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ABSTRACT

This paper describes the methodology used in a research study involving the collection of data through a Web-based survey, focusing on the advantages and limitations of the methodology. The Teacher motivation and Job Satisfaction Survey was administered to K-12 teachers. Many of the difficulties occurred during the planning phase, as opposed to the actual data collection. It was necessary to identify and locate teachers and let them know about the Web site. Four primary limitations were identified during the course of the survey: (1) limitations involving the use of listservs and obtaining e-mail addresses; (2) limitations of the technology itself; (3) lack of a population list; and (4) the questionable representativeness of the sample data. Advantages of the methodology included the number of responses received, efficiency, the ease of (or lack of) data entry, and the cost effectiveness of the approach. (SLD)

LESSONS LEARNED FROM THE ADMINISTRATION OF A WEB-BASED SURVEY...

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Running head: LESSONS FROM THE USE OF WEB-BASED SURVEY ...

Abstract

This paper discusses the advantages and disadvantages of administering a survey questionnaire via the Internet (i.e., utilizing both Web-based and e-mail platforms). Highlighted are problems associated with the use of listservs, e-mail addresses, formats for downloading and compiling data, and the nonrandom nature of the resulting sample.

Lessons Learned from the Administration of a Web-Based Survey

Introduction

Web surveys are an extremely promising method of data collection (Schillewaert, Langerak, & Duhamel, 1998). Witte, Amoroso, and Howard (2000) indicated that Internet research is "an area marked by great potential but also little experience." Advantages of Web surveys include a high rate of response, short time frame for the collection of responses, and time and cost savings. The World Wide Web certainly addresses the need for a less expensive and more expedient method of data collection (Schillewaert, Langerak, & Duhamel, 1998). Furthermore, Schillewaert, Langerak, & Duhamel (1998) have identified several additional benefits of using the Web for data collection. These benefits include a faster response, easy transfer of data into a database for analysis, cost savings, convenience for the respondent, and the possibility of wider geographic coverage.

As with any method of data collection, there also exist disadvantages. These include the potentially nonrandom nature of the sample, unavailability of population lists, computer access to the survey, and various technology-related issues. Often, the results of Web-based surveys differ when compared to written questionnaires and telephone surveys (Taylor, 2000), although Saphore (1999) found that there were no

differences in the pattern of responses between a Web survey and an identical pencil-paper form of the same survey. Furthermore, he concluded that there were no differences in the psychometric qualities of the two forms of the survey. Similar to the relative benefits, Schillewaert, Langerak, & Duhamel (1998) have identified several limitations of using the Web for data collection. These limitations include the inability to clearly define the population, lack of technological familiarity on the part of respondents, the potential for being able to identify respondents, and browser incompatibility problems.

One of the most substantial concerns about Web surveys is the nonrandom nature of the respondent group (Witte, Amoroso, and Howard, 2000). However, the issue of nonrandomness is not unique to Web-based survey research and will likely decline as the use of this methodology permeates further into the society of researchers (Witte, Amoroso, and Howard, 2000). Taylor (2000) has suggested that we remember that online data collection is not based on probability sampling, but rather on "volunteer" or "convenience" sampling. Nonetheless, Young and Ross (2000) state that the use of the Internet to collect data may be one of the most profound developments in survey research.

Even though their use is on the rise, not much is known about the relative effectiveness of Web-based surveys, especially in the field of social science research. More research is needed regarding their efficiency, as well as their limitations. This paper attempts to document some of the advantages and limitations of data collection

via the use of Web-based surveys, specifically from the perspective of one such survey research study which utilized this methodology.

Purpose

This paper chronicles the methodology utilized in a research study involving the collection of data via a Web-based survey, focusing on the advantages and limitations of the methodology.

Method

The primary information for this paper was collected through the administration of a Web-based survey. The study involved the administration of the Teacher Motivation and Job Satisfaction Survey to K-12 teachers (see Figure 1; the survey can also be viewed online at *http://personal.bgsu.edu/~mertler/TMJS-Survey/TMJS.html*).

Insert Figure 1 about here

Many of the difficulties encountered by the researcher occurred during the planning phase of the study, as opposed to the actual data collection phase. Therefore, it is important to outline the specific steps taken in conducting this study. Initially, teachers had to be notified of and directed to the Web site containing the survey. Since individual email addresses were not available and the desire was to obtain a large

sample, it was decided to attempt posting messages to listservs, or electronic discussion groups, which would direct individual teachers to the survey. Over several days, searches for educational listservs were conducted on the Web. Initially, 43 listservs were identified. Only 13 of these permitted the posting of the cover message (see Figure 2) to the entire listserv directing teachers to the survey. The 13 listservs who participated in the study are listed in Figure 3.

