

2DIY - computer club scheme of work for platform activities (6x1 hour lessons)

About this Unit

In this unit children will develop a greater understanding of how online activities are designed and produced. They will create their own educational games to support topics they are learning about in class and will be able to share their work with others through publishing it on a website/blog.

Key Vocabulary (to introduce/reinforce)

actionsript code, animation, embed, instructions, interactive, modify, play, score, sound effects, test, timer

Learning Objectives

Key Idea: that online activities use a range of methods to encourage interaction and use multimedia elements to enhance the enjoyment of completing them

- **Technique:** to create an interactive activity which can be played to improve understanding of a topic
- **Technique:** to use multimedia elements (e.g. sound and/or animation) to enhance an activity
- **Technique:** to combine a series of educational activities for embedding into a website/blog

Expectations

At the end of this unit:

Most children will:

- create a range of interactive activities about particular topics for others to complete;
- use multimedia elements to enhance their work, but with some inconsistencies (e.g. sound effects not matching an activity's theme).

Some children will not have made so much progress and will:

- create simple interactive activities about particular topics for others to complete.

Some children will have progressed further and will:

- create a sequence of interactive activities about a particular topic for others to complete;

- use multimedia elements effectively to enhance their work;
- begin to adjust some of the key elements within an activity by altering parts of its actionscript code.

KS2 National Curriculum for England Links:

- **Developing Ideas and Making Things Happen**

2. Pupils should be taught:

a) how to develop and refine ideas by bringing together, organising and reorganising text, tables, images and sound as appropriate [for example, desktop publishing, multimedia presentations]

- **Exchanging and sharing information**

3. Pupils should be taught:

a) how to share and exchange information in a variety of forms, including e-mail [for example, displays, posters, animations, musical compositions]




b) to be sensitive to the needs of the audience and think carefully about the content and quality when communicating information [for example, work for presentation to other pupils, writing for parents, publishing on the internet].

- **Breadth of Study**

5. During the key stage, pupils should be taught the Knowledge, skills and understanding through:

a) working with a range of information to consider its characteristics and purposes [for example, collecting factual data from the internet and a class survey to compare the findings]

(These learning objectives were written by Simon Haugton, and used with his permission)

<p>Lesson One</p> <p>Introduction</p>	<p>Ask children to load 2DIY onto their laptops / PC's. Discuss the activity types that are available, and point out that for the next 6 weeks they will be focusing on the "platform" activity.</p> <p>Explain to the children that this activity will allow them to create an "old style" flat 2D platform game (at this point you could briefly discuss flat 2D platform games that they have played)</p> <p>Ask children to click on the "platform" icon, and then choose the "simple" option. Once it has loaded demonstrate on an IWB / main computer each of the elements within the activity.</p> <div style="text-align: center;">  </div> <ul style="list-style-type: none"> • The "stickman" element is the main character: it can move left / right and jump using the arrow keys. • The "apple" element is to be collected. It can give be given a point score, and made to move around the screen. • The "monster" element is to be avoided. It can be given a negative point score, and made to move around the screen. • The "sun" element does not affect the score, but can be used to add extra effects. <p>Running along the bottom of the screen are "platforms". These are what the character will travel along and can be placed anywhere on screen. Show children the "lay platform" and "remove platform" tools on the left of the screen.</p> <div style="display: flex; align-items: center;">   </div> <p>Demonstrate to the children how to lay platforms on screen, and drag and place "apple" and "monster" elements on screen. (Note: at this stage, the original images will be fine).</p> <p>Main Activity</p> <p>Explain to the children that they are going to use the "apple" and "monster" elements, as well the platform tool to create an activity in which their character will try to collect the "apples" and avoid the "monsters". Ensure all children know how to use the tools within the program, and let them begin.</p> <p>Once completed, children to save the activity as "platform1" within their own area on the server.</p>
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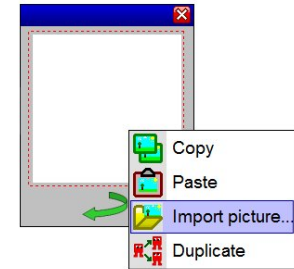
Plenary	Discuss any issues that were raised during the main activity; <ul style="list-style-type: none">• Could all the "apples" be collected? If not, why not?• Where did the character begin the activity from? Could it be moved to a better position?• What happened if there was no platform along the bottom of the screen?•
Next Lesson	Children will take their original activity and add graphics to the elements within it.

