# A Case Study of Progressing Geography Fieldwork Skills Over Years 7–10

**Julian Woolhouse**
Graduate from the Master of Teaching at The University of Melbourne

## Introduction

This paper investigates the teaching of fieldwork skills over the course of a student's geography education from Years 7 to 10. Relevant research is considered, and findings and discussion are drawn from a case study of the fieldwork program at an independent school in Melbourne.

The rationale for this study is that a geography teacher will be better placed to harness the potential of fieldwork if equipped with an understanding of the skills that can be gained through fieldwork, and how students progress in their learning of these skills over four years of geography education.

The scope of this case study was to identify what fieldwork skills are being taught and their progression over Years 7 to 10 at the school investigated. Evidence was drawn from fieldwork booklets, fieldwork report instructions, and observations of fieldtrips and classroom teaching.

Some of the questions used to guide this research were:

- Are the fieldwork skills repeated, repeated with greater complexity, or are new skills developed in each year?
- Is the development of skills evident to the teachers and students?
- Is the increase in complexity over time focused on data collection, analysis, or interpretation?
- Does the fieldwork draw upon skills gained in previous years?

## Literature review

See Appendix 1 for the literature review.

## Method

During semester one of 2015, I was placed as a Teacher Candidate at the school that I investigated. I observed geography classes of Years 7 to 10, participated in the fieldtrip for each year level, and taught geography classes in Years 7, 8 and 9.

In preparing the findings, I referred to the following documents:

- Notes I had taken for my observations;
- Fieldwork booklets for each year level. These are provided to students to guide observation, and structure the collection of data on the day of the fieldtrip. Year 8 student complete theirs on an iPad, the other year levels use paper copies;
- Teacher timetables and planners;
- The school's geography unit plans;
- Fieldwork report instructions. For each year level, the fieldwork report is the major piece of summative assessment for the semester. The teacher provides report instructions for students and elaborates on them during lessons dedicated to constructing the report. I taught classes of Year 7 and Year 8 through the report production stage. I observed Year 9 and Year 10 classes at this stage;
- Australian Curriculum, Assessment and Reporting Authority and Victorian Curriculum and Assessment Authority documents (ACARA, 2013; VCAA, (ND, 2015, 2016).

## Findings and discussion

The school investigated has a strong geography program, with the subject being compulsory for all students from Years 7 to 10. Students complete one semester of geography each year and it is allocated seven 55 minute lessons per fortnight. Fieldwork is a central component of the semester and the fieldwork report represents 40% of a student's overall subject grade. Class time that relates directly to fieldwork occupies approximately six weeks of the geography program although that is difficult to define as connections to the fieldwork are made throughout the semester.

The skill related aims for fieldwork expressed to the students are fairly general:

- To develop fieldwork techniques such as recording data, use of equipment and making field observations;
- To draw conclusions from the data gathered;

**Table 1:** Summary of fieldwork curriculum.

| Year | Area of study | Destination | Focus | Structure |
|---|---|---|---|---|
| 7 | Water in the world | Maroondah and Sugarloaf Reservoirs | Catchment and supply of Melbourne's water | Three sites visited |
| 8 | Landforms and landscapes | Half Moon Bay | Coastal processes of erosion and wave action | One site, walking between beach and cliffs |
| 9 | Biomes and food security | Yarra Valley: vineyard, cattle farm, orchard, and chocolaterie | The location of food production and the distribution of food | Seven sites, visiting different enterprises |
| 10 | Place and liveability | Laurimar Estate | Urban planning and liveability in a Melbourne suburb | Two sites, small group area and village centre |

Considering the different topics, structures and destinations of fieldwork in Table 1, the thematic connection between each year level discussed by Field (2009) is not evident. In this school's program, the connection between each fieldtrip is made through the application of skills in data collection and the subsequent fieldwork report writing.

In observing each of these fieldtrips, the most obvious progression is one of independence. With each year, the amount of scaffolding is reduced, and greater responsibility and freedom is given to students. The greatest leap was observed between Years 9 and 10. At Year 9, students were taken to specific locations of the Yarra Valley, guided on the observations required, and given some freedom to ask questions of the guest speakers. At Year 10, students worked in small groups with minimal teacher guidance to survey an area of Laurimar Estate, and then surveyed the shopping area independently. I observed that generally the Year 10 students were capable in applying fieldwork skills to these tasks without assistance and meet the expectations of the task.