Insert Figure 2 about here

Insert Figure 3 about here

The survey was "housed" on a Web site called "Digisurveys.com" (*http://www.digisurveys.com*). Upon completing the survey, teachers simply clicked the "**Submit**" button at the bottom of the page. They were transported to a "Thank you" page and their responses were submitted electronically in CGI script to a predetermined email address, where they were received as a text file. Each individual file was then filtered through a software program called Eform into a data stream and formatted into columns, which were then converted into ASCII format. The webmaster of Digisurveys.com the provided the researcher with the ASCII file on disk, who then converted it directly in an SPSS data file.

Limitations of Web-Based Surveys

Several limitations of this specific methodology arose during the process of conducting this particular study. Four primary limitations are listed and discussed below.

- *Listservs and Email Addresses*

The first major limitation involved the use of listservs, which was necessitated due to the lack of individual teacher email addresses. First, all listservs are subscription-based—that is, one cannot post a message to a listserv without first becoming a member of the list. This is typically not a problem; one simply sends an email message to the administrator of the listserv requesting membership. Within a day or two, confirmation of membership was received from all 43 listservs.

In an effort to save time, the first message posted by the researcher was sent to all 43 listservs simultaneously using a university email account (in other words, all 43 email addresses were entered in the "To:" line of the email message, separated by commas). This created serious problems. Within minutes, return messages were received from several of the listservs, each containing a message similar to the following:

> *"We have detected multiple simultaneous email messages sent from this address. We assume that you are trying to "spam" our listserv membership. You have been banned from posting any messages to this listserv for a period of two months."*

Obviously, this created some serious problems for the study at hand. Due to this banning, the initial cover message would not be forwarded to the individual

listservs. The researcher was forced to create a Web-based email account for the sole purpose of conducting the study. The cover message was then successfully sent out to all listservs individually.

Everything seemed to be proceeding alright until a new wave of return email messages began arriving. The researcher then discovered that the administrators of several of the listservs had to review the content of the message prior to it being posted to everyone. After several days, messages were received from a subset of those stating that this was the type of request that they would not post to their respective listservs due to the fact that the memberships did not appreciate being inundated with this type of request. A beneficial aspect of joining the listservs is that one knows when your message has been posted since you also receive it as a member of the list. Some of the listservs neither posted the message nor contacted the researcher; they just simply chose not to post it. After all of these unanticipated roadblocks, 13 of the initial 43 listservs posted the message to their entire membership list.

- *Limitations of Technology*

When this study was originally planned, it was the intent of the researcher to create a university account in order to electronically receive all of the teachers' responses. Upon making that formal request, it was discovered that Information Technology Services at the institution no longer provided CGI accounts due to the fact that students and others had learned how to "hack" into those accounts. Therefore, the researcher had to look elsewhere. There are several sites on the

Web—such as "zoomerang.com" and "survey.com"—that allow you to customize your own survey and house it on their servers. Fortunately for the researcher, one such site—"Digisurveys.com"—is maintained by a former graduate student. All services—uploading the survey, writing the code for the relay of responses, and conversion into an ASCII file—were provided for a nominal fee.

This type of service can make the retrieval of data quite easy. However, one must make sure, at the outset, to carefully specify the format in which the data is to be received.

- *Lack of a Population List*

Since the researcher desired to obtain a very large sample, and since individual email addresses were not available, an alternative had to be found. The idea of using listservs was a good one, from both logistical and practical viewpoints. However, one can not be sure of the population that is being reached with the request to complete the survey posted on a listserv. For example, the population of interest for the study at hand was K-12 teachers. Some teachers were automatically excluded from the *opportunity* to complete the survey due to the fact that they were not members of the identified listserv, that the listserv administrator refused to allow the cover message to be posted, that they did not have an email address (which is required for membership on a listserv), or that they did not have access to or comfort with a computer, among others. This fact has obvious consequences in relation to the representativeness of the resultant sample.

- *Representativeness of the Sample Data*

Since no population list was available, it follows that it was not possible to select a *random*, representative sample. At best, this methodology—as used in this study—resulted in merely a sample of convenience. Obviously, one needs to be cautious when using Web surveys, especially when respondents are obtained via listservs, about generalizing the results to a larger target population.

