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Making research and evaluation more useful and more interesting for information services and their users: A guide for students and practitioners

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Abstract

Reflections on the recent increase in the number of cross-sectional surveys received by the editorial team of the journal indicated that potential contributors might consider other research techniques, in addition to, or instead of a survey. In this article, Christine Urquhart discusses some different research designs, and different research methods that may help students and practitioners find useful answers to questions about professional practice beyond the standard survey. Researchers could consider research designs such as quasi-experimental techniques, controlled before-after studies, and interrupted time series. The basic principles of such methods are outlined and some examples cited. Other research techniques outlined include those that research subjects might find more interesting to do, such as conjoint analysis and vignettes.

KEYWORDS
evaluation, library and information professionals, research design, students

INTRODUCTION

One effect of the COVID-19 pandemic on journal submissions was a sudden increase in the use of cross-sectional surveys, often distributed online, and therefore a way of doing research during lockdown restrictions. The great advantage of cross-sectional surveys is that they are easy (and cheap) to administer, and easy to analyse with competent statistical expertise available. One of the main disadvantages is that such surveys are essentially observational studies that collect data at one moment in time on one sample group. Statistical analysis can determine possible associations, but not 'cause and effect' relationships. Cross-sectional surveys are probably most useful as a way of determining what could or should be followed up in future research or evaluation. The easiest format of survey for analysis uses fixed choice questions, rather than open-ended questions, but that means that question design has to be very carefully formulated, and preferably validated (Urquhart & Brettle, 2022). Although a cross sectional survey may seem a simple solution to finding a quick and easy research design for a small project, the findings may not provide very useful answers immediately, and there are many pitfalls in

For details on how to contribute to this Regular Feature please contact: Frances Johnson; Manchester Metropolitan University Department of Languages, Information and Communication; Geoffrey Manton Building Rosamond Street West Manchester M15 6LL; Tel: +44 (0) 161 247 6157; Email: f.johnson@mmu.ac.uk design (such as leading questions or using professional jargon). In this article, I discuss some different research designs, and different research methods that may help students and practitioners find useful answers to questions about professional practice. In addition, we should remember that research ethics asks us to consider what value the research subjects obtain from our research. How many people truly enjoy or benefit from completing questionnaires? Let's try to make library and information research in the health field more interesting and more valuable for both the researcher and the research subjects. This article discusses, with examples, some different approaches to planning and conducting research and evaluation—beyond the standard survey.

DOING AN EXPERIMENT TO TEST AN INTERVENTION

Many health librarians are involved in information literacy initiatives, and wish to evaluate whether their contribution makes a difference. There are many questions that could be asked, but the aim should be to find a focused question that is answerable (Coulbeck & Hadfield, 2013), and delivers findings that should improve the information literacy initiative. A good start to thinking around the problem would be to find a relevant scoping review, such as Hirt et al. (2020) on educational interventions to improve literature searching skills in the health sciences. The review collates details about the research design, participants, the nature of the educational intervention and the outcome. Most of the included studies were simple before-after studies (pre-post trials), but some studies used a control group (control trial, or randomised control trial). Theoretically, using a control group should allow more generalisation of the findings, but there are practical problems in education settings in ensuring that the groups do not talk to each other (and contaminate the findings), and quasi-experimental studies may be the only feasible option (Cook & Campbell, 1979).

QUASI-EXPERIMENTAL DESIGNS IN EDUCATION

Eldredge et al. (2021) describe how they managed to avoid some possible problems of contamination in a quasi-experimental study of a new EBP (evidence-based practice) instruction for formulating an EBP question. This involved: (1) pre-test (all students took a pretest on a clinical scenario), (2) the intervention occurred 28 days later, and (3) the post-test on the same clinical scenario occurred within 30 h of the intervention. The instructors scored the pre-test and post-tests using the rubric taught as part of the intervention, and passed on the results to the students before the students completed a similar but graded assignment. The design of the intervention evolved from experience gained from years of teaching question formulation at a medical school, and reflection on literature evidence on question formulation. It is worth noting that the research subjects should have gained some value for their graded assignment from the comparison between their pre-test and post-test results. A similar study by the same team (Eldredge et al., 2023) made good use of the social restrictions of COVID to avoid research design contamination among research subjects, and adopted an RCT design.

One of the problems of assessing whether an educational intervention is effective or not is the decision about when to measure the 'before' and 'after' outcomes for the intervention and, as previously mentioned, contamination between groups; ideally you should be sure that those in one group are not talking to those in the other group about the intervention. Other problems with 'before' and 'after' measurements can include deciding on a fair time to assess the impact on learning, whether immediately or later, and, last but not least, finding a time when most research subjects will be willing and able to do the post-test. Hamdan et al. (2021) examined whether a bibliotherapy self-help intervention helped students with examination stress, and note that they only had one measurement point after the intervention, although some similar quasi-experimental bibliotherapy studies managed several measurement time points.

