

A Quick Survey on Surveys

One of the most common data gathering tools engineering education researchers will use, especially initially, is a survey. Keep in mind that ethics clearance will usually be required to gather data from students (or instructors). Select or create your survey early in the research process because the ethics board will want to see it. More importantly, your survey should be designed to help you answer the research question(s) for your study. Much like design generally, survey design is underappreciated. It looks simple enough, but it can be difficult to do well. This snack provides a few nuggets on good survey design. We also encourage you to look at tip sheets and other sources online: We have referenced a couple of these at the end of this snack.

Before you begin ask yourself: do you really need to use a survey? Surveys are fraught in many ways. You will probably only get a 30% response rate (if you are lucky) and the people choosing to fill out the survey may not really be representative of your population of interest. Also, people are not terrific at self-assessing things like learning, or their own resilience, etc. And survey fatigue is becoming endemic. If you can gather information that answers your research question any other way, consider using a different method. If you must use a survey, consider adding other data sources to triangulate your findings.

0) Find an Existing Survey

A good survey (also referred to as an instrument) should be carefully crafted and developed. It should be validated. The items (i.e. questions) on the survey should load onto identified constructs and the survey should be tested to make sure that is the case. All to say, creating a survey is not something you do casually. So if you can find an existing, well tested survey that meets your needs, **use it!!** Using an existing survey or survey items can also allow you to compare your results to others. Jaeger, Freeman et al. (2010), winner of an ASEE best paper award, is a good example. If you use an existing survey or survey items, make sure you are aware of the copyright requirements – some surveys are proprietary (i.e. must be licenced), others can be used for free with some conditions. Even within a survey you construct yourself, you might want to use validated items from other surveys. For example, if asking demographic questions, consider using items developed by StatsCan for the population census. If you have decided that you must use a survey, and a search of the literature does not provide you with an existing one, then you must enter the swamp of survey development ...

1) Tell Us How You Really Feel

You need to be careful how you phrase the question and answers to get quality data. You want responses that reflect how your respondents feel about the question as you understand it, and you don't want biased responses. Consider the question "To what extent did you find the xxxx learning experience valuable?" Potential multiple choice answers could include "not at all/somewhat/quite/extremely". Note that every possible answer makes sense after reading the question. This is important for clarity. Also important is that the answers are clearly distinguishable and well-spaced. This is a "one sided" question in that answers range from zero on up. Another kind of question lends itself to a two-sided answer set. Likert scales provide a range of responses that measure the extent of agreement with a statement. Consider the statement "Active learning is fun". If respondents are asked to what extent they agree with this statement, a Likert response scale could be "strongly disagree/disagree/neither agree nor

disagree/agree/strongly agree”. Note that it is symmetric with a neutral center. It is unbiased and does not suggest a “correct” answer or even a correct type of answer (positive or negative).

2) Recall versus Recognition

Multiple choice questions are useful in surveys because they are quick to answer, and they can be analyzed quantitatively. The problem is, you aren’t letting the respondents answer your questions in a natural manner. You are guiding them. And sometimes your guidance will obscure valuable insights. So it is very valuable to often include “Other” as an option in a question so that a respondent can write in their own answer. Even better, ask open-ended follow-up questions such as “Why do you like active learning techniques?” You could offer multiple choice answers for this one or let respondents write their own. It’s the difference between recognition and recall. With multiple choice, you ask them to recognize reasons. With open-ended questions, you ask them to recall reasons. Results between the two often differ.

3) I will Answer this Question on One Condition

Where possible and appropriate, try and make your survey adaptive to your audience. No one likes to have to answer questions that aren’t for them. So include questions that are “gatekeepers”. For example, “did you take GE xxxx?” If the answer is “no”, allow the respondent to skip the questions that pertain to GE xxxx. This is easy to do with most survey software like Survey Monkey, and you will get higher survey completion rates if you can make them shorter for respondents. Note: check to see whether your institution has a site license for a survey tool that you can use for free.

4) Analyze Before You Finalize

Although you won’t conduct survey analyses until after you’ve deployed your survey and received responses, it’s very important to consider your survey analysis plan before you finish your survey design. Some of this will be obvious: for Likert scale questions, you might plan to analyze based on frequency of response, or by converting the Likert scale to a numerical scale and calculating a median, (note that calculating means can be tricky with Likert scales). You should also consider whether your open-ended questions will be analyzed using a particular theoretical framework, whether you’ll be looking at the relationship between survey questions, and how your survey questions map to (and address) your research questions. This exercise might reveal changes that need to be made in your survey design.

In summary, only use a survey if you have to, and if you have to, try to find an existing one. If you must create your own, be thoughtful about the items. Follow guidance for good item development. And, ideally, test the items with a sample of your participants before putting it out into the population. There is a huge literature on surveys and interpretation of survey results. You don’t have to be an expert in all of this, but some knowledge of what you are doing is critical.

Harvard University, Program on Survey Research, *Tip Sheet on Question Wording*, Accessed May 10, 2021:

https://psr.iq.harvard.edu/files/psr/files/PSRQuestionnaireTipSheet_0.pdf

Jaeger, B., Freeman, S., Whalen, R., & Payne, R. *Ac 2010-1033: Successful students: Smart or tough?*

<https://peer.asee.org/successful-students-smart-or-tough>

Pew Research Center, *Questionnaire Design*, Accessed May 10, 2021:

<https://www.pewresearch.org/methods/u-s-survey-research/questionnaire-design/>

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Distributed: May 17, 2021

