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Instructional Uses of Web-Based Survey Software

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Abstract

Recent technological advances have led to changes in how instruction is delivered. Such technology can create opportunities to enhance instruction and make instructors more efficient in performing instructional tasks, especially if the technology is easy to use and requires no training. One such technology, web-based survey software, is extremely accessible for anyone with basic computer skills. Web-based survey software can be used for a variety of instructional purposes to streamline instructor tasks, as well as enhance instruction and communication with students.

Following a brief overview of the technology, we discuss how *Web Forms* from *nTreePoint* can be used to conduct instructional surveys, collect course feedback, conduct peer evaluations of group work, collect completed assignments, schedule meeting times among multiple people, and aid in pedagogical research. We also discuss our experiences with these tasks within traditional on-campus courses and how they were enhanced or expedited by the use of web-based survey software.

Introduction

Communicating with students is one of the critical activities in which instructors engage. Indeed, effective communication has been identified as a discriminating factor between effective and ineffective teachers (Young & Shaw, 1999). Communication with students may involve a variety of activities to include collection of data and important information. Examples of such collection activities are gathering feedback on aspects of the course, collecting student work, responding to student emails, collecting data about peers in team projects, and gathering information to help schedule meetings.

Modern technologies that enable students to interact with their instructors in new ways have the potential to enhance and complement traditional methods of instruction (Alavi, Yoo & Vogel, 1997; Serva & Fuller, 2004). While new technologies have allowed new ways to interact with students (e.g. email, virtual classrooms, chat rooms, discussion threads etc.), to effectively communicate on all of these fronts is very time consuming (McInnis, 2002; Schwartzman & Tuttle, 2002). When this time allotted to communication is coupled with the time necessary to collect and evaluate submitted assignments and other administrative tasks associated with a course, it takes away from the limited number of hours an instructor has to devote to direct engagement in student learning and other scholarly activities.

With the emergence of new information technologies, universities are in a time of transition, and in response to market forces and globalization, are encouraging faculty to be more efficient and productive (McInnis, 2002). In addition to using technology to augment everyday tasks, some faculty are being evaluated on their effective use of technology for enhancing learning (McInnis, 2002). Within this environment, the use of technology within a traditional course has the potential to aid instructors by improving their effectiveness and efficiency and to increase the opportunities and time available for interactions with students (McInnis, 2002; Schwartzman & Tuttle, 2002). It is possible that such improvements will lead to increases in learning (Schwartzman & Tuttle, 2002).

However, to simply say that instructors should use technology for these reasons is easier to promote than to accomplish. For some instructors, the software or hardware necessary to

integrate the desired technology is not readily available to them, or is not feasible to obtain because of costs. Still others who might have appropriate access to these computer tools may lack the skills necessary to fully utilize them, and lack of training opportunities or pressures associated with research and other teaching activities may prevent them from adequately learning these skills (Garrison & Anderson, 2000; McInnis, 2002). For this reason, it is desirable to have a technology that can do the more difficult or involved tasks and is easy for the average instructor to use and implement.

Purpose and Organization of the study

The purpose of this paper is to present how one such technology, web-based survey software, can help improve the effectiveness and efficiency of multiple communications activities between instructor and student. After an overview of the technology, we will specifically discuss how it can aid the instructor in administering instructional surveys, gathering course feedback, conducting peer evaluations, collecting completed assignments, scheduling meetings with multiple people, and conducting pedagogical research. For each of these possible uses, we will discuss common non-computerized practices, how a web-based implementation can potentially make instructor more efficient or effective, and how to implement each task in a web-based environment. We also share our experiences and present anecdotal evidence of how we have improved our efficiency and effectiveness when communicating with our students.