For purposes of this study, the researcher was confident in many of the results since they mirrored results of a smaller pilot study. The smaller study utilized the same survey items as well as a more traditional pencil-paper format.

Advantages of Web-Based Surveys

Advantages of this methodology, which will be discussed thoroughly in the paper, include:

- *Number of Responses Received*

Although it was impossible to calculate a rate of return for the survey (without knowing the actual number in the population), the number of responses received exceeded the expectations of the researcher. In the fourteen days that the survey was "active" on the Web site, a total of 969 responses were received. Even if individual addresses had been available, one must question whether that size of return could have been achieved using more traditional survey methods.

- *Efficiency of Data Collection*

Difficulties typically associated with mail surveys encountered at both ends of the process are never realized when using this methodology. One does not have to factor into the process the amount of time it will take for the surveys to reach the intended respondent, nor the amount of time it will take for the survey to arrive back to the researcher. Additionally, there are no paper copies to keep track of or store following receipt of the completed surveys. Finally, the endless hours spent stuffing envelopes is not an issue with which one must deal when using Web-based surveys.

- *Non-Issue of Data Entry*

Probably the most meaningful time-saving feature of the Web survey is the fact that individual responses do not have to be manually entered into a data file. First, this reduces the chance of human error with respect to data entry. Second, manual entry of data is often a very time-consuming portion of the survey research process. However, the use of Web-based surveys all but eliminates this step in the process. In essence, each respondent "enters" his or her own responses into the data file simply by clicking on "**Submit**." Finally, even if computer scannable response forms are used, the Web survey process is still more efficient.

- *Monetary Savings*

Finally, the use of Web-based surveys can result in substantial monetary savings for the researcher. If this particular study had been conducted using conventional

surveys methods, and if it had resulted in nearly 1,000 responses, the cost would have been substantial. Assuming that the cost for each survey would have been about $1 per person (this includes copying, postage, and envelopes) and a conservative return rate of 40%, the total cost of preparing, sending, and receiving the surveys would have been approximately $4,000. In contrast, this particular study cost the researcher $120. Additional savings could be realized if persons were employed for purposes of data entry and/or statistical analyses.

Discussion

Even though their use is on the rise, not that much is known about the relative effectiveness of Web-based surveys. More research and related information—such as that provided in this paper—is desperately needed to assist researchers in determining the efficiency of Web surveys, as well as their limitations. There are certainly research design issues of a theoretical nature which must be examined, such as the issue of representative sampling and the resulting generalizability of the findings. These are issues that the research community must resolve because the use of Web-based surveys is increasing in popularity and use. In addition, there also exists a variety of practically-oriented issues with which researchers should be familiar prior to engaging in their own Web-based surveys. The purpose of this paper was to share with survey researchers many of the unanticipated barriers encountered in this particular study, as well as many of the distinct advantages associated with the use of this methodology. Hopefully, this paper has shed some light on several of those important issues.

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Young, S. & Ross, C. (2000, June). Web questionnaires: A glimpse of survey research in the future. *Parks and Recreation*, 30-42.

Figure 1.

The *Teacher Motivation and Job Satisfaction* Web-Based Survey

Welcome...and thank you for taking a few minutes to complete...

The Teacher Motivation and Job Satisfaction Survey

DIRECTIONS: For each item, please indicate your response by clicking on the appropriate button. When you have finished, click on the ***SUBMIT*** button at the bottom of the page to send your responses.

QUESTION NO.	QUESTION	VERY DISSATISFIED	SOMEWHAT DISSATISFIED	SOMEWHAT SATISFIED	VERY SATISFIED
1.	What is your overall level of satisfaction with your job as a teacher?	1 ◎	2 ◎	3 ◎	4 ◎

http://personal.bgsu.edu/~mertler/TMJS-Survey/TMJS.html

QUESTION NO.	QUESTION	YES	NO
2.	If you had the opportunity to start over in a new career, would you choose to become a teacher?	1	2

QUESTION NO.	QUESTION	YES	NO
3.	Generally speaking, do you believe that the teachers with whom you work are motivated?	1	2

QUESTION NO.	QUESTION	1-2	3-4	5-6	7-8	9-10	More than 10
4.	How many teachers that you know or work with would you classify as unmotivated?	1	2	3	4	5	6

5. On the following 6-point scale, indicate the degree to which each of the following serve as a motivating factor or an unmotivating factor for teachers.

