Learning in the Field: A Change in Venue or an Alternative Pedagogy?

An Investigation into a Year 10 Science Field Trip in Toowoomba, April 2004

Jeanette Farrington D12103043

Introduction

In April 2004 a group of Year 10 Toowoomba High School students participated in a field trip to an area of remnant vegetation at Jubilee Park, on the edge of the Toowoomba escarpment and on the fringes of urban Toowoomba. It was anticipated that this trip would provide an exemplary field trip experience, for myself as a pre-service teacher. It was organised by a science teacher, renowned for progressive, and excellent pedagogy.

The venue provided great scope for the identification of the differing components of the environments and for discussions of the complex interrelating forces that had contributed to it's ultimate form. Social, environmental, scientific, political, sociological and many other factors had ultimately been, in part, determinative of how this area appears today.

It was anticipated on my part that, through visiting this site, techniques in experiential/ empirical study and learning could be employed to facilitate great discussion as to these various factors. The reality was something completely different. Students were neither given the opportunity to move beyond familiar classroom teaching/learning strategies, nor did the teachers attempt to facilitate such a move. This was ultimately responsible for me asking the question, "was this merely the 'same old science lesson', but just outside?"

To understand what occurred and what can be improved upon in this instance I propose to investigate this issue under the following headings: "Anticipated Opportunities for Learning in the Field" and "Observations and Analyses of the Toowoomba Field Trip."

In part, this paper will delve into the issue of Socratic method in science teaching, in that the fieldtrip provides an ideal location to open up a dialogue on the issue at hand, to allow

students to learn from their own, and other students observations and interpretations, and to better understand the environment and the complex processes that created it.

Anticipated Opportunities for Learning in the Field

As an active participant it is necessary to identify my preconceptions of normal and exemplary fieldtrip practice. It is also important to identify where 'current thinking' lies on the issue, and to identify what 'best-practice' is (or should be) when it comes to organising and conducting a science fieldtrip. This should achieve two things. First, I will be able to identify my own preferences and, therefore, any potential bias in interpreting the validity of the approach taken in this instance. Second I can achieve a somewhat objective measure of good fieldtrip practice and, therefore, be able to quantify the extent to which the case at hand has strayed from this ideal. The ideal here is of course, not an absolute measure, as so many variables, such as students, teachers, location of fieldtrip, and other external factors all have a role in determining the ultimate form of the experience.

To determine my preconceptions, a brainstorming session was conducted, whereby I recorded my expectations of the upcoming fieldtrip. Specific and more general views as to what may constitute a good fieldtrip were noted. This was conducted prior to undertaking a literature review, so as to truly gauge my own opinions.

The following list summarises the essential components of that brainstorming session, in the order as they came to mind, although. Some relate to pedagogy and content, some are more utilitarian.

A fieldtrip should:

1. Be fun and engaging for the students
2. Demonstrate material taught in the class in a real world setting
3. Give students the opportunity to discuss their observations but also to discuss more broadly the issues under investigation
4. Not be overly taxing on the students from the point of view of recording observations or other details

5. Provide the basis for future in class activities or learning, or provide material for assessment
6. Be conducted in a flexible manner, to allow greater attention to be given to relevant factors identified whilst on the trip, or to cope with unexpected events (cancellations, weather, illness etc)
7. Expose students to first hand accounts and the opinions of non-teaching staff (in this instance, some of the key 'players' in the issue at hand could present 'their case')
8. Not be overly physically taxing, and provide opportunity for rest and recreation
9. Allow opportunities for teaching staff to build relationships with students
10. Allow teaching staff to engage students with behavioural or other issues and special needs
11. Build on material already taught, and not just replicate it, or go over again material that has been well covered in class
12. Be conducted within school and departmental guidelines and not present any risk to staff and students

From my limited experience in the profession, in practice and as a student, and from a subsequent review of the literature, these expectations all appear to be reasonable, obtainable and desirable.

Observations and Analyses of the Toowoomba Field Trip

A number of observations were made throughout the day of the fieldtrip to Jubilee Park. From these observations it has been possible to assess the appropriateness of the decisions made and of the strategies employed. From these assessments alternative approaches can be suggested. One male student, 'Peter' [not his real name] was 'followed' throughout the day, in addition to these more broad observations. A number of specific questions were asked, in addition to more general discussions. For ease of reference, both as a tool for my future use and for other teachers planning fieldtrips, these observations, assessments and alternatives can best be displayed in a table. Following this, a more broad discussion of the findings will be made, including an attempt to account for how and why these 'failings' occurred.

