# SURVEYOR: A CASE STUDY OF A WEB-BASED SURVEY TOOL FOR ACADEMICS

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**Abstract**
*"Many universities are actively looking at ways in which the use of technology can be mainstreamed across the university, linked with external clients and made convenient and accessible for students. These changes require coordination, planning and resourcing at an institutional level, in an environment where technological change is rapid and the demands for tailored applications are growing." (Coaldrake, 1999) How we effectively plan, coordinate and resource change is of ongoing concern to those who work in educational development support. Some initiatives take hold in the university environment and some do not. This paper seeks to examine one initiative, which arose from academic demand for a web-based survey program, to assist in distribution to global markets. The program needed to be simple and intuitive to use, minimize data processing and collection, and allow for academic construction, development and management of online survey questions. This paper reviews the selection, implementation and evaluation of a web-based survey tool, from an organisational change management and constructivist perspective, and whether the selection and adoption of such a tool will trigger the workplace cultural change necessary for sustained educational development.*

## Introduction

"Information technology has already had a significant impact on higher education, and will continue to reshape the educational landscape in years to come." (Coaldrake, 1999) Whether technology should be used in educational delivery is no longer the issue. Instead, the current emphasis is on ensuring that technology is used effectively to create new opportunities for academics and learners through the management and facilitation of student learning. Educational technology is not, and never will be, transformative in its own right. It requires the assistance of educators who integrate technology into their everyday professional practice. The challenge lies for educational developers, such as the authors of this paper, in how they mainstream these practices.

At Swinburne University, as in other higher education organisations, research is a key component of academic work.  The strategic initiatives of the university focus on entrepreneuralism; research; globalisation; learning and teaching; and intersectoral advantage. Academics are finding they need to be more innovative, more research intensive and more flexible in order to achieve the university goals. Finding new ways to meet these goals impacts on the demands of the academics' workload and the ways in which they work.

A growing need to access global populations for research purposes led the Psychology Department of Swinburne University to initiate a Learning and Teaching Support project to assess the feasibility of hosting web-based surveys. The distribution of hard copy and online (external posting) surveys was seen to be expensive, both monetarily and developmentally. The target users of the program were academics,

PhD., Masters and Honours students with the possibility of undergraduate use at a later stage of development. A web-based approach was seen as promising given that the Australian Bureau of Statistics indicates that by November 2000, 56% of the households in Australia had access to a home computer with 37% of homes having Internet access. (ABS 2000) These figures are likely to have grown exponentially over the last two years.

A team of psychologists, technical developers and educational development advisors was established to drive the project. The Psychology Department came from a strong orientation towards flexible delivery in higher education but had, with a few notable exceptions, little or no experience in web-based technology. The Acting Head of the Department was keen to build an online presence within the university as well as establish key lighthouse projects designed specifically to develop the online skills of teaching staff.

The project was designed to serve a dual purpose; to provide a technical tool to streamline professional practice; and to support staff in their move towards online flexible delivery. Implementation of a web-based survey program was viewed as a way to initiate positive attitudinal change toward technology whilst alleviating some of the time-consuming demands which currently face academics.

After investigation and evaluation, the "Surveyor" program was found to provide a number of key features; useability, transferability, functionality and branding. These features would greatly assist academics in the authoring, deployment, confidentiality, development and construction of surveys that use sound research and survey methodologies. The program was also found to be suitable as a teaching and learning tool in both face-to-face delivery and via the universities online subject delivery system. The program proved to have a number of effective applications at academic and student levels, but would these factors be enough to trigger the workplace cultural change required to embed technology into professional practice?

## Rationale

"Web-based surveying is becoming widely used in social science and educational research. The Web offers significant advantages over more traditional survey techniques however, there are still serious methodological challenges with using this approach". (Solomon, 2001) In deciding whether to proceed with the development of online survey facilities for the university a number of key factors were considered.  Would the development of a web-based survey facility:

- be cost effective;
- support current research, survey methodology;
- improve current survey capabilities within the university;
- have alternative educational applications and
- have broad academic acceptance and uptake.

