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SURVEYS**INTRODUCTION**

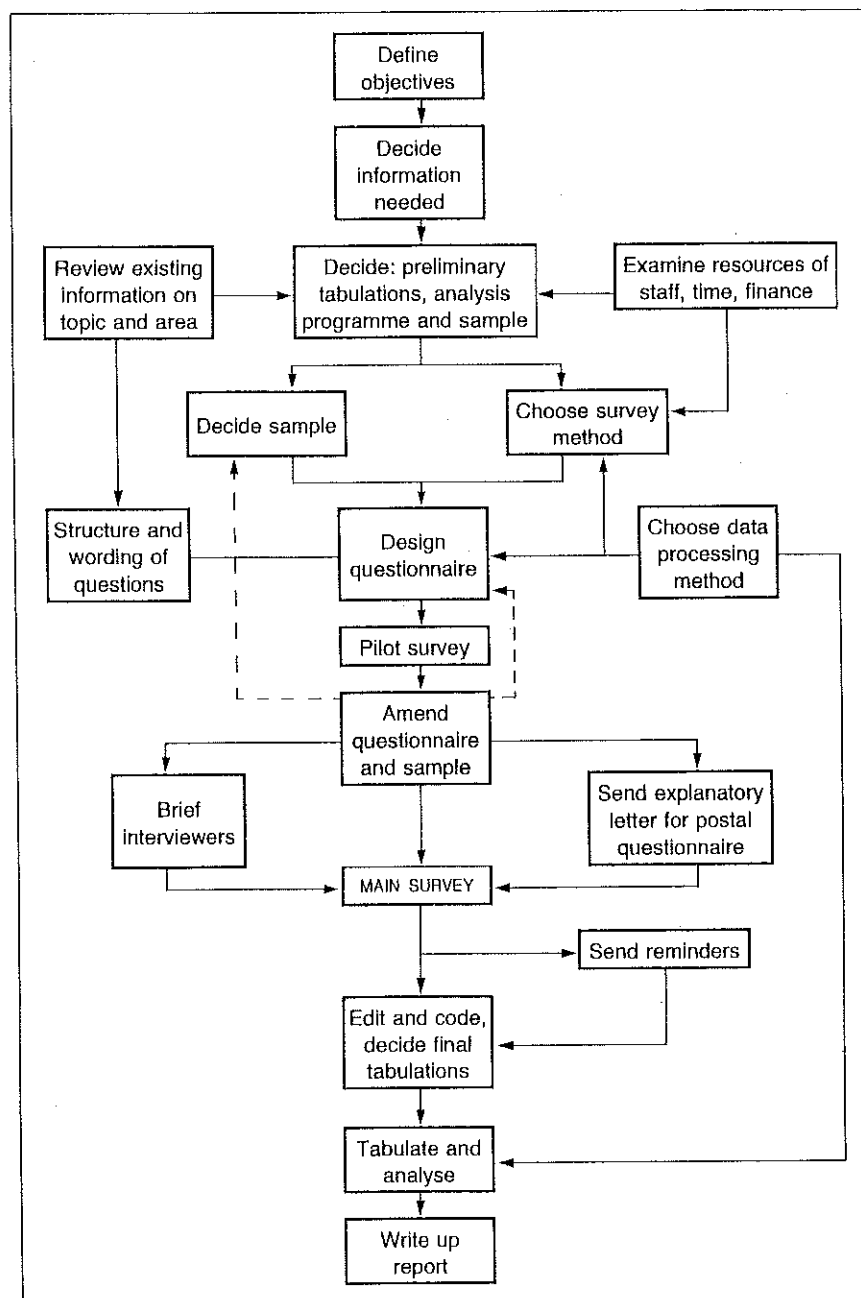
In this chapter we discuss what is perhaps the most commonly used descriptive method in educational research – the survey. Typically, surveys gather data at a particular point in time with the intention of describing the nature of existing conditions, or identifying standards against which existing conditions can be compared, or determining the relationships that exist between specific events. Thus, surveys may vary in their levels of complexity from those which provide simple frequency counts to those which present relational analysis.

Surveys may be further differentiated in terms of their scope. A study of contemporary developments in post-secondary education, for example, might encompass the whole of Western Europe; a study of subject choice, on the other hand, might be confined to one secondary school. The complexity and scope of surveys in education can be illustrated by reference to familiar examples. The surveys undertaken for the Plowden Committee on primary school children¹ collected a wealth of information on children, teachers and parents and used sophisticated analytical techniques to predict pupil attainment. By contrast, the small-scale survey of Jackson and Marsden² involved a detailed study of the backgrounds and values of 88 working-class adults who had achieved success through selective secondary education.

Whether the survey is large-scale and undertaken by some governmental bureau or small-scale and carried out by the lone researcher, the collection of information typically involves one or more of the following data-gathering techniques: structured or semi-structured interviews, self-completion or postal questionnaires, standardized tests of attainment or performance, and attitude scales. Typically, too, surveys proceed through well-defined stages, though not every stage outlined in Box 4.1 is required for the successful completion of a survey.

We begin with a consideration of some necessary preliminaries to survey planning before going on to outline a variety of sampling

Box 4.1 Stages in the planning of a survey

Source: Adapted from Davidson, 1970³

strategies that are used in survey research. We then discuss the construction and sequencing of questions in both interviews and questionnaires, prior to a detailed examination of the postal questionnaire as a survey technique. Finally, we identify some of the procedures involved in processing and analysing the results of survey research. Our discussion follows the sequential stages in survey design set out in Box 4.1.

