

OVERVIEW

BIG IDEA

Surveys are excellent tools for gathering data, but can often be misused.

OBJECTIVE

6.11: Identify potential problems in the design of survey questions.

AGENDA

1. Survey Critique
2. Steps to Conducting a Survey
3. Writing Surveys
4. Practice
5. Identify the Errors

HOMEWORK

Create an online survey about a topic of your choice.

LESSON 6.11

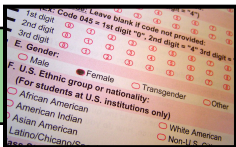
Survey Design

SUMMARY:

Students will be introduced to basic survey design and have an opportunity to practice devising basic survey questions. Students will examine a survey and look for problems with its questions, review the steps to carrying out a survey, read about potential pitfalls in survey question writing, and devise a research question and two survey questions to gather data. For homework, they will translate these questions into an online survey tool which will serve as practice for the next case study.

STANDARDS:

NGSS (WHST.9-12.7) Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. (HSL.13)



MODULE 5: RURAL HEALTH

LESSON 5.11

Survey Design

Obj. 5.11: Identify potential problems in the design of survey questions.

Survey Critique

As you take the survey below, consider any possible weaknesses in the way the questions are written.

News Habits Survey

1) When and how do you prefer to learn of the news?

☐ On the internet whenever I feel like it

☐ On the evening news

☐ In the newspaper in the morning

☐ I don't typically follow the news

2) How much does the news depress you?

1 2 3 4 5

A lot ☐ ☐ ☐ ☐ ☐ Not at all

3) Approximately how much time each day do you spend on the news?

Write your answer in the box below

What problems, weaknesses, or errors did you notice in the survey questions? Record your answers below:

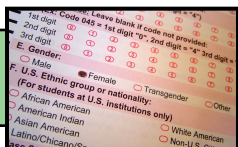
Question #	Problem
1	
2	
3	

DO NOW: Example answers:

1) Question is asking two things at once, answer responses are complicated (one part may be true while the other part is false, for example you may read the newspaper in the evening, not the morning)

2) Question is leading, perhaps the news uplifts the person but the wording of the question is biased to portray news in a negative sense. A better rewrite would be "How do you feel after watching the news?" with appropriate answers to cover the range of possible feelings.

3) An open-ended question may be difficult to tabulate data from; It also does not specify whether we should answer in hours, minutes, etc. or even that we should at least include units. A person who may not view the news every day (say once per week) may also have difficulty answering this (do they average that time between 7 days?)



Lesson 6.11 Instructor Guide

MODULE 6: RURAL HEALTH

DISCUSS

Survey Obstacles

A student wants to gather information on the obesity problem in her school. She decides to create a survey that will ask people about their height and weight (to calculate BMI), their eating habits, any health issues they have, and their self-perception of their own weight. What are some obstacles this student would face in designing and conducting her survey?



Primary Source: Survey

A survey is a systematic method of collecting data from a population of interest. It tends to be quantitative in nature and aims to collect information from a sample of the population. The purpose of a survey is to collect primarily quantitative (numbers-based) information, usually through the use of a structured and standardized questionnaire. Sometimes qualitative (descriptions-based) open-ended responses are used, but their usefulness is limited.

STEPS TO CONDUCTING A SURVEY:

- 1. Clarify purpose**
Why conduct a Survey? Who are the stakeholders? Who is the population of interest?
What issues need to be explored?
- 2. Assess Resources**
What external resources will you need?
Which accessible resources (ex: within our school) can you make use of?
- 3. Decide on Methods**
Select the method that is most appropriate
- 4. Write Questionnaire**
Decide on what questions to ask. Set the types of response formats. Set the layout of the questionnaire.
- 5. Revise questionnaire**
Revise and edit the questionnaire for clarity and grammar/punctuation/spelling. It should be professional.
- 6. Prepare Survey**
Decide on the sample design, format and method.
- 7. Collect data**
Administer your survey to the selected population.
- 8. Process data**
Data entry: automatic and online
- 9. Analyze the Results**
Use statistical formulas to determine different trends.
- 10. Interpret the Results**
What are the trends in the data telling you?
- 11. Take Action**
Respond to the data with an intervention.

DISCUSS

What are the advantages and disadvantages of using surveys to collect data?

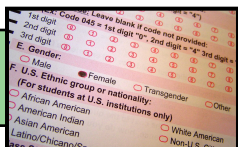
DISCUSS: Some possible obstacles may include: She is gathering potentially sensitive information (need to get approval, perhaps parent approval, or if it were an academic institution, IRB approval), need to maintain confidentiality and make survey optional/no pressure, need to make it anonymous, etc.). If all this were taken care of, she would also need to determine how accurately people can estimate their height and weight if they are self-reporting these variables.

NEW INFO: Instill the importance of Step #1 into students. All of the time, energy and resources that go into steps 2-11 can be a complete waste if their purpose is not clear, appropriate, and aligned to the survey that results from it.

