

Progression guide for control and monitoring

(Developing ideas and making things happen)

Concepts	Aspects of level	Control and monitoring aspect of National Curriculum level description	Expansion of level description	Illustration What might pupils do?
		Key characteristics of National Curriculum level		
<p>Modularity. Decision to choose between different instructions dependent upon a condition.</p>	5	<p>They create sequences of instructions to control events, and understand the need to be precise when framing and sequencing instructions. They understand how ICT devices with sensors can be used to monitor and measure external events.</p> <p>Combine instructions within an overall structure.</p>	<p>At this level pupil can solve given problems requiring testing and refinement of individual components e.g. identification of component parts (subroutines or procedures). Solutions could include monitoring simple 'on-off' conditions or conditions that fall between a specified range.</p> <p>Pupil understands that sensors can be used to measure changes in physical conditions precisely and monitor conditions accurately.</p>	<ul style="list-style-type: none"> • Create a procedure to perform an everyday event (Unit 7.6 lesson 5). • Develop a control system to automate a greenhouse, taking into account all environmental requirements (Unit 8.5 lesson 6). • Develop a modular solution to the control of a theme park ride (Case study 9.1 lessons 4, 5 and 6). • Use a datalogging system to produce graphical/tabular results of measuring the temperature change over time of hot potatoes wrapped in different insulating materials.
<p>Monitoring and control combined. Decision to choose between different instructions dependent upon variable-based counter.</p>	6	<p>They develop, try out and refine sequences of instructions to monitor, measure and control events, and show efficiency in framing these instructions.</p>	<p>At this level pupil can develop solutions to problems requiring a system to control an event by the monitoring of external conditions, and include using a variable to count, to make decisions.</p>	<ul style="list-style-type: none"> • Develop a control system to automate a greenhouse, taking into account all environmental requirements (Unit 8.5 lesson 6). • Develop a solution to the control of a theme park ride using variables to track the boats on the ride and increase the safety factors with the ride (Case study 9.1 lessons 4, 5 and 6). • Plan a flow chart of a car park barrier. Develop subroutines to: <ul style="list-style-type: none"> Monitor – by counting vehicles in (monitoring inputs) Measure – comparing with predetermined value. (10 cars in = car park full) Control – barrier up/down, light to display full sign.