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SOS: Supporting Teaching and Learning through a Customisable Subject Online Survey

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Abstract

One of the difficulties faced by many academics in their teaching is the evaluation of the teaching and learning process. The growing importance of this aspect of tertiary education has been picked up in recent years by Government in its push for quality assurance in the sector. If quality is most effectively ensured by those directly involved in the provision of a service, then tools, mechanisms and processes need to be provided so that this involvement can be facilitated. The need for evaluation of the success of teaching and learning has become even more critical as more and more in the tertiary education sector move towards the adoption of flexible approaches to teaching.

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SOS: Supporting Teaching and Learning through a Customisable Subject Online Survey

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Abstract

One of the difficulties faced by many academics in their teaching is the evaluation of the teaching and learning process. The growing importance of this aspect of tertiary education has been picked up in recent years by Government in its push for quality assurance in the sector. If quality is most effectively ensured by those directly involved in the provision of a service, then tools, mechanisms and processes need to be provided so that this involvement can be facilitated. The need for evaluation of the success of teaching and learning has become even more critical as more and more in the tertiary education sector move towards the adoption of flexible approaches to teaching.

At the University of Wollongong data on teaching performance is collected for academics with one main purpose in mind: to provide the academic with supporting information as to their teaching ability for the purposes of promotion. Currently this data is collected using 'prescribed Teaching Surveys'. The process is a formal, highly regulated mechanism and is administered by the Centre for Educational Development and Interactive Resources (CEDIR) on request. The promotion process requires that the academic provide not less than 4 and no more than 6 such survey reports in any application for promotion. These surveys are seen as an imposition by many rather than a tool for improving the process of teaching and learning at the university. Three major difficulties can be identified. Firstly, the prescribed question set is not always appropriate. Secondly the questions are too heavily weighted towards the academics performance as a teacher to provide useful information about the subject and its presentation which could be used to improve the quality of teaching and learning. Thirdly, this process can be seen as remote from the academic, as it is administered centrally and the academic has no input into or control over the process itself.

SOS provides a process which puts these assurance processes back into the hands of the teaching academic. SOS is a web based system which provides a simple and intuitive interface through which academics author customised surveys designed to collect information about the success or otherwise of the subjects that they provide for their students with greater emphasis on the structure, content, delivery and support rather than on the teaching performance of the lecturer. These surveys may be completed anonymously by the students via the web and the data is automatically collated and returned to the academic. The academic may also produce the surveys in hard copy, for distribution and collation

SOS fulfils two perceived needs: providing a 'non-threatening' and 'informal' mechanism by which academics can obtain useful information about the subjects they develop and teach in terms of subject based criteria rather than the 'lecturer based criteria' of the formal Teaching Surveys. This information can be used to 'test out' new approaches to teaching and learning as well as subject delivery. With the University adopting a flexible delivery approach for both on and off campus students, there is also a need to gather data from the students' point of view on the success or otherwise of this approach.

This paper provides a background to the development of SOS as a joint venture with the Multimedia Education Unit at Melbourne University in the context of the needs of the University of Wollongong and it's academics. It presents an overview of the development of the system from the exploration of possible pre-existing systems, to the development of a specification, a summary of its structure and operation, the evolution of a database of suitable questions and the trialing of the beta version. It also reports on the

outcomes of these early trials that have involved a broad cross-section of faculties and departments across the University and outlines our plans for the future development of SOS.

Background

Traditionally, data relating to the teaching of subjects at the University of Wollongong has been collected for academics with one main purpose in mind: to provide the academic with supporting information as to their teaching performance for the purposes of promotion. Currently this data is collected using 'structured pre-set Teaching Surveys'. The process is administered by the Centre for Educational Development and Interactive Resources (CEDIR) and is available upon request. In its current form it is a formal, highly regulated process. Distribution and collection of the surveys is paper based and carefully monitored so that the academic does not have access to the completed survey forms. Marking is done mechanically by staff at UNSW and the results are posted to the academic. The academic may then approach academic staff at CEDIR for analysis and advice on the outcome. These surveys are perceived as an imposition by many academics rather than a means of collecting data that may be used to improve the process of teaching and learning at the university. This perception is supported by the fact that the prescribed question set is not always appropriate to the specific circumstances. Further, the questions are too heavily weighted towards the academic's performance as a teacher to provide useful information about the subject and its presentation, which information could be used to improve the quality of teaching and learning. The cost and time spent in producing, administering, scoring and disseminating the results of these surveys has over the past few years become a major drain on resources.

