

Moving from the Lab to the Internet: Getting Started
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There are many advantages to collecting data over the Internet, rather than in the research lab. First, Internet-based data collection is less expensive and time-consuming than collecting data in the research lab. There are no costs for photocopying or mailing the forms. There is no time spent on administering testing sessions or on entering the data. By eliminating data entry, this also eliminates data entry errors, resulting in higher quality data. Second, Internet-based data collection often results in larger sample sizes. Because participants can complete the study at any time in any location, and because Internet-based studies can be advertised over the entire world, large sample sizes often result. This produces studies with high power, and the ability to do separate analyses for different subgroups. Third, Internet-based studies have the ability to collect data over wide geographical areas or in distant locations. For these three reasons, on-line experiments can be conducted by people who do not have access to a Subject Pool, do not have lab space, do not have research assistants, and who do not have money for postage (Barchard, Crossman, & Kelso, 2005).

In addition to these practical advantages, there are some methodological advantages as well. By eliminating personal contact between the researcher and participants, we can minimize or eliminate experimenter effects and demand characteristics (Reips, 2000). Second, participants are able to complete studies in familiar environments, increasing external validity (Reips, 2000). Third, because Internet-based studies use computers, they allow the collection of time-related data, such as reaction time, and the participant need not even realize that this data is being collected. Fourth, unlike mailed surveys, researchers can examine drop-outs in on-line studies (Reips, 2000). Fifth, samples obtained by advertising studies over the Internet are often more diverse and more representative of Americans in general than samples obtained from the local Subject Pool. And finally, if the study is designed properly, it is possible to have complete anonymity in Internet-based research, allowing the study of sensitive topics.

For all of these reasons, many people would like to do on-line research. However, most people do not know how to get started. In this paper, we describe the basic resources and skills needed to get started with online data collection, and the additional resources and skills needed for an advanced online data collection lab.

Basic Lab

If you are interested in moving from data collection in the lab to data collection online, there are different programs and skills you will need. On the most basic level, you will need a computer with an Internet connection, space on a server, an html editor, and a form processor.

Computer with an Internet Connection

Most on-line research involves putting questionnaires and tests on webpages, which participants complete over the Internet. Therefore, researchers will need a computer so that they can design their webpages, and they will need an Internet connection so they can transfer their webpages to a server. The Internet connection can be provided through the university, someone's workplace, or even a dial-up modem. Most people already have a computer with an Internet connection, and so this just leaves space on a server, an html editor, and a form processor.

Space on a server

A server is a computer that is always connected to the Internet. When a participant wants to complete an on-line study, they will access the files on the server. To conduct Internet-based research, researchers need to put their files onto a server.

Most universities provide faculty access to free server space. Students may also have free access to server space. Contact your university's computer help desk for information on how to get access to this space, and how to upload your files to it. If your university does not offer server space, you have several other options. You can create a free account through companies like Yahoo or Tripod. These accounts give you a limited amount of server space, but any website you create will be filled with pop up ads and banner advertisements. Another option is to pay a monthly or yearly fee. Companies like Yahoo and Tripod also offer paid space, without advertisements.

Html Editor

Next, researchers will need a method of creating webpages. Webpages are written in a language called html: Hyper-Text Markup Language. Therefore, researchers need an html editor in order to create webpages. There are two types of html editors. The first is a basic html editor. A basic html editor allows the researcher to type html code directly into the webpage. Using an html editor requires knowledge of html itself. Usually, a basic html editor will not provide any method of previewing the webpage, to see what it will look like once it is displayed on the Internet. Almost everyone already has the most basic html editor: WordPad or NotePad. Just open a WordPad or NotePad file, type the html code, and save using an ".htm" or ".html" extension. Programs that were specifically created to be html editors can be much easier to use than WordPad, however, because they provide assistance in creating the code and in checking that the html code was written properly. One high-quality free html editor 1st Page 2000 (EvrSoft, 2000).

The second type of html editor is called a WYSIWYG html editor. WYSIWYG stands for "What You See Is What You Get." A WYSIWYG is much better suited to beginning web designers, because it acts like a standard word processor. The researcher simply types the information they want participants to see, and the WYSIWYG creates the necessary html code to make that happen. The researcher does not need to know html in order to create a webpage with a WYSIWYG. Several different WYSIWYG's exist, and many faculty members and students will find that they already have access to one of them. These include Macromedia Dreamweaver (Macromedia, 2004) and Microsoft Frontpage (Microsoft, 2003b). The tutorials included with these programs make them simple to learn and user friendly. A free 30-day trial version of Dreamweaver is available from the Macromedia website, and 30 days may be sufficient for many researchers who are designing their first on-line study.