SOME PRELIMINARY CONSIDERATIONS

Three prerequisites to the design of any survey are the specification of the exact purpose of the enquiry; the population on which it is to focus; and the resources that are available. Hoinville and Jowell's⁴ consideration of each of these key factors in survey planning can be illustrated in relation to the design of an educational enquiry.

The purpose of the enquiry

First, a survey's general purpose must be translated into a specific central aim. Thus, 'to explore teachers' views about in-service work' is somewhat nebulous, whereas 'to obtain a detailed description of primary and secondary teachers' priorities in the provision of in-service education courses' is reasonably specific.

Having decided upon and specified the primary objective of the survey, the second phase of the planning involves the identification and itemizing of subsidiary topics that relate to its central purpose. In our example, subsidiary issues might well include: the types of courses required; the content of courses; the location of courses; the timing of courses; the design of courses; and the financing of courses.

The third phase follows the identification and itemization of subsidiary topics and involves formulating specific information requirements relating to each of these issues. For example, with respect to the type of courses required, detailed information would be needed about the duration of courses (one meeting, several meetings, a week, a month, a term or a year), the status of courses (non-award bearing, award bearing, with certificate, diploma, degree granted by college or university), the orientation of courses (theoretically-oriented involving lectures, readings, etc., or practically-oriented involving workshops and the production of curriculum materials).

As these details unfold, note Hoinville and Jowell, consideration would have to be given to the most appropriate ways of collecting items of information (interviews with selected teachers, postal questionnaires to selected schools, etc.).

The population upon which the survey is focused

The second prerequisite to survey design, the specification of the population to which the enquiry is addressed, affects decisions that researchers must make both about sampling and resources. In our hypothetical survey of in-service requirements, for example, we might specify the population as 'those primary and secondary teachers employed in schools within a 30-mile radius of Loughborough University of Technology'. In this case, the population is readily identifiable and, given sufficient resources to contact every member of the designated group, sampling decisions do not arise. Things are rarely so straightforward, however. Often the criteria by which populations are specified ('severely handicapped', 'under-achievers', 'intending teachers' or 'highly anxious') are difficult to operationalize. Populations, moreover, vary considerably in their accessibility; pupils and student teachers are relatively easy to survey, gypsy children and headteachers are more elusive. More importantly, in a large survey researchers usually draw a sample from the population to be studied; rarely do they attempt to contact every member. We deal with the question of sampling shortly.

The resources available

The third important factor in designing and planning a survey is the financial cost. Sample surveys are labour-intensive (see Davidson, 1970), the largest single expenditure being the fieldwork where costs arise out of the interviewing time, travel time and transport claims of the interviewers themselves. There are additional demands on the survey budget. Training and supervising the panel of interviewers can often be as expensive as the costs incurred during the time that they actually spend in the field. Questionnaire construction, piloting, printing, posting, coding, together with computer programming – all eat into financial resources.

Proposals from intending education researchers seeking governmental or private funding are often weakest in the amount of time and thought devoted to a detailed planning of the financial implications of the projected enquiries. (In this chapter we confine ourselves from this point to a discussion of surveys based on self-completion questionnaires. A full account of the interview as a research technique is given in Chapter 13.)

SURVEY SAMPLING

Because questions to do with sampling arise directly from the second of our preliminary considerations, that is, defining the population upon which the survey is to focus, researchers must take sampling decisions

early in the overall planning of a survey (see Box 4.1). We have already seen that due to factors of expense, time and accessibility, it is not always possible or practical to obtain measures from a population. Researchers endeavour therefore to collect information from a smaller group or subset of the population in such a way that the knowledge gained is representative of the total population under study. This smaller group or subset is a 'sample'. Notice how competent researchers start with the total population and work down to the sample. By contrast, novices work from the bottom up, that is, they determine the minimum number of respondents needed to conduct a successful survey.⁵ However, unless they identify the total population in advance, it is virtually impossible for them to assess how representative the sample is that they have drawn. There are two methods of sampling. One yields probability samples in which, as the term implies, the probability of selection of each respondent is known. The other yields non-probability samples, in which the probability of selection is unknown. We deal first with various methods of probability sampling.⁶

Probability samples

Simple random sampling

In simple random sampling, each member of the population under study has an equal chance of being selected. The method involves selecting at random from a list of the population (a sampling frame) the required number of subjects for the sample. Because of probability and chance, the sample should contain subjects with characteristics similar to the population as a whole: some old, some young, some tall, some short, some fit, some unfit, some rich, some poor, etc. One problem associated with this particular sampling method is that a complete list of the population is needed and this is not always readily available.

Systematic sampling

This method is a modified form of simple random sampling. It involves selecting subjects from a population list in a systematic rather than a random fashion. For example, if from a population of, say, 2,000, a sample of 100 is required, then every twentieth person can be selected. The starting point for the selection is chosen at random.

Stratified sampling

Stratified sampling involves dividing the population into homogeneous groups, each group containing subjects with similar characteristics. For

example, group *A* might contain males and group *B*, females. In order to obtain a sample representative of the whole population in terms of sex, a random selection of subjects from group *A* and group *B* must be taken. If needed, the exact proportion of males to females in the whole population can be reflected in the sample.

Cluster sampling

When the population is large and widely dispersed, gathering a simple random sample poses administrative problems. Suppose we want to survey children's fitness levels in a particularly large community. It would be quite impractical randomly to select children and spend an inordinate amount of time travelling about in order to test them. By cluster sampling, we can randomly select a specific number of schools and test all the children in those selected schools.

Stage sampling

Stage sampling is an extension of cluster sampling. It involves selecting the sample in stages, that is, taking samples from samples. Using the large community example referred to earlier, one type of stage sampling might be to select a number of schools at random, and from within each of these schools select a number of classes at random, and from within these classes select a number of pupils.

