

**USING EFFECTIVE PROFESSIONAL DEVELOPMENT SESSIONS
TO IMPLEMENT CHANGE IN CURRICULUM AND
CLASSROOM PRACTICES: MY STORY AS A TEACHER AT
EXMOUTH DISTRICT HIGH SCHOOL, WA'S REMOTEST
DISTRICT HIGH**

Susie Bedford

**Science & Year 8 Coordinator
Exmouth District High School
WA**

INTRODUCTION

Before talking about using effective professional development to implement change in curriculum and classroom practice I want to give you a snapshot of the school and its isolation.

Exmouth is a small town 1200kms north of Perth, and along with Coral Bay is one of the 'gateways' to Ningaloo Reef - a fringing coral reef - about 260kms long and 1/10th the size of the Great Barrier Reef. We boast an amazing array of charismatic megafauna such as the incredible whale-sharks, dugongs, dolphins, manta rays, humpback whales, turtles, not to mention hundreds of species of coral and the accompanying plethora of colourful fish and other organisms that make up the coral reef ecosystem, which is the major drawcard for the tourists who visit the area and the people who choose to live here.

The terrestrial ecosystem is just as fascinating, housing the endangered black-footed rock-wallabies, echidnas, goannas or bungarras, emus (Exmouth chickens), an amazing Karst system of caves and sinkholes, in the limestone of the Cape Range, housing some amazing fauna known as troglobites (cave-dwelling) and stygofauna (living in the underground water). The marine ecosystem is protected through a Marine Park with some 18 protected, no-take sanctuary zones and the terrestrial eco-system through Cape Range National Park. We live in an arid zone environment where temperatures in mid-summer are consistently over 40°C and occasionally pipping the 50°C mark.

The town's population is currently about 2100, but fluctuates during the year with increases starting at the beginning of the whale shark season at the end of March and decreasing again at the end of the October school holidays, with a peak in the July school holidays. The main economy of the town is now tourism, but the prawn commercial fishery based in Exmouth Gulf and the Harold E Holt Navy Base are also other major employers in town.

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SCHOOL BACKGROUND

The school was established in 1968, when there was a large contingent of American Navy Personnel based here. It is a District High and the remotest DH in WA. We have K-12. The make-up of the school is:

Primary:		267
High School:	Yr 8	29
	Yr 9	26
	Yr 10	22
	Yr 11	6
	Yr 12	4

The majority of students, who go onto tertiary education, leave Exmouth DHS after Year 10 to continue their education in Geraldton, or at private schools in Perth. Unfortunately there is a perception in the community that the students will get a much better education at a bigger school and this provides us with a Catch-22. If more students stayed in Year 11 and Year 12 we would be able to offer a much better selection of face-to-face subjects. Whilst the majority of students leave after Year 10, we very rarely have the opportunity of running face to face tertiary entrance subjects and for those students who do stay they have to tackle subjects like Chemistry and Physics through SIDE (School of Distance and Isolated Education). Students who do undertake such a pathway have to be extremely self-disciplined, self-motivated and be prepared to spend every day from the beginning to the end of each school day in one room, with little or no face-to face contact with the teachers at the school.

USING EFFECTIVE PD TO IMPLEMENT CHANGE

Remoteness = costly & limited PD = choosing carefully!

Teaching in a remote town has its drawbacks with regard to Professional Development, which becomes extremely costly, so each staff member is probably limited to one decent PD, generally in Perth, once a year. This means choosing PD extremely carefully to ensure "value for money" and hopefully that it will provide the teacher concerned with knowledge/strategies/information/resources – some or all of which can be used or shared effectively back in the school and within the classroom.

In thinking back over my last 8 years at Exmouth District High, I have been lucky enough to attend PDs that were significant for me and effective enough to give me tools, strategies, information and resources that have allowed me to lead the way in implementing curriculum change in the high school and change some of my classroom practices.

PD AS A CATALYST FOR IMPLEMENTING LEARNING TO LEARN

For many years as a Science teacher I have been concerned about the level of literacy and numeracy of the students coming in to Year 8. The students' poor comprehension affects their learning in all learning areas not just English. In staff meetings and staffroom discussions it was apparent that I was not alone in my thinking about the Year 8 students. This is in no way a criticism of the Primary teachers, but probably more symptomatic of a system that is not working as effectively as it could. In determining our school development plans every year, literacy and numeracy always seemed to be set as priorities, which I continually puzzled me as I felt that they should be core business for primary classes.

