

Accessing Practitioner Expertise Through Online Survey Tool LimeSurvey

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Surveys provide a valuable means to capture the knowledge and experience of a responding cohort that is large in size and dispersed over a wide geographic area. Online surveys are increasingly used for this purpose, offering both significant benefit and challenge to researchers. This highly efficient and attractive method of delivery has the potential to achieve high response rates and maintain a confidential environment for participant management. The electronic process provides efficiencies and cost-effectiveness in delivering survey data into a database (e.g., Excel or SPSS/PASW) for subsequent analysis and supporting related issues of ethics approval and data archiving. LimeSurvey is a trustworthy open source survey application designed for academic and institutional facilities. The Griffith University Research Survey Centre locally hosts an open source survey application LimeSurvey on a secure server providing support to researchers within the university. This online survey tool was used to gather information about practices preferred by educational practitioners experienced in supporting the transition of young children with autism to school throughout Queensland. This paper documents the process from conceptualisation to data analysis for this state-wide survey. Issues involved in survey design, administration, and data transport are discussed, together with results from preliminary data analysis.

Introduction

Recent national funding of research and intervention to support young children with autism set an agenda to capture the views of experienced practitioners about evidence-based practices for transitioning these youngsters to school. Obtaining information from practitioners presented a challenge because they were scattered throughout Queensland providing services close to where the children and their families live. Online surveying, therefore, was seen to provide a viable option to traditional paper-based procedures.

The survey preparation process continues to represent a balance between optimal design and delivery against overall cost and efficiency. It has long been acknowledged that survey design and the associated sampling approach require careful consideration in order to address issues affecting the validity and reliability of data and the generalisability of results (Creswell, 2008; Gay, Mills, & Airasian, 2009). "Survey fatigue" was another issue that needs to be addressed because it can substantially affect response rates. Sheehan (2001) commented on observations that response rates for all types of surveys have been declining. Hence, design and delivery issues are paramount in an environment of declining preparedness to complete surveys and greater pressure on the quality of the evidence.

The issue of survey design, while of critical importance in the effectiveness of a survey,

has been a common factor across delivery methods. Issues in question structure and wording, and the use of scales in survey instruments, are well documented (see, for example, Gay et al., 2009) and will not be discussed further here.

In a meta-analysis of response rates in web and internet based survey, Cook, Heath, and Thompson (2000) concluded that representativeness of the sample was more important than response rate. However, they noted that representation of non-random non-responses could affect interpretation of outcomes if part of a sample chose not to respond. Failure to engage participants' interest and motivation has been important in reducing attrition. An instructive introduction to the survey topic and then reminders to potential participants to respond have been recognised as important elements in achieving higher response rates (Cook et al., 2000; McColl et al., 2001; Yun & Trumbo, 2000). Similarly, "salience", where potential participants feel a particular interest in the survey topic, can have a marked effect on the motivation of participants (Sheehan, 2001), which often improves response rates (see, also, reducing the length of a survey).

Email and, more recently, online surveys, have gained increasing prominence in survey delivery with increasing use of, and familiarity with, the internet. Over 20 years ago, Kiesler and Sproull (1986) reported electronic or computer mediated surveys to be "a new tool in survey research" (p. 402). From a researcher's perspective, relatively easy preparation of an online survey through public access options for survey development and delivery and greater capacity for confidentiality of responses have made the online tool attractive. From a participant's perspective, completing an online survey (compared to a paper-based alternative) may provide a better environment for sharing more personal or detailed information. Whereas Kiesler and Sproull (1986) found more socially undesirable responses by those completing the electronic survey, Yun and Trumbo (2000), in their more recent review comparing response patterns by post, email, and web, found that people tended to provide more extensive and detailed responses when completing surveys on the computer.

While a number of online survey options exist (e.g., SurveyMonkey), Griffith University now supports its own tool, LimeSurvey, through its new Research Survey Centre (RSC). The aim of this paper is to report on the process and outcomes of using LimeSurvey to collect practitioner judgments about the most important practices for transitioning young children with autism to school in order to demonstrate the efficacy of using this on-line tool. Events encountered during the design and delivery of the online survey, together with response issues, will be the focus of attention.

An Overview of LimeSurvey

The research community at Griffith University was previously reliant on fee-based surveying solutions for creating surveys, collecting results, and analysing survey data (e.g., SurveyMaker, SurveyMonkey). External hosting of such fee-based programs posed significant risks to research projects. Risks included retrieval of private data (potential compromise or system crashes) and long-term preservation requirements of survey data (not a secure archive). Hence, researchers needed a trusted, support-based online survey service that meets the fundamental requirements for online survey creation, implementation, and archiving.