Non-probability samples

Small-scale surveys often resort to the use of non-probability samples because, despite the disadvantages that arise from their non-representativeness, they are far less complicated to set up, are considerably less expensive, and can prove perfectly adequate where researchers do not intend to generalize their findings beyond the sample in question or where they are simply piloting a survey questionnaire as a prelude to their main study. The chief kinds of non-probability sampling are as follows.

Convenience sampling

Convenience sampling – or as it is sometimes called, accidental sampling – involves choosing the nearest individuals to serve as respondents and continuing that process until the required sample size has been obtained. Captive audiences such as pupils or student teachers often serve as respondents in surveys based upon convenience sampling.

Quota sampling

Quota sampling has been described as the non-probability equivalent of stratified sampling (see Bailey, 1978). It attempts to obtain representatives of the various elements of the total population in the proportions in which they occur there. Thus, researchers interested in race relations in a particular community might set a quota for each ethnic group that is proportionate to its representation in the total population in the area under survey.

Purposive sampling

In purposive sampling, researchers handpick the cases to be included in the sample on the basis of their judgement of their typicality. In this way, they build up a sample that is satisfactory to their specific needs.

Dimensional sampling

Dimensional sampling is simply a further refinement of quota sampling. It involves identifying various factors of interest in a population and obtaining at least one respondent of every combination of those factors. Thus, in the study of race relations to which we referred earlier, within each ethnic group, researchers may wish to distinguish between the attitudes of recent immigrants, those who have been in the country for some period of time, and those members of the ethnic group who were born in Great Britain. Their sampling plan might take the form of a multi-dimensional table with 'ethnic group' across the top and 'length of stay' down the side.

Snowball sampling

Researchers identify a small number of individuals who have the characteristics that they require. These people are then used as informants to identify others who qualify for inclusion and these, in turn, identify yet others – hence the term snowball sampling.

SAMPLE SIZE: AN OVERVIEW

A question that often plagues novice researchers is just how large their samples should be in order to conduct an adequate survey. There is, of course, no clear-cut answer, for the correct sample size depends upon the purpose of the study and the nature of the population under scrutiny. However, it is possible to give some advice on this matter. Thus, a sample size of thirty is held by many to be the minimum number of

cases if researchers plan to use some form of statistical analysis on their data, though techniques are available for the analysis of samples below thirty. Of more import to researchers is the need to think out in advance of any data collection the sorts of relationships that they wish to explore within subgroups of their eventual sample. The number of variables researchers set out to control in their analyses and the types of statistical tests they wish to make must inform their decisions about sample size prior to the actual research undertaking.

Sample size: some statistical considerations

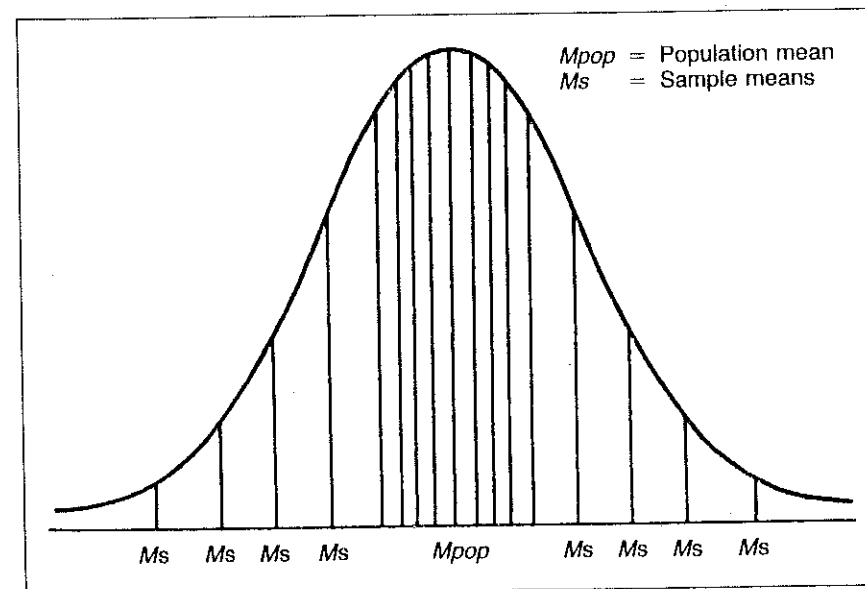
As well as the requirement of a minimum number of cases in order to examine relationships within subgroups, researchers must obtain the minimum sample size that will accurately represent the population under survey. Where simple random sampling is used, the sample size needed to reflect the population value of a particular variable depends both upon the size of the population and the amount of heterogeneity of the variable in the population (see Bailey, 1978). Generally, for populations of equal heterogeneity, the larger the population, the larger the sample that must be drawn. For populations of equal size, the greater the heterogeneity on a particular variable, the larger the sample that is needed. To the extent that a sample fails to represent accurately the population under survey, there is sampling error.

SAMPLING ERROR

If many samples are taken from the same population, it is unlikely that they will all have characteristics identical either with each other or with the population. In brief, there will be sampling error (see Cohen and Holliday, 1979). Sampling error is not necessarily the result of mistakes made in sampling procedures. Rather, variations may occur due to the chance selection of different individuals. For example, if we take a large number of samples from the population and measure the mean value of each sample, then the sample means will not be identical. Some will be relatively high, some relatively low, and many will cluster around an average or mean value of the samples. Why should this occur? We can explain the phenomenon by reference to the Central Limit Theorem which is derived from the laws of probability. This states that if random, large samples of equal size are repeatedly drawn from any population, then the means of those samples will be approximately normally distributed. Moreover, the average or mean of the sample means will be approximately the same as the population mean. We show this diagrammatically in Box 4.2.

