

Questioning and Problem Posing

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The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance.

Albert Einstein

Ever think to yourself, “I don't want to ask that question. It may sound like a stupid question” or “If I ask this question, I will show everyone how little I know”? Sometimes we are reluctant to ask questions because others may think that knowing answers means you're smart but asking questions means your ignorant.

Sometimes you may not know how to ask the question because you are not yet certain what sort of information you need. You may be asking simple questions without realizing that they are leading to more complex issues. You may be looking for a “right” answer when, in fact, you are exploring the topic. When confronted with a discrepancy, you may lack an overall strategy of search and solution finding.

The topics, challenges and problems described in this issue of Think+ are neither simple nor can they be resolved with simple questions or one immediate action. Effective

problem solvers know how to ask questions to fill in the gaps between what they know and what they don't know.

Questions vary in complexity, structure and purpose. Effective questioners are inclined to ask a range of questions. For example, they pose questions that:

- Request data to support others' conclusions and assumptions. E.g.
 - "What evidence do you have.....?"
 - "How do you know that's true?"
 - "How reliable is this data source?"
- Seek alternative points of view. E.g.
 - "From whose viewpoint are we seeing, reading or hearing?"
 - "From what angle, what perspective are we viewing this situation?"
- Search for causal connections and relationships. E.g.
 - "How are these people (events) (situations) related to each other?"
 - "What produced this connection?"
- Suggest hypothetical problems ("iffy"-type questions). E.g.
 - "What do you think would happen IF.....?"
 - "IF that is true, then what might happen if....?"

Strategies for Question Generating

When we encounter a problem, it is tempting to come up with an immediate solution. Instead, you can learn to withhold those solutions and generate questions instead. A great example is the technique used by the Toyota Company. The Toyota Production System (TPS) does not involve applying a cookie-cutter method to get a desired result but rather starts by generating a system of *interconnected questions*. TPS employs a

five-step cycle for problem finding, framing, and solving. As employees develop their problem-finding capabilities and problem-solving skills, they individually and then collectively enhance the organization's judgment in the long run (*Ballé, et al. 2014*).

You can use a similar system in your classroom with your peers. Here are some steps that will help you get in the habit of questioning and problem posing:

1. *Select a problem focus*—some discrepancy, observation, community problem or project that attracts you and that stimulates your curiosity.
2. *Generate questions*. Pose as many questions as you can; do not stop to discuss, judge, or answer any of the questions; write down every question exactly as it was stated; and change any statements into questions. Marilee Adams (2009) calls this “QStorming.” By listening to other students' questions you may generate even more and varied questions
3. *Classify your questions*. Analyze the differences between your questions stating the intent of each question: What do you want to learn by asking that question. Categorize the list of questions you have just produced.
4. *Prioritize your Questions*. Choose the three questions that have the greatest possibility of yielding the information you desire.
5. *Decide on actions*. Decide how to use the questions. What data will they yield? How might these data provide insights into resolving the problem?
- 6: *Reflect on what you Have Learned*. Review the steps of the process. What helped or hindered your understanding of question generating? What have you learned from this process? ? When else might you use this process?

One of the characteristics that distinguish humans and other forms of life is our inclination, and ability to FIND problems to solve. Effective problem solvers know how to ask questions to fill in the gaps between what they know and what they don't know.

Inquirers recognize discrepancies and phenomena in their environment and probe into their causes: "Why do cats purr?" "How high can birds fly?" "Why does the hair on my head grow so fast, while the hair on my arms and legs grows so slowly?" "What would happen if we put the saltwater fish in a fresh water aquarium?" "What are some alternative solutions to international conflicts other than wars?"

Nobel Prize winner, Naguib Mahfouz, put it this way: "You can tell whether a man is clever by his answers. You can tell whether a man is wise by his questions."

References

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