# Lesson 11 – Bit:Bot Race Car Project Body Shell Mass Production

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| The Big Picture – Why Is This Relevant? | Learning objectives |
| * To get an understanding of the iterative development cycle and how it can be used to develop better products * To understand how prototypes can be turned into mass production models | * Apply understanding of computational thinking and programming skills to achieving a goal * Create prototypes of designs using an iterative design cycle * Test and refine designs using time trials * Produce a mass-production model of design |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * Giving the Learners the scenario to work within * Make it a challenge with fastest prototype winning * Works best with a team where they can discuss the impact of their designs * Have a team leader to make final decisions | **Expected Progress:**   * Learners have test fitted and trialled the prototype   **Good Progress:**   * Learners can identify and make improvements that have a positive impact on performance   **Exceptional Progress:**   * Learners are able to identify further improvements that may currently be out of their timescale of that of materials available |
| Key Concepts | Key Words |
| * The idea of taking a unique prototype and producing a mass production model from this design | * Prototype * Iterative Design * Mass Production * Nets |
| Differentiation | Resources |
| Some Learners will need guidance with measuring and cutting and interpreting between mm and cm.  Some Learners will need support with timings. | * Lesson 12 ppt * Lesson 12 Activity Sheet * Paper and planning sheets * Materials such as card, balsa, straws, adhesives etc * Scissors * Access to <https://makecode.microbit.org> * micro:bit * Bit:Bot * Stop watches |
| Lesson Flow | |
| * Remind Learners of the purpose of the project * Remind Learners of iterative design and then link to mass production and how compromises in design from concept to mass production may need to be made * Work through some examples of how 3D shapes can be converted to nets. See example Slide 5 * Get Learners to time a car without a bodyshell for a baseline * Get Learners to time trial their designs and make improvements until they have the design that they are happy with * Get Learners to complete the test table for their modifications – see example on Activity Sheet * Discuss mass production * Get Learners to produce a net for their design along with assembly instructions | |
| Making | |
| Prototype bodyshell. | |