Table 2 reflects this progression of increasing independence in fieldwork tasks, although it does not show the more critical factor in determining the level of scaffolding – the teacher's mode of instruction.

**Table 2:** Fieldwork data collection tasks by Year level.
Tasks are ordered by increasing level of independence from top to bottom.

| Data collection task | Year 7 | Year 8 | Year 9 | Year 10 |
|---|---|---|---|---|
| Fill the gap sentences | √ | | | |
| Answers to questions from information provided by teacher | √ | √ | √ | |
| Annotated photos of specified objects | √ | √ | √ | √ |
| Words from information boards or displays | √ | | √ | |
| Written description of specified areas | √ | | √ | |
| A table of guided observations (e.g. beach features and supermarket price survey) | | √ | | √ |
| Labelling a given diagram or aerial photo (e.g. coastal erosion) or close-up photo | | √ | | |
| Photos of specified elements (e.g. undercutting of cliffs) | | √ | | |
| Notes from expert talk (e.g. orchard farmer, cattle farmer, real estate agent) | | | √ | √ |
| Measurements taken in field (e.g. beach profile, longshore drift and pedestrian count) | | √ | | √ |
| Labelling a map | | | √ | √ |
| Inference-based observations (e.g. uses of Half Moon Bay) | | √ | | |
| Drawing/field sketch | | | √ | √ |
| Information from advertising (e.g. real estate prices) | | | | √ |
| Student constructed observations (e.g. human impacts at Half Moon Bay) | | √ | | |
| Unstructured note taking of observations | | | √ | √ |
| Recording impressions/opinions/reflective questions | | | | √ |
| Complete teacher constructed area evaluation survey (Laurimar Street, access, and housing survey) | | | | √ |

It is significant that the last task in Table 2 involves *evaluation*, a higher order skill in Bloom's revised taxonomy (Krathwohl, Anderson, & Bloom, 2001). In the recently released Victorian Curriculum, the skills that require analysis and explanation at levels 7 and 8 are differentiated simply by the addition of the word *evaluate* at levels 9 and 10 (VCAA, 2015). Here, in addition to gaining independence in their fieldwork, students are developing capacities in higher order thinking. This progression in relation to student performance fits into the model described by Berry and Smith (2009).

The construction of a fieldwork report following the field trip is an integral part of the geography curriculum at the school studied. There are some common elements to the report structure such as the inclusion of an introduction, location map and statement, representation of data, and a final extended response. The data is represented using annotated photos, maps, diagrams, tables, flow diagrams, and at Years 9 and 10, sketches and annotated maps. The key points of difference between the year levels is how the data is used by the students and the level of scaffolding provided by the teacher in representing and interpreting the data. These differences are summarised in Table 3. By looking at how students use their data in the report, the increasing complexity of thinking that is required with each year becomes evident.

As students engage in the higher order tasks of the fieldwork report, they would be developing the *thinking skills* described by Foskett (2000). As students are taught to be more independent each year, these skills would be developing beyond the acquisition phase and students should gain the capacity to transfer these skills laterally and vertically to new situations. This progression appears to have been designed throughout the curriculum.

Foskett (2000) says that the learning of thinking skills should be made explicit to students. The school studied has recently introduced the use of the Structure of the Observed Learning Outcome (SOLO) developmental taxonomy (Biggs, 1982), and in this whole school approach, learning is explained to students using the SOLO construct. Students gain a metacognitive awareness of the skills they are developing in this process.

## Conclusion

The geography curriculum from Years 7 to 10 at the school investigated is designed to progressively develop the students' fieldwork skills, independence in applying those skills and, most significantly, an increasing complexity in the use of field data.