In May 2009, Information Services (INS) at Griffith University deployed the RSC, a free web service available to researchers, faculty, and research honours degree students who require a surveying tool for research purposes only. This solution included an online web service for survey registration to development (“sandpit”) and production environments; help information for creating, managing and conducting surveys; and direct access to LimeSurvey (<http://www.limesurvey.org/>). LimeSurvey is the reliable open source online survey application selected by INS at Griffith University. The RSC solution provided free hosting of an online survey for a 6-month period and an archive service for long-term preservation of survey data.

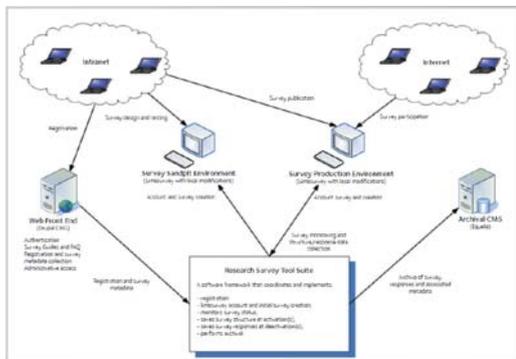


Figure 1. Architecture of the RSC showing LimeSurvey sandpit and production environments.

Figure 1 presents the RSC architecture, which maps the different components of the LimeSurvey environment. The LimeSurvey application has built a positive reputation in the academic IT's sector, and is currently used by a number of universities, including the University of Sydney and Monash. Its key features are a Griffith University template¹ utilising a Griffith Logo, easily identified links between administrators and participants, accessibility through intranet web browser and more branching question paths, and accommodation of large numbers of participants. Other features include the use of “token” and “cookie” protections (to help manage access and prevent data tampering) and the capacity to export data in common formats for further interpretation, using additional statistical tools such as SPSS. These features and additional offerings appeared to make LimeSurvey a usable tool with varied applications for researchers. LimeSurvey Features are available at <http://www.limesurvey.org/en/about-limesurvey/features>.

For researchers and HRD students who have not used an online survey tool, conducting research with a large pool of respondents can be a daunting process. The RSC team provide varied support including static online support, survey customisation

¹ This is an Institution specific template developed by Griffith University for use by its staff in using the open access on-line LimeSurvey application.

development, and group training opportunities. This technical support makes survey creation, distribution, and analysis processes easy for this user group. The RSC also provides a contact email address for users who require additional assistance, with comprehensive responses provided via email or follow-up calls when necessary.

The Survey Experience

An initial written version of the survey about practices for transitioning young children with autism to school was prepared and then developed in the LimeSurvey “sandpit” environment. During this developmental period, institutional ethics approval was obtained. A production environment account was then obtained, and the survey was transferred to its production account and activated. Following a pilot of the survey, the survey was deactivated to allow minor adjustments targeted to clarity of meaning, consistency of style, and appropriate data output format. The survey was then re-activated for release.

The LimeSurvey default invitation email was adapted to reflect the specific project needs. In particular, the title “TRANSITION SURVEY” was placed in the subject line to ensure that participants could identify by title the item in their emails. Automatic invitations were sent to all 117 participants on June 6, 2010. Subsequently, the researchers were informed of an additional 6 people eligible and available to complete the survey; they were added to the token table and invitations manually sent. Monitoring of response level was undertaken during the open period to target appropriate reminders. Following a drop-off in responses, a first reminder was sent on June 17, with a final reminder sent on June 23, 2010. The survey closed, as previously identified to participants, on July 1, 2010.

Survey Results

Findings are presented in three key areas: the process of using LimeSurvey, the response level, and the form of results collected through the survey process. As with any new technology, there is a steep learning curve for a researcher. Table 1 summarises key issues, tabulated by the architecture and researcher experience.

In general, LimeSurvey was very logical and flexible to use and provided a broad range of design and delivery options. The major issue facing the researchers was terminology, with many terms appearing “nonintuitive”. For example, the set of Likert type statements were referred to as “answers”. Another example was the use of “cookies” and “tokens” to refer to methods of participant access.

