Designing a Survey

The key to obtaining good data through a survey is to develop a good survey questionnaire. Whether you are conducting interviews or mailing out surveys, you will need to know how to design a good survey questionnaire.

What is a survey questionnaire?

Survey questionnaires present a set of questions to a subject who with his/her responses will provide data to a researcher. 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. We will focus here on describing some of the key elements in designing a survey questionnaire, and then highlighting some tips and tricks to for creating a good survey questionnaire.

Objectives

The key to developing a good survey questionnaire is to keep it short while ensuring that you capture all of the information that you need. This is not an easy task. Before you even begin to design your survey questionnaire, you should develop a set of objectives for your research and list out the information that you are trying to capture. This list of objectives and research goals will serve as your plan for the survey questionnaire.

Now that you know what you are looking for, you can begin to structure the questions that will help you capture the information. Once you have developed your survey questionnaire, you can use your objectives to go back through the questions and determine if each of the questions is providing you with information that you need. Any question that is not providing necessary information should be removed.

Types of Questions:

There are two different types of questions that can be used to collect information. The first is called a structured or fixed response question and the second is called non-structured or open question. It is important to understand when and how to use these questions when designing your survey.

Structured (fixed response)

Structured questions are questions that offer the respondent a closed set of responses from which to choose. Structured questions make data collection and analysis much simpler and they take less time to answer. Structured questions are best suited in the following situations: (1) when you have a thorough understanding of the responses so that you can appropriately develop the answer choices (2) when you are *not* trying to capture new ideas or thoughts from the respondent.

Examples of Structured Questions

Do you have a driver's license? ( ) Yes ( ) No	Which subject do you enjoy the most at school? ( ) Math ( ) Science ( ) English ( ) Foreign Language ( ) History ( ) Government ( ) Art / Music ( ) Other	How many hours a day do you spend doing homework? ( ) 0 to 1 hour ( ) 2 to 3 hours ( ) 4 to 5 hours ( ) more than 5 hours

When writing the selection of responses for a structured question, you should make certain that the list covers **all possible alternatives** that the respondent might select AND that *each of the answers is unique* (ie they do not overlap). So for example, in the homework question above, we have included every option on the number of hours (from 0 to infinity). Also, you will notice that we were careful not to overlap the hours when defining the ranges by stating them as "0 to 1 hour" and "2 to 3 hours" rather than saying "0 to 1 hour" and "1 to 2 hours".

Sometimes, including general catch all responses (such as "Other", "Don't know", "None of the above", etc...) at the end of a list of answer choices will help to ensure that the data you are collecting will be accurate. In the school subject example above, you will notice that the last answer choice is "Other". Since the selection of non-required courses varies dramatically from school to school the option of "Other" helps to ensure that you are capturing the responses that do not fit into the broader subject areas already listed, rather than forcing respondents to select one of the other subject areas. Similarly, adding "Don't know" to a response list for a question that some of the respondents may not be capable of answering will help ensure you are collecting valid data. In general however, you want to use the "Don't know" option sparingly. You should try to ensure that your respondents are capable of answering the majority of the questions on your survey questionnaire.

You should also make sure that all of the answers are *relevant* to the question. Irrelevant responses may distract the respondent in addition to adding unnecessary length to your survey questionnaire. Consider the following change to the favorite school subject question.

Example of a Bad Question With an Irrelevant Answer Choice

Which subject do you enjoy the most at school?   ( ) Math   ( ) Science   ( ) English   ( ) Foreign Language   ( ) History   ( ) Government   ( ) Art / Music   ( ) Football Practice   ( ) Other

If we added a choice of "Football practice", we may find that football practice is someone's favorite "activity" at school, but it is not relevant to this particular question which asks "Which *subject* do you enjoy the most at school?"

Consistency is very important in writing the list of responses. All of the responses should be similar so that no single response stands out to the individual except the answer that is true for them. Consistency simply helps to ensure that you are not leading respondents to a particular answer by making that answer different from the others.

It also makes it much easier for respondents to find the answer that is relevant to them. Here's an example using the homework question you have already seen above:

Example of a Bad Question with Inconsistent Answer Choices

How many hours a day do you spend doing homework?
( ) 0 to 1 hour
( ) 120 to 180 minutes
( ) 4 to 5 hours
( ) more than 5 hours

In this example, the second choice is exactly the same as what we had before, but it is listed in minutes rather than hours making it inconsistent with the other answer choices. Listing answer choices in this way is very confusing for the respondent and makes it more likely that they will provide you with incorrect information.