Overview of Web-Based Survey Software

There are many web-based or online survey software packages or services available to individual users or organizations. An internet search yielded many dozens of such alternatives (see Appendix A), including;

> Survey Monkey, Zoomerang, nTreePoint *Web Forms*, SurveyPro, SurveyGold, Hosted Survey, Survey Solutions, Key Survey, Survey System, Surveylogix, finalsite Survey, Infopoll, Statpac, SurveyView, and SurveyCrafter, to name a few.

Some of the products include hosting services for clients to post surveys on the company's server, while others consist only of the software to develop surveys. Costs vary widely from free

basic versions (for example, SurveyMonkey, Zoomerang, SurveySolutions Express, Infopoll) to rather expensive products with advanced features. Many of the products are reasonably priced and offer free trial versions and academic discounts. While much of this software is geared toward corporate usage, a review of the product websites of some of the packages (see Appendix A) indicates that many are used by colleges and universities across the United States.

Generally speaking, commercially available web-based survey software allows non-technical users to easily manage the creation of single or possibly multi-page forms and the resulting data; operations only require entering text or selecting options with a mouse click. Much of this software employs WYSIWYG ("What You See Is What You Get") editors, so users are not required to know HTML (Hyper Text Markup Language) coding. When users develop forms, they can specify security settings, such as an option that grants access to only specific users or groups, and options for the activation or availability of forms. Questions of various standard types can be added to forms, and the data gathered by the forms can either be viewed on-screen or exported to a file for analysis.

This software is very suitable for instructional purposes for several reasons. First, the features discussed above make such software attractive to instructors who are non-technical users. Also, students are generally supportive of using the Internet for other tasks in a traditional course, for example, retrieving course documents and schedules (Lundgren & Nantz, 2003). Lastly, once such software is employed for one purpose, there are many additional ways in which it might be used to enhance instruction, and so the non-technical user can reap many benefits with minimal training.

In the following discussion, we specifically refer to the *nTreePoint Web Forms* software (Unidigm, 2005) because it is the software with which we have the most experience due to its availability at our institution. Like much of the other software of this genre, *Web Forms* requires only basic web-browsing skills and is very accessible to non-technical users. While this is the primary vehicle though which the instructional activities were implemented, the procedures and discussion can, in general, be applied to any commercially available web survey software. In addition, electronic course management software such as Blackboard has built in capabilities to

accomplish many of these instructional tasks; when appropriate, notable differences between Blackboard and web-survey software will be discussed.

Instructional Surveys

One obvious instructional use of web-based survey software is for instructional surveys that instructors may use in several ways to enhance the classroom experience. An instructor might wish to administer surveys to the class to gather data that he or she can use to gauge the background, level, and interest of the enrolled students. An instructor may also wish to gather data for students to use, for example, when performing statistical analyses a statistics course. An instructor might also wish to assign projects, for example in a marketing research or research methods class, in which students must collect and analyze data, and a web-survey could easily be implemented for that purpose.

Traditional Methods. Although many instructors might not have cause for implementing such surveys, those who do have likely used the traditional and time consuming process of administering paper and pencil surveys from which data are entered into a spreadsheet or into statistical software for analysis. Another method involves the use of scannable general-purpose answer sheets on which students fill in "bubbles" to indicate their response; however, this approach has a major drawback in that non-categorical responses cannot be collected. A combination of methods can also be used in which categorical responses are scanned and other data are entered by hand. While this approach is more efficient than manual entry, it prohibits anonymity in cases when it is necessary to match categorical and non-categorical responses to the same individual. Furthermore, the answer sheets must still be processed by the institution, causing delays in obtaining results. Using these labor-intensive methods, producing a data set ready for analysis potentially could require several days or longer.

Advantages of Web-based Methods. An alternative to these paper-based surveys is web-based surveys, which offer a fast, easy, inexpensive, and flexible way to collect data (Chou, 1997; Kastman & Gurak, 1999). When used, data from web-based surveys can be available for analysis within minutes of obtaining the final response. While setting up a web-based survey

does take some time, the survey is then available for multiple uses or can be adapted for similar future uses.

