Technology Education Activity:

Simple Java Scripts for Teaching Basic Computer Programming Skills

Technology education teachers are being challenged to teach their students in a realistic and simple manner to develop their own Web sites.

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Introduction

In education, many people have access to the World Wide Web (WWW) and use it on a regular basis. As this area of communication technology grows, many technology education teachers are implementing Web site technology into the curriculum in an endeavor to better improve student learning. While some teachers use HTML authoring software to design their sites, others seek to add pizzazz to what they have already created. Java Script is one of the components that will meet this need.

Technology education teachers are being challenged to teach their students in a realistic and simple manner to develop their own Web sites. The demand for Web site teaching activities that teachers can use to deliver a viable curriculum was illustrated at the 1998 International Technology Education Conference in Fort Worth, Texas. Ninety-five people attended the session in which the lead author made a presentation on the topic of "Web Authoring–

How Do I Get Started?" While getting on the WWW and understanding the fundamentals of hypertext markup language (HTML) were expressed as problems for some of the session attendees, many of the attendees simply were seeking activities to enhance their classroom instruction.

In order to meet the need for programming activities in Website development, two simple Java Script activities are presented for technology education teachers and students. However, the background and a definition of Java Script must first be addressed in order to understand and implement the activities.

Background

To understand and use Java Script, you must have some background and experience in creating HTML pages and Web sites. You do not need to have advanced training and knowledge on computer programming and scripting. However, it would be helpful for you to know the basics of Web

site development and have some familiarity with creating links, forms, and frames, and importing images. If your programming experience is limited to setting the time on your VCR, you will probably need to devote some time to learning the basics. Even if you have programming experience, it would be helpful to read the information presented on some Web sites dealing with Java Scripts.

A search of the Internet using search engines such as Alta Vista, InfoSeek, Lycos and Dogpile will provide some Web sites that provide this basic instruction in simple, understandable formats for use by both the teacher and the student. This information can then be incorporated into the curriculum. A couple of sources on the Internet for learning how to write Java Scripts are www.math.utah.edu/java and www.javaboutique.com.

An exciting aspect of Java Script is that it is relatively easy to write. While similar to HTML, Java Script is embedded into HTML code, thereby giving it additional and more complicated features such as active user interfaces, navigation feedback, countdowns, pop-up pages, information forms, calculators, calendars, games, and alert boxes. Java Scripts are used in conjunction with the Web browser; therefore, the Web browser must be able to support the code.

Two of the recommended browsers are Netscape Communi-

cator 3.0 or higher and Internet Explorer 3.0 or higher. If you do not use either of these browsers, it would be in your best interest to obtain one of them so as to eliminate frustration when scripting. Both browsers can be downloaded free of charge. Netscape can be accessed at the Netscape Web site (http://home.netscape.com) and Internet Explorer can be accessed at the Microsoft Web site (http://microsoft.com/).

Java Script Defined

According to Negrino and Smith (1998), Java Script is a programming language that can be used to add interactivity to a Web site. Java Script is often referred to as a "scripting language." Java Script is written much like HTML but runs in the background and shows up as an application or an applet on the Web site. However, the primary difference between Java Script and HTML is that the Java Script text does not appear on the Web browser's source page.

The source page is the document that contains the programming language for the actual Web site being viewed. One simple way to see the programming language is to click on [View] in the menu bar and then click on [Source] in the dropdown menu that appears. A screen will appear that shows the scripting which creates the Web site being viewed. Sometimes this can serve as a learning tool in that you can

compare the script with the actual page created to see how indentations, bold words, and alignment of text are created. Additionally, you can see how pictures are inserted into the Web site.

The concept to remember is that the Web browser has been developed by the software developers to run the Java Script program. Just like HTML, the Java Script program is most often written within the first section (referred to as the <head> section) of the HTML page. However, it can be written in the main portion of the programming document (referred to as the<body> section).

Let's Get Started!

Activities one and two are simple basic Java Scripts for Web site development. The Java Scripts are based on an outstanding Java Script guide entitled "Visual Quick Start Guide, Java Script for the World Wide Web" written by Negrino and Smith (1998). This guide is easy to follow and with a few hours practice you will be functioning like a programmer. It is recommended that this guide be added to the library of the teacher for cyberspace instruction.

One caution needs to be taken into account when doing the activities. Java Script is case sensitive and will not operate correctly if minor formatting problems are present. Examples of poor formatting include the mixing of upper case and lower

case wording, spacing between wording, return and tabs. Be very careful to transfer what you see in the activity directly to your HTML page. Additionally, HTML documents can have as many <head> and <body> sections as needed. Therefore, copy what you see to your HTML document and then add additional HTML coding as required. The editing of any HTML document can begin only after you have transferred the original document into a text format such as Notepad on the Windows platform or TeachText on the Macintosh platform.

