

CULTIVATING CREATIVITY AND CURIOSITY THROUGH QUESTIONS



By Andy the Science Wiz, Andy Allan, NAA's Stem Specialist

Providing high-quality learning experiences is bigger than simply presenting hands-on activities. The goal is to create an atmosphere of discovery where kids are engaged in creative and critical thinking. Asking good questions is an important part of creating the right environment. Through intentional questioning you can stretch young peoples' curiosity, reasoning ability, creativity, and independence.

DID YOUR EXPERIMENT WORK?

This is an example of a closed-ended question. It can be answered with one word, often a simple yes or no. It does not invite discussion or creativity. The answer to a closed-ended question is predictable and often structured by the question. Young people are conditioned by closed-ended questions to stop thinking and instead try to guess what the teacher's preconceived ideas are. Closed-ended questions have a place for testing factual recall, but they do not encourage high-level thinking.

HOW DO YOU KNOW YOUR EXPERIMENT WORKED?

This is an example of an open-ended question. An open-ended question has more than one answer and invites thought and discussion. Open-ended questions provide young people with the freedom to express their ideas and they generate conversation. Instead of predictable answers, open-ended questions elicit fresh insight and ideas, opening minds and enabling you and your young people to build knowledge together. Open-ended questions engage young people in dynamic thinking, where they must synthesize information, analyze ideas, and draw their own conclusions.

5 TIPS FOR CULTIVATING CREATIVITY AND CURIOSITY

1 CREATE A QUESTION LIST.

Old habits can be hard to break. To help you create better

questions, make a list of generic open-ended questions that can be posted on the wall or carried on note cards in your pocket.

The following is a list of STEM focused open-ended questions that can inspire creative thinking.

- What patterns did you notice?*
- Why do you think this happened?*
- What else might have caused that?*
- What did you expect to find and why?*
- How was it different this time?*
- Describe what you saw?*
- Is there another explanation?*
- What evidence do you have?*
- What are your assumptions?*
- How will you know if your experiment works?*
- How do you think you could make it better?*
- How did you decide on your method?*
- Why did you do it that way?*
- What is your hypothesis?*

SET EXPECTATIONS.

You want to foster cooperation, not competition. Encourage young people to respect everyone's ideas. Ensure that everyone has a voice and can be a participant. Use words and model behaviors that foster teamwork. Initially the expectations of open-ended questions can be stressful when shared in front of the whole group. Start by using a policy of Think Pair Share. When you ask a question, have the young people pair up to discuss the answer. Slowly promote discussion between the groups until everyone feels safe

enough to take part in a large group discussion. Try to make opened-ended discussions part of all of your activities.

BE CURIOUS AND LISTEN.

For open-ended questions to be effective, it's critical to ask them with real curiosity and interest. Your engagement and attitude will draw kids into discussions where you might learn more than they do. Remember to make use of wait time. After asking a question, wait 10 seconds to allow young people to think about and answer your question before providing any prompts. Do not be too quick to referee the correct the answer.

TWO-QUESTION RULE.

Because open-ended questions tend to be general, young people tend to answer in a general way and use general adjectives to describe their situations and opinions. Follow a question with another question that probes for deeper understanding. Second questions should probe for clarity or additional information. For example, "How do you know your experiment worked?" could be followed up with, "How do you think you could make it better?" The goal is to have the children think about their activities and the reasoning behind their answers.

PRACTICE, PRACTICE, PRACTICE.

Give yourself time to implement open-ended questions and be successful!

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SEE MORE AT: <http://naaweb.org/professional-development/item/472-5-tips-to-become-an-open-ended-quiz-master>

OPENING DISCUSSION

Are you regularly using open ended questions with your groups?

How much time do you currently give for young people to reflect and give answers?

Who has an example of successfully using open ended questions to stimulate creativity in their young people?

What are some of the challenges of asking more opened questions with your groups? How could some of these challenges be overcome?

APPLICATION ACTIVITY

Have participants form groups of three. Invite one person to be the student, one person the adult leader, and one person be the observer. Have them take two minutes to conduct an exercise with the following roles (this may also be done by a selected trio in front of the whole group)

- **Student** draws picture | **Adult Leader** interacts with student starting with two closed-ended questions and then least two open-ended questions | **Observer** watches and notes questions and student reactions.

Have participants debrief. What types of reactions did the different types of questions elicit?

Invite participants to think about a STEM (or other) activity they recently taught: and:

- Give an example of a closed ended question that was used. What was the student's or students' reaction?
- How the question could have been changed to be more open ended.
- How would the results have been different with the open-ended question?

CLOSING REFLECTION

We are all very busy in our professional lives what are some steps you can take to be more intentional with your questioning?

If applicable, provide participants with the corresponding certificate of participation and if required ask them to complete the questions included on the certificate.

CERTIFICATE of PROFESSIONAL DEVELOPMENT



CULTIVATING CREATIVITY AND CURIOSITY **THROUGH QUESTIONS**

_____ **PROFESSIONAL DEVELOPMENT HOURS, EARNED BY:**

CONTENT INCLUDED:

The power of good questions • The difference between closed and open-ended question • What is a good open ended question? • Intentionally questions • How to set expectations for productive group discussions • Using wait time to improve listening when asking questions • The two question rule

FACILITATOR: _____ **DATE:** _____

| What makes a good question?

| List three things that the use of open-ended questions encourages.

- a.
- b.
- c.

| What are two ideas you can use to encourage young people to be creative and share their thoughts and ideas?

- a.
- b.

Supports Content Area 2, Levels 1-3 of the NAA Core Knowledge and Competencies for Afterschool and Youth Development Professionals