Implementing a Web-based Survey. If an instructor wishes to develop a web-based instructional survey consisting of categorical questions, he/she would need to designate a form, provide instructions, and then design each question by specifying both a question or caption and the possible responses. In *Web Forms*, for example, one would provide instructions by adding a question type with no responses that *Web Forms* calls a "heading." After naming the heading (for example, "Instructions"), formatting such as font color and size can be selected from a toolbar similar to one what sees in Microsoft Word or Excel.

Once the instructions are added to the form, the user would designate the format of the question. For example, respondents can indicate a single response to a question by choosing one option from a drop-down list or by selecting from a list in which each response is associated with a circle (radio button format). Options such as whether a response to the question is required and text formatting can also be specified. Text for the selections of a drop-down list or radio button question is entered and a default value is chosen, if desired.

In *Web Forms* and some other web survey software, if the number of questions is large and multiple pages are desired, one can insert a page break, and questions can then be moved up or down, or from page to page as desired. Rules can also be set up so that respondents are directed to different questions or pages of a form, depending on how they answer certain other questions. Forms can be copied or moved, which allows for the efficient development of several similar surveys.

Experiences with Web-based Instructional Surveys. Our experience with multiple instructional surveys in our courses has been very positive. For example, using *Web Forms*, we implemented one survey on the web that is given each term to introductory business statistics students in order to explore their backgrounds and attitudes. The data was also fed back to students to perform various statistical analyses throughout the semester. The web survey took about one hour to design, but because the survey is given each term, this time investment only occurred once. The

instructor specified that, upon submission, students could view summary information showing the number and percentage of responses falling into each category, and depending on the question type, bar graphs as well. The data was exported to Microsoft Excel a matter of minutes, and then was formatted and imported to statistical software for distribution to students within about 15 minutes. This turnaround time compares very favorably to the paper and pencil administrations we had used previously, in which it normally took five to seven days to process the bubble answer sheets and obtain the resulting data.

It is worth noting that course management software such as Blackboard can be used to design and administer web surveys. Like other web-survey software, Blackboard can be used to collect multiple-choice, true-false and open-ended responses. Unfortunately, Blackboard has one major limitation in that only multiple-choice and true-false responses can be exported to a data file for analysis.

Course Feedback

Another task that many instructors wish to undertake is to collect mid-term feedback in which students can apprise the instructor of issues or problems they are having with the class, raise questions or ask for clarifications about the material, or give general feedback, concerns, or comments, both positive and negative (Gross-Davis, 1993). Feedback might be solicited about the course in general or with respect to a particular activity or topic. For instance, if an instructor tries a new hands-on activity, he or she might want to gather input from students about the effectiveness, benefits and drawbacks of the activity, as well as whether students thought it was fun and interesting. This type of feedback allows the instructor to assess his or her performance, make adjustments to instructional practices, or generally gauge how the class is progressing.

Traditional Methods. Most instructors who solicit such feedback likely do it in one of two ways, either informally or with a midterm course evaluation. Informal feedback, generally asked verbally in class or with students in one-on-one situations, can inform the instructor of how the class is going as a whole or how a particular topic or activity is being received. One issue, however, is that students might not feel comfortable speaking in class or may be afraid to say something negative in face-to-face situations. It is probably quite rare that instructors have

"suggestion/comment boxes" outside their offices to solicit anonymous comments, but this is potentially a way to get honest feedback.

In our experiences, midterm evaluations are generally anonymous and consist of questions that can help the instructor gauge student responses to the course, and perhaps change approaches to certain activities or topics if the need arises. These evaluations, if done on paper, require a possibly large time investment to read through responses and perhaps enter numerical responses to "rating" questions into a spreadsheet for analysis. If such information is not entered, the instructor will likely use a qualitative review of the ratings to determine an overall feel for what is going well and the course, and what areas may need attention. Common sense suggests, however, that paper-based evaluations are potentially limited; if qualitative feedback is solicited, students may feel that they may be identified by their handwriting and thus may not give totally honest responses.