LONGITUDINAL STUDIES AND INTERRUPTED TIME SERIES DESIGNS

Sometimes information services want to assess whether a completely new system or service is effective or not. Situations like these often involve people having to change their routines, possibly acquire new skills, and adapt their ways of working, meaning that views on the success of the innovation are likely to change over time. Training and awareness activities may make the coming change seem attractive and attitudes will be positive prior to implementation while the post-implementation story may be less positive or even negative at first. The pre-post changes are therefore very dependent on the time of measurement and, in this case, an interrupted time series design is advisable. This research design requires a series of measurement time points before the actual intervention, and a series of time points afterwards, preferably three points before and three points after, to check whether there is an improvement or not. A simple healthcare example of a before and after study that can be classed as an interrupted time series is Athwal et al. (2009) who studied whether a revised bedside handover process was effective. Guidelines have been proposed (on the basis of a systematic review) for interrupted time series studies of quality improvement initiatives in healthcare (Hategeka et al., 2020), and these discuss the advantages and disadvantages of variations on interrupted time series designs, and how such studies should be reported. For a study evaluating whether a particular intervention or change in service delivery in a library service had been successful, the interrupted time series design could be much simpler than one appropriate for a large scale quality improvement initiative, though the principles remain the same: (1) choose appropriate outcomes, (2) be consistent in how these outcomes are measured, (3) plan carefully so that there are at least three time points before and after the intervention. Following these three steps means that the difference between before and after is clear, despite any unforeseen problems that may have affected the implementation process. Using an interrupted time series also implies that researchers should be able to justify how and why improvements should emerge, and also identify what else might influence any changes observed. Some of the impact case studies reported in the value/impact section of the Knowledge for Health website (NHS England) (https://library.hee.nhs.uk/) concern quality improvement projects, but the library contribution often appears only at the beginning, at the literature searching stage. There may be opportunities to extend the library and knowledge service input throughout some quality improvement projects, particularly if there is an information literacy education component involved. The ability to link library-based impacts with impacts concerning the continuing professional development (CPD) of healthcare staff and patient outcomes should help raise the profile of knowledge services.

USING CONJOINT ANALYSIS TO EXPLORE ATTITUDES

Service promotion is an ongoing aim for most health library services. Like many market researchers, library managers need to know more about their users, and how to persuade the users that services on offer might be valuable to them in patient care, research and CPD. Market research techniques offer some potential ideas for different ways of assessing attitudes. Some of you may have completed a market research survey in which you ordered your preference for different attributes, through a series of stages in which different combinations were presented, asking typically which you preferred most and which you preferred least. This is conjoint analysis, and organisations use conjoint analysis to determine what combination of attributes should be offered to satisfy most potential customers (and often determine the price level they are prepared to pay). As in most questionnaire design, some prior planning is required to think about the attributes, before setting up an online survey, and health libraries are more likely to think in terms of how much time users are prepared to 'pay' in reading, or using learning materials, rather than money payments. A recent example in general information management (Lopes et al., 2021) examined which cues influenced the perceived usefulness and credibility of an online review, and how the importance of such cues depended on how much people already knew about the product. The authors examined the relative importance of argument strength, whether the argument was balanced or positive or negative, quality of writing, number of arguments, rated review usefulness, summary review rating and number of reviews. Another conjoint analysis extracted which indicators researchers really considered when trying to assess which research articles they should read (Lemke et al., 2021). The authors examined the relative importance of attributes such as citation counts, journal impact factors, bibliometrics, and altmetrics.

USING VIGNETTES TO EXPLORE ATTITUDES AND LIKELY BEHAVIOUR

One of the reasons that researchers might want to use conjoint analysis is that it is a way of revealing people's true preferences, and attitudes rather than what they think they should say… or what they think the researchers would like them to say: even offering complete anonymity may not be enough to extract honest opinions on some sensitive topics. One method that avoids the awkwardness of direct questions is the use of vignettes, short descriptions of a situation, usually some sort of problem situation. Vignettes may be presented in writing, video-clips, or orally, and respondents are asked for their reactions, and suggestions. Vignettes were used to study information seeking behaviour of nurses in the EVINCE project (Davies et al., 1997; Urquhart, 1999) as a way of assessing what level of knowledge the interviewees had about information sources, and what type of strategy they had for using those sources (personal as well as published sources). Different vignettes were prepared to suit the setting in which the interviewees worked, and usually the question was phrased 'what advice would you give to your colleague in this situation?' Vignettes were also used in a longitudinal study of the use of e-resources in further and higher education (Urquhart & Rowley, 2007) to complement critical incident interviews, as a way of exploring the students' habitual routines for finding information for their learning, in a non-threatening way. The emphasis is on understanding the why as well as the what of the information behaviour. As would be expected, piloting of vignettes is desirable to ensure that they are relevant to the interviewees.

Vignettes may also be used in a more structured way, in quantitative research for hypothesis testing. An example is a study (Horne & Przepiorka, 2021) of how people formulate their views about potential privacy violations when using a household energy app. If people think the app is popular, are they less concerned about potential privacy violations? What is the effect of expectations of privacy violating behaviour among similar energy app providers? Analysis showed that privacy behaviour was governed by norms and levels of trust. Another study (Pérez-Pulido & González-Teruel, 2023) used vignettes to assess whether health students were developing appropriate professional ethics awareness after training.

ALLOWING THE RESEARCH SUBJECT MORE CONTROL

Many of the techniques outlined above have the advantage of allowing the research subject some freedom of choice, some agency, and can be more engaging than completing Likert scale attitude surveys, for example, although some Likert scales may have the advantage of being validated measures. However, it is important to use research and evaluation techniques that are interesting and possibly fun to do. Increasing the response rate is generally a good aim, and if the respondents feel that they can play at the same time, that can be an advantage. Gamification is being tried in healthcare for education of both health professionals and patients (Damaševičius et al., 2023) and, in a library context, even used in the gamification of cataloguing and classification education in Nigeria (Adetayo et al., 2023).

CONCLUSION

Planning a research project means that not only formulating a good research question, but think carefully about how to make the research more interesting, and useful for both the research subjects as well as the researcher. While randomised controlled trials may not be appropriate or easy to do, the quasi-experimental techniques listed could be help students and practitioners find useful answers to questions about professional practice beyond the standard survey, making them both more useful and more ethical as well.

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