Sometimes you will be interested in obtaining a person's opinion on a topic, subject, product, event, etc.... To capture varying degrees of emotion about a subject, it is best to use either a rating or a ranking question. A rating question asks respondents to explain the degree with which they feel about a certain topic, subject, event, etc... For example:

Example of a Rating Question

Please describe how you felt about the Homecoming Pep Rally.

Unsatisfied	Somewhat Satisfied	Satisfied	Very Satisfied	Extremely Satisfied
(1)	(2)	(3)	(4)	(5)

A ranking question asks respondents to explain how they feel about something by comparing it to other items in a list. For example:

Example of a Ranking Question

Please rank the following Homecoming activities in order of preference (starting with 1 for your favorite activity).

___Homecoming Pep Rally
___Homecoming Parade
___Homecoming Football Game
___Homecoming Dance

In general, if you are trying to get a respondent's opinion about something, it is best to have them do a rating rather than a ranking. A ranking asks respondents to list their responses in order of preference. This type of question leads you to an answer where the respondent is comparing one thing to another rather than giving you their feeling about each individual item. The disadvantage to a ranking is that if the respondent feels the same about two or more items, they are still forced to sort them into a ranking. The results of a ranking basically tell you which is the most preferred and which is the least preferred item on the list, but you do not know from a ranking if the respondent likes or dislikes any or all of the items on the list.

Non-structured (open-ended)

Non-structured questions, or open-ended questions, are questions where there is no list of answer choices from which to choose. Respondents are simply asked to write their response to a question. Here is an example:

Example of a Non-structured Question

> What do you like best about the Science Buddies Classroom Scientists Program?
>
> _____
>
> _____

It is best to use non-structured questions when you are exploring new ideas and you don't really know what to expect from the respondents. In some situations, you may have a partial list of answer choices, but you may still have some doubt or uncertainty about other possible responses. You can create a partially structured question such as the following:

Example of a Partially Structured Question

> Why did you sign up for the Science Buddies Classroom Scientists Program (please select all that apply)?
> ( ) I really enjoy science
> ( ) My teacher asked me to sign up
> ( ) My teacher made me sign up
> ( ) My parents asked me to sign up
> ( ) I'm bored in science class & thought this would be fun
> ( ) I thought it would help me do a better project
> ( ) I thought it would help me win the Science Fair
> ( ) I thought having a Mentor to talk to would be fun
> ( ) I knew other students who were doing it
> ( ) Other _____

Open-ended questions let you get more insight into the respondents' thoughts and ideas about a subject. As we have already mentioned, open-ended questions are useful when you are trying to capture new ideas or information for which you have no basis to develop an all inclusive set of structured responses. The disadvantages to using open-ended questions is that it can be much more time consuming and difficult to analyze the data. In general you should try to minimize the number of open-ended questions in your survey questionnaire. If you find yourself designing a survey questionnaire where the majority of the questions are open-ended, then you may need to do more exploratory research to get a better foundation of knowledge for the subject you are researching.

Tips to creating a good survey questionnaire:

Here are some tips and tricks to help you ensure you are developing a good survey questionnaire:

- **Clearly state your intentions with the research.**

    Many people are hesitant to answer questions about themselves and their opinions. If you are developing your survey for a science fair project, people will probably be more willing to help if you clearly state your intentions. At the top of your survey, write a brief statement explaining why you are collecting the information and reassure each respondent that the information is entirely anonymous. If you need to know specifics about a person, respect their privacy by identifying them as subject1, subject2, etc...

- **Include instructions with your survey questionnaire**

What may seem obvious to you probably is not very obvious to someone else. To ensure that you collect valid survey results, make sure you include instructions on how to answer the survey questionnaire. There should probably be a short introductory set of instructions at the top of the survey questionnaire, and additional instructions for specific questions as needed.

Your overall instructions may be something like:

Please mark the appropriate box next to your answer choice with an "x" (X). Please answer all of the questions to the best of your ability.

- **Don't ask for personal information unless you need it.**

Asking individuals to provide you with personal or demographic information (age, race, income level, etc...) may irritate some respondents and prevent them from completing your survey questionnaire. However, in many instances, this information is necessary for the research. If you need to ask for this type of information it is best to place the questions at the END of your survey questionnaire.

- **Keep the questions short and concise**

The wording for survey questions should be short and concise. Each question should be clearly stated so that there is no misunderstanding about what is being asked. The best way to ensure your questions are well worded is to test them by having other people review and test your survey before you distribute it to the full sample.