Web-based Implementation. As an alternative to these informal or paper-based methods, web-based survey software can be used to gather feedback from students regarding the course. Because all student comments are read, regardless of the medium, the web-based approach does not actually save much time compared to paper evaluations; however, electronic course feedback does have several advantages over in-person feedback, including that queries can be made when the question or concern is fresh in the student's mind (Schwartzman & Tuttle, 2002), and it is more efficient and allows for more unsolicited feedback (McInnis, 2002). One way to collect course feedback is with an electronic "suggestion box" in which students anonymously offer comments about the course. To develop such an application in web-survey software, one would set up a form, add a heading with instructions that might include the promise of anonymity, and set up questions with text boxes, either single or multiple lines, that allow students to type in open-ended responses. The questions would have captions (e.g. "What would you like me to know?") and the number of lines in the text box can be specified.

Experiences with Web-based Course Feedback. We implemented electronic suggestion boxes in multiple classes. Instructions were provided that encouraged students to make comments as specific as possible, using as an example the statement to the effect that: "I do not like the

homework" is not feedback that the instructor can use to improve the course; however, "I do not like the homework because it takes too long" or "it is not challenging" is. Students were given the option to leave their name, and several places for open-ended responses were allowed with prompts such as:

- I am having problems with ...
- I am concerned about …
- I really like .... / I really don't like ....
- I would recommend improving the course by ...
- I would really like the instructor to know ....

A link to the suggestion box was put on each course's main webpage, so that students could access it at any time. The instructor was then able to address concerns either individually (if the student's name was provided) or to the whole class.

We also used an electronic course feedback form to gather information from students to gauge how well a hands-on group problem-solving activity in a management science course was received. In the same course, midterm and final evaluations were implemented with web-based forms. While the final course evaluations were not the official instruments used by the university, they allowed the instructor to do two things that the official evaluations do not. First, they allowed open-ended answers to questions about what students liked or disliked about the course as well as comments regarding the effectiveness of the instructor. Second, unlike the standard evaluations, they allowed students to rate on a numerical scale certain unique aspects of this particular course, which was taught almost exclusively with experiential activities.

In our experiences, students seemed receptive to the idea of the suggestion boxes. In an introductory statistics course in which 90 students were enrolled in two sections, a total of 41 comments were posted to the suggestion box over the course of the semester. Many chose to leave their names, allowing the instructor to follow up personally, if appropriate. At other times, the instructor used comments to discover and address more widespread issues and student concerns. In an upper-level business course, only one student of 13 provided feedback; however,

the small class size and students' familiarity with the instructor may have contributed to increased personal communication and therefore less need for the electronic form.

Drawbacks of Electronic Feedback. While electronic feedback provides an easy way for students to communicate with their instructor, some students may be deterred from providing comments if they do not feel assured of anonymity. It is possible with web-survey software to track the user who submits each response; while we did not conduct any such tracking and assured students that responses were anonymous unless they chose to leave their name, there is no guarantee that students will believe these assurances, and no way for them to ensure that this promise was not violated. The rapport and trust between the students and the instructor will likely have a large impact on how much of an issue this becomes for any given course. We suggest that if an absolute guarantee of anonymity is vital to the collection of honest feedback, a web-survey is probably not the most effective method.

Peer Evaluations

Because of the importance of working in teams in the business world (Rubin & Morreale, 1996; Wilhelm, 1999), many instructors assign group or team projects in their classes. However, group assignments inevitably lead to problems with inequitable division of labor within the group, and instructors often struggle with how to manage this problem and how to determine individual grades when presented with a product submitted by the entire group (Levi & Cadiz, 1998). While some faculty are hesitant to use peer evaluations because of fears that students will rate each other based on friendships or other irrelevant factors, others have successfully used peer evaluations to ensure equal participation and to determine individual grades (Levi & Cadiz, 1998; Longmore, Dunn & Jarobe, 1996). Approaches to peer evaluations are varied, but they generally have qualitative and quantitative elements.

