Evidence-Based EdTech Diagnostic

EDUCATE Programme: Research Materials

Surveys

*To find out how **you** can benefit from examining your EdTech through a **'research and evidence mindset'**, contact our **Accelerator Team** at hello@educateventures.com*

- The survey allows a researcher to collect data from a large sample of participants without being present him or herself, using a questionnaire that can be administered online or on paper. Its numeric results can be relatively simple to analyse, and findings can be generalised to an entire population, depending on the survey sample
- However, developing and piloting survey questionnaires is challenging, and the resulting data may not provide the explanatory power that your research questions require. Why use surveys for your edtech research? Surveys are an excellent way to collect data from a large sample of your customers. In addition to learning about customers' feelings about or experience with your product or service

- **Expert Tips!**
  - Whenever possible – **use existing standardised surveys to measure complex psychological concepts such as** confidence, self-esteem, self-efficacy and others that you may identify as desired outcomes of your EdTech
  - It is advisable to collect **demographic information** to analyse data by customer segment or tailor your product to customers' needs or to suit their background
  - Surveys can easily be offered online. Incorporated them into your product or distributed widely via email or social networks

Objectives of Survey Questions

Factual Questions

- Collect systematic demographic information (that can be used to sort/filter responses or for identifying differential trends)

Knowledge Questions

- Assess what respondents know about a particular topic

Attitudinal Questions

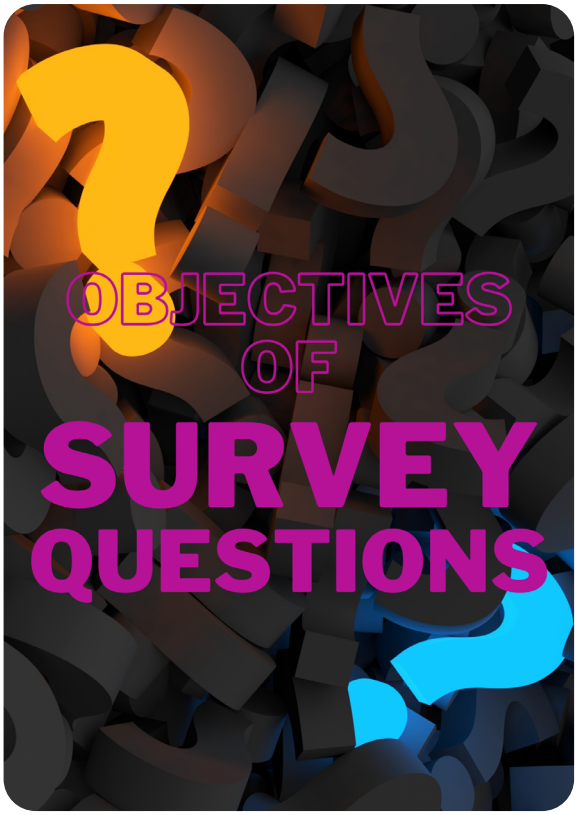
- Seek to measure respondents' opinions, beliefs, values and feelings which cannot easily be verified by behavioural data

Behavioural Questions

- Find out what people do (or intend to do) and how this might have changed as a consequence of the intervention

Preference Questions

- Relating to different possible options and outcomes, including trade-offs between competing opportunities or actions



Designing Research Questions

- **Question Type: Yes/No**
- **When to Use**: the simplest type of question, usually used as a filter question, indicating whether to proceed to another question/section, or whether the data from the respondent should be included in a specific analysis

- **Examples:**

1. Has your child ever been diagnosed with a learning disability?
   - Yes (proceed to Question 2)
   - No (proceed to Question 4)
- What type(s) of learning disability has your child been diagnosed with?