One of the strongest arguments for using electronic surveys is cost reduction; printing, postage, telephone and data entry. (Shannon, Johnson, Searcy, Lott 2002; Dix, Anderson 2000) These obvious savings, along with some of the hidden advantages such as shorter development time, data entry accuracy, projectability and complex data gathering at source, need to be viewed against limitations.  Currently researchers have concerns regarding the reliability of web-based surveys with particular regard to; coverage bias, sample limitations, privacy, poor response rates, confidentiality, as well as limitations in reaching specific target audiences. (Shannon, Johnson,  Searcy, Lott 2002; Solomon 2001; Dillman 2001) Determining an appropriate survey methodology needs to be addressed in the early stages of the primary research project. Once determined then selection of the appropriate survey tool becomes less problematic.

When developing the original project scope the Psychology department of Swinburne University identified a growing need to access global markets and a shrinking budget from which to fund postgraduate research as specific needs. The web-based survey program selected "Surveyor", was able to achieve broad usage and penetration into the university community however, it also brought with it, an ongoing need to manage issues surrounding web-based survey methodology. Being able to access global markets cost effectively using web-based programs was likely to increase survey non-response rates. (Dillman 2001) Solomon (2001) suggests support techniques such as; personalised email cover letters,

follow up reminders, pre notification of intent to survey and simple survey formats will lower non-response rates. These issues need to be addressed at academic level, not only from a research perspective but also from an educational perspective. The growing use of the web will mean academics supervising post-graduate students will need to address these methodological issues in their teaching.

One of the greatest challenges educational developers face in the current Higher Education environment is the engagement of the wider academic community in pedagogical change. Fox tells us that staff are slow to take up the opportunities that new technologies offer and are reluctant to change their work practices or move outside their comfort zones. (Fox, 1999) Occasionally a breakthrough occurs. One identifies an online program that captures the attention of the broader academic community and engages their ongoing interest. The trial and implementation of "Surveyor" has certainly triggered considerable interest within the Swinburne Community. From a broader educational development point of view, is the spontaneous interest in an online educational tool likely to trigger the workplace cultural change so necessary for sustained pedagogical change?  Will it overcome the hesitancy of academics to adopt new technologies that underpin and support many of the innovative teaching and learning practices currently unfolding in the field of flexible delivery in Higher Education?

Morgan (1997) suggests that cultural change is achieved through "reality construction" where shared ideologies, values, beliefs, language, norms, ceremonies, and other social practices must be constructed and adopted by workers if effective and sustained organizational change is to be achieved. Change in technology, rules, systems, procedures and policies are not enough.  Change must be both "appropriate" and "shared". This would suggest that of the three sets of educational change strategies proffered by Smith & Lovat  (1990); power/coercive; rational/empiric and normative/re-educative the latter, normative/re-educative, is most likely to effect change in an organizational culture such as a university, as it focuses on participants and sees participants as the locus of change. This strategy seeks to… " alter individuals' beliefs, perceptions, meanings and practices and collaboratively, to fundamentally change our communities and societies". (Smith & Lovat, 1990)

As educational developers acting as a change agents, it is imperative that a change process is established that allows those who are ultimately responsible for implementing change (teaching academics) to have the opportunity to decide the nature and extent of the change, as well as the development of the process of change. (Kemmis & McTaggart, 1988; Scott, G 1999) Fundamentally this is no different to a constructivist approach to education where learning is seen as an active process in which learners construct new ideas or concepts based upon their current/past knowledge. (Bruner, 1966) Just as a constructivist approach is learner centred, so must the change management approach be participant centred, with participants constructing and directing the implementation of the new technology thus enhancing their ownership. Knowles (1980) would suggest in an adult learning context we should:

- set a cooperative learning climate;
- create mechanisms for mutual planning;
- arrange for a diagnosis of learner needs and interests;
- enable the formulation of learning objectives based on the diagnosed needs and interests;
- design sequential activities for achieving the objectives;
- execute the design by selecting methods, materials, and resources and
- evaluate the quality of the learning experience while rediagnosing needs for further learning.