For each of the activities, the script is presented. After typing the script in a text format, save it as a file. You may give the file any name you wish, but for ease of use, let's use the name of the activity. For example, in Activity 1, entitle the file "Java Script Clock." The next step is to open your browser. Then view the file you have created by opening it with the browser. Your creation should match the figure shown at the end of each activity.
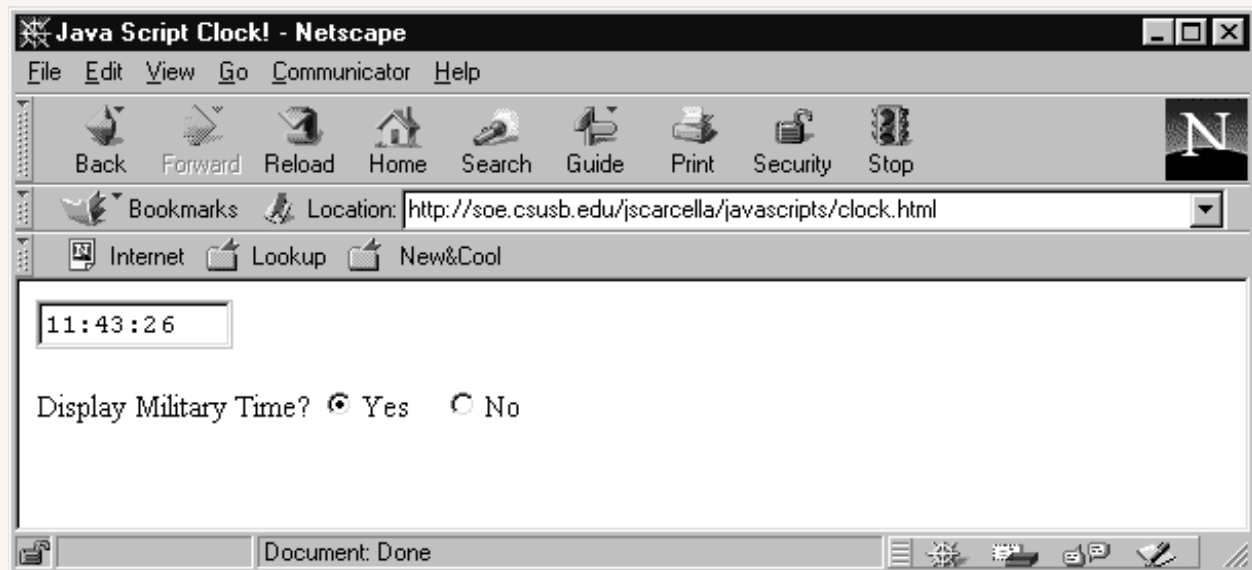
Activity 1 – Java Script Clock!