Traditional Methods. If an instructor undertakes a paper-based quantitative approach to these evaluations, a huge time commitment is necessary to enter all of the data and compute average peer ratings for each student on various scales regarding, for example, meeting attendance, quality of work, attitude, etc. Furthermore, if group sizes vary, then the instructor may be unable to copy formulas in Excel, and the process cannot be easily automated. While qualitative

approaches are often all that is feasible for some instructors to undertake, they could prove to be somewhat risky and difficult to defend should a grade be challenged. Furthermore, they do not allow mid-term evaluations in which feedback reports are provided to the student. These reports can provide valuable information to students and allow them to modify their behavior prior to receiving a final grade.

Advantages of Web-based Methods. If peer evaluations are done in a web-based form, the instructor can reap the benefits of a quantitative approach with minimal labor requirements. Paper evaluations can easily be converted to a web-based form that asks the rater to choose his/her own name from a drop-down list consisting of a class roster and the name of student who is being evaluated from a second identical list. Then, the rater provides his/her evaluation of the peer (for example on a scale from 1 to 10) on various behavioral or general scales using a radio button or drop-down list. In addition, open-ended questions in the form of multiple-line text boxes can be included to gather comments from the rater on why the score was assigned. This way, the instructor knows why the student was given certain rating and can determine the severity or validity of any complaints lodged by the student's peers.

Once all peer evaluations have been completed, the data can be quickly exported to a spreadsheet and sorted by the person being rated. In this way, each student's performance and contribution to the team is in one location to make it easier for the instructor to evaluate. Some instructors might wish to calculate average ratings for each student, and compare each individual's average to his or her group average in order to determine the relative contribution to the group. If desired, the information can be imported into a table in a database, and individual reports can be generated and fed back to students so that they are aware of how they are being evaluated by their peers. Database queries and reports can also be used to summarize ratings for each student so that an individual grade can be assigned based on the group grade.

Experiences with Web-based Peer Evaluations. Using *Web Forms*, we implemented in multiple upper-level business courses a web-based peer evaluation system using Behaviorally Anchored Rating Scales (Smith & Kindall, 1963). After the instructor verified that all of the students had completed the evaluations by crosschecking the names of respondents with the class roster, the

data was exported to a Microsoft Excel *Comma Separated Value* (csv) file with one mouse click. The data were imported into a Microsoft Access table and only minutes were required to create, with the Access Report Wizard, individual midterm feedback reports to distribute to each student. For the final term evaluations, queries were written that computed the average scores of the individual students, the averages of the groups, and then the ratio of each individual mean to his or her group mean. Group scores were fed into a separate Access table, and individual scores (individual ratio times group score) for the team assignment were output by another query. These scores were pasted into Excel grade books. Once the queries were written, the entire process from the exporting of data to the individual assignment grades took only about ten minutes.

In our experiences, the time saved by implementing the evaluations electronically was extraordinary. Before the electronic implementation, the manual data entry requirements and calculations of average scores and ratios in Excel required approximately 3-6 hours at the end of the term, whereas production of midterm feedback reports required approximately 10-15 hours.

Submitting Assignments

Instructors in a variety of disciplines collect assignments from students in the form of computer files of some form, including reports in word processing software, financial reports in Excel, statistical analyses in SPSS or SAS, presentations in PowerPoint, databases, computer programs, and graphics files. At times, it is undesirable or unnecessary to have such assignments submitted on paper. An electronic version of a spreadsheet or database may be necessary for the instructor to accurately evaluate the work, or program code may need to be run through a compiler. Additionally, the increased prevalence of electronic plagiarism has prompted more faculty to examine student reports and term papers for originality (McInnis, 2002), and electronic word processing files can now be processed by anti-plagiarism software such as Turnitin (iParadigms, 2005). Collecting such data on diskettes is burdensome and can be problematic if a submitted diskette is unreadable, defective or infected with a virus. Having assignments emailed to the instructor's account may be feasible, but may be an issue for some if the files take up too much space in the email account. Both of these options are troublesome in moderate to large-sized classes just by the sheer number of files to manage.

