# Lesson 23-24 - IoT project

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| The Big Picture – Why is this Relevant? | Learning Objectives |
| * After completing a few of the projects in this course, learners should now be comfortable with the project structure. They will now be expected to ideate their own solution to a problem. This will encourage learners to critically analyse the problems provided and come up with a technical solution. | * Understand how to apply the technology they have been learning about to solve a problem * Understand how to work collaboratively and how to work on multiple problems at once * Understand how to manage their time effectively |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * Learners will be able to work in groups of four to develop a product that solves a problem presented by the Global Goals * The larger groups will be a change of pace for the learners and they will need to distribute the tasks effectively, this means learners can work on what interests them * This project is open ended and so learners are free to choose which problem they will engage with and how they will go about solving it, this exercise is a creative problem solving process and this should engage learners | **Expected Progress:**   * Learner shall ideate, design, develop, program and refine a Global Goals themed solution using a micro:bit   **Good Progress:**   * Learners shall collaborate and communicate effectively to achieve the finished product   **Exceptional Progress:**   * Learners shall complete all the tasks and meet all the success criteria and present their ideas |
| Links to KS3 Program of Study | |
| * Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems * 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 * Create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability | |
| Key Concepts | Key Words |
| * Project management * Global Goals * Problem solving | * Global Goals * Time management * Project manager |
| Differentiation | Resources |
| Due to the open ended nature of this project this is largely differentiated by outcome but its recommended that the larger groups should be made up of mixed ability learners to better stretch the leaner and to improve communication skills. | General making resources (due to the open ended nature of the project, learners will need a variety of making resources such as additional card, tape, glue etc. and these are best determined before the project so learners don’t design a product that cannot be made given the resources) |
| Lesson Flow | |
| * This is a multi lesson (2 lesson) project with specific objectives for each lesson * This is a competition with winners in several categories   **Lesson 1**   * Introduce the competition to the learners * Put the learners into mixed ability groups of four * Go through the four roles and discuss what each role is responsible for * Discuss time management and parallel working * Introduce the Global Goals and explain that they need to choose one to work with * Introduce success criteria for the project * Explain what they are being judged on (idea, design, teamwork, communication, product, pitch) * Get learners to start to capture their initial ideas * Show which boxes each role should be filling in on the design sheet * Gather the PMs and remind them of their role and responsibilities * Discuss realistic expectations and limitations of hardware available. Stress that they are prototypes that they are building, not fully functioning solutions. * Use the design sheets to complete the design of the product * Remind learners to pay attention to the IPO design * Once the designs are complete the learners can start to build the product * PMs are responsible for storing the product and plans safely   **Lesson 2**   * Learners will spend most of this lesson building and programming their products * Remind learners on the judging criteria (idea, design, teamwork, communication, product, pitch) * Ensure the developers have completed their IPO design before they start programming * Remind learners of the success criteria and how the product must match the design * Encourage learners to update their designs if they change anything or update what they are doing * Spend your time equally with the teams and help troubleshoot any programming issues or making problems * Due to the open ended nature of the project, not all projects will be successful, failure is part of learning and learners should be encouraged to be resilient and iteratively improve their product and often simplify what they are intending to achieve * Introduce the concept of the ‘elevator pitch’ and ensure someone on each team is creating one for the second half of the lesson * Spend your time equally with the teams and help troubleshoot any programming issues or making problems * Remind learners to brand their products * Remind learners to test their products * Get each group (PM) to present their teams elevator pitch (~2 minutes each). It is likely that teams will finish at different points in the lesson. To make most effective use of the time available you may wish to listen to the pitches at the team tables rather than them presenting back to everyone in the class. * Choose a winning team using the judging criteria | |
| Making | |
| * This project will involve two lessons of making and so suitable quantities of making materials should be provided * Allow students to be creative with their designs and encourage innovation * Encourage resilience and iterative development of the products | |