

# Gaming in Kodu Scheme of Work



Key Stage 3 Scheme of Work



Duration: 7 Weeks



Lesson Plans and teaching resources included



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# Scheme of Work Overview

## About this unit

This unit aims to teach students the fundamentals of games programming using Kodu, which is a visual game development environment.

Using Kodu students will understand how to build a world and program characters and objects before moving on to designing their own games.

## Homework

Kodu is free to download from <http://fuse.microsoft.com/kodu> so students can use the software at home to make their own creations.

## Language for Learning

World, character, object, program, page, instructions, sequence, design, evaluate

## Resources

- PowerPoint for each lesson outlining tasks
- Kodu
- Xbox game controllers (optional)
- Help cards

## Cross Curriculum

Numeracy – Logic and sequencing  
Literacy – Story creation in own game

## Support and Extension

Less able students may benefit from working in pairs to complete activities and tasks may need to be extended over a longer period of time (broken down into smaller tasks). Laminated help cards are also available.

Extension tasks are available for more able students.

## NC Assessment Focus

### AF1 – Planning, developing and evaluating

#### Level 3

- Plan how they will use ICT to solve a problem.
- Comment on success of their solution.

#### Level 4

- Plan and implement solutions that combine and refine different forms of information.
- Evaluate the quality and success of their solutions.

#### Level 5

- Plan and develop structured solutions to problems which use a combination of ICT tools and techniques.
- Use criteria to evaluate the quality of solutions, identifying improvements and refining their work.

#### Level 6

- Use criteria and feedback to improve the effectiveness and efficiency of solutions.

### AF2 – Handling data, sequencing instructions and modelling

#### Level 3

- Use a sequence of instructions to control events.
- Use ICT-based models or simulations to answer questions.

#### Level 4

- Devise and refine sequences of instructions.
- Use models to explore relationships between inputs and outputs and explain how the models work.

#### Level 5

- Create precise and accurate sequences of instructions.
- Change variables within models and explain the impact.

#### Level 6

- Create efficient sequences of instructions including the use of subroutines



## Lesson

1

## Resources

- ☐ Lesson 1 PowerPoint
- ☐ Self Assessment Sheet
- ☐ Kodu

## Learning

### Objective(s):

- Learn how to create a world and control a character using Kodu.

### Outcome(s):

- A completed world demonstrating different:
  - Heights
  - Types of terrain
  - Varieties of colours
  - Water/liquid
- Character, controlled by the user that is able to collect objects.

## Lesson Activities

Student:

- ✓ Write learning objective onto **Self Assessment Sheet**.

Teacher:

- Introduce what Kodu is and what it does, show example game.
- Demonstrate how to make a world with different:
  - Heights
  - Types of terrain
  - Varieties of colours
  - Water/liquid
- Demonstrate how to add objects (i.e. apples) to the world.

Student:

- ✓ Create a world of their own with a river through the middle.
- ✓ Add objects to be collected.

Teacher:

- Demonstrate how to add a character to be controlled by the user.
- Demonstrate how to make the character collect chosen objects.

Student:

- ✓ Add a character to the world and program it to be controlled by the user.
- ✓ Program the main character to collect objects by eating them.
- ✓ Use **Self Assessment Sheet** to assess their own progress.



## Lesson

2

## Resources

- ☐ Lesson 2 PowerPoint
- ☐ Self Assessment Sheet
- ☐ Kodu
- ☐ Lesson 2 – Starter activity (cut out)

## Learning

### Objective(s):

- Learn how to add different types of paths to a world and control an enemy within a game.

### Outcome(s):

- A world that contains:
  - Walls
  - Bridge
- Enemy that follows a set path and shoots at the player.
- Player character that can fire when pressing a button.
- *SOME students may also have adjusted the World Settings for the game.*

## Lesson Activities

Student:

- ✓ Write learning objective onto **Self Assessment Sheet**.

Student <IN PAIRS>:

- ✓ Complete the starter activity by matching up Kodu's instructions to the correct boxes.

Teacher:

- Go through answers to starter activity on the board.

Teacher:

- Demonstrate how to add paths to a world to make
  - Walls
  - Bridges

Student:

- ✓ Add walls and a bridge to the world they created last lesson.

Teacher:

- Demonstrate how to add a plain (invisible) path to be used for controlling a characters motion.
- Demonstrate how to make the "enemy" character shoot at the user.

Student:

- ✓ Add a plain path to their world for the enemy to follow.
- ✓ Program the enemy to follow the path and shoot at the user.
- ✓ Program the users character to shoot when a certain button is pressed.
- ✓ *EXTENSION: Students who have completed all activities should be looking at the World Settings and experimenting with changing variables in here.*
- ✓ Use **Self Assessment Sheet** to assess their own progress.





## Lesson

3

## Resources

- ☐ Lesson 3 PowerPoint
- ☐ Kodu
- ☐ Self Assessment Sheet
- ☐ Small world containing apples and Kodu already created and controlled using Xbox controller.

## Learning

### Objective(s):

- Learn how to use different pages and add scoring to a game in Kodu.

### Outcome(s):

- A basic game in which the character gains points by eating green apples and loses health and changes pages when eating brown apples.
- *SOME students may add Game End and Win screens to display at the end of the game.*

## Lesson Activities

Student:

- ✓ Write learning objective onto **Self Assessment Sheet**.