I often used to wonder how I could help with this problem that affected my approach to Science in Year 8. The solution came unexpectedly out of the blue a few years ago in 2003, when 'enterprise education' was the buzz word. Five staff members of the school attended a 2-day conference in Perth. A lot of the conference didn't appeal to me and I thought I would be walking away from a PD which was a waste of time. However, luckily for me, one of the sessions was a presentation by a Maths teacher at Hamilton Hill Senior High School in Perth on a subject that had been introduced into Year 8 called *Learning to Learn*, because of the very same concerns we were having at Exmouth. The programme that they run, and have been doing so for the last 10 years, really struck a chord with me. So, after the session I quizzed Helen about the programme and more importantly asked the students with her what they felt about the programme. Their response was very positive and that was all I needed to get the ball rolling.

Later that year I attended a PD in Geraldton to become a facilitator in a programme run by the Health Department called *Resourceful Adolescent Programme - RAP*. They also paid for our PD, including airfares and accommodation. I felt it would be great to incorporate *RAP* into a *Learning to Learn* programme to help students cope with adolescence, their behaviour, and how they react to situations, as it helps them to identify resourceful as opposed to risky behaviour that is negative and not likely to be productive for them at school.

As we had to fly to Perth to get back to Exmouth, I seized the opportunity to persuade the School PD committee to let me stay an extra day in Perth to spend with Helen Egeberg at Hamilton Hill High School, so I could pick her brains about her *Learning to Learn* course and watch some of her classes in action. She was an inspiration and gave me both her Year 8 and Year 9 courses to use as I wished.

Motivated and enthusiastic, I returned to school and spoke to the High School staff about the possibility of introducing such a course in 2004. They were all extremely supportive and we mapped out a programme for Semester 1 2004. However, it wasn't timetabled into the courses being run, but I continued to push the introduction of such a course and it was finally introduced this year, two years down the track. The Year 8 students have been split into 2 small classes (14 & 15 in each) and I teach both classes.

So in February of this year, with *Learning to Learn* already underway, I applied to attend a PD Conference in Perth called *Active Brains Engaged Minds - Setting the Climate for Thinking*. It provided me with invaluable resources to incorporate into

Learning to Learn, and one very simple thing I took away with me was how to make 'Little Books'. These I have used successfully and effectively with all my Science classes (Years 8-10), and in *Learning to Learn*.

So what have we incorporated into *Learning to Learn*? Firstly, I run the RAP programme, along with understanding how our brains learn, left-right brain connections, and identifying strategies the students can adopt to help with their learning. We also do relaxation, some brain gym, motivation, visualisation and goal-setting (using the Little Books). We have also concentrated on comprehension and multiplication tables, as not one student in Year 8 knew all their tables. Trying to do Maths without knowing one's tables becomes laborious and boring. I work closely with the English teacher, so for one period a week students have a reading period and keep a 'Reading Journal'. At the beginning of each term we return to goal-setting so students evaluate their goals from the previous term and set new goals – short term, medium and long term goals.

The students made their own juggling balls, from balloons and rice/sand and learnt how to juggle. As a teacher I could not juggle, so I made my own juggling balls and learnt how to juggle with them. I downloaded the instructions from the Internet. Some students picked up juggling very quickly whilst others found it more difficult. The fact that I was learning too helped some of the ones who weren't as coordinated. So why learn to juggle? It was great fun, students had to cooperate and help each other make juggling balls, and it is great for hand-eye coordination and getting the left-brain/right-brain connections happening. At the end of the time set aside all the students had learnt to juggle (including me!) and all got a great sense of achievement out of the exercise.

No course should ever be static and I will continue to hunt for PD sessions that will help me consolidate this course. We will need to evaluate the course and make changes where appropriate, but at this stage I feel it has been a good change in the Curriculum and it could not have happened without the support of my colleagues and Administration.

TAKING THE PLUNGE WITH GROUP WORK

At the brain-based learning conference, in the beginning we had to work in groups to produce an assessment task for a class based on group work. There was a mix of teachers, with only one other Science teacher. I came up with the idea of looking at Global Warming (as it is such a 'hot' topic and very relevant at the local level to Exmouth), based on an individual task I have given my Year 9 students in previous years. We brain-stormed and came up with an assessment task that was plausible and great for group and individual work. Although I use group work extensively in the practical part of my Science classes, I hadn't yet made the wholesale shift to group work all the time, but I had been toying with the idea, and this PD cemented it for me.