This case study has investigated how the curriculum is delivered to students; however, to thoroughly evaluate its effectiveness, a more detailed analysis of student achievement would be needed. Based on my observations of Year 10 students demonstrating their capabilities in their

**Table 3:** Summary of fieldwork reports by year level.

| | |
|---|---|
| **Year 7** | • Report instructions specify how and which data to represent.<br>• Data are used to present observations and descriptions of what is there.<br>• Conclusion: *Describe how Melbourne's water supply benefits from closed catchments, like Maroondah Reservoir, and how this water comes from our reservoirs to our taps.* |
| **Year 8** | • Teacher guides class on how and which data to represent.<br>• Data are used to describe and explain the natural processes and human impacts.<br>• No conclusion, instead a creative response: *Imagine you have been given a contract to improve Half Moon Bay. Present an annotated plan to show and explain how this would improve Half Moon Bay.* |
| **Year 9** | • Teacher gives option and advice on the how and which data to represent.<br>• Data are used to describe, explain, compare, evaluate and support a point of view.<br>• Extended response: *"The location and features of the Yarra River are the most important influences on agricultural production of the Yarra Valley." To what extent do you agree?* |
| **Year 10** | • Students choose how and which data to represent; teacher provides some modelling.<br>• Data are used to evaluate (liveability).<br>• Conclusion: *Make an overall evaluation of the pros and cons of Laurimar and its liveability in relation to the people who might live there. Make a judgement about whether you think further urban-fringe developments, such as Laurimar, are a good solution to housing Melbourne's growing population.* |

fourth year of Geography, I believe this program has successful outcomes.

Although there is a connection between each year's fieldwork component, the links are not as strong as the examples given by Field (2009). I suggest that a stronger link could be made to the individual's development of skills through the building of a fieldwork portfolio that covers Years 7 to10. Whilst the school has a database to record student achievement, a portfolio could provide an accessible format for both teacher and student to visualise individual progression.

The linking and transferring of skills across different subjects discussed in the literature review is not something that became evident in my investigation. As students consolidate higher order thinking skills, they will likely transfer these across to other subjects, particularly if they have an awareness of the skills. This transfer would be strengthened if teachers facilitated these cross-curriculum connections. An example could be a Science class developing an inquiry based on data collected on a geography fieldtrip. In this area, there is potential to further the value of fieldwork and strengthen the skills developed.

## References


Australian Curriculum, Assessment and Reporting Authority [ACARA]. (2013). *AusVELS Geography* (Familiarisation and planning PDF version ed.). East Melbourne: Victorian Curriculum and Assessment Authority.

Berry, R., & Smith, R. (2009). *Towards a national geography curriculum for Australia: background report*. Milton: Australian Geography Teachers Association Ltd, Royal Geographical Society of Queensland Inc, Institute of Australian Geographers Inc.

Biggs, J. B. (1982). *Evaluating the quality of learning: the SOLO taxonomy (structure of the observed learning outcome)*. New York: Academic Press.

Cook, V. A. (2011). The origins and development of geography fieldwork in British schools. *Geography 96*(2), pp. 69–74.

Erebus International. (2008). *A study into the teaching of geography in years 3–10: final report*. Sydney: Erebus International.

Field, S. (2009). Doing fieldwork with year 7 classes. *Geography Bulletin, 41*(1), pp. 3–6.

Foskett, N. (2000). Fieldwork and the development of thinking skills. *Teaching Geography 25*(3), pp.126–129.

Geographical Association. (2009). *A different view, a manifesto from the Geographical Association*. Sheffield: Geographical Association.

Huynh, N. T., Solem, M., & Bednarz, S. W. (2015). A road map for learning progressions research in geography. *Journal of Geography, 114*(2), 69–79. doi: 10.1080/00221341.2014.935799

National Research Council [NRC]. (2007). *Taking science to school: Learning and teaching science in grades K-8*. Washington, CD: The National Academies Press.

Krathwohl, D. R., Anderson, L. W., & Bloom, B. S. (2001). *A taxonomy for learning, teaching, and assessing: a revision of Bloom's taxonomy of educational objectives* (Complete ed.). New York: Longman.

Victorian Curriculum and Assessment Authority [VCAA]. *AusVELS Standards and progression point examples: the humanities* – geography. Retrieved from http://www.vcaa.vic.edu.au/Documents/auscurric/progressionpoints

VCAA. (2015). *Victorian Curriculum F-10*. East Melbourne: Victorian Curriculum and Assessment Authority. Retrieved from http://victoriancurriculum.vcaa.vic.edu.au

VCAA. (2016). *The Victorian Curriculum F-10*. EWast Melbourne: Victorian Curriculum and Assessment Authority. Retrieved from http://victoriancurriculum.vcaa.vic.edu.au


## Appendix 1 – Literature Review

### Research question

How can research inform the teaching of fieldwork skills over the course of a student's geography education from Years 7 to 10?

