

Activity: “Wireless Telemetry”

Subject/s: Computing	
Focus: <ul style="list-style-type: none"> • Instructions within a computer system • Computer networks and wireless communications • Reading and using real time information from a 3-Axis accelerometer • Showing movement data in real time using a graph function 	
Ages: 11-14	Time: 45 minutes
Prior Learning: <ul style="list-style-type: none"> • Some understanding of computer coding using a blocks type system such as Scratch • Familiarity with making USB and battery connections and dragging and dropping files • Experience of motion sensing technology – smartphones, game controllers, etc. 	
Lesson Objectives: <ul style="list-style-type: none"> • Students will understand that computers can be networked to share data, etc. and that these networks can be wireless. (Bluetooth or Wi-Fi, etc.) • Students will understand that computers can respond to motion data from internal or external accelerometers and will be able to read motion (acceleration) values in one or more axis and transmit this wirelessly to another device. • Students will be able to make a micro:bit respond to the receipt of wireless data, inc. generating a real time graph of a changing variable. 	
Resources: Worksheets, 2x Micro:bits per team (+battery packs and USB connections), Laptops or PCs with internet access.	Vocabulary: code, program, input, sensor, accelerometer, XYZ axes, wireless network, compile, broadcast, receive download
Activities: <ul style="list-style-type: none"> • Discuss motion sensors in technology they are familiar with – games, phones, etc. • Explain that the micro:bit has an accelerometer built into it. • Have students create and download the two programs that allow two micro:bits to connect wirelessly and share/display data on each other. • Discuss real world applications and the role of ‘telemetry’. 	
Assessment opportunities: Demonstration, discussion and application in project work	
Extension ideas: <ul style="list-style-type: none"> • Make a motion detector burglar alarm for an object that wirelessly sends an alert if the object is moved. • Use the motion detector in a moving vehicle to capture motion data • Record the maximum acceleration value (can be used to calculate velocity) 	