

USING E-TOOLS FOR SCHOOL HEALTH PROMOTION

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Keywords: School health, Drug use monitoring, Evaluation.

Abstract: Our purpose is to outline the potential use of E-Tools for data collection and monitoring for school health purposes. We discuss evidence on the feasibility of such E-Tools in school settings across the United States, and will discuss issues of usability, confidentiality, and costs. Such E-tools can be extended to many school health efforts, particularly areas of mental health, eating disorders and obesity. Drawing on our experience developing such web-based assessments, we will also lay out design considerations for such E-tools that are focused on drug prevention.

1 INTRODUCTION

The primary context for monitoring and preventing adolescent drug use in the United States has been through schools and other local educational agencies (Ringwalt et al., 2002). Schools in the US are required to provide drug prevention education, and adopt drug-monitoring tools. It is often difficult, however, for relatively small community and school-based programs to sustain meaningful drug evaluation systems. Problems include lack of staff enthusiasm, insufficient funding, staffing and expertise (Mantell et. al., 1997; Sedivy, 2000). Teachers are expected to take on responsibilities other than teaching even at a time when there are increasing pressures on them to raise the academic achievement levels of their students, and collection and monitoring of data on substance use or other health concerns are perceived as consuming valuable time (Hallfors et al., 2000). E-tools that provide online data collection and analysis—such as web-based surveys—provide promising opportunities for drug abuse monitoring. Despite the growing popularity of computer-assisted surveys, researchers and practitioners working in the field of drug prevention have generally been slow to adopt this technology for data collection purposes mainly due to a lack of awareness and/or availability of such tools, as well as with the practical issues related to such technologies. In this paper, we will provide a brief overview of emerging trends in computer and web-based data collection methods in public health research that can fulfill these needs, and the

feasibility of applying such methods in schools and community settings. Drawing from our own experience in developing web-based assessments for behavioral health, we will also lay out design suggestions for online E-tools that are specifically geared towards drug use monitoring and treatment. Although our experience is largely US-based, our paper has implications for other Western countries as well.

2 FEASIBILITY OF WEB-BASED ASSESSMENTS IN SCHOOLS

The increase in computer facilities in U.S. schools makes it practically and financially feasible to consider web-based computer-administered querying for future alcohol, tobacco or drug surveys. Over the past decade, access to computers and the Internet has become almost universal in U.S. elementary schools. Nearly 100% of public schools had access to the Internet in 2005 with 97% of them using broadband connections (Wells and Lewis, 2006). The percentage of instructional rooms with access to the Internet was 94 percent and the ratio of students to instructional computers with online access was 3.8 to 1. There were no differences in access by minority enrollment, school size, rural/urban setting or socioeconomic status (Wells and Lewis, 2006). Computer-assisted surveys have already been used in a limited form in several recent national surveys of youth sexual behaviour and substance use including the National Survey of Adolescent Males,

National Household Survey on Drug Abuse, and the National Survey of Child and Adolescent Well-Being. More recently, substance abuse researchers have been using Web-based surveys for collecting data from elementary (McCabe et al., 2005; Wang et al., 2005), secondary (e.g. Beebe et al., 1997; Boyd et al., 2004, 2007; McCabe et al., 2004) and postsecondary student populations (e.g. Eisenberg et al., 2007; Kypri & Gallagher, 2003; McCabe et al., 2007a, 2007b; Miller et al., 2002; Pealer & Weiler, 2003). In a recent study, web-based surveys were found to be an effective tool for collecting data from Hispanic high school students located in remote, rural areas (Cooper et al., 2006). It has been argued that audio enhanced web-based surveys might be a format that is more comprehensible to junior-high and vocational high school students who might have lower literacy skills than senior-high school students (McCabe et al., 2004). Moreover, there is overwhelming evidence that students prefer web-based surveys to paper and pencil surveys, and perceive more response anonymity (e.g. Case et al., 2004; Hallfors et al., 2000; McCabe et al., 2002, 2004). The images associated with computer administration are aligned more closely with television images than those of the written word, a preference often observed among adolescent populations thereby increasing respondent motivation for completing surveys (Beebe et al., 1997). Web-based survey administration also seems acceptable to school staff (Hallfors et al., 2000).

It is clear that web-based E-tools for school health research has tremendous potential. As part of a project funded by the National Institute of Drug Abuse (NIDA), the authors conducted focus groups and telephone interviews with practitioners, educators, teachers and district administrators from across the U.S., to assess the feasibility of online CASI administration in schools. Based on the interviews and focus group discussions, we have outlined some preliminary design considerations for any online data collection and monitoring tool that can be developed for measuring drug prevalence in schools and for evaluating school-based drug prevention efforts. The most optimal design for such a tool would be one that allows for customized survey development; web-based administration; and downloadable data that eliminates the identity of clients. In other words, any online data collection system must be comprehensive and focus on all three aspects of evaluation-- survey development, survey administration and data analysis—in order to fulfill the evaluation needs of schools and communities across the United States.

