**Disclaimer: All surveys that are used in your Mission Folder must have proper Institutional Review Board (IRB) approval and a completed IRB Approval Form must accompany your Mission Folder. The IRB Approval Form can be found in the Competition Rules section of our website or by contacting Mission Control at missioncontrol@ecybermission.com.*

Writing a Scientific Survey

Scientific surveys are a common method used by teams to collect data for a Mission Folder and can be an effective tool to gain information from a target audience. The information students gather from their survey should be able to help the team either prove or disprove their hypothesis.

On the surface, it seems a fairly simple task to write up a set of questions to collect information, but there are many pitfalls that should be avoided to develop a good survey questionnaire.

Tips for an Effective Survey

Here are 12 tips to help guide your students in writing successful survey questions:

1. **Remember the Survey's Purpose:** Every question asked should support the research objectives.
    a. **Research/Survey Objectives:** You should begin by stating your research and survey objectives.
    b. **Targeted Survey Population:** Identify the correct respondents for the survey. This will ensure that the target audience will give you information you need when answering the survey.
    c. **Survey Demographics:** Identify any demographic details, such as age, race or geographic location that may impact the hypothesis.
2. **When in Doubt, Throw it Out:** If you are not able to come up with a concrete research benefit that will result from the question, don't use it.
3. **Keep Questions Simple:** Break complex questions down into multiple questions that are shorter and easier to understand.
4. **Stay Specific:** Be specific and avoid vague issues.
5. **Include Only One Topic per Question (Avoid "Double-Barreled" Questions):** A double-barreled question is a question that asks about more than one issue in a single question. Try to break down compound questions into multiple simpler questions or statements.
6. **Avoid Leading Questions:** Leading questions can provide you with inaccurate information, as it causes prejudice or bias toward a specific answer.
7. **Ensure Respondent Has Sufficient Information:** It can be beneficial to break down questions that require background information into two parts; a screening item describing the situation that asks the respondent if he/she knows about it; and a follow-up question addressing the respondent's attitude about the topic.

8. **Look to Obtain Useful Answers With:**

    a. **Consistency:** Keep responses similar so that no single response stands out to the individual except the answer that is true for them.

    b. **Clear and Distinct Response Choices:** Always provide answer choices that match respondents' opinions or experiences.

    c. **Response Options Need to be Easily Distinguished as Different:** Response options should be mutually exclusive with only one legitimate place for the respondents to answer.

9. **Minimize Open-Ended Questions:** Open-ended questions, or essay questions, can result in respondent fatigue and may pose problems in terms of collecting, categorizing and analyzing data.

10. **Account for Different Perspectives:** Build in a time frame for completion to ensure that all respondents are answering in the same way. Avoid vague responses like "Regularly," "Sometimes" and "Often."

11. **Consider a "Don't Know" Response:** If you only want information from survey participants with an informed opinion or higher interest, offer a "Don't Know" choice.

12. **Provide a Meaningful Scale:** There are three things to remember when constructing a response scale:

    a. An odd number of points will provide a middle alternative or neutral position.

    b. An even number of points elicits slight preferences.

    c. A scale with a greater number of points draws out extreme opinions.

Once you have developed your survey questionnaire, let your Team Advisor review it, and if time permits, you should conduct a small test group (five to 10 people) to make sure that respondents clearly understand the questions they are asking and that they are capturing the information they need.

Well-written questions are important for a successful survey. Think carefully about the questions you write, guide them to look at reputable examples of questions and refer to the points above.

Writing a Scientific Survey Worksheet

Instructions: Below are examples of poorly written survey questions.

1. **Example:** On average, how many hours do the lights in your classroom remain on per day?

   ☐ a. 0 to 4 hours

   ☐ b. 4 to 8 hours

   ☐ c. More than 8 hours

- **Problem:** The answers choices here are not mutually exclusive. If a person left the lights on for 4 hours per day they can choose either “a” or “b.”
- **Correction:** _____

2. **Example:** Some scholars believe that the risks of rising landfills are underrated. Do you agree?

- **Problem:** This is a leading question and can cause bias toward a specific answer.
- **Correction:** _____

3. **Example:** Which of the following items do you recycle at least weekly?

   ☐ a. Plastic bottles

   ☐ b. Tin cans

- **Problem:** The answer choices in here do not account for recycling any items other than bottles and cans.
- **Correction:** _____

4. **Example:** How often do you read the community newspaper?

   ☐ a. Rarely

   ☐ b. Sometimes

   ☐ c. Often

- **Problem:** The answer choices here are vague. Each participant might have a different idea of what “Rarely,” “Often” and “Sometimes” means.
- **Correction:** _____

5. **Example:** The cafeteria at school recently changed its menu to include healthier options. Do you like the new menu items?

    a. Yes

    b. No

- **Problem:** This question assumes that the reader has knowledge about the old cafeteria menu as well as the new one.
- **Correction:** _____

6. **Example:** How much water do you drink a day?

    a. None

    b. 1 liter

    c. 2 glasses

    d. 40 ounces

- **Problem:** The answer choices here are inconsistent forms of measurement.
- **Correction:** _____