An alternative to these methods is to create a web-based form to collect the files. In *Web Forms,* for example, these files are saved on the web server as part of a student's "response" and can be accessed by the instructor when convenient without the hassle of a large number of diskettes or emails. The instructor can either view each file without saving or can save the file to a specified location.

Web-based Implementation. To implement such an assignment collection form in *Web Forms*, one must utilize the question type called "Document" that shows a single-line text box followed by a "Browse" button. To attach a file, a respondent clicks on the button and navigates to where the file to be attached is located. Once the form is submitted, the file is attached to the response. The user can specify a caption or instructions for such a question, for example, "Click the browse button to navigate to the location where your report is saved. When you have located the file, click on the SUBMIT button." Fields for students to enter their names should also be used, and can be either text boxes for them to type in or drop-down lists pre-loaded with a class roster.

Experiences with Web-based Collection of Assignments. Our experience with such an implementation includes an introductory statistics course in which approximately 90 students were enrolled in two sections. These students, working alone or in groups of two or three, submitted a total of about 65 projects for each of two assigned projects. A link was posted on the course homepage and was also given in class. Three fields were shown for the students to list up to three names of those submitting the project. Before locating the file with the "Browse" button, students were instructed to name their document in a specific format: "*lastname1_lastname2_lastname3_project1.doc*." This allowed the instructor to save the files to a hard drive without having to rename files to correctly identify the students. These files were then uploaded into the Turnitin anti-plagiarism software (iParadigms, 2005) to ensure originality. Students did not report any problems or complaints with the submission method, which allowed them to submit their projects at any time via the Internet.

This web-survey method of collecting files compared favorably to email and diskette methods we had implemented previously. Each individual submission to a web form does need to be

accessed or saved separately, but since submissions are shown in a list format on a web page, it only took about approximately 10 minutes to save the 65 or so files. When email was used in previous terms, the time required to save files was approximately the same; however, we found it to be more convenient to access all of the files at once instead of managing a large number of emails, possibly at different times. When submissions were collected on diskettes in previous terms, it took about three times longer to save each file because of the disk transfer that had to be done each time. This time savings, although modest, comes with the convenience of not needing to handle 65 diskettes, which may contain viruses or be defective.

Comparison with Blackboard.   Blackboard and other course management software do have the functionality to collect electronic files, and can be directly connected with an anti-plagiarism software such as Turnitin, resulting in a seamless interface for the submission of papers or reports. However, for other types of files, a web-survey does have one advantage over, for example, Blackboard's Digital Dropbox. In the Digital Dropbox, the instructor can only view the files in one large list. If students are required to submit several files or assignments, the instructor may have difficulty parsing out which submissions are intended for the assignment he or she is currently reviewing, a problem that may be compounded if students do not indicate what they have submitted. On the other hand, in a web-survey, different forms can be developed for each assignment. Students can then select the form for the assignment they are submitting, thus ensuring that the instructor views all submissions for a single assignment together.

Scheduling Meeting Times

Sometimes an instructor wishes to schedule times outside of class for class-related activities; for example, prior to an exam the instructor may offer a study or review session. Some instructors may wish to set a time that is convenient for most or all students, but if the class is moderate to large in size, finding such a time can be difficult and time consuming if done verbally during class time. If an instructor attempts to gather data on meeting times via paper or email, he or she is likely to only review the information visually to select an appropriate time, but this approach may not take into account how likely each of the respondents is to attend at that time. Most instructors would probably not take the time to enter such data into a spreadsheet for analysis.