### Introduction

Fieldwork is a key element to geography teaching and has been present in school geography curriculums from as early as the 1870s (Cook, 2011). In Victoria, fieldwork was included in the levels 7 to 10 AusVELS curriculum (AusVELS, 2013), and at Victorian Certificate of Education level it is mandated by the study design. In the new Victorian Curriculum, fieldwork is not specified for Years 7 to 10, however collecting and recording data from primary sources is specified (VCAA, 2016). The term *fieldwork* broadly includes the preparation, the fieldtrip activity (a firsthand, out of the classroom, experience), and the subsequent reporting and analysis. The importance of fieldwork is well supported by the relevant literature. Experiential learning outside the classroom in the real world is considered an essential component of geography education (Geographical Association, 2009) and it contributes not only to students' geographical knowledge but also to their personal development (Berry & Smith, 2009).

A geography teacher needs to be able scaffold student learning of fieldwork skills and provide a progression to direct each student's development in this area. I was interested to investigate how the available research could inform the teaching of fieldwork skills over the course of a student's Year 7 to 10 geography education. I had difficulty finding research specifically on the learning progression of fieldwork skills, so I extended my scope to look more broadly at how fieldwork skills can be taught over the secondary years. A recent paper by Huynh, Solem, & Bednarz (2014) had reviewed over 400 articles from three prominent geography education journals and found no research in learning progressions.

The papers selected for review were chosen for their content related to development of fieldwork skills, rather than being a justification of the value of fieldwork. There was greater emphasis on the skills gained from the *outside the classroom* components of fieldwork rather than the in-class time spent on preparation and report writing. Articles from Australia, United States and England were looked at to give an international perspective. AusVELS curriculum documents have also been referred to due to their significance in guiding teaching in Victoria, despite not being peer reviewed research articles.

## Learning progression

A learning progression is a "description of the successively more sophisticated ways of thinking about a topic that can follow one another as children learn" (National Research Council 2007, cited in Huynh et al., 2015). Articulating a learning progression may assist a teacher to clarify concepts accurately to students, helping to avoid misunderstandings as students grapple with increasingly more sophisticated geographical thinking.

In their article, Huynh et al. (2015) identify three methodological approaches for research into learning progressions. The first bases the learning progression in the literature on learning in that topic; the second includes assessment of student performance against the progressions in order to revise them; and the third differs by using instructional intervention to measure student learning and feedback into the progression development.

Progression points for the AusVELS geography curriculum are clearly outlined in curriculum resources available to teachers in which examples are given for levels 4 through to 10 (VCAA, 2012). They are designed to illustrate how a student might demonstrate progression, but whether this guide was based on peer reviewed research is unknown. It is not specified if these progression points are derived from observations of what a typical student might display, or from a theoretical view on what a student might be capable of. It seems that in the terms Huynh et al. (2015) it is the first approach that has been used. The further assessment and instructional intervention of second and third approaches are left in the hands of the teacher. Indeed, AusVELS states that the progression points should not be the only resource used by a teacher nor should they replace standards. Huynh et al. (2015) describe standards as being based on what, when and how concepts are taught, while learning progressions should emphasise how students learn and help to understand student thinking. The AusVELS progression points give examples of what student work could demonstrate at each level, but they do not specify how a student could learn concepts.

Sue Field's article from the NSW publication *Geography Bulletin* provides some real examples of a fieldwork program that is structured across Years 7 to 10. She suggests that fieldwork and its assessment should be designed so that there is a strong connection between the fieldwork at each year level; that the skills learnt each year contribute to a bank of skills required at Year 10; and even suggests that a return experience at the same location could be valuable if the program is different (Field, 2009). This connection between years can be further strengthened by involving the Year 7 students in data collection for the Year 10 project. This approach helps to give students a clearer idea of the direction of their geography studies. They will recognise the progression of skills that are inherent in the structure of the fieldwork studies. These skills include greater complexity of the topic studied; greater precision required; increased maturity and awareness of relevant issues and context of the topic; and a wider range of scales being studied (Berry & Smith, 2009).