Lesson Two

Introduction

Recap on the key points from the previous week (character / apple element / monster element / platform)

Load a saved activity from the previous week. Talk about the standard icons that are used (the apple graphic / the monster graphic / the brick graphic). Demonstrate how these can be altered. Click on an "apple" element, so that it appears larger in an editing window. Show the children that by right clicking on the larger graphic an option appears enabling them to add some clipart from within the program. Choose a suitable graphic and drag it into the editing window (if this cannot be seen, move the clipart window across the screen then try again).



Ask the children what they would do if they wanted to use the same image for all "apple" elements within an activity. Demonstrate that if they right click on the graphic there is an option called "duplicate" - what would that do? Click on it, and show them the result with the other "apple" elements.

Repeat the process for the "monster" icons (use duplicate again if all "monster" elements are to be the same)

Now move onto the platform graphics. There is nothing on screen at the moment that allows you to edit the platform graphic. Explain to the children that they need to click on the "add platform" tool. A new editing window now appears on the right of the screen.

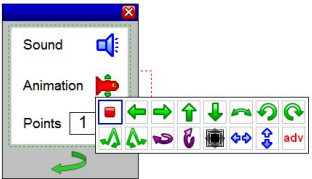
Important! You will not be able to edit this graphic whilst the "add platform" tool is still selected. You will need to click onto another tool (ie the pen or pencil) before you are able to right click the platform graphic and choose clipart.

The platform tool will make all platform graphics appear the same, there is no need to use a duplicate command.

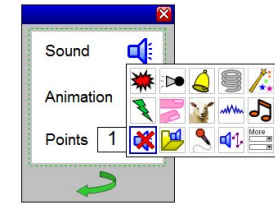
Finally, the character graphic (the stickman) can also be edited using clipart in the same way as the platform was.

All elements were altered using clipart, but explain to the children that they can draw their own graphics for any element using the tools on the left of the screen. Demonstrate this by drawing a character yourself using the pen / pencil tools.

Main Activity	<p>Ask the children to load their previous weeks work (platform1.2iy). They are going to edit their graphics for the "apple", "monster", "platform" and "character" elements. Remind them of the duplicate option.</p> <p>Once completed, children to save the activity as "platform2" within their own area on the server.</p>
Plenary	<p>What were the issues with adding clipart? White edges to the element on screen? Coloured dots appearing on elements?</p> <ul style="list-style-type: none">• The white edges can be made see through using the chequerboard colour option (transparent) in the toolbox.• Coloured dots appear when the pen / pencil tool is selected and an element is then clicked on.
Next Lesson	<p>The "apple" and "monster" elements will be animated.</p>