Web-based Implementation. To save class time and collect the data more efficiently, a web form can be set up for students to access. A grid can be developed that lists all possible times that the instructor is willing to offer the session. For each prospective time period, students can be asked to specify if they can or cannot attend, with other possible responses such as "possibly can attend," "probably can attend" or "prefer not to." Then, web-based survey software such as *Web Forms* can be used to view the summarized data, and a good time can easily be established with little or no time commitment beyond the development of the question, which can be reused at a later date with minimal editing.

To gather information on meeting times using web survey software, the user would need to establish a form and instructions as described in the above sections, and then add a question grid in the form of a radio-button group or grid that consists of multiple "questions" all having the same responses. The list of responses (e.g. Yes, No, Possibly, Probably, Prefer Not To) is entered once, and each question (e.g. time period) is entered and named individually, and can be updated, deleted, or moved up or down in the order if desired.

Experiences with Web-based Scheduling. Using *Web Forms*, we implemented such a process on the web to schedule study sessions for an introductory business statistics class in which approximately 90 students were enrolled in two sections. Students were directed to the link from the homepage and were asked to fill out the survey if they might be interested in attending the session. Both classes used the same form, and it took no class time. In about one minute, the instructor was able to find a time that worked for the students who were most likely to attend by simply accessing the summarized data, which contained graphical displays to easily spot the most preferred time periods.

This approach was much easier than previous attempts to verbally establish acceptable times among students enrolled in two classes. This process involved finding some acceptable (or unacceptable) times for the earlier class and negotiating those times with the later class, which took about 10-15 minutes of class time and did not account for how likely students were to attend.

Pedagogical Research

In addition to all of the ways that web-based survey software can be used to implement, augment, or facilitate instructional activities, it can also be used to make pedagogical research easier. Often an instructor wishes to evaluate how well a new teaching method or activity works, or to determine how much the exercise benefited the students (Kastman and Gurak, 1999). An instructor may wish to distribute a survey that asks students to report their perceptions of the activities, if they understood the concepts, what they felt they did or did not learn, what they liked or disliked, how much they were motivated, etc. Then, responses can be matched with student data such as measures of performance and attendance, demographics, or learning styles and then analyzed statistically.

Traditional Methods. Like other types of surveys given to students, these surveys have been traditionally done on paper and pencil, and suffer from all of the same drawbacks as other instructional surveys. Using web survey software, a survey can be developed that asks students to answer both categorical and open-ended questions, and that data can easily be exported to Excel where student data, such as measures of performance, are often housed in grade books. The time savings in receiving the data is similar to that discussed for other instructional surveys.

Web-based Implementation. To implement a survey for pedagogical research, one would most likely be interested in using both categorical and open-ended questions that have been discussed previously. Categorical questions might include statements in which students rate their agreement about the effectiveness of a given activity (1 = Strongly Disagree to 5 = Strongly Agree), whereas open-ended questions might include "How would you suggest improving this activity?"

Other types of questions that may be useful in such research would be those in which a date is entered and those that allow multiple selections. In pedagogical research, one might wish to collect data on students' ages, and therefore might wish to ask their birth date. In *Web Forms*, this is done by selecting the "Date/Time" question, entering a caption, and simply indicating if the time is also to be included. In *Web Forms*, questions in which multiple selections are allowed can be done with checkboxes or with a multiple selection drop-down list. An example

of such a question might be "Which of the following activities did you feel was effective in helping you learn the concepts? Check all that apply." In *Web Forms*, this question is developed much like other categorical questions in which only one response is allowed: the question is named, the caption is entered and formatted, and the responses are specified.