## Establishing the Team

In support of the change management process, a collaborative multi departmental project team was formed to establish the project scope, identify aims, determine the technical requirements and set the project action line. The team comprised: one Educational Development Advisor (Project Manager), five Psychologists (teaching academics), two Psychologists (statistical programming backgrounds), one Instructional Developer, and one Programmer. The team met on a regular basis and defined the project scope by identifying the baseline requirements for the web based program to:

- develop a system to facilitate the preparation of online questionnaires housed on the Swinburne web server;
- develop a web site to act as a gateway to the questionnaire system.
- ensure that questionnaire templates are built and maintained by Psychology staff and students with some technical knowledge;
- ensure that questionnaires are creatable by non-technical Psychology staff and students using a template approach and to
- develop a method for accessing questionnaire data from the web server in a format that can be used in external reporting applications, specifically SPSS and MS Excel.

The university had some prior experience in developing online surveys for web hosting, but development had been labour intensive and required extensive input from programming staff. The team decided "useability" would be a key selection feature in any software development or purchase. Once the technical requirements were established it was decided that a web-based research, review and evaluation of existing software would be carried out. A brief costing exercise had indicated that internal development within the university would cost approximately $A30,000 and take 9 months to complete.

A detailed system requirement report was developed which addressed six major areas of review:

- template development;
- questionnaire authoring;
- questionnaire deployment;
- questionnaire display;
- questionnaire results and
- branding.

This report was compiled collaboratively by the team. The client, the Psychology Department, was asked to sign off on the final requirement list.

## Research, Review and Evaluation of existing web tools

A web search was carried out to identify available software that matched the system requirements report. The final list was extensive and there was culling on the basis of cost, server requirements and ongoing technical support. The remaining programs were trialed and evaluated by the technical members of the team for useability and compatibility with server software. The final choice was "Surveyor" a program developed by ObjectPlanet Inc. in Oslo Norway. ObjectPlanet Inc. is a vendor of Java based software components, network monitoring tools and online survey software. Their main development focus is on creating lightweight software that is easy to use.

Although the program met most of the system requirements there were a few areas which needed further investigation. A full trial program was loaded onto the backup server. The technical development unit and the Psychology Department provided experienced staff to test the trial version for useability; technical robustness; and possible interface with Blackboard (the Learning Management System used by the Higher Eduction sector of the university). The decision to purchase "Surveyor" was ratified by the team and the university purchased a fully licensed version.

During the research, review and evaluation process, a number of issues were identified as impacting on the broader university community. It was decided that a rollout trial with the Psychology Department would provide critical information about the required protocols for:

- administration;
- ethics approval;
- security of data;
- educational use within "Blackboard";
- management of users;
- help desk support;
- training;

- cross sectorial development;
- possible commercial use and
- use for non academic purposes.

## Technical summary

"Surveyor" is an Internet based program that allows academics to produce, publish and manage online surveys and questionnaires on the Internet using a regular web browser. Survey participants are given access via a URL. Each survey is easily customised to satisfy ethics approval requirements. Access, including developer access can be strictly controlled.

The program offers a variety of question formats for users to choose from. These include:

- rating (20 levels);
- multiple choice;
- multiple answer;
- text input;
- matrix (one per row);
- matrix (cross section);
- matrix (all);
- drop down list and
- numeric (integer, decimal).

Advanced users have the option of adding extra JavaScript to customise questions. There is also a facility for conditional branching as well as password protection for clients and users. All surveys are editable and can be cloned for multiple client use.

Data is collected, stored and collated electronically. Reports are immediately available after respondents have started answering the survey: responses can be displayed directly in a web browser, or exported to Excel or SPSS for further analysis. All data is stored on the server and backed up 24 hourly. Files are saved as .csv or .tsv and are fully downloadable. Data can also be downloaded for set time periods *eg* before, after and during an event.

## Implementation

The project team decided to train staff through self-paced materials as users would require rolling enrolment for any professional development offered. To achieve this, key members of the team needed to immerse themselves in the "Surveyor" program in an attempt to identify what skills staff would need to acquire to become proficient users of the program. A constructivist learning style was adopted where a typical work based project was identified and then modelled for participant use. Self-paced training was supported with mentoring by experienced users, thus optimising the "learning for transfer" concept. (Down 2001) The materials were then trialed with test groups of academics, PhD students and Master students. Feedback regarding the self-paced notes was sought and materials were modified accordingly.