QUESTION NO.	QUESTION	HIGHLY UNMOTIVATING	.....	.....	.....	.....	HIGHLY MOTIVATING
5a.	recognition (e.g., receiving praise from administrators, parents, students, or others)	1	2	3	4	5	6
5b.	potential for professional growth (e.g., possibility of improving one's own professional skills)	1	2	3	4	5	6
5c.	supervision by superiors (e.g., overall competence of superiors)	1	2	3	4	5	6
5d.	interpersonal relationships with colleagues (e.g., interaction with other teachers)	1	2	3	4	5	6
5e.	salary (e.g., financial compensation)	1	2	3	4	5	6
5f.	job security (e.g., tenure)	1	2	3	4	5	6
5g.	status (e.g., professional status of teaching)	1	2	3	4	5	6
5h.	interpersonal relationships with administrators (e.g., interaction with administrators)	1	2	3	4	5	6
5i.	sense of achievement (e.g., experiencing success)	1	2	3	4	5	6
5j.	working conditions (e.g., building conditions, amount of work, facilities available)	1	2	3	4	5	6
5k.	district policies (e.g., overall effects of the district as an organization)	1	2	3	4	5	6
5l.	teacher evaluation (e.g., appraisal of classroom instruction by evaluator)	1	2	3	4	5	6

5m.	responsibility (e.g., autonomy, authority and responsibility for own work)	1	2	3	4	5	6
5n.	potential for advancement (e.g., possibility of assuming different positions in the profession)	1	2	3	4	5	6
5o.	work itself (e.g., aspects associated with the tasks of teaching)	1	2	3	4	5	6
5p.	factors in personal life (e.g., effects of teaching on one's personal life)	1	2	3	4	5	6
5q.	interpersonal relationships with students (e.g., interaction with students)	1	2	3	4	5	6
5r.	sense of accountability (e.g., being held directly responsible for student learning)	1	2	3	4	5	6

6. On the following 6-point scale, indicate the degree to which each of the following items serve as a motivating factor or an unmotivating factor for teachers.

QUESTION NO.	QUESTION	HIGHLY UNMOTIVATING	.....	.....	.....	.....	HIGHLY MOTIVATING
6a.	a one-time monetary award (supplemental to the step increase)	1	2	3	4	5	6
6b.	being selected as "Teacher of the Year" in the district	1	2	3	4	5	6
6c.	an instructional workshop offered by the district for a fee	1	2	3	4	5	6
6d.	having students thank a teacher for aiding in the understanding of a difficult concept	1	2	3	4	5	6
6e.	an instructional workshop offered and paid for by the district	1	2	3	4	5	6
6f.	being given the opportunity to participate in teacher projects (e.g., research, curriculum development)	1	2	3	4	5	6
6g.	early retirement/contract buy-out	1	2	3	4	5	6
6h.	observing vast improvement in the achievement levels of one's students since the beginning of the year	1	2	3	4	5	6
6i.	being awarded a plaque by students	1	2	3	4	5	6
6j.	being permitted to purchase additional equipment and supplies for the classroom	1	2	3	4	5	6

QUESTION NO.	QUESTION	FEMALE	MALE
7.	What is your gender?	1	2

QUESTION NO.	QUESTION	AFRICAN AMERICAN	ASIAN AMERICAN	CAUCASIAN	HISPANIC AMERICAN	OTHER
8.	What is your ethnicity?	1 ◎	2 ◎	3 ◎	4 ◎	5 ◎

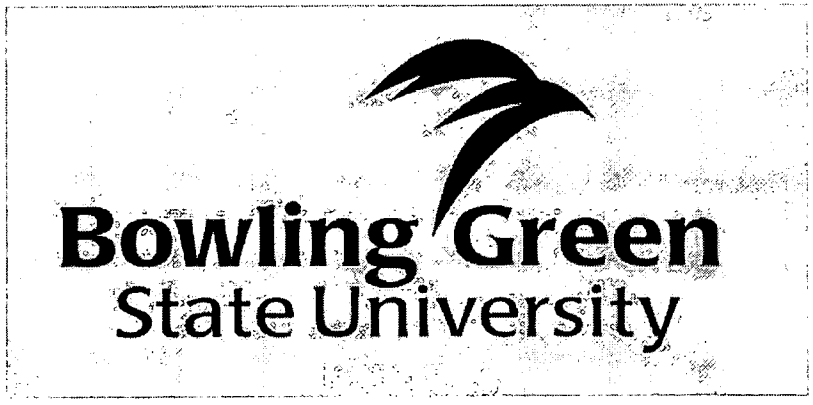
QUESTION NO.	QUESTION	21-25 YEARS	26-30 YEARS	31-35 YEARS	36-40 YEARS	41-45 YEARS	46-50 YEARS	51-55 YEARS	56 YEARS OR OLDER
9.	What is your age?	1 ◎	2 ◎	3 ◎	4 ◎	5 ◎	6 ◎	7 ◎	8 ◎