In 1998, the Director of CEDIR, A/Prof Sandra Wills, secured funding to conduct research on the development of an 'informal' online survey system which could be used to provide academics with personal formative data on the success of their subjects from the student's perception, allowing them to improve teaching and learning outcomes for students without the need to resort to numerous and expensive formal Teaching Surveys. The research working party examined the methods used to conduct teaching surveys by 15 Australian universities.

In summary the findings included:
- web sites which existed were designed specifically for that University and outlined the procedures and recommendations for that institution;
- generally, these sites are nothing more than a means of communicating that information;
- in some cases, the application for evaluation questionnaires is via the web, but the actual process involves the usual preparation and distribution by the body concerned;
- none are using the web exclusively to distribute and collate the data although some have taken tentative steps towards this goal; and
- most surveys seem to consist of set questions plus optional, selected from item banks.

From this research the working party made several recommendations which later formed the basis of the specifications for the development of the Subject OnLine Survey (SOS). These included:
- the tool should be web based in terms of authoring of the surveys, distribution and completion, collation and return of data;
- the tool should comprise a simple intuitive interface which requires no knowledge of web based programming to use;
- there should be an item bank of 'standard questions' from which the academic may select as well as the ability to author individual questions;
- there should be a variety of questions types available such as Likert scale, True and False, Yes and No and opened response; and
- there needs to be a concurrent staff development program to ensure appropriate and effective use of the system.

During the research phase, the Melbourne University Multimedia Education Unit's development of a generic evaluation tool LEO or Learning Evaluation Online was identified as a possible engine which could be relatively easily adapted to our purposes. The LEO software environment is a template using the

OXYGEN (Object eXtensible analYsis and Generation of Education coNtent) software engine developed by Albert Ip. The authoring capability of the OXYGEN software engine is extremely flexible, making it very adaptable for a wide variety of potential for uses, and users.

Learning Evaluation Online (LEO) was originally developed as a survey/ evaluation tool in response to a need for an asynchronous Web-based evaluation mechanism, that could be easily modified to suit a variety of potential respondents (eg. peer, student, multimedia developers, interface designers, etc.), and courseware from various content domains. SOS was developed using the LEO engine because it already contains some purpose built features common to our specification for SOS. These included:

- deliberately designed to be as content-free as possible—the content of every survey or questionnaire relied upon the survey author;
- several different pre-defined question styles, including Likert scales, True/false items, free text responses and;
- the ability to create fully customised question.

Subject OnLine Survey (SOS)

SOS is a web based system which provides a simple and intuitive interface through which lecturers can construct and author customised surveys designed to collect information about the success or otherwise of the subjects and/or subject components that they provide for their students. SOS fulfils two perceived needs: providing a 'non-threatening' and 'informal' mechanism by which lecturers can obtain useful information about the subjects they develop and teach in terms of subject based criteria rather than the 'lecturer based criteria' of the formal Teaching Surveys; providing a means of gathering data from a student's viewpoint on the success or otherwise of the 'flexible delivery' approach being embarked upon by this University. This data could be used to 'test out' new approaches to teaching and learning as well as efficacy of subject delivery.