In this activity, you will simply type the script as it is presented below. The typing is an example of using Java Script to create a clock that is functional and can be read in a 12-hour mode or in military time, which is a 24-hour mode. Once you have entered the script, save it as an HTML file titled "Clock".

```
<html>
<head>
<title>Java Script Clock!</title>
<script language=javascript>
<!--Hide script from old browsers
function showMilitaryTime() {
if (document.theForm.showMilitary[0].checked) {
return true
}
return false
}
function showTheHours(theHour) {
if (showMilitaryTime() || (theHour > 0 && theHour < 13)) {
return (theHour)
}
if (theHour == 0) {

return (12)
}
return (theHour-12)
}
function showZeroFilled(inValue) {
if (inValue > 9) {
return ":" + inValue
}
return ":0" + inValue
}
function showAmPm() {
if (showMilitaryTime()) {
return ("")
}
if (now.getHours() < 12) {
return (" am")
}
return (" pm")
}
function showTheTime() {
now = new Date
document.theForm.showTime.value =
    showTheHours(now.getHours()) +
    showZeroFilled(now.getMinutes()) +
    showZeroFilled(now.getSeconds()) +
    showAmPm()
setTimeout("showTheTime()",1000)
}
// End hiding script from old browsers-->
</script>
</head>
<body bgcolor=white onload="showTheTime()">
<form name=theForm>
<input type=text name=showTime SIZE=11><P>
Display Military Time?
<input type=radio name=showMilitary checked>Yes
      
<input type=radio name=showMilitary >No
</form>
</body>
</head>
```

```
Java Script Clock! - Netscape                                    _ □ ×
File  Edit  View  Go  Communicator  Help

 Back   Forward  Reload   Home   Search   Guide   Print  Security  Stop       N

  Bookmarks    Location: http://soe.csusb.edu/jscarcella/javascripts/clock.html  ▼

  Internet   Lookup   New&Cool

   11:43:26

 Display Military Time?  ⦿ Yes    ○ No



  Document: Done
```
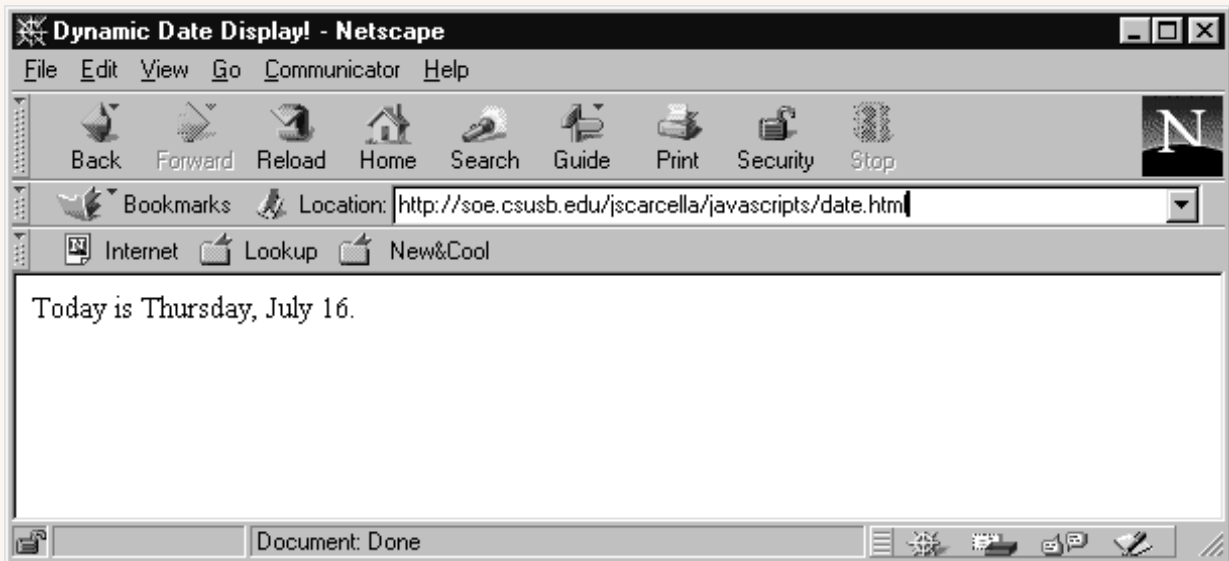
At this point, open the browser program and click on [View]. Open the file you just created and the result should look like the window above which represents the Java Script Clock.

Activity 2 – Dynamic Date Display!

As in Activity 1, you will simply type the script as it is presented below. The typing is another example of using Java Script to create a date display that displays both the day of the week, the month, and the day. Once you have entered the script, save it as an HTML file entitled "Dynamic Date."

```html
<html>
<head>
<title>Dynamic Date Display!</title>
<script language=javascript>
<!--Hide script from old browsers
var dayName = new Array ("Sunday",
        "Monday","Tuesday","Wednesday",
        "Thursday","Friday","Saturday")
var monName = new Array ("January",
        "February","March","April","May","June",
        "July","August","September","October",
        "Novemeber","December")
var now = new Date
// End hiding script from old browsers -->
</script>
</head>
<body bgcolor=white>
<script language=javascript>
<!--Hide script from old browsers
document.write("Today is " +
dayName[now.getDay()] + ", " +
monName[now.getMonth()] + " " +
now.getDate() + ".")
// End hiding script from old browsers-->
</script>
</body>
</head>
```

Dynamic Date Display! - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security Stop

Bookmarks Location: http://soe.csusb.edu/jscarcella/javascripts/date.html

Internet Lookup New&Cool

Today is Thursday, July 16.

Document: Done

At this point, open the browser program and click on [View]. Open the file you just created and the result should look like the window above which represents the Dynamic Date Display.

Final Thoughts

Do not be afraid to experiment when creating Java Scripts. There are no known cases of the computer injuring the user for making scripting errors. If you see a document on the WWW that you like, seek out the source page, and take the time to record the information. Seeing what others have done can often be a resource for your development. With a simple search, you will find a number of Web sites that offer valuable learning examples to test your abilities.

These activities are superb critical-thinking and problem-solving activities for your students. Your students will perform at different levels of achievement due to their own learning abilities and self-challenge. As a matter of fact, many proficient computer users are challenged in writing Java Scripts. Therefore, do not expect all of your students to perform exactly alike.

Let's face it. Programming is not something everyone is conditioned to do. It takes time and patience. However, it can be rewarding to see one's creation appear as a functional Web site. So, let's explore and have fun!

This article was refereed.

References

Negrino, T. & Smith, D. (1998). Visual quick start guide, Java Script for the world wide web (2nd Ed.). Berkeley, CA: Peachpit Press.

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