By drawing a large number of samples of equal size from a population,

Box 4.2 Distribution of sample means showing the spread of a selection of sample means around the population mean



Source: Cohen and Holliday, 1979

we create a sampling distribution. We can calculate the error involved in such sampling. The standard deviation of the theoretical distribution of sample means is a measure of sampling error and is called the standard error of the mean (SE_M). Thus,

$$SE_M = \frac{SD_S}{N}$$

where SD_S = the standard deviation of the sample and
 N = the number in the sample

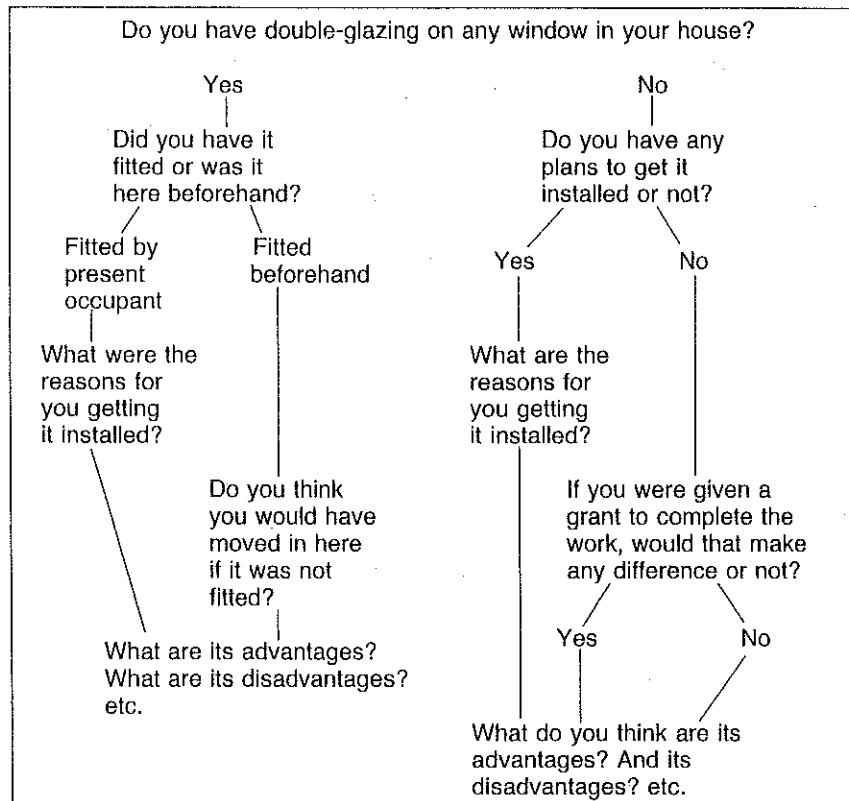
Strictly speaking, the formula for the standard error of the mean is:

$$SE_M = \frac{SD_{pop}}{N}$$

where SD_{pop} = the standard deviation of the population

However, as we are usually unable to ascertain the SD of the total population, the standard deviation of the sample is used instead. The

Box 4.3 A flow chart technique for question planning



Source: Social and Community Planning Research, 1972⁷

standard error of the mean provides the best estimate of the sampling error. Clearly, the sampling error depends upon the variability (i.e. the heterogeneity) in the population as measured by SD_{pop} as well as the sample size (N). The smaller the SD_{pop} , the smaller the sampling error; the larger the N , the smaller the sampling error. Where the SD_{pop} is very large, then N needs to be very large to counteract it. Where SD_{pop} is very small, then N , too, can be small and still give a reasonably small sampling error.

DESIGNING THE SELF-COMPLETION QUESTIONNAIRE

An ideal questionnaire possesses the same properties as a good law:

It is clear, unambiguous and uniformly workable. Its design must minimize potential errors from respondents . . . and coders. And

since people's participation in surveys is voluntary, a questionnaire has to help in engaging their interest, encouraging their co-operation, and eliciting answers as close as possible to the truth.

(Davidson, 1970)

With these qualities in mind, we turn to the problem of designing a self-completion questionnaire. Having identified subsidiary topics of interest in their survey and itemized specific information requirements relating to them, the researchers' task now involves the structure of the questionnaire itself.

At this preliminary stage of design, it can sometimes be helpful to use a flow chart technique to plan the sequencing of questions. In this way, researchers are able to anticipate the type and range of responses that their questions are likely to elicit. In Box 4.3, we illustrate a flow chart employed in a commercial survey based upon an interview schedule, though the application of the method to a self-completion questionnaire is self-evident.

Using a flow chart in questionnaire design brings home to researchers the paramount importance of the question in any form of survey work. Whole books have been written on the art of questioning. The brief space we are able to allot to this vital topic in no way reflects the priority that should be given to the framing and testing of questions before any survey is undertaken. We discuss various forms of questions (structured, unstructured and the funnel varieties) in Chapter 13 and illustrate some ways in which respondents may record their answers. For the present, we identify some pitfalls in question construction.

Questions to avoid

Avoid leading questions, that is, questions which are worded (or their response categories presented) in such a way as to suggest to respondents that there is only one acceptable answer. For example:

Do you prefer abstract, academic-type courses, or down-to-earth, practical courses that have some pay-off in your day-to-day teaching?

Avoid highbrow questions even with sophisticated respondents. For example:

What particular aspects of the current positivistic/interpretive debate would you like to see reflected in a course of developmental psychology aimed at a teacher audience?

