

TRAINER PREPARATION GUIDE 2.2: CHOOSE AND CONFIGURE HTML5 TAGS TO DISPLAY GRAPHICS

Lesson Objective 2.2:

Choose and configure HTML5 tags to display graphics.

Required materials to teach this lesson:

1. Microsoft® Expression® Studio 4 (preferred)
2. Internet Explorer® 9 or later is recommended
3. 98-375-ENU-2.2-LP
4. 98-375-ENU-2.2-IC
5. 98-375-ENU-2.2-ICKEY
6. 98-375-ENU-2.2-PC

Preparation tasks

Technical preparation activities:

1. The lesson demonstration requires an application (either Expression Web or Notepad) to create an HTML5 document.
2. The demonstration shows the students how to use the new HTML5 canvas tag to create an image on the screen.
3. Copy the following code into your HTML page to show the simple drawing of a diagonal line. When you preview the page in a browser, discuss the possible uses of the canvas tag, such as drawing paths, filling shapes, drawing shapes, and creating animations.

```
<!DOCTYPE html>
<html>
<head>
  <title>HTML5 Canvas Diagonal Line</title>
</script>

function drawDiagonal() {
  var canvas = document.getElementById('diagonal'); //creates a css id
  var context = canvas.getContext('2d');
  // Save a copy of the current drawing state to be restored upon exit
  context.save();
  // Move the drawing context to the right and down using transformation
  context.translate(70, 140);
  // Draw the same line as before, but using the origin as a start
  context.beginPath();
  context.moveTo(0, 0);
  context.lineTo(70, -70);
  context.stroke();
  // Restore the old drawing state
```

```

context.restore();
}
window.addEventListener("load", drawDiagonal, true);
</script>
</head>
<body>
    <header>
        <h1>Check out the new canvas element</h1>
    </header>

    <canvas id="diagonal" width="400" height="400">
        You need to upgrade your browser to see the canvas
    </canvas>
</body>
</html>

```

4. Vocabulary:

canvas: provides an object that is used for drawing, rendering, and manipulating images and graphics in a document.

Scalable Vector Graphics (SVG): a language for describing two-dimensional graphics in XML. SVG allows for three types of graphic objects: vector graphic shapes (paths that consist of straight lines and curves), images, and text.

transformation: a modification layer that sits between the commands issued and the output on the canvas display. Commands include scale, translate, and rotate.

5. Additional readings and resources:

MSDN®:

Internet Explorer Learning HTML5: <http://msdn.microsoft.com/en-us/ie/aa740476>

HTML5 Graphics: [http://msdn.microsoft.com/en-us/library/gg589511\(v=VS.85\).aspx](http://msdn.microsoft.com/en-us/library/gg589511(v=VS.85).aspx)

Other resources (books, e-reference):

Canvas element (HTML5): <http://www.w3.org/TR/html5/the-canvas-element.html#the-canvas-element>

Modernizr: <http://www.modernizr.com/>

Lubbers, Peter; Albers, Brian; Smith, Ric; Salim, Frank (2010-09-01). *Pro HTML5 Programming: Powerful APIs for Richer Internet Application Development* (Kindle Location 161). Apress. Kindle Edition

Note: HTML5 is changing and developing quickly. The list of resources is current as of January 2012. Check resources for current and up-to-date information at the time of classroom use.

Instructor computer setup:

1. A workstation with Expression Studio 4 or at least Expression Web 4 (including Service Pack 2) is recommended.
2. Internet Explorer 9 or later is recommended.

Instructional preparation activities:

1. Review the instructor notes in the notes view of Microsoft PowerPoint® presentation 98-375-ENU-2.2-LP.
2. Make copies of student documents available as needed.
3. Follow the instructions for the demonstration ahead of time, and determine whether the browser you have available supports the HTML5 features in the demonstration.

Lesson Sequence (50 minutes)

Activating prior knowledge/lesson staging (5 minutes):

Instruct students to answer each question in the "Guiding questions" section of the In-class Activity document or in their personal class notes.

Guiding questions:

1. **What criteria determine whether the developer uses the <canvas> tag or the <svg> tag?** Developer knowledge and skillset, the size of the screen, and the number of graphic objects are key elements in making the decision. Generally, as the size of the screen increases, the canvas begins to degrade as more pixels need to be drawn. As the number of objects increases on the screen, SVG begins to degrade as they are being added to the Document Object Model (DOM).
2. **Why is it recommended to use transformations when drawing on the canvas?** Transformation is a modification layer that sits between the commands issued and the output on the canvas display. A key recommendation for reusable code is to draw at the origin and apply transformations such as scale, translate, and rotate to modify the drawing code into the final appearance.
3. **How can developers accommodate browsers that do not support the HTML5 canvas?** Use a try/catch statement and add text to the <canvas> tag element. If the canvas element is supported, the text will be ignored; otherwise (if it is not supported), it will display the message: "HTML5 Canvas is not supported in your browser."

```
try{  
  
    document.createElement("canvas").getContext("2d");  
  
    document.getElementById("support").innerHTML = "HTML5 Canvas is supported  
in your browser.";}  
  
catch (e) {  
  
    document.getElementById("support").innerHTML = "HTML5 Canvas is not  
supported in your browser."; }
```

Lesson activity (35 minutes):

1. Teacher instruction (35 minutes)
 - a. Use the PowerPoint presentation 98-375-ENU-2.2-LP to review choosing and configuring HTML5 tags to display graphics.
 - b. An In-class Activity document is available for use as needed.

Lesson review (10 minutes):

1. Lead students in a discussion of the guiding questions.
2. During and after the discussion, have students list any questions they have or any topics with which they would like more assistance.
3. Have students work in pairs to answer the additional questions written by students. Answer any questions that cannot be answered by students, or collect them for follow-up later.
4. Provide the Post-class Activity document for additional review.