Supervision of "Surveyor" users was tied to the administration systems embedded within the program. Quality and ethics procedures established by the project team were documented and reinforced through support notes and help desk training. Each School, Unit or Department nominated as a user group was assigned a group administrator. The group administrator was drawn from staff within the School, Unit or Department and was responsible for:

- approving users in their School;
- providing the self paced notes and associated training files and
- providing support documents outlining;
  - quality processes,
  - responsibilities,
  - technical support,
  - university publishing standards and

o  ethics requirements.

Staff were given open access to the system but all students (eg PhD) who had access were supervised by their academic supervisor. It became evident that supervising staff needed to become proficient in the software if they were to maintain their standards of supervision. Building on the already established academic supervision role has embedded the ownership of the program and its academic use firmly into the academic culture of the School. Anecdotally this is supported by feedback from the Ethics Committee, who report that official requests to use "Surveyor" for research has risen markedly over the three months it has been in operation. Surveyors usage in the Psychology Department has grown from 0 users on March 18, 2002 (date of launch) to 23 active users by July 18, 2002.

## Review

The success of the program within the Psychology Department, along with its reported ease of use, triggered interest from other faculties and departments throughout the university. The Learning and Teaching Support Unit decided that a university-wide roll out would be appropriate as long as the protocols identified in the implementation process were maintained. The marketing of "Surveyor" was carried out through a series of workshops supported by newsletter articles, official email, word of mouth and promotion via key cross-university projects. The first marketing workshop took place on June 13, 2002 and by July 18, 2002 the user groups had grown from one to sixteen.

The rapid growth in users over a short period of time has necessitated the establishment of an ongoing management group to supersede the project team. The role of the new management group has moved away from dealing with issues surrounding administration and training, towards issues relating to:

- appropriate use of technology;
- synchronous electronic publishing;
- student evaluation;
- university wide monitoring of surveys;
- ethical use of data collection;
- monitoring and security of online data;
- possible commercial use and
- use with external clients.

## Ethics

In a university context, one of the major issues surrounding the use of web based survey tools is meeting ethics requirements for research. To avoid potential problems the management group proactively approached the chairperson of the university Ethics Committee to discuss relevant issues. Discussions surrounding the confidentiality of data, future use of data, appropriate notifications of clients/users, as well as security of data storage were conducted before the program became available in the public domain.

Features allowing the printing of surveys and exiting the program mid-survey were built into the delivery system, as well as information regarding counselling support for participants. The university Ethics Committee was also helpful in identifying and establishing standards for surveys, evaluations and questionnaires that were not to be used for research purposes but rather for the collection of everyday data for administrative purposes.

## Issues

Once "Surveyor" became available to the broader university community it was relatively easy to transfer standards from one teaching department to another. As issues surrounding usage, client groups and ethics were similar, a number of non-teaching units approached the Learning and Teaching Support Unit looking to use the program for a variety of uses. These included:

- evaluating students performance in industry placements;

- evaluating external companies involved in student placements;
- satisfaction of students with overseas campuses;
- evaluating student guide usage and
- monitoring of cross university projects.

With this diversification of use, concerns regarding visual standards and *"general ethical behaviour"* arose. Ongoing management of these types of issues will need to be considered, responsive and adaptable if they are to be effective.

If due consideration and reflection is not given to management processes then the university could be placed in the position where they are supporting a technology that has the potential to be invasive. Students and corporate partners could be placed in a situation where inappropriate data is collected and stored without their knowledge and used for purposes beyond their control. Concerns regarding the *"general ethical behaviour"* surrounding the program are exacerbated by the fact that development and publication of surveys and questionnaires using "Surveyor" is synchronous.

Supervision of undergraduate students using the program for educational purposes also becomes problematic. For example; should students studying marketing be allowed access to a program that publishes directly to the web while work is still under development? Undergraduates are not bound by the same professional standards as staff working within the university environment. Procedures, checks and balances need to be firmly established before such usage is considered.

## Student evaluation

Swinburne, via a working party of the university's Program Quality Committee, is currently undertaking a review of student subject evaluation. "Surveyor", because of its ease of use, availability and number crunching qualities is currently being considered as a suitable delivery platform.