Where the sample being surveyed is representative of the whole adult population, misunderstandings of what researchers take to be clear, unambiguous language are commonplace.

Avoid complex questions. For example:

Would you prefer a short, non-award bearing course (3,4 or 5 sessions) with part-day release (e.g. Wednesday afternoons) and one evening per week attendance with financial reimbursement for travel, or a longer, non-award bearing course (6, 7 or 8 sessions) with full-day release, or the whole course designed on part-day release without evening attendance?

Avoid irritating questions or instructions. For example:

Have you ever attended an in-service course of any kind during your entire teaching career?

If you are over 40, and have never attended an in-service course, put one tick in the box marked *NEVER* and another in the box marked *OLD*.

Avoid questions that use negatives. For example:

How strongly do you feel that no teacher should enrol on the in-service, award-bearing course who has not completed at least two years full-time teaching?

Avoid open-ended questions on self-completion questionnaires. Because self-completion questionnaires cannot probe respondents to find out just what they mean by particular responses, open-ended questions are a less satisfactory way of eliciting information. (This caution does not hold in the interview situation, however.) Open-ended questions, moreover, are too demanding of most respondents' time. Nothing can be more off-putting than the following format:

Use pages 5, 6 and 7 respectively to respond to each of the questions about your attitudes to in-service courses in general and your beliefs about their value in the professional life of the serving teacher.

On a more positive note, Selltiz and her associates have provided a fairly exhaustive guide to researchers in constructing their questionnaires which we summarize in Box 4.4.

POSTAL QUESTIONNAIRES

Frequently, the postal questionnaire is the best form of survey in an educational enquiry. Take, for example, the researcher intent on investigating the adoption and use made of a new curriculum series in secondary schools in England and Wales. An interview survey based upon some sampling of the population of schools would be both expensive and time-consuming. A postal questionnaire, on the other

Box 4.4 A guide for questionnaire construction

- A. *Decisions about question content*
 1. Is the question necessary? Just how will it be useful?
 2. Are several questions needed on the subject matter of this question?
 3. Do respondents have the information necessary to answer the question?
 4. Does the question need to be more concrete, specific and closely related to the respondent's personal experience?
 5. Is the question content sufficiently general and free from spurious concreteness and specificity?
 6. Do the replies express general attitudes and only seem to be as specific as they sound?
 7. Is the question content biased or loaded in one direction, without accompanying questions to balance the emphasis?
 8. Will the respondents give the information that is asked for?
- B. *Decisions about question wording*
 1. Can the question be misunderstood? Does it contain difficult or unclear phraseology?
 2. Does the question adequately express the alternative with respect to the point?
 3. Is the question misleading because of unstated assumptions or unseen implications?
 4. Is the wording biased? Is it emotionally loaded or slanted towards a particular kind of answer?
 5. Is the question wording likely to be objectionable to the respondent in any way?
 6. Would a more personalized wording of the question produce better results?
 7. Can the question be better asked in a more direct or a more indirect form?
- C. *Decisions about form of response to the question*
 1. Can the question best be asked in a form calling for check answer (or short answer of a word or two, or a number), free answer or check answer with follow-up answer?
 2. If a check answer is used, which is the best type for this question – dichotomous, multiple-choice ('cafeteria' question), or scale?
 3. If a checklist is used, does it cover adequately all the significant alternatives without overlapping and in a defensible order? Is it of reasonable length? Is the wording of items impartial and balanced?
 4. Is the form of response easy, definite, uniform and adequate for the purpose?
- D. *Decisions about the place of the question in the sequence*
 1. Is the answer to the question likely to be influenced by the content of preceding questions?
 2. Is the question led up to in a natural way? Is it in correct psychological order?
 3. Does the question come too early or too late from the point of view of arousing interest and receiving sufficient attention, avoiding resistance, and so on?

hand, would have several distinct advantages. Moreover, given the usual constraints over finance and resources, it might well prove the only viable way of carrying through such an enquiry.

What evidence we have about the advantages and disadvantages of postal surveys derives from settings other than the educational. Many of the findings, however, have relevance to the educational researcher. In Box 13.1 (p. 272), we summarize the relative merits of self-completion questionnaires as compared with interview procedures. Here, we focus upon some of the ways in which educational researchers can maximize the response level that they obtain when using postal surveys.

Research shows that a number of myths about postal questionnaires are not borne out by the evidence (see Hoinville and Jowell, 1978). Response levels to postal surveys are not invariably less than those obtained by interview procedures; frequently they equal, and in some cases surpass, those achieved in interviews. Nor does the questionnaire necessarily have to be short in order to obtain a satisfactory response level. With sophisticated respondents, for example, a short questionnaire might appear to trivialize complex issues with which they are familiar. Hoinville and Jowell identify a number of factors in securing a good response rate to a postal questionnaire.

General

The appearance of the questionnaire is vitally important. It must look easy and attractive. A compressed layout is uninviting; a larger questionnaire with plenty of space for questions and answers is more encouraging to respondents.

Clarity of wording and simplicity of design are essential. Clear instructions should guide respondents – 'Put a tick', for example, invites participation, whereas complicated instructions and complex procedures intimidate respondents.

Arrange the contents of the questionnaire in such a way as to maximize co-operation. For example, include questions that are likely to be of general interest. Make sure that questions which appear early in the format do not suggest to respondents that the enquiry is not intended for them. Intersperse attitude questions throughout the schedule to allow respondents to air their views rather than merely describe their behaviour. Such questions relieve boredom and frustration as well as providing valuable information in the process.

Design and layout

Coloured pages can help to clarify the overall structure of the questionnaire and the use of different colours for instructions can assist respondents.