Teacher:

- Show example world and demonstrate how to change the colour of objects to create green and brown apples.

Student:

- ✓ Create a small, flat new world and add Kodu.
- ✓ Add three green apples and three brown apples to the world.
- ✓ Program Kodu so he can be controlled with the Xbox controller and eats green apples if he touches them.

Teacher:

- Show the use of different pages and how to get to them.
- Demonstrate how to switch to page 2 after eating a brown apple to make Kodu turn green and say he doesn't feel well.
- Demonstrate how to switch back to page 1 after a 5 second delay.

Student:

- ✓ Program Kodu so when he eats a brown apple he switches to page 2.
- ✓ Program Page 2 to switch back to Page 1 after 5 seconds while doing the following:
  - Changing colour to green
  - Saying he doesn't feel well

Teacher:

- ✓ Demonstrate how to add a score to go up when Kodu eats green apples and a hit metre to show damage when he eats brown apples

Student:

- ✓ Change your program so the score goes up when Kodu eats a green apple.
- ✓ Add a hit metre to show damage to Kodu, this should go down by 2 points when he eats a brown apple.
- ✓ Make the score increase when Kodu eats green apples.
- ✓ *EXTENSION: Add Game End and Win screens to display when Kodu loses all health or collects all of the green apples.*
- ✓ Use **Self Assessment Sheet** to assess their own progress.



## Lesson

4

## Resources

- ☐ Lesson 4 PowerPoint
- ☐ Kodu
- ☐ Lesson 4 guide sheet
- ☐ Self Assessment Sheet
- ☐ Example of a Pong game to use as a demonstration

## Learning

### Objective(s):

- Learn how to use programming techniques in Kodu to replicate an old arcade game.

### Outcome(s):

- ✓ Completed Pong or Pacman replica
- ✓ *SOME students may complete both games*

## Lesson Activities

### Student:

- ✓ Write learning objective onto **Self Assessment Sheet**.

### Teacher:

- Show example of a Pong game
- Demonstrate how to make a square world by just using a large square tile
- Demonstrate how to fix the camera position in place

### Student:

- ✓ Select one of the arcade games from the guide sheet:
  - ✓ Easy Pong or
  - ✓ Tricky Pacman
- ✓ Create their chosen game
- ✓ *EXTENSION: Once students have completed one game to a standard they are happy with they may attempt the other game from the guide sheet.*
- ✓ Use **Self Assessment Sheet** to assess their own progress.



## Lesson

5

## Resources

- ☐ Lesson 5 PowerPoint
- ☐ Kodu
- ☐ Self Assessment Sheet
- ☐ Example of a "Space Invaders" game created in Kodu

## Learning

### Objective(s):

- Learn how to use creatables to make clones of an object.

### Outcome(s):

- ✓ Completed Pong or Pacman game (from last lesson)
- ✓ Completed Space Invaders replica.

## Lesson Activities

### Student:

- ✓ Write learning objective onto **Self Assessment Sheet**.

### Teacher:

- Demonstrate how to make a character a "creatable" and created every five seconds.
- Discuss reasons why this method is better than copying & pasting multiple characters
- Demonstrate where to find the world settings to change the lighting effects.

### Student:

- ✓ SOME students may need to complete game from last lesson
- ✓ MOST students can begin making their own "Space Invaders" game.
- ✓ Students do not need to create land, just "space decoration", an enemy and a player character.
- ✓ Use **Self Assessment Sheet** to assess their own progress.



## Lesson

6

## Resources

- ☐ Lesson 6 PowerPoint
- ☐ Kodu
- ☐ Help sheets
- ☐ Self Assessment Sheet
- ☐ Game Design Templates

## Learning

### Objective(s):

- Understand the points to be considered when designing a computer game.

### Outcome(s):

- ✓ Completed Game Design Template
- ✓ The start of own game created in Kodu.

## Lesson Activities

### Student:

- ✓ Write learning objective onto **Self Assessment Sheet**.

### Teacher:

- Lead class discussion and mindmapping activity (writing on PowerPoint slide) to discuss good game examples and what makes them a good game.

### Student:

- ✓ Students complete a Game Design Template to plan out their own game.
- ✓ Students begin developing their game in Kodu once their designs have been checked by the teacher.
- ✓ Use **Self Assessment Sheet** to assess their own progress.





## Lesson

7

## Resources

- ☐ Lesson 7 PowerPoint
- ☐ Kodu
- ☐ Help sheets
- ☐ Self Assessment Sheet
- ☐ Completed Game Design Templates
- ☐ Peer Assessment Sheets

## Learning

### Objective(s):

- Learn how to make a game in Kodu from a design.

### Outcome(s):

- ✓ Completed game created in Kodu that matches design.
- ✓ Completed peer assessment sheets.

## Lesson Activities

### Student:

- ✓ Write learning objective onto **Self Assessment Sheet**.

### Teacher:

- Recap on the work carried out last lesson.

### Student:

- ✓ Continue and finish developing their game in Kodu.
- ✓ Use **Peer Assessment Sheet** to evaluate their partners game.
- ✓ Use **Self Assessment Sheet** to assess their own progress.