Designing Research Questions, continued

- **Question Type**: **Multiple Choice** (eg. single select, multi select, dropdown list)
- **When to Use**: Multiple choice questions are useful for factual questions and knowledge questions, and for behavioural questions that aren't on a scale. Make sure that if the question might have more than one answer for a respondent, then the response-type supports multiple selections. For a single selection from a long list, use a drop-down question

- **Examples**:

1. What is your grade level?
   - Year 1
   - Year 2
   - Year 3
2. What country do you live in?
   - Please select an option
3. Out of the following programming languages, select all of those with which you are familiar:
   - C++
   - Javascript
   - Python
   - Node JS
   - C#

- **Question Type**: **Rate** (Likert Scale)
- **When to Use**: Rating scales are useful for attitudinal questions and for scale-based behavioural questions. When phrasing a rating question, the scale must be defined according to the quality being measured
- If rating questions include an odd number of 5 or more options, they can be treated statistically as an interval scale which can be used for establishing correlations

- **Examples**:
  - On a scale of 1-5, how enjoyable was it using the 'Essay Buddy' platform?
    1. Not enjoyable at all
    2. Not enjoyable
    3. Average
    4. Enjoyable
    5. Very enjoyable
  - How confident do you feel in applying for a job abroad?
    1. Not confident at all
    2. Not confident
    3. Average
    4. Confident
    5. Very confident
  - How likely are you to apply for a job abroad in the next year?
    1. I will not apply for a job abroad
    2. Highly unlikely
    3. Average
    4. Highly likely
    5. I will apply for a job abroad

Designing Research Questions, continued

- **Question Type: Agree/Disagree Scale**
  - **When to Use**: Usually, it is advisable to ask rating questions directly and use answer points specific to the question. However, if there are a lot of rating questions, using an agree/disagree scale is possible. Be aware that using such a scale is prone to bias as respondents tend to mark different things along the same line, so please use only when absolutely necessary

- **Example**:
  - To what extant do you agree or disagree with the following statements about your classroom while using Essay Buddy?
    1. The overall collaboration in my class increased
       - Strongly Disagree
       - Disagree
       - Neither Agree nor Disagree
       - Agree
       - Strongly Agree

- **Question Type: Open-Ended**
  - **When to Use**: Sometimes you will want to leave room for free-text input. Open-ended questions in a survey can be very informative but should be used scarcely and should usually be defined optional. Some people feel strongly about their positions and want room to share these. Most people, however, feel less strongly and might consider open-ended questions a nuisance. If you do use these questions, please place them at the end of a section or at the end of the survey

- **Example**:
  1. What are your school's greatest needs or gaps concerning EdTech?
  2. Do you have any additional comments?

Expert Tips

- **Avoid using reverse scored items**
- **Label each response anchor with a specific term**
- **Strive to ensure that every part of every question applies to every respondent. Branch them if necessary using filter questions. If not possible, make sure to add "inapplicable" or "irrelevant" for each question that some of the respondents might not have an answer for**
- **Example: asking teachers "How frequently do you use your VR tool?" assumes that respondents**
  - **(a) have a VR tool**
  - **(b) use them from time to time and**
  - **(c) implies but does not clarify that the "use" of the VR tool is for educational purposes!**

Setting Up a Survey Data Collection

- The literature on successfully designing surveys is vast. There are key elements you need to consider in planning and implementing a survey. To set up a successful survey data collection, you need to follow steps in five areas: planning, developing, piloting, redeveloping and executing (or implementing)

- **Plan**

1. Consider issues of sampling, distributing the survey, target response rates, securing enough participants, and data management to be sure that a survey is right for your study
2. Develop a plan you can implement if response rates are low
3. Review your research questions to understand which or which aspects of the questions might be answered with a questionnaire:
    - List, group, and categorize these 'aspects'
    - Explore whether there might be existing questionnaires or sets of questions that address these 'aspects' that may be appropriate

- **Develop**

1. If relevant questionnaires or sets of questions exist, use them, but adapt them for your study if necessary
2. If your questionnaire requires the construction of any new questions, you will need to draft them. (See the box "Designing Research Questions?" above for more detail.)
    - Decide on the response categories for each question, considering the responses each will generate and the kind of data you need.
    - Carefully read each question and response choices, and think about whether your questions might be considered ambiguous, leading, confronting, offensive, based on unwarranted assumptions, double-barrelled, or pretentious
    - Rewrite the questions in relation to the considerations above and run them past a few peers/ supervisors for their assessment. Repeat this step as many times as necessary to get each question as right as possible
3. Attempt to put your questions in an order that will be logical and ease respondents into your survey
4. Write instructions for your respondents and ask your peers/supervisor whether they seem clear and unambiguous. Rewrite as necessary
5. Construct a clear, logical, professional, and aesthetically pleasing layout and design. Write a cover letter. OR, if you're using an online tool, input the survey questions, instructions and relevant cover letter information into the tool

