

## Going over the interview transcripts with the students

Through the interviews, I followed a number of threads (constructed a number of themes). These include

- a. Independence
- b. Help, attention, coaching
- c. Interest
- d. Social interaction, culture of learning, choosing partners
- e. Prior knowledge
- f. Time

### Independence

The major theme throughout the interviews was that of independence. Most students liked the freedom they had to choose their own problems, the ability to choose the procedures to collect the data they wanted to collect, and the freedom to learn from the data what they thought you could learn from.

Fab: I think we had already a lot [of freedom], like we had a lot of time to say what we wanted to do. Mr. Bowen, all he really did, he'd say, pick your focus question, we'd pick it and we could do whatever we wanted. We found the information any way we wanted...We like could do what we wanted and how we wanted. And he did help us, if we were going on a wrong track, he'd like help us.

For the students, this freedom brought a number of advantages which normal classrooms do not offer. First, doing investigations on their own gives students the challenge of framing a problem, designing an inquiry, and to come up with a solution.

Shaun: You have your own way of doing the investigations, it is totally up to yourself...I like that better, because it is more a challenge, and it is more enjoyable than having someone always on your head do this do this do this

In this way, the students get to own their problems. In traditional classrooms, "problems" are assigned from the textbook. Yet these are not problems in the true sense of the word. These are puzzles which students have to solve, for which they most often know that there exists a correct way for getting the right answer. Getting the right answer, then, becomes the sole purpose for doing these textbook problems (Wheatley, 1991). On the other hand, the students in this study owned their problems, they were problematic in the sense that they were meaningful as problems. The students chose them, then went about ways of solving. The students experienced themselves in control of the activities from the problem setting to controlling the problem-solving processes to presenting a solution. Because of their control of the solution processes, the students had to choose from alternatives, which also included to abandon a problem for some other solution. Similar observations were made in a study which concerned the use of arithmetic in real-life situations (Lave, 1988).

Ownership of a problem also brings with itself the pleasure of accomplishment, students can experience self-worth, and they are validated in their beliefs that they can achieve.

Stew: because when you make up your own questions then you get it, then you get it right, it makes you feel like you have accomplished something...and then when you are done, and when you got it right, it makes you feel like, great

And ownership brings with it interest

This degree of independence was planned by Michael and experienced by the students as