Table 1. Analysis of Jubilee Park Field Trip

Observation/Interview	Assessment	Alternative/Recommendation
A great deal of time was spent prior to departure on the morning of the field trip discussing the procedures, requirements and expectations for the day	Ideally preparation and preliminary instruction should be carried out in the classroom prior to the commencement of the trip. This allows time for the information to be absorbed, as well as providing an environment where the relevant instructions will be comprehended.	Conduct preliminary discussions and instructions for the fieldtrip in regular classes, prior to departure.
Behaviour management was a significant topic of instruction prior to departure.	In addition to academic goals and expectations it is necessary to discuss with the students how they are to behave. This is important given the departure from the normal school environment, and the rigid behavioural structure it implies.	Conduct preliminary discussions about expectations of behaviour in regular classes, prior to departure and reinforce on the day of the fieldtrip.
The group of students was very large, approximately 60 students, and comprised a number of classes. However this was broken up into approximately 12 groups of 5 students, accompanied by 1-2 teachers. These groups worked through different stages of the day's activities	It is recommended to limit group sizes to one class (DET 2004); hence splitting the group into groups of 5 is apparently compliant. However, the small size of the class in this open environment (where there was no competition for resources) reduced the ability for discussion and evaluation of differing opinions or interpretations.	Groups to be made up of at least 10 students whilst conducting open environment fieldwork, and not to be too proximate to one another – preferably working through different stages of the days activities at different times.
The composition of the small groups was not predetermined, and no thought appeared to be put into getting a balance of gender, needs, abilities or constituent classes.	The fieldtrip provides a good opportunity for students who do not prosper in the normal classroom environment to demonstrate their abilities. It also allows for interpersonal communication between students who usually do not associate with one another. This possibility can be circumvented by inclusion amongst a group of friends (clique) where the 'other' can be excluded.	Groups to be comprised of an even mix of gender, needs and abilities, and where more than one class is involved, to comprise a mix of those classes whilst conducting open environment fieldwork.
Representatives from the Department of Primary Industries and Toowoomba City Council conducted a presentation to the whole group. Students did not appear 'engaged' by the presentations. Peter questioned their relevance and felt more preparation for the students would have helped	Presentation by industry representatives can be very beneficial to highlight real world links to (or applications of) the scientific principles or other issues being dealt with in the classroom. The reverse, that the material or issues being presented may not delivered in an 'accessible' format, or contain relevant content, can also be the case.	Those presenting to students need to be briefed as to what the students have been studying and what the focus of the presentation should be. Similarly, students should be briefed as to the likely content of the presentations.

Observation/Interview	Assessment	Alternative/Recommendation
Peter believed that the 18 pages of questions, relating to 28 'stations' (places to make observations) was excessive, and quickly became bored with the activity.	The large number of questions did seem to affect the learning process, in that it effectively became a race to get the questions filled out and to return to base-station.	Allow for some answering of set questions but do not let it dominate the fieldtrip experience.
Students were not given the opportunity to discuss the issues raised at each station, rather, each group circulated around the 'course' of stations, answering the questions as quickly and briefly as possible. Often the students were 'spoon fed' the answers.	More time could have been provided for teacher-led discussion and analysis of the sites. By spoon-feeding the students the answers, the fieldtrip became little more than an outdoor lecture. Hence, merely conducting a lecture at a number of outdoor sites proved ineffective.	Primarily use the fieldtrip experience to extend the students' understanding and knowledge, through guided and open-ended discussion about what the students are presented with in the field.
Students complained about the physical exertion required throughout the day. Little consideration had been given to the 'pit-stops'.	Basic practical, logistical and physical considerations must be made in the planning process, otherwise simple tiredness will greatly impact on learning outcomes. An army fights on their stomachs and students study on their stomachs and on their legs.	Create a basic checklist of practical requirements that must be considered at all stages of the fieldtrip.
Motivation to actively participate ebbed at either end of the day. Peter was clearly delighted not to be in classes for the day, and was distracted by the prospect of a day 'off school'. By the end of the day many of the students levels of motivation had also declined. When required, Peter was on task less than 50% of the time, compared with in class observation (>75%)	There appears to be a direct correlation between motivation and the stage that the fieldtrip has reached. Excitement in the morning, hunger at lunch and tiredness in the afternoon all impact on motivation, and hence learning and behaviour.	Organise the day of the fieldtrip to focus learning around times of best concentration; mid-morning and mid-afternoon, with more fun activities at other times.
Discussions that did occur at each station revealed a lack of basic understanding of the principles that were trying to be demonstrated at each site. Basic knowledge was lacking and students appear ill-equipped to be addressing more complex issues	When moving from the science classroom to the field, it may not be inevitable that those principles that seem well understood in that familiar environment, will necessarily transfer to the new, real-world situation, especially where material is not discussed in real terms in the classroom.	Special attention should be paid prior to any field trip (and probably in all circumstances regardless) to making connections between the 'abstract' material being delivered in the classroom and its application to, or relationship with the real world.
Periodic confirmation of retention of material was made by myself. Students were continually asked throughout the day to recall significant findings from previous stations. In every case retention was very poor, with virtual no essential information retained.	Retention of information was very poor for the group that I observed. It is essential where students are to pay special attention to a certain point, that it is adequately recorded. Where open discussions (which I advocate) occur, these too need to be recorded, as much valuable insight may be uncovered.	Provision for time and space to record notes must be made. A space on worksheets for each relevant point of the fieldtrip, must be provided to record additional notes from discussions or observations. Alternative methodologies and technologies (GPS, video/digital cameras, sound recording, even drawing) should be employed.