Putting ticks in boxes by way of answering a questionnaire is familiar to most respondents whereas requests to circle precoded numbers at the right-hand side of the questionnaire can be a source of confusion and error.

The practice of sublettering questions (e.g. Q9 (a) (b) (c) . . .) is a useful technique for grouping together questions to do with a specific issue. It is also a way of making the questionnaire look smaller than it actually is!

Repeating instructions as often as necessary is good practice in a postal questionnaire. Since everything hinges on respondents knowing exactly what is required of them, clear, unambiguous instructions, boldly and attractively displayed, are essential.

Completing a questionnaire can be seen as a learning process in which respondents become more at home with the task as they proceed. Initial questions should therefore be simple, have high interest value, and encourage participation. The middle section of the questionnaire should contain the difficult questions; the last few questions should be of high interest in order to encourage respondents to return the completed schedule.

It bears repeating that the wording of the self-completion questionnaire is of paramount importance and that pretesting is crucial to its success.

Finally, a brief note at the very end of the questionnaire can: ask respondents to check that no answer has been inadvertently missed out; solicit an early return of the completed schedule; thank respondents for their participation, and offer to send a short abstract of the major findings when the analysis is completed.

Initial mailing

Use good-quality envelopes, typed and addressed to a named person wherever possible.

Use first-class postage, stamped rather than franked wherever possible.

Enclose a first-class stamped envelope for the respondent's reply.

In surveys of the general population, Thursday is the best day for mailing out; in surveys of organizations, Monday or Tuesday are recommended.

Avoid at all costs a December survey.

Covering letter

The purpose of the covering letter is to indicate the aim of the survey, to convey to respondents its importance, to assure them of confidentiality, and to encourage their replies. With these intentions in mind, the following practices are to be recommended:

The appeal in the covering letter must be tailored to suit the particular audience. Thus, a survey of teachers might stress the importance of the study to the profession as a whole.

Neither the use of prestigious signatories, nor appeals to altruism, nor the addition of handwritten postscripts affect response levels to postal questionnaires.

The name of the sponsor or the organization conducting the survey should appear on the letterhead as well as in the body of the covering letter.

A direct reference should be made to the confidentiality of respondents' answers and the purposes of any serial numbers and codings should be explained.

A presurvey letter advising respondents of the forthcoming questionnaire has been shown to have substantial effect on response rates.

A short covering letter is most effective; aim at no more than one page.

Follow-up letter

Of the four factors that Hoinville and Jowell discuss in connection with maximizing response levels, the follow-up letter has been shown to be the most productive. The following points should be borne in mind in preparing reminder letters:

All of the rules that apply to the covering letter apply even more strongly to the follow-up letter.

The follow-up should re-emphasize the importance of the study and the value of the respondents' participation.

The use of the second person singular, the conveying of an air of disappointment at non-response and some surprise at non-cooperation have been shown to be effective ploys.

Nowhere should the follow-up give the impression that non-response is normal or that numerous non-responses have occurred in the particular study.

The follow-up letter must be accompanied by a further copy of the questionnaire together with a stamped addressed envelope for its return.

Second and third reminder letters suffer from the law of diminishing returns, so how many follow-ups are recommended and what success rates do they achieve? It is difficult to generalize, but the following points are worth bearing in mind. A well-planned postal survey should obtain at least a 40 per cent response rate and with the judicious use of reminders, a 70 per cent to 80 per cent response level should be possible. A preliminary pilot survey is invaluable in that it can indicate the general

level of response to be expected. The main survey should generally achieve at least as high as and normally a higher level of return than the pilot enquiry. The Government Social Survey (now the Office of Population Censuses and Surveys) recommends the use of three reminders which, they say, can increase the original return by as much as 30 per cent in surveys of the general public. A typical pattern of responses to the three follow-ups is as follows:

Original despatch	40 per cent
First follow-up	+20 per cent
Second follow-up	+10 per cent
Third follow-up	+ 5 per cent
Total	75 per cent

Incentives

The fourth and final factor in maximizing response rates is the use of incentives. Although the use of incentives is comparatively rare in British surveys, it can substantially reduce non-response rates particularly when the chosen incentives accompany the initial mailing rather than being mailed subsequently as rewards for the return of completed schedules. The explanation of the effectiveness of this particular ploy appears to lie in the sense of obligation that is created in the recipient. Care is needed in selecting the most appropriate type of incentive. It should clearly be seen as a token rather than a payment for the respondent's efforts and, according to Hoinville and Jowell, should be as neutral as possible. In this respect, they suggest that books of postage stamps or ballpoint pens are cheap, easily packaged in the questionnaire envelopes, and appropriate to the task required of the respondent.

