# Lesson 33 – Project – micro:PET Building the Physical micro:PET

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| The Big Picture – Why Is This Relevant? | Learning Objectives |
| * This is an open-ended project where Learners will use the skills, code and hardware that they have learnt about in previous lessons to build a Programmable Engaging Toy (micro:PET) * Now that Learners have some working code, this lesson they should be encouraged to begin to build the physical structures / frames for the micro:PET | * Know what the success criteria mean * Be able to develop a solution to meet Success Criteria * To understand the purpose of testing and be able to test a product again success criteria * To be able to reflect on the development process and identify potential improvements |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * Motivate and support groups and Learners where required * Teacher could refer Learners to other groups that have had success with an element of the project for support | **Expected Progress:**   * Learners build a basic model of the micro:PET   **Good Progress:**   * Learners use colour and other resources to build an engaging model micro:PET   **Exceptional Progress:**   * Learners use colour and other resources to build an engaging model micro:PET which meet specific success criteria |
| Links to KS3 Programme of Study | |
| * design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems * use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions * undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users | |
| Key Concepts | Key Words |
| * When a product is developed it is important to check the product addresses the success criteria * Once a product has been produced it is important to reflect on what went well and what could be improved as this could inform future development processes | * Iterative testing * Final testing |
| Differentiation | Resources |
| Learners will be working in small groups, it is important to remind them of their role.  Some groups / Learners may need clear direction on what to do and how to proceed. Teacher can advise and direct, set clear requirements for Learner, for example, ‘build a frog that sings when it gets dark, croaks when you shake it and use the Halo as a lily pad that displays the temperature’ | * Lesson 33 ppt * Lesson 33 Activity Sheet 1 * Lesson 33 Activity Sheet 2 * Design sheet * Project overview * Access to previous lesson resources and hardware * Coloured paper * Coloured card * Corrugated card * Glue * Sellotape/fabric tape * Fabric scraps * Velcro tape * Pens, pencils, coloured pens/felt tips * Assorted google eyes * Scissors * Tinfoil |
| Lesson Flow | |
| * Starter – look at the function and Learners discuss what it does * Teacher to recap the micro:PET project with reference to the Success Criteria * Introduce the lesson and that the Learners need to build and test the physical micro:PET model that will hold the micro:bit and hardware. The developer should work on the code whilst the engineer works on the product. The project manager should support the various roles. The tester should be testing the product throughout development so will be working closely with the developer. * If the teacher has access, they could display some model toys or previously completed projects as a guide to what Learners could create. The developer could user activity sheet 1 for support. * Encourage Learners to ensure that the model can house the micro:bit and hardware that is to be used * Teacher to ensure that Learners do not get distracted by painting and cutting out activities * Teacher to circulate Learners and support with their ideas and solutions, try to refer to previous lesson activities and resources * Half way through the lesson learners should nearing completion of their product. Stress to learners that they will need to test their product against specific success criteria. Show Activity Sheet 2 which the tester will complete as part of their final testing. Show learners the example score card so they know how they will be scored. * Learners should aim to complete their products 10 minutes before the end of the lesson. * For the last 10 minutes students should complete the reflection. * If there is time learners could be given an additional lesson to work on the build. They could also formally present their products to the rest of the class. | |
| Making | |
| * Creating the physical model for the PET | |