Experiences with Web-based Pedagogical Research. After appropriate clearance from our university's Institutional Review Board, we implemented such a survey for a management science course in which several activities were used, including lectures, individual problem-solving sessions, group problem-solving sessions, and a semester-long team project. Students answered questions about how effective, interesting, and motivating they found each of the activities to be. Their responses were exported to Excel, matched to their performance and their learning styles, and then the data was exported to SPSS and analyzed statistically. We were able to determine that certain students appeared to learn better with lectures and individual assignments, while others preferred the more real-world group assignments. That knowledge was then used to balance course activities for students enrolled in the course in a later term.

Limitations of Web-based Survey Software

There are several benefits to using *Web Forms* and other web-based survey software, including increased efficiency and accuracy of data collection, and the enhanced ability to communicate with students through course feedback. However, there are some limitations to such software, and *Web Forms* in particular. For example, users may have limited control over the look and feel of their survey or may be required to use formatting established within the university's domain. In addition, one cannot develop a survey while offline, and cannot directly interface with course management software. Lastly, users may still need to employ other software such as Access and Excel to created customized reports and summarize data. Despite these shortcomings, web-based survey software offers many advantages that make it a valuable resource for instructors.

Conclusions

There are many instructional uses of web-based survey software that instructors can use to facilitate and enhance the educational experiences in their classes. Using web-based survey

software allows instructors who are not familiar with HTML coding or how to link web-based forms to databases to take advantage of these ideas.

One of the main advantages of using web survey software is that it saves time and effort compared to paper-based data collection methods, especially for moderate to large classes, and the instructor can then concentrate more effort into student interactions and course development. By using a web form, instructors may also be able to collect data that might have been impractical to attempt to gather on paper. Another advantage of web-based data collection forms is that they allow more effective communication between the instructor and the students, whether it takes the form of an electronic suggestion box or evaluation of course activities. A summary of the advantages of using *Web Forms* rather than traditional methods for various instructional tasks is shown overleaf in Table 1.

Communication with students will continue to be of paramount importance in education. Using web-based survey software offers the opportunity to improve instructor communication efficiency and effectiveness.

Table 1: Estimated Implementation Times and Key Advantages of Using *Web Forms*

Instructional Task	Estimated Implementation Times		Key Advantages of Using a Web Form
	Traditional	Electronic	
Obtaining Data from Instructional Surveys, Pedagogical Research	5-7 days	15 minutes	Time saved; no data entry errors; ability to gather non-categorical data.
Course Feedback, Suggestion Box		time similar	Accessible to students; allows for instantaneous and unsolicited feedback
Peer Evaluations: Midterm Feedback Reports	10-15 hours	10 minutes	Time saved; ability to provide feedback in time for behavior modification
Peer Evaluations: Final Grade Calculations	3-6 hours	10 minutes	Time saved; no calculational errors in grades
Submitting Assignments		time similar	Enhanced ability to manage files; more convenient than email or diskettes
Scheduling Meetings	10-15 minutes	1 minute	Class time saved; ability to take into account likelihood of attending

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APPENDIX A: Reference Information For Selected Web-Based Survey Software

Web-Based Survey Software	Url (last accessed August 3, 2005)
Apian SurveyPro	http://www.apian.com/
finalsiteSurvey	http://www.finalsite.com/page.cfm?p=348
Hosted Survey	http://www.hostedsurvey.com
Infopoll	http://www.infopoll.com/live/surveys.dll/web
KeySurvey	http://www.keysurvey.com/
nTreePoint Web Forms by Unidigm	http://www.unidigm.com/index.asp?sec=1662
Perseus SurveySolutions	http://www.perseus.com/survey/software/index.html
StatPac	http://www.statpac.com
SurveyCrafter	http://www.surveycrafter.com/interim2/
SurveyGold by Golden Hills Software	http://www.surveygold.com/
Surveylogix by Sparklit	http://www.surveylogix.com/
Survey Monkey	http://www.surveymonkey.com
Survey Said Survey Software	http://www.surveysaid.com
Survey System by Creative Research Systems	http://www.surveysystem.com
SurveyView	http://www.surveyview.com
Zoomerang	http://info.zoomerang.com/