How the Survey Works

The overall structure of SOS is shown below in Fig 1. Academic staff have two avenues of access to the system, each with its own separate URL. The first provides for the authoring process and the second for the collection of data.
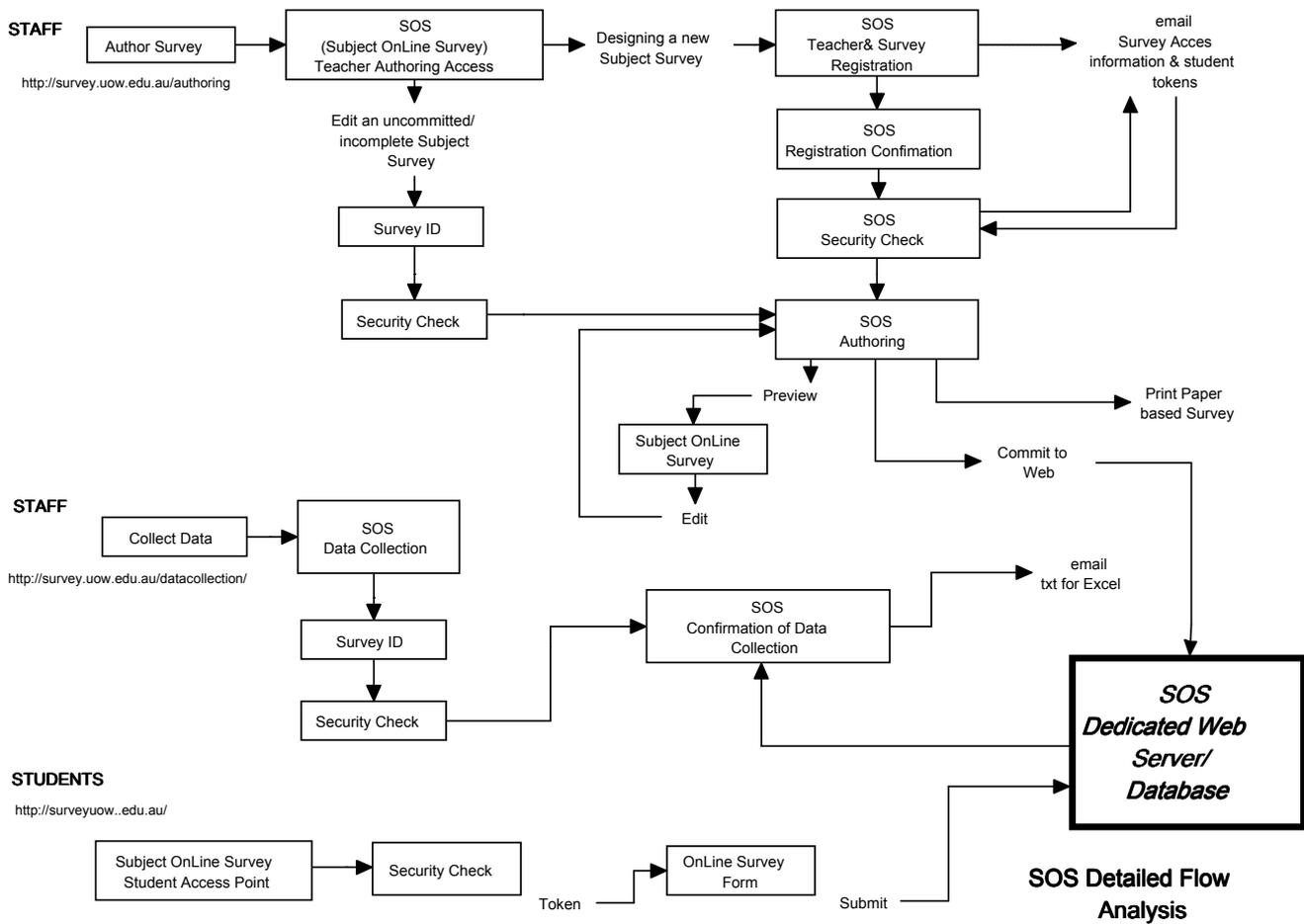
Fig: 1 SOS Structure

Students, have a separate access point, the URL of which is made available by the authoring lecturer.

There are three stages to the use of SOS for the lecturer comprising:

• Registration - confirmation, security procedures
• Authoring – editing, previewing, committing either to the print mode or online mode
• Collecting the results from the online mode

Registration
When the lecturer completes and submits registration details at the first entry point, the survey is registered and a survey number or 'ID' is assigned.

The lecturers email address, provided during the process, enables SOS via this email address to:
> automatically and confidentially confirm the registration;
> provide the lecturer with a password specific to the survey;
> provide a list of numerical tokens as an attached text file for distribution by the lecturer to students; and
> provide the academic with the student access point URL.