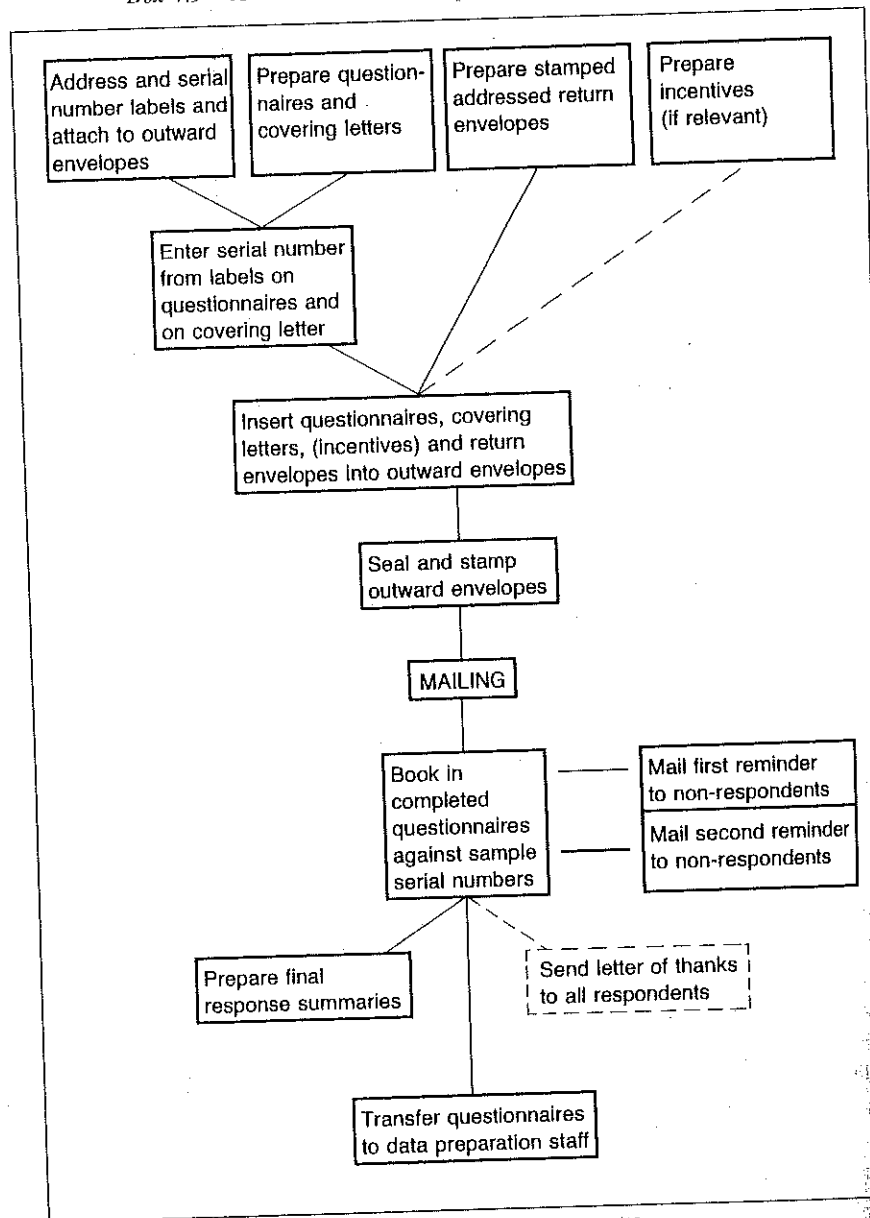
The preparation of a flow chart can help the researcher to plan the timing and the sequencing of the various parts of a postal survey. One such flow chart suggested by Hoinville and Jowell is shown in Box 4.5. The researcher might wish to add a chronological chart alongside it to help plan the exact timing of the events shown here.

Validity

Our discussion, so far, has concentrated on ways of increasing the response rate of postal questionnaires; we have said nothing yet about the validity of this particular survey technique.

Validity of postal questionnaires can be seen from two viewpoints according to Belson (1986).⁹ First, whether respondents who complete questionnaires do so accurately and second, whether those who fail to

Box 4.5 A flow chart for the planning of a postal survey



Source: Hoinville and Jowell, 1978

return their questionnaires would have given the same distribution of answers as did the returnees.

The question of accuracy can be checked by means of the intensive interview method, a technique consisting of twelve principal tactics that include

familiarization, temporal reconstruction, probing and challenging. The interested reader should consult Belson (1986: pp. 35–8).

The problem of non-response (the issue of 'volunteer bias' as Belson calls it) can, in part, be checked on and controlled for, particularly when the postal questionnaire is sent out on a continuous basis. It involves follow-up contact with non-respondents by means of interviewers trained to secure interviews with such people. A comparison is then made between the replies of respondents and non-respondents.

PROCESSING SURVEY DATA

Let us assume that researchers have followed the advice we have given about the planning of postal questionnaires and have secured a high response rate to their surveys. Their task is now to reduce the mass of data they have obtained to a form suitable for analysis. 'Data reduction', as the process is called, generally consists of coding data in preparation for analysis – by hand in the case of small surveys; by computers when numbers are larger. First, however, prior to coding, the questionnaires have to be checked. This task is referred to as 'editing'.

Editing

Editing interview schedules or self-completion questionnaires is intended to identify and eliminate errors made by interviewers or respondents. (In addition to the clerical editing that we discuss in this section, editing checks are also performed by the computer. For an account of computer-run structure checks and valid coding range checks, see Hoinville and Jowell (1978) pp. 150–5). Moser and Kalton¹¹ point to three central tasks in editing:

- 1 *Completeness*: a check is made that there is an answer to every question. In most surveys, interviewers are required to record an answer to every question (a 'not applicable' category always being available). Missing answers can sometimes be cross-checked from other sections of the survey. At worst, respondents can be contacted again to supply the missing information.
- 2 *Accuracy*: as far as is possible a check is made that all questions are answered accurately. Inaccuracies arise out of carelessness on the part of either interviewers or respondents. Sometimes a deliberate attempt is made to mislead. A tick in the wrong box, a ring round the wrong code, an error in simple arithmetic – all can reduce the validity of the data unless they are picked up in the editing process.
- 3 *Uniformity*: a check is made that interviewers have interpreted instructions and questions uniformly. Sometimes the failure to give explicit

instructions over the interpretation of respondents' replies leads to interviewers recording the same answer in a variety of answer codes instead of one. A check on uniformity can help eradicate this source of error.