3 USING WEB-BASED ASSESSMENTS IN SCHOOLS

To monitor and prevent drug abuse, schools in the United States often rely on local self-report surveys (McCabe et al., 2004; Hallfors & Iritani, 2002b). These self-report surveys are typically constructed from commonly used outcome measures available in the public domain. Currently, there are several published instruments available for public use in numerous websites maintained by the United States National Institutes for Health. As a first step, any online assessment tool must include an Instrument Developer that will allow practitioners to pick outcomes measures and construct a survey of their choice. Such outcome measures can be pre-programmed and stored in a “bank” of high quality, commonly used questions and scales on a variety of substance abuse and violence related topics. Practitioners can then select the measures they are interested in and create an online survey literally within minutes by a simple selection process (such as checkboxes).

The focus group discussions and telephone interviews suggested that the most commonly used drug prevalence measures were ones that have undergone rigorous study into its psychometric properties and that were most likely to be mandated or approved by federal, and state funding agencies. The most commonly used measures for drug assessment purposes included the following:

- Core risk and protective measures compiled by the National Institute on Drug Abuse (www.Nida.nih.gov). These core measures are drawn from various national surveys such as the Student Survey of Risk and Protective Factors that assesses students' attitudes, perceptions, and behaviour regarding drug use and violence, the Monitoring the Future Survey, and the National Survey of Drug Use and Health . Most of these measures are in the public domain.

- State-specific school climate and youth risk behaviour surveys such as the Oregon Healthy Teen survey, which are mandated by the Oregon Department of Education, or the Kentucky Incentive for Prevention Survey. Most of these state surveys are built from the National Youth Risk Behaviour Survey (High School) which includes sections on youth resiliency measures, school safety and connectedness.

Any instrument developer that eases survey develop-

development will need to have several *programming safeguards* in place to ensure that a novice user can successfully create a scientifically valid evaluation instrument. For example, if a user selects a question from within a skip pattern or scale measure, the entire block of questions will be added to the survey. Because these questions are pre-programmed, users cannot alter these questions in any way thereby retaining their psychometrics properties.

Such an Instrument Developer online interface can be developed by using a combination of HTML and JavaScript with a custom-written CGI (common gateway interface) program developed in Perl to bridge the server-based question database with the interface. Once the question selections have been finalized by the user, the interface will send the information from the HTML form to a database using a CGI program written in the Perl scripting language. Based on the specific user selections, the Instrument Developer then automatically generates an online survey that forms the basis of the CASI interface.

A concern expressed by the focus groups and interviewees related to survey confidentiality and privacy. The concerns related to data storage and security, as well as the easy visibility of survey responses on closely spaced monitor screens. A number of solutions were discussed. Participants suggested that respondent privacy could be enhanced by using monitor visors (that can range from \$20-\$40 per piece) or computer privacy screens. Participants were also asked about allowing students to take their surveys from multiple access points, particularly from their homes or other private locations. The reaction was decidedly mixed in both groups. Some felt that this would promote flexibility and greater survey participation, while others felt there would be more scope for misuse as it teachers would be unable to monitor the respondents. Recent studies do indicate that web-administration in an “on your own setting” could lead to incomplete data (Denniston et. al. 2010).

4 HELPING SCHOOLS DEVELOP ONLINE ASSESSMENTS

Once a survey is created, students can self-administer the questionnaire either in their computer labs or from home. The data gathered will be transmitted online and securely stored on the host server. For users who prefer to conduct data analysis using their own software, the interface should include a function that downloads a copy of the raw

data that can then be imported into standard statistical packages such as SPSS, SAS, Stata, Minitab for offline analysis. It is imperative that the downloaded data be made available *without subject identifiers* in order to maintain confidentiality.

Data collected through such an online system would reside on a secondary web server ensuring maximum confidentiality and anonymity. At the same time, the security of the data is of paramount importance. Comprehensive security procedures will need to be drafted for accessing the data; the programming and files associated with the Instrument Developer and ACASI will need to be installed in secure sections of the server and not available for viewing or download.

5 CONCLUSIONS

E-tools facilitating online data collection and analysis can significantly enhance school health research and practice. Such tools allow school staff to save time and resources by using the computer for a number of key evaluation tasks—especially those that are burdensome, time-consuming and tedious. And once developed, an online data collection system would emerge as a more affordable option compared to evaluation using traditional data collection and monitoring methods.

ACKNOWLEDGEMENTS

National Institute on Drug Abuse.

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