Discussion

Why did this fieldtrip fail to capture the students' imagination? Why were they not engaged? Why were their levels of retention so poor? The preliminary brainstorming as to what should be included in any successful fieldtrip is clearly reflected in the subsequent analysis of observations taken on that trip. In every case, the requirements that have been identified have not been satisfied at all, or only in part.

A teacher may validly claim they are not solely/directly responsible for this outcome. Lucas (1999, p.2), from the relevant literature, has identified "novelty of unfamiliar locations and stimuli as an important factor in influencing the behaviour of visitors, particularly children in school groups." The same paper (Lucas 1999, p.2) identified three 'novelty reducing strategies' that can be employed. These include "increasing students' familiarity with the physical location," "ensuring that students have appropriate levels of knowledge about the topis or focus of the [activities]," and "providing prior opportunities for students to practise relevant skills." While Lucas was discussing a fieldtrip to a 'Sciencecentre', these strategies are more broadly applicable, and are especially relevant to the case at hand. Novelty value itself would be hard to measure. It may involve determining a student's prior knowledge of the proposed fieldtrip topic and venue. Action research, whereby a study of a subsequent fieldtrip where these three steps have been implemented, could be undertaken. This would be a more valid and reliable approach.

The innovative step to include a fieldtrip in this unit was not backed-up by an equally innovative decision to properly explain the complex and interrelated processes at work, and the opinions of the many parties that had an interest in the area under investigation. Instead the fieldtrip clearly resided in the normal classroom milieu, transferring basic factual elements to the students' workbooks, with little elaboration. The questions in the workbook suggest higher reasoning goals, but the reality of the day, saw these dealt with in a very superficial way.

The use of 'Socratic Method' in the field could be of great assistance here. Socratic method is a system of teaching, using open-ended questions to evaluate understanding and enhance learning (Teaching with Questions). With this method, the teacher can:

> model an inquiring, probing mind by continually probing into the subject with questions. We can probe into the nature of the question, problem, or issue that is on the floor. We can inquire into whether or not we have relevant data and information. We can consider alternative interpretations of the data and information. We can analyze key concepts and ideas. We can question assumptions being made. We can ask students to trace out the implications and consequences of what they are saying. We can consider alternative points of view (Socratic Method)

Socratic method presents many benefits, amongst them is this; "the student is drawn out into an interactive form of learning that is more healthy and exciting than any boring, dry, dull lecture can be" (Teaching with Questions). In this instance, the Socratic method is supplemented through experiential learning opportunities present through teaching in the field, with the students being directly confronted by the subject of their learning.

It must be taken into consideration that the reliability of the conclusions here are greatly limited by both the small data set (only one student followed closely) and temporal considerations. Only one fieldtrip event was studied on one day, with one group of students. The same fieldtrip in previous years may have had very differing results. That said, the conclusions and recommendations made here appear consistent with 'current thinking' on the topic.

Conclusion

This appears to be little more than a fieldtrip for the sake of having one. Students were neither given the opportunity to move beyond familiar classroom teaching/learning strategies, nor did the teachers attempt to facilitate such a move. The observational analysis has clearly shown that a number of practical and pedagogical considerations must be made, both prior to and during the fieldtrip. Science especially warrants special consideration, as the shift from abstract concepts in the classroom, to their application in a real-world setting may be problematic. Early preparation and continual in-class references to real-world applications is one partial solution. The fieldtrip setting would only enhance the use of Socratic Method, as a strategy for teaching science in the field.

References

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