The numerical tokens provide the lecturer with security in that, only students with a valid numerical token are able to complete the survey. The lecturer can distributed these numerical tokens to students in such a manner that the identity of students remains anonymous, for example, they may be printed out, cut up and handed out 'at the door' as students leave the class. If the online mode for completion has been chosen, then only valid tokens are accepted by the system. If the print mode for completion has been selected, then the academic need only check off the numerical token codes listed on each response sheet against the list provide by the system to validate responses.

Authoring
An overview of the authoring process is shown in Fig 2. There is an SOS Authoring Menu screen which enables the lecturer to construct a subject survey, selecting from a large database of pre-designed questions, or by entering up to 3 custom questions of their own.

The survey questions in the database are organised under the following headings:

- Design/Content/
- Teaching/Learning
- Modes of Delivery
- Teacher/Learner Relationships
- Open Ended Questions
- Custom items

```
                    ┌──────────────────┐
                    │   REGISTRATION   │
                    └──────────────────┘
                             │
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                    ┌──────────────────┐
                    │   CONFIRMATION   │
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                    ┌──────────────────┐
                    │  SECURITY CHECK  │
                    └──────────────────┘
                             │
                             ▼
                    ┌──────────────────┐
           ┌────────┤    AUTHORING     ├────────┐
           │        └──────────────────┘        │
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 ┌──────────────────┐               ┌──────────────────┐
 │       NEW        │               │   EDIT EXISTING  │
 └──────────────────┘               └──────────────────┘
       │    ▲                             ▲    │
       │    └──────┐             ┌────────┘    │
       │           │             │             │
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          ┌──────────────────────────┐
          │       PREVIEW/EDIT       │
          └──────────────────────────┘
               │                 │
               ▼                 ▼
   ┌──────────────────┐  ┌──────────────────┐
   │  COMMIT TO WEB   │  │  PRINT HARD COPY │
   └──────────────────┘  └──────────────────┘
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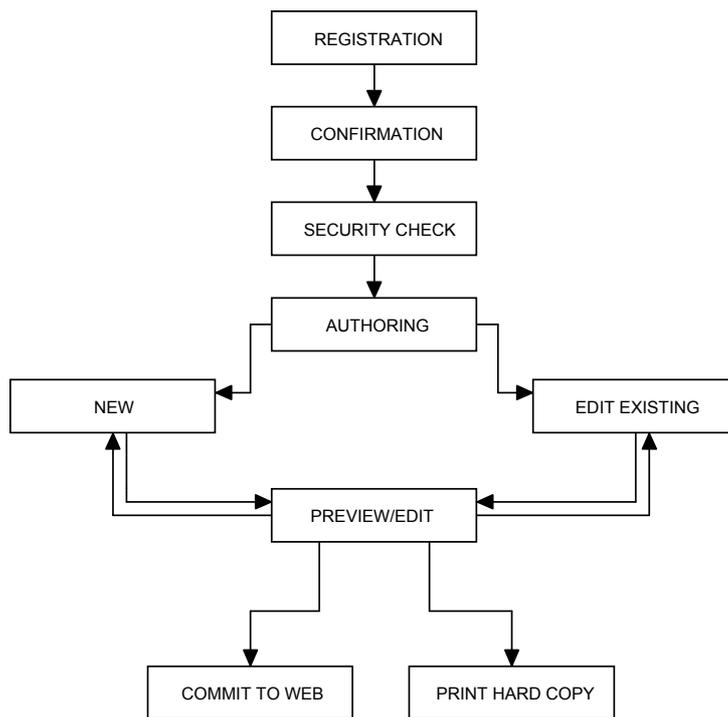
SOS Overview
University of Wollongong

Fig: 2 SOS Overview

During the authoring process the lecturer may select as many questions as required from any or each of the database categories.
The questions in each of these categories use a 7-step Likert scale response design.
The lecturer is also able to compose custom item questions for inclusion in the survey. They may choose from three response styles; Likert scale, True or False and Open written response.

When the lecturer is happy with their constructed survey, they may print copies for manual distribution and analysis or post it to the web for completion by students online. The advantage of the online approach is that the responses will be collated automatically by SOS and be available for viewing by both the lecturer and /or the students immediately.

If the online approach is chosen, SOS ensures that students can only respond to the survey once using the numeric tokens sent to the lecturer via email. This ensures that the surveys are completed anonymously by the students. It should be noted that the 'use by date' of the survey may also be set, but is by default, 100 days from the initial submission of the survey by the lecturer.
Students have access via a separate web site (see Fig 1) which is provided as a URL by the lecturer. To complete and submit the survey, they must enter the numeric token supplied to them by their lecturer, complete all questions and press the submit button.

Data Collection
The data collection entry point for lecturers is protected from miss-use by requiring the entry of the lecturers' name, the survey ID and the lecturers' own password.
The data collated by SOS is made available through two avenues. Firstly, using the data collection site mentioned above, the lecturer may obtain the cumulative responses over the life of the survey and copy

them into a spreadsheet program of their choice for graphical representation or other analysis. If however the lecturer has not accessed the data by the expiry date of the survey, the data collated at that time is automatically sent via email and the survey de-activated.

