Moray Micro:bit Data and Environment Lesson Plan 2 – Recording Data

Working towards outcomes of a Curriculum for Excellence:
I have carried out investigations and surveys, devising and using a variety of methods to gather information and have worked with others to collate, organise and communicate the results in an appropriate way. (MNU 2-20b)
I understand the instructions of a visual programming language and can predict the outcome of a program written using the language. (TCH 1-14a and TCH 2-14a)
I understand how computers process information (TCH 1-14b and TCH 2-14b)

Programming Concept(s)
Algorithms & Evaluations.

Learning Intention	***Success Criteria***
We are learning to collect and analyse data using the micro:bit.	- I can create a program which records data when buttons are pressed. - I can use my program to carry out a survey - I can create and analyse a graph of my results

Resources	Between two or three – 1x micro:bit, 1x battery pack, 1x USB cable, 1x device (iPad or Laptop).
Timing	1hour
5-10mins	**Introduction** Watch introductory video from Mr Morrison. This gives a reminder of data and types of data. Opportunity to pause to discuss graphs. This can be expanded depending on the knowledge of the learners.
10-15mins	**Part 1 – Data Logging Code** Learners create code to create a traffic survey following the instructions in the video (Full Code HERE). They are able to customise the pictures within the code.
15-20mins	Once learners have completed this code they are ready to complete a traffic survey. You can either choose to go outside to a local road or watch a video of a road which is in the presentation (Available HERE). If watching the video you can slow the traffic down by going to settings in bottom right of Youtube and choosing 0.75 speed.
5mins	**Part 2 – Analyse the Logged Data** Once the traffic survey is complete watch the second video from Mr Morrison which explains how learners can analyse the data.
15-20mins	This is done by plugging in the micro:bit, opening the 'DATA' file and copying this data to a blank excel spreadsheet. Learners should create totals at the bottom of the data using the =SUM() function in excel. They should add titles above these totals before highlighting to create a bar graph. Learners can make as many cosmetic changes to the graph as they like. Finally learners answer the questions on slide 11 about their data. **(Extension)** Make changes to the code to count different things e.g. Wildlife, Survey of Transport to school etc.
5mins	**Ending the lesson (Plenary)** Discuss as a class the results and compare graphs. Then answer plenary discussion questions.