Once the researcher has created the necessary webpages for their study, they upload them to the server. From there, participants can access the study directly, at any time and from any location.

Form Processor

When participants complete the on-line study, the data needs to be stored somewhere. The easiest method of storing the data is to have it sent to the researchers' email address. This is very easy to set up in the html editor. However, if a researcher is collecting a lot of data, they will want to create a computer program for formatting the data and putting it into a database. This is covered under Advanced Lab, below.

Advanced Lab

Once a researcher has mastered the basics of on-line data collection, they will soon want to add advanced features to their studies. Some of the advanced features that they may want to add are a specialized form processor, timed presentation of stimuli, and giving feedback to participants. The advanced online data collection lab should have knowledge of html, a programming language, a database program, and good web design.

Knowledge of html

When doing basic online data collection, it is not necessary to know html. The researcher can use a WYSIWYG program to create the html code for them. However, most WYSIWYG programs also allow the researcher to examine and change the html code itself. Understanding html can assist in trouble-shooting, and provide the researcher with more direct control over the layout and function of the website. In addition, knowledge of html is necessary before incorporating other advanced features into one's webpages, such as other programming languages.

Knowledge of a Programming Language

Html was design to control the layout and formatting of text on a webpage. There are many things it can do, but also many things it cannot do. If you want to create a specialized form processor, time the presentation of stimuli, record how long it takes participants to respond to each question, or calculate total scores for each participant and give them feedback, then you will need to learn a programming language that was designed for the Internet. There are several such languages. Three of the most commonly used Internet programming languages are PHP, ASP, and Javascript. Different languages are better suited to different purposes, and so the researcher should talk with a few web programmers about the different languages before deciding which one to use.

When the researcher writes a computer program for the Internet, this computer program is put into a webpage, and uploaded to the server just like other webpages. However, in order for this program to run, the server needs to understand that specific computer language. As well, for security purposes, the computer program webpages may need to be stored in a different folder than the rest of the website. Therefore, the researcher should check with the computer support staff at their university before deciding which language to use.

Knowledge of a Database Program

Once the study has been completed by the participant, and has been processed by the form processor, the data is put into a database program. Therefore, it is important that the researcher knows how to set up the database when designing a study, and how to access data from the database once the study is complete. Microsoft Access (Microsoft, 2003a) is a ready-made database application that requires little to no programming skills. Many researchers already have Access (because it often comes bundled with other Microsoft software), and may already be familiar with this program. A much more powerful tool is MySQL (MySQL AB, 2005), an open-source database management system which allows users to store, search, sort, and retrieve data. Although MySQL does not have the same well-known user interface as Microsoft Access, it is still relatively easy to learn and use. Because MySQL is open-source, it is also free, and it can be installed on virtually any server (Welling & Thomson, 2001).

Knowledge of Good Web Design

Finally, a basic grasp of good web design principles can be extremely useful. Some web page layouts are better than others, allowing users to navigate with ease and efficiency. A researcher who understands these principles can create webpages that display similarly in different browsers and on different monitors, and that reduce participant confusion. They can also attract more users to the study website and keep them in the site longer, so that participants complete the entire study. One good source of information on good web design is User Centered Web Development by Lazar (2001).

Who Can Learn All That?

You might be thinking at this point that this is a lot of information to learn. However, it is not necessary that one person has all this knowledge. There may be support staff in the University who can help you with some of these areas. More commonly, there will be a division of labor within or between research labs. One person might become an expert with a WYSIWYG program, and another person might learn how to program, and a third person might become an expert with a database program. As well, while the webpages and databases need to be created specifically for each study, it is common to create (or borrow) a generic form processor that works with all studies, and to use the same programming code to give feedback in every study. Finally, there are many commercial services that are able to provide some or all of this knowledge. However, learning these skills oneself – or creating a network of people who between them have these skills – can save a lot of time and money.

Additional Resources

<p>Basic Web Design Macromedia Dreamweaver MX 2004 by Garo Green User Centered Web Development by Jonathan Lazar Classes Check with your local university regarding credit and non-credit classes on webdesign, programming languages, and databases.</p>	<p>Languages HTML for the World Wide Web by Elizabeth Castro JavaScript Programming for the Absolute Beginner by Andy Harris PHP and MySQL Web Development by Luke Welling and Laura Thomson Databases PHP and MySQL Web Development by Luke Welling and Laura Thomson Access 2003 Bible by Cary N. Prague, Michael R. Irwin, and Jennifer Reardon</p>
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