Developing a Question database

During the research phase of this project our direction with respect to content categories, types and styles of questions to be included in the initial databases clarified. The Teaching Survey database previously in use within the university contained many hundreds of questions which were either directly suited or with modification could be used successfully. As ownership of these questions rests with the university, use and/or modification did not present an issue, allowing rapid completing and testing of a prototype. Many additional questions were added to take account of the University's decision to adopt WebCT as the standard web delivery environment. Additionally, some questions specific to the implementation of a university wide Tertiary Literacies Policy were developed and included in the question database.

Evaluation:

At the time of writing, the SOS system has been available for use by lecturers for a period of about six weeks. In this initial trial period, the system has been made available to three faculties within the university, Engineering, Commerce and Public Health.

To date most of the surveys produced have been 'one off' tests by lecturers of the procedures and process. Use is being made by a lecturer in Public Health to obtain data on the students perceived differences of the effectiveness of on vs off campus delivery of a subject in the area of Public Health and Nutrition. Within the Engineering faculty, some lecturers are using the system to develop surveys for use in Engineering/Science common first years subjects which have to date been note well received. Early indications would suggest that it is a structural problem rather than one based in the teaching process. The subject has been traditionally delivered on campus, but is being offered concurrently to a group of off campus students this semester. The actual number of surveys authored so far is small, but we expect that this will increase as the exposure to and training in the use of the system is extended to other faculties and the semester progresses.

The system is designed to collect data to assist in evaluation. Some of the information collected and stored centrally includes:

- the name and subject code for each survey;
- the question categories and numbers used in each survey;
- the number of students entered; and
- the number of students who responded.

Much of the evaluative data collected so far is in the form of comments and suggestions by users of the beta version. Several faculties including Engineering, Commerce and Health and Behavioural Sciences were given some initial information and basic training in using the system and were asked to either use it to construct some 'mock' trial surveys and/or to use SOS to produce surveys for use by students early in semester 1, 1999.

A summary of the positive comments received about the SOS include:

- the simplicity of the authoring interface;
- the ease and speed of deployment of the survey;
- the ease of customisation for a variety of different student groups and needs;
- the quick turn around possible in comparison to a paper based survey; and
- the ease with which a 'non-computer' person can produce a useable product.

Lecturers who have use the system to date identified the following possible weaknesses of the current version:

- the 'set' 7 point Likert scale, possibility of others being available;
- no mechanism for students to see aggregated results;
- no choice of background graphics at present; and
- the need to manually modify the data collected before exporting to a spreadsheet.

Future Directions

There are a number of areas in which the current version will be improved. Using the feedback obtained so far a number of areas and functions have been identified as areas which need addressing. Currently we are working in the following areas:

- addition of more questions to the current databases;
- addition of other question categories to improve the applicability to a wider campus community;
- incorporation of further questions, with modification, from the extensive pre-existing "Teaching Survey" validated question databases
- the collection of normative data on each question in the databases;
- exporting the survey data into Excel spreadsheet with built-in frequency counts, bar chart generation and
  cross-tabulation for preliminary data analysis (via macros);
- a program of staff training in developing an understanding of the application of the survey results to their teaching: and
- the collection of information from individual faculties with regard to their special needs which may be incorporated in the next version