DISCUSS:

Advantages: Surveys are a great way to collect information from a large group of people. More structured than interviews, allowing an objective and controlled comparison. Self-administered, meaning that the respondent of the survey fills out the survey form by him or herself. Survey respondents may be biased or self-report information that is not entirely accurate or true, for a variety of reasons

Disadvantages: May lack the depth that an interview could have (people can't usually explain their responses). Sometimes need to be read aloud to respondents, taking time



Lesson 6.11 Instructor Guide

MODULE 6: RURAL HEALTH



Writing Surveys

Read the following guidelines for writing excellent surveys:

1. Surveys should have a clear focus

What research question do you hope to answer from the survey?). This research question should serve as your guide to creating each survey question. If a particular question does not help you to answer your research question, do not include it in the survey.

2. Surveys should be short and questions should be concise.

When questions are stated in a clear, simple way, there is less opportunity for respondents to misread, get confused, or lose patience taking the survey.

3. Use closed-ended questions

These questions, in which respondents choose from a set of listed responses, are easier to analyze and are often easier for the respondent. Occasionally, open-ended question (also called a free-response question) are used in order to provide a greater depth of information.

4. Avoid "double-barreled" questions

A double barreled question is a single question that actually asks two different things at once. For example asking "Why do you exercise and eat right?" is actually asking two different things. People may exercise because they think its fun but eat right because they like the way healthy food tastes. Instead, the question should be separated into two different questions; "Why do you exercise?" and "Why do you eat right?"

5. Avoid "leading questions"

A leading question suggests a possible answer or makes some responses seem better than others. In the example above, respondents are asked "Why do you exercise"? However, some respondents may not exercise at all. Which option would a person choose below if they never exercised?

1. Why do you exercise? (select all that apply)

- A. I exercise because it is fun
- B. I exercise to stay healthy
- C. I exercise because I feel good afterward

You could split this question into two separate questions. Alternatively, you can keep the questions combined as long as you include an "I do not exercise" response option.

2. If you exercise, what is the primary reason why you exercise? (select one)

- A. I exercise because it is fun
- B. I exercise to stay healthy
- C. I exercise because I feel good afterward
- D. I do not exercise

Another type of leading question makes the respondent think they should answer a question in a particular way. In the following example, the use of the word "love" makes one think that they should love math class. Even the responses to this question are biased.

3. How much do you love math class?

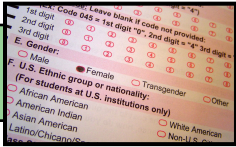
- A. I love math class more than most people
- B. I love math class the same as most people
- C. I love math class less than most people

However, asking people how they feel about math class, instead of how much do they love math class, allows them to report their own feelings about the course.

4. Please rate your feelings about math class on the scale below:

1 2 3 4 5
I love it! It's O.K. I hate it!

READ: Ask students to go back the survey in the Do Now. Were any of the questions Closed-ended? Double-barreled? Leading?



Lesson 6.11 Instructor Guide

MODULE 6: RURAL HEALTH



Response Options

Surveys can have a variety of different types of response options. Some common examples are:

Response Options

- *Multiple choice* (Respondents only select one option; see example #2)
- *Choose from a list* (Respondents may select several options; see example #1)
- *Scale* (Respondents choose a degree of agreement with a statement; see example #4)

Can you think of any other types of response options?



Practice: Create Two Survey Questions

Complete Steps 1 and 4 of the "Steps to Conducting a Survey" to practice.

1. Clarify purpose

a. Select an issue you would like to collect information about:

b. Write a research question about that issue. Be sure you have two distinct variables that you hypothesize have a causal relationship. For example, if your issue is "coffee drinking and sleep" your question might be, "Do those who get less average sleep tend to be coffee drinkers?" Write your research question below:

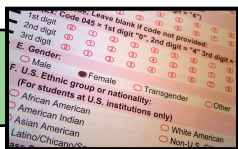
4. Write Questionnaire

Devise one question and the corresponding response options for each variable. Avoid open-ended, double-barreled and leading questions.

Variable #1 Question:

Variable #2 Question:

DISCUSS: Go to a google form and show students the wide range of possible ways to set up answer responses.



Lesson 6.11 Instructor Guide

MODULE 6: RURAL HEALTH



Identify the Errors

Explain the error(s) or problem(s) with each question below:

1. How much do you like coffee?

- a. I love it
- b. I like it
- c. I dislike it
- d. I hate it

Error or Problem:

2. How much sleep do you get, on average?

- a. a healthy amount (8 or more hours)
- b. a moderately unhealthy amount (6-8 hours)
- c. an unhealthy amount (less than 6 hours)
- d. I don't know

Error or Problem:



Create an Online Survey

Assignment: Using the two questions you devised earlier in this lesson (or new ones if you prefer), create a fun, appropriate survey using any online survey tool. Be sure your questions are not open-ended, double-barreled, or leading!

Recommendation: Use a "Google Form" to create your survey. More information can be found online by searching for "How to create a google survey" on google.com

Challenge: Add more questions and try to use different types of response options

ASSESS:

1. Leading, Answers do not represent a spectrum of people that might include non-coffee drinkers who have never tried it
2. Leading (by providing a value judgment—healthy vs. unhealthy amount, people may be led to choose one answer over another)

For a challenge, ask students to write down an example of a double-barreled question related to sleep and coffee.

HOMEWORK: The purpose of this homework assignment is to provide students a chance to practice using an online tool to create surveys. You may want to require that all students use the recommended Google Form type, as this mode makes sharing easy with the instructor and others, is simple & free to use, and would create consistency for grading or tracking purposes, and later simplify instruction required to get students going on the case study data collection requirement.