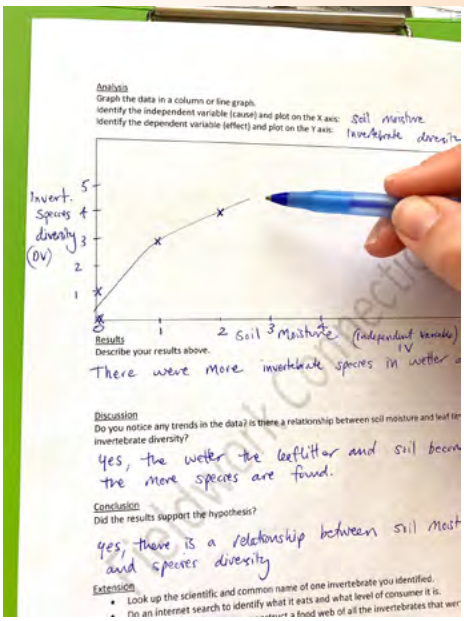

Geographical Numeracy: Interpreting field data and graphing skills

Kathy Jones, Fieldwork Connections

Numeracy is vital in geography. It makes up a large part of our students understanding of geographical skills such as graphs, statistics and data interpretation. Numeracy and graphing skills are very important when learning to find meaning in physical geography fieldwork.

On a recent trip to the Northern Territory I was able to visit a school and deliver a fieldwork investigation I had designed with year 10 and 11 students. Although I only had an hour with each class I wanted them to not only learn the beauty of data collection in the field but also how to interpret their data and visually represent it in the form of a graph.

My fieldwork design in physical geography is closely linked to my environmental science roots and sometimes I find the scientific method useful*. This can be helpful when collecting data and analysing results to better understand interactions between the geographical spheres; biosphere, lithosphere, atmosphere and hydrosphere.

Students need to understand their data numerically in order to graph and interpret it. When linking to science we need to understand our variables. We can simplify this into two factors as a kind of cause and effect or independent and dependent variables.

The fieldwork that was undertaken in Alice Springs focussed on the biosphere and the diversity (how many) of invertebrate species living in leaf litter around the school grounds. Species diversity was our dependent variable because it relied upon an abiotic (non-living) factor in the hydrosphere, soil moisture, which was our independent variable. At each location students collected data on the amount of soil moisture and the species of invertebrates present. By graphing this data, students were able to see the correlation between the two. When graphing results the independent variable belongs on the X-axis and the dependent variable belong on the Y-axis. The photo below shows the data graphed on the field sheet.

With the numerical skill of graphing the data, students can visually see correlations and trends and gain a deeper meaning of the data rather than just a page full of numbers. Results from this field investigation showed an obvious correlation between soil moisture and species diversity and the trend could be describes as 'the wetter the soil, more invertebrate species are present'. The graph could also be used to extrapolate the data when looking at the line of best fit.

NUMERACY IN FIELDWORK

At the end of the session I was able to discuss the results with the students. The above results were a good example of what we hoped to find, however, some groups did not find many species and all locations were dry. Results don't always reflect what you hope to find, however, we were able to discuss that if we wanted to improve the reliability of the study we could increase the sampling rate. Maybe next time, they could sample at 10 locations rather an 5.

When designing your own fieldwork to better understand biophysical interactions remember to keep it simple. Start with some observations, build a hypothesis and identify your independent and dependent variables that can be graphed. This will hopefully give students a deeper understanding of the interactions of the world around them.

For a deeper understanding of the scientific method when designing physical geography fieldwork please read my previous article "Simplifying the Science: Helping your students to plan an SGP in Physical Geography", Geography Bulletin Vol 54, No1 2022.

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Previous Fieldwork articles written by Kathy for the GTA Bulletin include:

- Connecting fieldwork to careers. Contamination Assessment Year 11. VOLUME 54, NO. 4 2022
- Simplifying the Science. VOLUME 54, NO. 1 2022