I went back to Exmouth, changed the whole setting of the desks into groups and decided it was time I took the plunge. I chose the Year 8 Science groups, a mixture of boys and girls, although the Year 9s were allowed to choose their groups as long as there was a mixture of boys and girls. I also set the assessment task we had put together in Perth, but instituted it as a group task with individual components. I set it up as webpages on the Intranet (students did not receive paper copies) with links to all the outcomes and levels. I altered it to address all the outcomes in Science and then approached the

English teacher to see if he wanted to incorporate the report writing and newspaper article writing into his Year 9 English class. He readily agreed and we ended up with a very successful 6 weeks of work in a cross-curricular approach.

The move to group work, not just in practical sessions, has been a huge success. Students prefer the change and it helps even the most reluctant learners. I have always veered toward student-centred learning, but this has taken it to a new dimension.

EARTHWATCH FELLOWSHIP, TEACH LIVE AND ECHIDNA WATCH

I was also extremely lucky this year to have been a recipient of an Earthwatch Fellowship, sponsored by Woodside Energy, for the Kangaroo Island Teach Live Project. My principal e-mailed the application forms and encouraged me to apply. I saw many similarities between Kangaroo Island and Exmouth – remoteness being one, and the fact that both areas have echidnas and goannas – the animals we were going to study. We often see echidnas and goannas as a regular feature of the environment. I immediately saw the potential for instituting some programmes easily at the school that still linked in with the research at Kangaroo Island. So I applied for, and was fortunate to become a recipient of an Earthwatch-Woodside Fellowship for the Teach Live Project.

The Teach Live Project was developed to give teachers an opportunity to gain practical, hands-on scientific research skills whilst their students experience a ‘virtual’ expedition via the web.

The interactive nature of the programme is an excellent opportunity for teachers to improve their web-based teaching skills and a great introduction to the way innovative technologies can motivate students.

We were given a training session via video conference on how to navigate around the website and how to post lessons on the web. Each teacher had to post lessons on the web for their classes to do whilst they were on Kangaroo Island. I made sure my students had access to the computers whilst I was away, I gave a run-down to my relief teacher to ensure she had a handle on the website, and more importantly, gave my students a session on the website to make sure they knew how to e-mail me via the website whilst I was away.

Before I left, I posted two lessons to the web which my students had to do whilst I was traveling to Kangaroo Island. This involved the students accessing the lessons via the web and completing worksheets I had prepared. The students also had to get all their information about Kangaroo Island and the fauna and flora from another website. This way the students had some understanding of the place to which I was going.

Once at Kangaroo Island we all vied for computer time to answer our students’ e-mails and post other lessons for our students to do. It was very exciting and my students got a great deal out of the whole week by following their teacher’s activities on an island off Adelaide.

On Kangaroo Island, we were trained in field techniques used in scientific research. Many of the techniques were familiar to me, as I had a science research background.

However, we also learnt to radio-track animals, which was challenging and very exciting, and something I had never experienced before. At first we had to find radio transmitters that were hidden in very obscure locations before we were allowed to track the 'real thing' in the form of the echidnas, Scout and Big Mamma, and Echo, a goanna.

I was fascinated by the work being done on Kangaroo Island by Dr Peggy Rismiller and her partner Mike, who have been studying echidnas for 18 years. Peggy has set up Echidna Watch to try to learn the extent and range of echidnas on mainland Australia. I immediately seized on this when I went back to Exmouth – why not set up a smaller version of Echidna Watch with the Year 8 students that could feed back into Peggy's database? So that's what I did.

I set up a special e-mail account Echidnawatch@Exmouthdhs.wa.edu.au that the students could access. The students then had to make posters advertising Echidna Watch with the catch cry 'Who, what, where, when?' – which was all the information we needed for each sighting – who saw the echidna? what was it doing and what was the observer doing? where it was seen? and when? (date and time). I wanted the Year 8s to advertise Echidna Watch (EW) with the primary classes and thought it would be a great idea if groups of my students went to the various primary classes to talk about Echidna Watch and give each class a poster.

So once again I approached the English teacher, who had a student teacher with them at the time. They agreed to take over the Echidna Watch talks and enthusiastically changed them into an English assessment. Feedback from the primary teachers was fantastic. We already have fifteen sightings e-mailed to us over the last two weeks with another six verbal sightings.

Each Year 8 group in Science takes it in turn to access the Echidna Watch e-mails, write the data on specially designed data sheets, reply to the person/s who e-mailed the echidna sighting and enter the data into Dr Peggy Rismiller's database. The students have ownership of, and responsibility for, Exmouth's Echidna Watch programme. Without leaving the classroom the students are contributing to the collection of valuable scientific data on echidnas in this region, which has not previously been collected.

Echidna Watch has already been embraced by the local community and is set to become a long- term Year 8 project. All the procedures for Echidna Watch are documented, so that even in my absence, or when I am no longer at Exmouth DHS, the Echidna Watch Programme can continue to run. Plans are underway to expand the programme to include radio tracking of some echidnas should we be fortunate enough to obtain funding to do so.