- **Pilot**

1. Pilot your questionnaire with a few people who are similar to those in your sample. a. Get feedback from the pilot group in relation to the questions themselves, the overall layout and design, the effectiveness of the cover letter, the usefulness of the instructions and the length of time it took to complete the questionnaire
2. Attempt to create variables, code the pilot responses, and then plug it into a statistical program (SPSS, STATA) or qualitative data analysis program (nVivo) to see if you are likely to encounter any issues when you input your main data

- **Redevelop**

1. Make modifications based on both the feedback of the pilot group and the quality of the data generated. a. If modifications are substantial, start again from the step below on ethical clearance
2. Get ethical clearance for the final version of your questionnaire

- **Execute**

1. If you are using paper questionnaires, distribute them and be sure to include instructions for return (address and return date) and possibly a self-addressed stamped envelope. If online, let your sample know that the survey is open
2. Send out a reminder if response rates are low
3. Put low response rate plan (see 'Plan', step 2) into action if not enough data has been gathered by your deadline
4. Record and manage responses as they are received

Evidence in EdTech

*To find out how **you** can benefit from examining your EdTech through a **'research and evidence mindset',** contact our **Accelerator Team** at hello@educateventures.com*

- Evidence of the **impact** of EdTech on teaching and learning is often at the forefront of **demands,** particularly from those who dictate the **funding** available to pay for technology within education. As has been shown in numerous **meta-level investigations,** (see for instance Cox et al., 2003), evaluation of the impact is a **challenge.** This is magnified when evaluating **emerging innovative technologies**
- **Pedagogical change** is at the core of these technologies, both because their design evolves over **time,** but also, arguably, their raison d'être is to **transform the learners' experience** (Cukurova & Luckin, 2018)
- The increased challenge is at least partially due to the **unwritten expectation** that, in traditional impact evaluations, evidence regarding the impact of an intervention is considered as a **shield against change.** The generation of **scientifically robust evidence** can be used by stakeholders, such as policymakers, for an educational intervention's **standardisation** and **scaling**
- **Change** is the essence of emerging technologies, though. Three years after an original report reviewing emerging technology innovations in education (Luckin et al., 2012), there was evidence that only **39 of the 150 innovations** (26%) were still in active use. Therefore, in the context of emerging technologies, more **value** is to be found in the careful consideration of different **types** and **sources** of evidence that are appropriate to the **current state of the technology** as well as in the use of **robust research methods** to generate **new evidence**
- This requires an **evidence-informed decision-making process** for the **design and use of EdTech,** rather than only considering evidence as the **outcome of the evaluation**
- Taking into account the peculiarities of the **local context,** the accumulated experience and judgment of **educators,** and the perspectives and values of **users,** and combining these three with the fourth source, **the best available research evidence,** can provide a more productive way forward in the attempt to bring evidence into **educational practice**

- Excerpt from 'Evidence & the Golden Triangle of EdTech, (EDUCATE, 2021)' by Professors Cukurova, Luckin, Clark-Wilson

Who can help me?

*We are specialists in **educational research** and **evidence-based technological development** for schools and education and training businesses*

The EDUCATE Programme promotes **excellence** in the EdTech community by providing **training** and **mentoring** to support and promote the use of **evidence-informed EdTech.** Our research-focussed programme, based on the **Golden Triangle,** bridges the gaps between **EdTech designers** and **developers, researchers in education and EdTech,** and **users,** to ensure that EdTech products live up to their **promises.**

To find out how you can benefit from examining your school or business through a **'research and evidence mindset',** and focussing on **'what works',** contact the **Accelerator Team** at EDUCATE Ventures Research today:
hello@educateventures.com

Thanks for reading!

- The EDUCATE Ventures Research Team

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