inquiry-based learning can occur with the context of short-term engagement (a single session), or longer-term assignment (e.g., over a semester).

HOW TO GET STARTED USING INQUIRY-BASED LEARNING?

(Concept to Classroom, 2004)

To start using inquiry, teachers must first be familiar with the conceptual frameworks that structure the subjects they teach and the "ground rules," or skills, that are important to particular disciplines.

Questions, whether self-initiated or posed by others, are at the heart of learning by inquiry. While questions are a part of the traditional classroom, the source, the purpose, and the level of questions are quite different. In the traditional classroom, the purpose of questioning is to assess if students have learned or assimilated particular information. Whereas, when the teacher poses questions in an inquiry classroom, the questions are more reflective in nature. Appropriate questioning techniques are important in an inquiry classroom – especially in the lower grades where guided inquiry serves as a base for later, self-initiated questioning.

Read more about Inquiry-based learning here:

INQUIRY BASED QUESTIONS

(Adapted from Wilson, 2018)

There are five different types of question that can be created to begin an Inquiry-Based Learning process. These are:

1. Factual
2. Convergent
3. Divergent
4. Evaluative
5. Combination

<table>
<tr><td colspan="2">Factual – questions that require simple answers based on fact. These usually involve the lowest levels of learning in Bloom's taxonomy such as remembering. Answers are usually right or wrong.</td></tr>
<tr><td>Example: What is the name of this piece of safety equipment?</td><td>•  </td></tr>
<tr><td colspan="2">•  Convergent – These are questions that have a limited number of correct responses. It is likely that a group of learners will arrive at similar answers in response to these questions. These questions may relate to a few levels of learning in Bloom's taxonomy such as understanding, applying, analysing.</td></tr>
<tr><td>Example: What are the main reasons why safety equipment is necessary in this environment?</td><td>  </td></tr>
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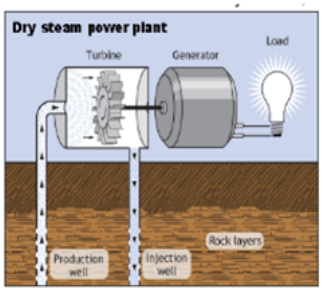
Divergent – These are questions that have many possible answers. It is likely that a group of learners will arrive at quite different answers in response to these questions. Learners will need to work at the higher levels in Bloom's taxonomy such as analysing, predicting, evaluating, synthesising. The correctness of the different answers is usually based on how probable the outcome is. These questions are designed to provoke deep thinking

Example: Indonesia has the world's largest geothermal potential. Exploration campaigns, and initial test drilling, for new geothermal power sites cost millions of dollars. What strategies would you use to maximise the discovery of viable geothermal sites?	

Evaluative – These are complex questions requiring higher level thinking, such as Bloom's taxonomy levels of analysing and evaluating. Learners may need to combine multiple processes, levels, or perspectives. This may lead to learners synthesising or creating new information of ideas.

Example: What are the similarities and differences in the processing required for the hydrothermal resources from dry steam wells and from hot water wells?	 Image from U.S. Department of Energy.

Combination – These are questions that blend any combination of the above.

ROLE OF A TEACHER IN INQUIRY-BASED LEARNING

(From Shariff, 2016)

Inquiry-based learning requires being prepared mentally and physically for the process. The mental process might be more of a personal philosophical change about teaching and learning. The physical process has more to do with the preparation of the learning environment.

The teacher's role is critical in inquiry-based learning, but the role is different from that for which most teachers have been prepared. The teacher becomes the leader of the learning, or the facilitator of the learning process.

Early discussions and questioning before the initiation of a new topic or an activity can be important in finding out what the learner knows, what he or she would like to know, and perhaps some held misconceptions. The final step in this process will be to determine what the learner learned.

In order to encourage the process of inquiry learning, it is important that the teacher helps the learner feel safe in sharing. Misconceptions can be overcome, but it takes skill to avoid "putting down" learners who hold them.