Coding

The primary task of data reduction is coding, that is, assigning a code number to each answer to a survey question. Of course, not all answers to survey questions can be reduced to code numbers. Many open-ended questions, for example, are not reducible in this way for computer analysis. Coding can be built into the construction of the questionnaire itself. In this case, we talk of precoded answers. Where coding is developed after the questionnaire has been administered and answered by respondents, we refer to post-coded answers. Precoding is appropriate for closed-ended questions – male 1, female 0, for example; or single 0, married 1, separated 2, divorced 3. For questions such as those whose answer categories are known in advance, a coding frame is generally developed before the interviewing commences so that it can be printed into the questionnaire itself. For open-ended questions (Why did you choose this particular in-service course rather than XYZ?), a coding frame has to be devised after the completion of the questionnaire. This is best done by taking a random sample of the questionnaires (10 per cent or more, time permitting) and generating a frequency tally of the range of responses as a preliminary to coding classification. Having devised the coding frame, the researcher can make a further check on its validity by using it to code up a further sample of the questionnaires. It is vital to get coding frames right from the outset – extending them or making alterations at a later point in the study is both expensive and wearisome.

SURVEY RESEARCH IN EDUCATION: TWO EXAMPLES

We have selected to describe briefly two educational issues in order to illustrate the skill and attention that researchers must give to the preparation and presentation of survey questionnaires.

The first, by Belson and his associates (1975)¹⁰ sought to conceive and construct a measure of theft behaviour for use with a sample of 1425 boys aged between 13 and 16 years. The account of the development of procedures for eliciting information from juveniles about the nature of their thieving warrants close and careful scrutiny. Box 4.6 summarizes the steps taken during the course of the research.

Our second example of a survey involved the total student teacher population of a University Faculty of Education, some 787 men and

Box 4.6 A study of stealing

1. A comprehensive review of the criminological and non-criminological literature was undertaken for leads on technique, format and administration of elicitation procedures.
2. An explanatory study involving intensive interviews with boys was carried out to identify barriers to respondents giving accurate information about their stealing. Findings relating to facilitating and inhibiting factors were then employed in what Belson terms 'a process of progressive modification' to construct a first version of the elicitation procedure.
3. During the first run of the elicitation interview careful attention was paid to factors such as the sample, appointment procedures, location of interviews, selection and training of interviewers, the wording and presentation of the questions etc.
4. Following the first trial form of the elicitation procedure, further progressive modifications were made to the techniques particularly in respect of the form and sequencing of questions and the use of card sort routines and rules for sorting.
5. The modifications of the initial form of the eliciting procedure were then subject to further scrutiny and additions such as, for example, the inclusion of a 'pretending game' (a re-sorting technique) to explore those who selected NEVER cards.
6. All in all, the progressive modification sequence was continued on, to a total of *seven* cycles before the full scale investigation was undertaken.

Source: Belson, 1975

women in all. The research was inspired by some critical remarks by the then Secretary of State for Education concerning teacher training and his intention to increase substantially the amount of time students were to spend in schools rather than in college. Hannan and Newby, the investigators, decided to seek the views of students about these proposed changes.¹²

Of the 787 students contacted, 358 completed the twelve-item questionnaire, a response rate of almost 46 per cent, not atypical for this method of data collection.¹³ Both four-year B.Ed and one-year PGCE students were included in the sample. Inter alia, the survey questionnaire put some of the Secretary of State's proposals to the student body. Their views on one of his suggestions are set out in Box 4.7. The data show that a substantial majority of students pursuing both B.Ed. and PGCE routes to teacher status (some 73 per cent overall) were opposed to the Secretary of State's proposal to give schools, rather than higher education institutions, the lead in the teacher training process. Moreover, a close examination of the frequencies of the responses in Box 4.7 suggests differences of perception between PGCE students and B.Ed. students as a whole, and changing weights of rejection within the B.Ed. students when differentiated by year of training. The final question of

Box 4.7 An analysis of student teachers' views on proposed changes in their form of training

Item The Secretary of State's plans seem to favour a form of school-based training in which the school and its teachers are in the lead in the whole of the training process, from the initial design of the course through to the assessment of the performance of the individual student. What is your view of such an arrangement? 1 = very good idea; 2 = quite a good idea; 3 = don't know; 4 = don't mind; 5 = not a very good idea; 6 = very bad idea; 7 = not answered								
Course and year	Responses							Row Total
	1	2	3	4	5	6	7	
PGCE	0	9	3	0	22	7	0	(41)
B Ed Year 1	6	17	9	1	64	15	0	(112)
B Ed Year 2	2	17	7	0	40	10	0	(76)
B Ed Year 3	2	13	3	0	28	16	0	(62)
B Ed Year 4	0	4	2	0	30	29	2	(67)
Totals	10	60	24	1	184	77	2	(358)
(Percentages)	2.8	16.8	6.7	0.3	51.4	21.5	0.6	(100)

Source: Adapted from Hannan and Newby¹²

the survey elicited a wealth of student comment that assisted the researchers in 'fleshing out' the bland statistics of the previous eleven questionnaire items.

CONCLUSION

In conclusion, we suggest that this chapter be studied alongside Chapter 13, which deals with interviews and interviewing.

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- 12 Hannan, A. and Newby, M., 'Student teacher and headteacher views on current provision and proposals for the future of Initial Teacher Education for primary schools', Rolle Faculty of Education, University of Plymouth, July 1992, (mimeo.).
- 13 The authors are right to be concerned with the fact that over half of the student population failed to take part in the survey. 'It is likely', they observe, 'that those who did respond were those who felt most strongly, one way or the other, with respect to the issues raised and the questions posed.' This may well have been the case. None the less, no attempt was made to follow up non-respondents (see Hannan and Newby, 1992). See p. 98 on non-respondents.