QUESTION NO.	QUESTION	1-5 YEARS	6-10 YEARS	11-15 YEARS	16-20 YEARS	21-25 YEARS	26-30 YEARS	31-35 YEARS	36 YEARS OR MORE
10.	Including the current school year, how many years of teaching experience do you have?	1 ◎	2 ◎	3 ◎	4 ◎	5 ◎	6 ◎	7 ◎	8 ◎

QUESTION NO.	QUESTION	URBAN	SUBURBAN	RURAL
11.	Which best describes your current school setting?	1 ◎	2 ◎	3 ◎

QUESTION NO.	QUESTION	ELEMENTARY SCHOOL	MIDDLE/JUNIOR HIGH SCHOOL	HIGH SCHOOL
12.	Which best describes your current school level?	1 ◎	2 ◎	3 ◎

Submit Survey



Thank you for participating in this research study.

If you have questions or comments about this survey, please feel free to contact me...

Craig A. Mertler, Ph.D.
Bowling Green State University
Bowling Green, Ohio 43403
mertler@bgnet.bgsu.edu

Figure 2. Cover Message for *The Teacher Motivation and Job Satisfaction Survey*

Hello, Everyone! I am currently conducting an online survey research study titled "Teacher Motivation and Job Satisfaction of Public and Private School Teachers", the purpose of which is examine the current levels of teacher motivation and job satisfaction for teachers.

The purpose of this email message is to ask for your participation in the study. The survey will only take about 4-6 minutes to complete. When you have completed the survey, simply click on the SUBMIT button to send your responses to me. Please make sure you submit your responses only once!

Please be assured that your responses will be anonymous and confidential. There will be no way for me to determine the origin of your responses. You will not be contacted for any further information. Additionally, no individual information will be shared; only aggregate results will be reported. Finally, due to the web-based nature of the survey, there exists a minimal chance that your responses could be intercepted while being transmitted.

Your participation in this study is voluntary. By completing and submitting the survey, you are giving your consent to participate. If you do not wish to participate, simply disregard this message. If you have any questions regarding this survey study, I may be contacted at mertler@bgnet.bgsu.edu.

I would like very much for you to participate in the study by completing the brief survey which can be found at:

digisurveys.com/Mertler

Please pass this message on to other teachers you know or direct them to the website. In advance, thank you very much for your participation in this research endeavor and best of luck in the remainder of your school year!

Best Regards,

Craig A. Mertler, Ph.D.

Figure 3. List of Participating Listservs

1. Special Education Discussion List *SPECED-L@LISTSERV.UGA.EDU*
2. AERA-K Division K: Teaching and Teacher Education *AERA-K@asu.edu*
3. AERA-C Division C: Learning and Instruction *AERA-C@asu.edu*
4. Kentucky K-12 Arts and Humanities Teachers Discussion List *KYARTS@LSV.UKY.EDU*
5. KY Business Education Teachers *KYBUSED@LSV.UKY.EDU*
6. Kentucky Geography Teachers *KYGEOG@LSV.UKY.EDU*
7. Elementary Education *elemed@acpub.duke.edu*
8. K-12 Educators Interested in Educational Administration *K12ADMIN@LISTSERV.SYR.EDU*
9. Foreign Language Teaching Forum *FLTEACH@LISTSERV.ACSU.BUFFALO.EDU*
10. Math Educators *mathsed-l@deakin.edu.au*
11. English Teachers' List Secondary School level *TEACH-ENG-L@NETPALS.LSOFT.COM*
12. For parents, teachers, and others concerned about education *ABLETECH-L@LISTSERV.OKSTATE.EDU*
13. Beginning Teachers Network List *BTN@QED.QLD.GOV.AU*

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