## Fieldwork skills

The literature on the value of geography fieldwork highlights a broad range of skills that it can develop in students. The geography curriculum needs to show how knowledge and skills are progressively built upon each year, taking into consideration the cognitive development of the student (Erebus International, 2008). Some of the skills discussed in relation to fieldwork include communication, collecting and recording data, calculation, geographical representation, conducting interviews, discussing and others. An interesting variation to this list is the *thinking skills* discussed by Foskett (2000) in his article where he takes a bigger picture view of what students can gain from fieldwork.

The thinking skills that Foskett (2000) refers to include deciding, choosing, reasoning, deducing and applying logical thinking. They can be divided broadly into skills that are creative and skills

that are critical. In order for students to develop beyond the acquisition phase, skills need to be transferred – laterally and vertically – to new situations. Fieldwork provides an ideal platform to push students to higher order thinking and the experiential learning aspect of fieldwork actually accelerates the learning of these thinking skills. Gains are best achieved with active fieldwork rather than passive, and episodic incidents such as getting wet or muddy can improve long-term memory recall.

The field inquiry approach that is familiar to geography teachers can readily be strengthened by incorporating Foskett's (2000) thinking skills concepts. This can be achieved by making explicit the opportunities where thinking skills can be developed. For example, the knowledge components of data collection could be augmented by having students critique the data collection process and discuss improvement to the design and methods. Independent inquiry could develop skills in self-evaluation and reflection. In addition to presenting data, students could engage in a role-play of management strategies. The transfer of knowledge and higher order thinking can be applied by linking classroom activities to the field activities, and considering case studies from other areas than the one observed to hypothesise how different management strategies might affect an area.

This thinking skill approach is a broad perspective on student learning and would need to be combined with subject specific skills that the fieldwork is targeted at developing. Foskett does not present a progression of thinking skills to guide student development year to year. Whilst students at any level can engage in higher order thinking, it would be useful for the teacher to have an understanding of how thinking skills can progress in order to direct students to their zone of proximal development.

The Council of the Institute of Australian Geographers (cited in Berry & Smith, 2009) presents a more structured sequence of geographic skills that grow in complexity without assigning year level, age, or time frame to this sequence. It is worth noting that the AusVELS progression points, whilst expressing levels that may correspond to the school years Foundation to Year 10, also do not stipulate the age or school year or time frame that students should achieve each level of progression. The important factor is that progression is available to students at each stage.

## Cross-curriculum approach

A key element of fieldwork is the linking of knowledge, concepts, skills and procedural values gained in classroom learning to real life scenarios through the opportunity to apply these in the field (Berry & Smith, 2009). Making such links is developing in students the thinking skills of transfer. If students develop this skill of transfer in geography, then they are open to applying it across other learning areas. The same can apply to other thinking skills, and the process would certainly be strengthened if other subject areas within a school were employing a similar approach and actively encouraging metacognitive awareness in students.

According to Huynh et al. (2015), the available research in geography education is based around the learning of separate ideas or practices, not on the higher order relationships between different content and subject areas, or between skills learned across different grade levels. Understanding learning progressions in other subject areas could provide valuable information to support teaching in geography. For example, knowing where students are at in their learning of linear paths and fractions in maths could assist the timing and delivery of teaching the concepts of scale in geography.

## Conclusion

The literature reviewed indicates a good awareness of the importance and benefits of fieldwork in geography teaching and of a positive trend towards a more active, student-centred style of fieldwork. However, there is more to be exploited from fieldwork that can translate to better outcomes for students.

A geography teacher will be better placed to harness the potential of fieldwork if equipped with an understanding of skills that can be gained through fieldwork and how a student can progress over the years of their school geography education. Considering the thinking skills involved in fieldwork adds further value to the undertaking and promotes a more holistic approach. This opens opportunities for cross curriculum learning where students can make links between content in different subjects.

This linking and the transferring of skills between subjects strengthens student understanding in both areas and, at the same time, the higher order thinking process of transfer is in itself valuable. There is potential for teachers to facilitate this if teachers, particularly for areas where skills can be easily transferred, better understand the learning progressions across different subjects. This understanding could present the school curriculum to students in a more cohesive and integrated manner – ultimately with the aim achieving better learning for all students.

### References

See earlier reference list.