Table 1. Key design issues and observations by researchers

Factor	Design Issues	Observations
Cost	Traditional survey distribution, collection of responses, and validation can take significant resources. The "Research Survey Centre" (RSC) provides access to LimeSurvey for design and hosting of the survey online, and long-term archival of the survey structure, responses, and metadata.	<ul style="list-style-type: none"> • Access to LimeSurvey and to individual support (in addition to Workshop sessions) was invaluable in preparing and administering the survey, and facilitated troubleshooting and rapid issue resolution. • Automatic coding and exporting of survey responses into SPSS was very cost effective.
Ethical practice	The RSC is linked to the provision of research support within Griffith University. As such, the use of LimeSurvey complies with University policy on ethics (including privacy) and also addresses the needs of archiving of data in line with such provisions (e.g., the minimum period for retention is 5 years from the date of publication but for specific types of research, such as clinical research, 15 years may be more appropriate)	<ul style="list-style-type: none"> • The process of gaining ethical approval provided valuable input into the design of the survey and the sampling process. Confidentiality of the process was readily communicated to participants. • Preliminary survey results have been achieved, but the capacity to revisit results is available and is going to be used to re-access the extensive detail of open response items that exceeded the default length.
Design / Layout features	The Griffith template/logo presents a very positive and professional perception and is provided as standard for all surveys. This feature provides a uniform Griffith University branded "look and feel" and also supports quality design.	<ul style="list-style-type: none"> • The template and logo provided a professional look and also design flexibility. For example, <ul style="list-style-type: none"> ◦ Text responses ("Small to Huge"); ◦ Multiple response options to statement sets were available: Likert-style ratings of Importance (1-6), with Label Sets also user designed where desired • While assorted design options are available, a recommendation from this research is that these are in many cases left blank to achieve a more professional appearance; • A risk exists in changing "Label Sets" while survey remains inactive. It would be valuable to be able to create and save/protect "label sets."
Capacity for initial and follow-up contacts	LimeSurvey uses a "token" register to identify participants, sends email invitations and reminders to participate, and can track survey completions. Tokens can be used to tag a participant to his/her survey response. With anonymous surveys, participants can be completely dissociated from their respective responses.	<ul style="list-style-type: none"> • Target population identified ($n=117$) through DETA support/processes, and csv file imported. An additional 6 potential participants were later identified and invited. • Personalised invitation and reminder emails were sent through system. Manual operation was used where 6 late additions were added to the token file ($n_{\text{final}}=123$). • Some respondents had difficulty returning to the survey – in future more specific warning/advice on survey return will be given, including information likely to be required during the completion process.
Data	Survey structure, responses, and associated metadata are automatically archived after the survey process has completed.	<ul style="list-style-type: none"> • Token file (csv) was imported and output file exported to SPSS, with variable codes set up to ensure most responses were coded numerically.

Factor	Design Issues	Observations
Computer Language /Learning needs	The design/architecture of LimeSurvey comes from an external source. It has its own simple analytical tools (frequencies) and was designed as a stand alone product.	<ul style="list-style-type: none"> • The initial process of becoming familiar with LimeSurvey involved a “<i>new language</i>” with; in some cases, the language either contradictory or not-intuitive for those from an outside discipline. Examples included: <ul style="list-style-type: none"> ◦ The concepts of “cookies” and “tokens” ◦ In assessing attitudes by a Likert scale, the “answers” are the statements; ◦ “Code” can (for SPSS use) mean “variable name”# when used to define “answers”, or “value labels”# in a Label Set; ◦ “Token”, for example, means “invitation”; ◦ For transferring data to SPSS it is important where possible to have value labels coded numerically - but this is not always apparent; • The University provides workshops for users and also a very responsive support system, supporting researchers through this essential learning process.

The links between the survey design and the resulting exported SPSS data file were accorded particular attention to ensure efficiency in the subsequent data analysis. The appropriate specification of “codes” by the researcher is important, as the term “code” was used both to define each Question and also options within a Label Set (e.g., response options in a Likert Scale). For Label Set “codes”, a numerical value leads to numerically coded variables with defined value labels in the SPSS file, while Question “codes” defining the variable names are best as short descriptive sets. For example, alphanumeric combinations of around 12 characters, such as “Role_in_Sch”, was used for the variable defining the role of each participant. In the case of this transition project, once the researchers understood the terminology employed by the tool designers, survey development progressed smoothly.

Table 2 summarises the demographic characteristics of respondents to the Transition survey. From 123 email invitations to potential participants, 91 complete responses were received (response rate 74%). Except for one male, all respondents were female ($n = 90$), and this gender distribution was representative of practitioners working in this area. This survey captured diverse views across ages, locations, and roles. Respondents were spread across three age-clusters, with the majority being in the ages 39-49 bracket. Responses showed a good geographical spread across metropolitan, regional, and rural locations, consistent with participants’ subsequent reporting of differential service availability and transition practice. A broad coverage in role in the transitioning process also was evident, with the majority of respondents (76%) working in specialised early intervention centres for under-school age students in ECDPs.

