

Questions and answers for Chapter 3

1. What are the main differences between experimental and non-experimental studies?

The key difference between experimental and non-experimental research lies in the extent to which the environment is controlled and manipulated by the researcher. In experimental studies the researcher sets up the environment and carefully controls the variables s/he is interested in. Non-experimental research takes place in a real-life setting, and it is not possible for the researcher to control all possible variables. This means that it is harder to determine causality in non-experimental studies, but also that they tend to be more flexible and allow for a greater range of topics to be studied.

2. 'Observational studies give us a true picture of reality, while surveys only give us perceptions'. Do you agree or disagree with this statement? Why?

While it is true that surveys are by definition based on the perceptions of those completing them, it is not necessarily true to say that observations give us a true picture of reality. There are a number of reasons for this. Firstly, we typically only observe a snapshot of the behaviours we are interested in. If, for example, we are interested in science teaching and observe science lessons, these will be only a subset of lessons taught by the teachers we observe, let alone science lessons in general. Secondly,

observation can often introduce bias, in that the presence of the observer, and the fact that the observed know they are being observed, may make them consciously or unconsciously behave differently from usual. Finally, as observers we come into any research with our own biases and perspectives, which will influence the way we interpret what we see.

3. If surveys are the most flexible and efficient way of doing research, why would we want to do any other kind of research?

Because surveys also have a number of disadvantages. Surveys do not allow the researcher to control the environment and are therefore less suited to answering questions of causality than experimental designs. It can also be difficult to come to a deeper understanding of processes and contextual differences through questionnaires, which are standardised and by their nature limited in length and depth of responses. Finally, while questionnaires are highly suited to gathering information on respondents' perceptions and opinions of a situation, gathering information on respondent behaviours can be problematic as self-reports are not always reliable in this respect.

4. I want to know whether teachers' classroom practice influences pupils' self-concept. Can you design a study that looks at this?

This research question would lend itself well to a mix of survey and observational research. We could design a questionnaire to measure pupils' self-concept, or use an

existing instrument, and administer that to pupils in a number of different classrooms. We would also have to collect data on a number of other variables that may affect pupils' self-concept, like their attainment or parental background. We could then observe teachers and measure their classroom practices using an observation instrument. We could then look at whether or not there was a relationship between self-concept and classroom practice controlling for the other variables.

5. I want to know what both teachers and pupils in my school think of the new mentoring system I have introduced. Can you design a study that looks at this?

This research question can be studied using survey research. We could design two questionnaires, one for teachers and one for pupils, asking them what they think about the mentoring system.

6. I want to know whether self-concept influences pupil achievement, or whether it is higher pupil performance that leads to a more positive self-concept. Is it possible to determine this using non-experimental research? If yes, how would you do that?

To an extent. We could design a longitudinal survey study, where we use questionnaires to measure self-concept, and tests to measure achievement. We could then look at the relationship between the two. We would have to include a number of questions on other variables in the survey, to try and control for the possibility of an underlying variable causing any relationship between self-concept and achievement. Of course, we could

never be sure that we had measured all relevant factors. To try and determine which variable 'comes first', the study would have to be longitudinal, i.e. we would have to do the questionnaires and tests every year for a number of years. Then we could see whether, for example, a change in self-concept levels later led to a change in achievement (or the other way round).