- **Ask only one question at a time (the double barreled question)**

This is a very common mistake in survey questionnaires and one that will severely impact the results of your data. When you are writing a question, you must make sure that you are only asking one question at a time.

Here is an example of a double-barreled question:

Bad Question: Double-barreled Question	Good Question
How have teachers and students at your school responded to the new 45-minute lunch period? ( ) Satisfied ( ) Unsatisfied	How have <u>teachers</u> at your school reacted to the new 45-minute lunch period? ( ) Satisfied ( ) Unsatisfied How have <u>students</u> at your school reacted to the new 45-minute lunch period? ( ) Satisfied ( ) Unsatisfied

You notice that the double-barreled question is asking about teachers AND students. This means that a "satisfied" response could mean any of the following:

Teachers are satisfied
Students are satisfied
Teachers and students are satisfied

An "unsatisfied" response could mean any of the following:

Teachers are unsatisfied

Students are unsatisfied
Teachers and students are unsatisfied

Since the question was phrased in such an ambiguous way, you will not know what the respondent intended with their response unless you ask them, invalidating your data.

To solve this problem, you simply need to break this question into two separate questions, as shown in the example above.

You will also notice that the two rephrased questions above are very similar and that the key word (which differentiates the two questions) has been underlined. This is a good technique to ensure that the respondents are reading the questions correctly when the structures are so similar.

- **Make sure the questions are unbiased**

When developing your survey questionnaire, you want to make certain that you are asking the questions in a neutral way, ie that you are not leading them toward a particular answer. This may seem simple, but when you are writing questions you will often find that the way you phrase the question may reflect your underlying opinion. Here is an example of a leading question:

Example of a Leading Question and How to Correct it

Bad Question: Leading	Good Question: Neutral
Do you think that the new cafeteria lunch menu offers a better variety of healthy foods than the old one? ( ) Yes ( ) No ( ) No Opinion	How do you feel about the new cafeteria lunch menu compared to the old one? ( ) The new menu offers a better variety of healthy foods ( ) The old menu offers a better variety of healthy foods ( ) The selections are similar ( ) No opinion

The leading question drives the respondent to the conclusion that the new menu is healthier than the old. A yes response to this question is the easiest, and many respondents may simply take the path that requires the least amount of thinking. The neutral question presents a better way to phrase this question by removing the bias.

- **Ask questions that can be answered by your subjects**

Make sure that the questions you are asking are questions that people will be able to answer. The most common mistake is to ask questions that most people simply cannot remember. Here is an example:

How much did you spend on school supplies last year?
( ) $0 - $10
( ) $11 - $20
( ) $21 - $30
( ) over $30

While this question appears to be perfectly acceptable, it is unlikely that many students will really remember how much they spent on school supplies. Most responses will probably be guesses rather than actual numbers, and many respondents may become frustrated trying to calculate in their heads how much they spent. If a guess is all that you are looking for, then simply rephrasing the question to the following will make

it much easier for the respondent.

How much do you estimate you spent on school supplies in the last year?
( ) $0 - $10
( ) $11 - $20
( ) $21 - $30
( ) over $30

- **Order/group questions according to subject**

  If you have more than six questions in your questionnaire, then you should make an effort to organize your questions so the respondents can answer them as quickly as possible. A good way to organize the questions is to group them together by subject. This way your respondents can focus their thoughts and answer a series of questions around these thoughts.

- **Present the questions in a clean and organized layout**

  A clean layout will make it much simpler for people to respond to the questions and for you to collect the data. Make sure that your method for marking answers is well explained and that your answer boxes are consistent throughout the questionnaire. See the following links for some sample survey questionnaires from Science Buddies.

  Sample Survey: Science Buddies Advisor Survey (http://www.sciencebuddies.org/science-fair-projects/project_ideas/Soc_survey_sample1.shtml)

  Sample Survey: Science Buddies Teacher Survey (http://www.sciencebuddies.org/science-fair-projects/project_ideas/Soc_survey_sample2.shtml)

- **Test the survey questionnaire**

  Once you have developed your survey questionnaire, you should conduct a small test (5 -10 people) to make sure that respondents clearly understand the questions you are asking and that you are capturing the information that you need for your study.

Credits

Source

Parasuraman, A. *Marketing Research - 2nd Edition.* Addison-Wesley Publishing Company, Inc., 1991.

You can find this page online at: http://www.sciencebuddies.org/science-fair-projects/project_ideas/Soc_survey.shtml

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