Programs such as "Surveyor" are often seductive to bureaucrats, as web-based systems are:

- easy to administer;
- eliminate the need for, and costs of, physical distribution and
- require no manual scanning or data processing.

What must be considered however is the appropriateness of the tool. Is an online questionnaire the best way to evaluate students? Currently, paper based versions of evaluation are distributed to students in the classroom. They are completed during class time and collected by a student representative and posted to a secure box. The completion rate is high. Students are a captive audience when given class time to complete tasks. Will completion rates be as high if students need to log on to a computer system to undertake the task?

There is also the presumption with both models that surveys are the best way to evaluate academic performance. If we accept a constructivist model of organisational change management then academics need to be given more ownership of the evaluation process. This is supported by Guba, E., Linclon, Y. (1992) who tell us that the most effective evaluation data is collected in a variety of formats with anecdotal evidence being the most effective in modifying the behaviour of teachers.

## Academic and user perspectives

As part of the ongoing evaluation and management of "Surveyor"; educational developers, corporate staff, academics, PhD, Masters and honours students have provided qualitative feedback regarding attitudinal changes.

Academics report that use of the program has given them a greater insight into how electronic media can support their teaching beyond the university's learning management system (Blackboard). In one case, an academic used the program to develop a class-based activity on "Perception of Infant Temperament"

where data was collected from students randomly linked to three surveys posted in their online subject. The activity was then followed up with a series of online activities involving the "data set". Students involved in the activity indicated they would enjoy participating in more activities of this nature.

There was also a significant increase in the number of academics who reported a more positive attitude to online delivery in general after using the program. Most indicated they would be interested in establishing other project teams to look at other educational technology tools that could be used within the department. From initial interest three further projects have been identified: an online conference for post graduate students; the establishment of a data bank of 'student developed' resources for use within Blackboard subjects; and an online bank of assessment items for academic use.

PhD, Masters and honours students reported that their workload has dropped significantly and funds earmarked for hard copy distribution of surveys are now being used for other resources. Two students reported that "Surveyor" has allowed them to broaden their data catchment area from within Australia to international. Another is currently looking to develop surveys in foreign script for distribution in Vietnam and Japan.

Corporate staff noted the program provided a consistent corporate look for all surveys and allowed them to clone surveys for individual schools and departments. It also provided them with a tool to confidentially survey students at off shore campuses.

Educational developers reported an increase in academic contact. Academics were approaching them seeking information about the program and how to gain access. This observation is supported by the attendance of key personnel at the "Surveyor" Workshops held at each campus of the university. Attendance was particularly high by discipline leaders and Educational Development Coordinators (faculty based Academic D – Learning and Teaching positions).

## Conclusion

This paper set out to review the impact of a technological change initiative in a university. "Surveyor" has certainly captured the interest of academics at Swinburne initially through its alleviation of hackwork, however what may prove to be of more sustained value, is the engagement of academics in the ownership and selection of technical tools that serve a variety of their needs.

Academics ability to identify with the technology lowering workload appears to underpin the adoption process. In this case study, the potential to lower workload was strong enough to overcome the natural hesitancy of staff who had not previously used technology in their everyday professional practice.

The successful adoption of "Surveyor", using an adult learner constructivist model, has established all the criteria that Knowles (1980) would suggest underpin the process. It has:

**Set a cooperative learning climate** for academics within the Psychology Department and the broader academic community;
**Created mechanisms for mutual planning** not only for this program but also for other educational tools, as they become available;
**Arranged for a diagnosis of learner needs and interests** at academic, PhD, Master and Honours level;
**Enabled the formulation of learning objectives based on the diagnosed needs and interests** of the stakeholders;
**Designed sequential activities for achieving the objectives** through appropriate planning, implementation and professional development;
**Executed the design by selecting methods, materials, and resources** developed collaboratively by the project team and
**Evaluated the quality of the learning experience while rediagnosing needs for further learning** and ongoing management.

It has also established a normative/re-educative model (Smith & Lovat 1990) of organisational change management, as well as provide a lighthouse project for the department that develops online flexible delivery skills, which are both appropriate and shared.

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