Table 2. Key demographic aspects of sample: location and age range by different roles

	ECDP ^a Teacher (n = 39)	ECDP HOSES ^b (n = 30)	AVT ^c (n = 14)	Other (n = 8)	Total (N = 91)
Age (yrs)					
<30	5 (71.4%)	0 (0%)	1 (14.3%)	1 (14.3%)	7
30-49	24 (42.1%)	21 (36.8%)	6 (10.5%)	6 (10.5%)	57
50+	10 (37.0%)	9 (33.3%)	7 (25.9%)	1(3.7%)	27
Location					
Metropolitan	29 (61.7%)	10 (21.3%)	3 (6.4%)	5 (10.6%)	47
Regional	6 (25.0%)	10 (41.7%)	8 (33.3%)	0 (0%)	24
Rural	4 (21.1%)	9 (47.4%)	3 (15.8%)	3 (15.8%)	19

^aECDP denotes Early Childhood Development Program; ^bHOSES denotes Head of Special Education Services;

^cAVT denotes Advisory Visiting Teacher.

Figure 2 provides a summary of the responses to the survey’s key questions assessing the importance of the 36 research-based practices from the literature. On LimeSurvey, participants could choose from a range of six Likert-type categories (from *not important* = 1 to *highly important* = 6). While all practices received very high ratings of importance (average scores all above 5 from a maximum of 6), participants clearly differentiated between individual practices. In addition to these responses, most participants (71 of the 91 responses) provided detail comment on the issues raised in the survey, adding invaluable documentation to support their quantitative assessment of practices and the research process.

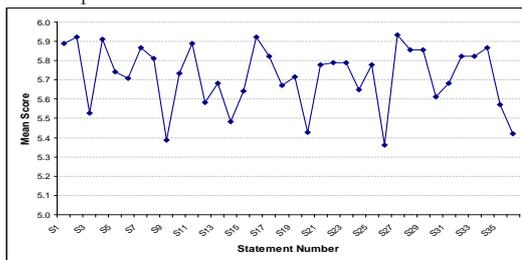


Figure 2. Mean level of importance of the 36 research based practices.

Discussion

The survey accessed a large and diverse group of practitioners, all of whom had a high

commitment to, and interest in, the issue of transitioning young children with autism to school. The high response rate, together with the extensive and highly informative comments in open-ended item responses, confirmed motivation to “have a say” about the transition practices. Some respondents also directly emailed researchers to provide positive feedback about the survey design and the survey experience.

While effort was made to prepare participants for the survey process using an emailed instruction sheet, one area of minor confusion became apparent when participants attempted to partially complete and save the survey. The survey documentation provided instructions on this issue—successfully followed by many respondents—but several contacts to the researchers to request support suggested some difficulty. Further clarification in the initial instructions and survey will better address this confusion.

The high response rate (74%) for this survey was particularly pleasing, with 91 complete responses from the 123 invitations sent. The response pattern also was positive in terms of major response bias, with a broad coverage of the target practitioner population across age, role, and location.

Although this survey was only active for a short time period of 3 weeks, the strategies used to communicate with the target population (below) led to a very successful overall response:

- Initial communication to all target population informing them of the survey, its intent, and instructions for completion;
- Use of the “token” system to personally email the target population; and
- Reminders (two) sent only to those where a response had not been recorded (possible using the “token register”).

The quality of the information from the diverse sample of practitioners provided rich data about the transition practices and their relevance to the Queensland context. More detailed descriptive and multivariate analysis of the data from this survey is currently being undertaken (e.g., Beamish, Bryer, & Klieve, manuscript in preparation). A qualitative analysis of responses from the open-ended questions will follow.

While there have been some learnings (summarised in Table 1) about survey development related to survey design and distribution, this case illustrates that Limesurvey is a valuable research tool that can be effectively used in a range of future applications. The training and support provided by the RSC team were invaluable in supporting researchers in this transition research.

In summary, the process using LimeSurvey through the Griffith University RSC has been a very successful one, with learnings able to be readily applied in future research practice. LimeSurvey has provided a very effective and efficient means of conducting research with a responding cohort that is large in size and dispersed over a wide geographic area. Four key advantages were identified.

1. The overall LimeSurvey structure and Griffith University template facilitated the development of a high quality survey document supporting research being undertaken by highly credible researchers.
2. The use of the token table and associated tools provided de-identified communication with survey participants.

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3. The university hosting of the tool provided links to the university research infrastructure, including ethical approval processes and IT support systems.
4. The process was highly cost effective, with efficient mechanisms for allowing data to be exported to the SPSS environment for subsequent detailed analysis.

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