<p>Lesson Three</p> <p>Introduction</p> <p>Main Activity</p> <p>Plenary</p> <p>Next Lesson</p>	<p>Recap that so far the children have added elements to an activity, and created graphics for the elements. This week they are going to animate the elements.</p> <p>Load an activity and select an “apple” element. Click on it (to open its editing window). Point out the green arrow below the graphic. This rotates the editing window to show more options. Click on it and discuss the “animation” option that is displayed. What does “animation” mean? What will it do to the element?</p> <p>Click on either the word “animation” or the image of the red fish, to open the animation options. Go through all of the symbols, explaining what each one means; No animation; move to the left; move to the right; move up; move down; rock left and right; spin to the left; spin to the right; move randomly to the left; move randomly to the right; rotate (vertical axis); rotate (horizontal axis); grow and shrink; move left then right; move up then down; Advanced Actionsript options.</p>  <p>Now select a “monster” element. Repeat as for the apple element. There are different options on the second line for the monster element; move randomly to the left; move randomly to the right; follow a maze path; chase the character element; grow and shrink; move left then right; move up then down; Advanced Actionsript options.</p> <p>Discuss which animations would suit a platform game, and the graphic elements that have already been chosen.</p> <p>Load the previous weeks activity (platform2.2iy). Select the elements that are going to be animated and add the selected animations. Test the game (click on the green “play” triangle). Does the activity work. Can you collect all the “apple” elements? Do the “monster” elements prevent you reaching any parts of the screen? Revise the game as appropriate and test again until the activity can be completed with a challenge. Once completed, children to save the activity as "platform3" within their own area on the server.</p> <p>What problems did adding animation cause? How were the problems overcome?</p> <p>Adding sound and other visual effects</p>
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<p>Lesson Four</p> <p>Introduction</p>	<p>Load a previously created activity and play it. It should work as a completed game, but can it be made better? What would enhance the activity? What “extras” do the games they play at home contain? Sound and other graphics.</p> <p>Discuss the “sun” element”. These cannot be collected (like “apples”), and don’t need to be avoided (like “monsters”). They will just sit on screen adding graphics.</p> <p>Remind the children how they chose clipart / drew their own graphics for the other elements – the sun can have graphics selected the same way. It can also be animated like the “apple” element with the same options.</p> <p>Return to an “apple” element” and click on one to open the edit window. Use the green arrow to reveal more options. Discuss the “sound” option and click on it. There are many sounds that can be selected to play when the element is reached by the character element. The “monster” element will also allow a sound to play when the character collides with it.</p> <p>There is one other feature within the “monster” option to discuss. The third option. What happens when the character touches a “monster”? There are several options here; points could be lost; the character could be moved backwards; a life could be lost (the default setting); nothing could happen, or Advanced ActionScript code could be used to create an effect. For these lessons, pupils are best choosing between losing a life and losing points.</p> <p>Finally, select a “sun” element. Add a sound to it, then make the element transparent (the chequerboard pattern”. Place it within the activity. What will happen as the character moves along now? When it passes over the transparent element it will trigger a sound to play.</p>
<p>Main Activity</p>	<p>Load the previous weeks activity (platform3.2iy). Select elements to add sound to. Also add some transparent “sun” elements with sound to create in-activity sounds. Test the activity to make sure it sounds right.</p> <p>Once completed, children to save the activity as "platform3" within their own area on the server.</p>
<p>Plenary</p>	<p>What graphics could you choose for the “sun elements” if you make the elements move across the screen? (eg clouds) Up the screen? (eg bubbles)</p>
<p>Next Lesson</p>	<p>Adding an introduction screen that explains the activity.</p>



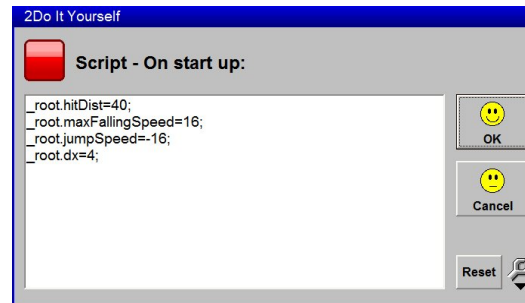
Lesson Six

Introduction

Discuss what has been achieved so far; pupils have added a character / items to collect / objects to avoid / display graphics / animations / sounds and instructions to their activity.

This week they are going to be introduced to (simple) ActionScript changes that can affect their game.

Load an activity and right click on the green play button. A window will appear with some code showing. Look at each line of code and ask the children if they can work out what each line does within the activity;



- **hitDist** is the distance between the character and an element before a collision is detected (the smaller the number, the closer they can get)
- **maxFallingSpeed** is the speed a character falls down the screen (the smaller the number the slower they fall)
- **jumpSpeed** is the height a character can jump up (the smaller the number the less height they can reach when jumping)
- **dx** is the speed a character moves across the screen (the bigger the number the quicker a character moves)

If they alter the values, it will affect how their character moves and could make the game harder / more of a challenge.

Main Activity

Load the previous weeks activity (platform5.2iy). Right click on the play button and make changes to the ActionScript values. Test the game after each alteration and see the result. Make your game tricky, but achievable. Think about;

Plenary	<ul style="list-style-type: none">• If you reduce the jump height, is there a platform that can be reached?• If you slow the speed your character moves, can they avoid “monster” elements still?• If you reduce the Hit Distance can you still collect the “apple” elements? <p>Once completed, children to save the activity as "platform6" within their own area on the server.</p> <p>Show some of the activities to class on IWB. Children to log into their learning spaces and load their completed activity (platform6) into it.</p> <p>Review the work that has been completed over the previous 6 sessions. What new skills do the pupils now possess?</p>
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