USING I-BUTTONS TO LOG TEMPERATURES AND INCORPORATING THEIR USE INTO SCIENCE CLASSES

On Kangaroo Island, we also learnt to use I-buttons – little gadgets that look like larger versions of the batteries you put into digital watches. These amazing little pieces of technology can be programmed via a special reader and computer, to monitor temperature at predetermined intervals – e.g. every half-hour for up to 80 days. So what, you might think! I, however, saw these as an incredible piece of technology, that were relatively cheap, and that I could incorporate into my Year 9 Science programme.

Whilst on Kangaroo Island we programmed the I-buttons to read temperatures every half-hour. These were then placed at various locations around the research station. One was placed in a goanna burrow, one in a cave and one outside the burrow. The data was downloaded into a computer, and because of my Science background (and because the others didn't want to do it!!!) I was the chosen one who had to learn to download the data and import it into a spreadsheet to make charts (see Fig. 1).

Since my return to school, the Kangaroo Island data has been given to my Year 9 students who had to plot the data on a graph then explain the patterns they could see in the data from the graph. They then had to explain why goannas might go into burrows during winter, particularly at night. Doing such a task fits into the Science outcome Investigating, particularly the aspect Processing Data.

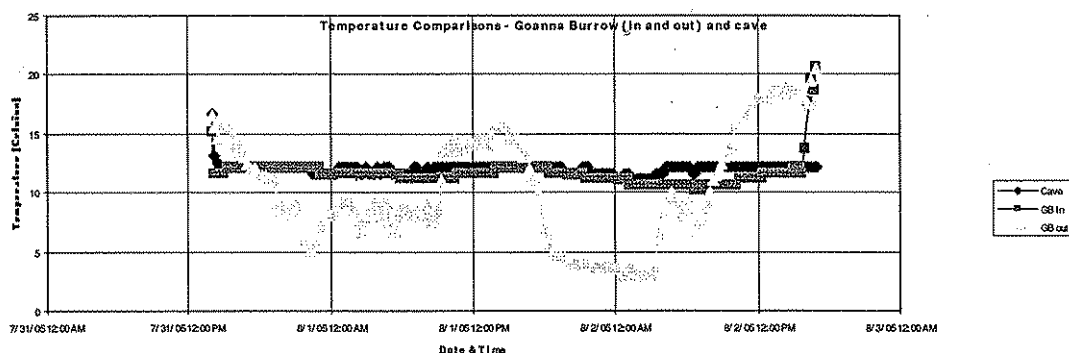


Fig. 1.

Since my Kangaroo Island trip, I have purchased six I-buttons and the reader that plugs into a computer via a USB port. Students have since used the I-buttons to investigate the temperature in different coloured 'houses', as part of a longer term project to design and build a model, solar-powered, energy efficient house with an environmentally friendly water-wise garden. The houses the students used for the 'colour' investigation were merely the photocopying paper boxes. Students had to make predictions about the effect of colour on the temperature of their 'house' – and use their I-button data, from which a chart was made, to write a scientific report. The colours ranged from two black houses, a pure white house, two with blue roofs, and a gold house. As expected, the black houses were hotter, by at least 10 degrees! The white house was the coolest.

The 'model houses' for their project had to be made out of recycled materials. Each group in turn had all six I-buttons for a week to carry out investigations which may involve the effect of insulation, shade or orientation on the temperature of their houses.

The students are motivated and excited about using the I-buttons – they learn to programme them and download the data after an investigation.

GROUP WORK AND BOTTLE ROCKETS

You often don't need a huge budget to run motivating programmes that get the students enthusiastic in Science. Nothing seems to get the students more excited and motivated than things that go flying in the air, or lids popping off whilst creating a fizz! It's all about getting the 'ooh- aah' factor happening; letting them discover what happens, and allowing them to learn the Science behind it all. Group work for both practical and class work is a good motivator for all students, but is particularly helpful for the reluctant learners.

In Year 8 for example, I have just completed the space-race using bottle rockets and fizzy rockets, none of which cost a fortune, and the fizzy rockets, apart from the chemicals, use recycled materials, including used film canisters, the cardboard tubes from toilet rolls and recycled cardboard. The only real, but minimal expense is the vinegar and the bicarbonate of soda, both readily available in supermarkets.



Student with "fizzy" rocket!

The bottle rockets use recycled plastic soft-drink bottles, with connectors and a bicycle pump or hand pump, which the students have to bring from home. Doing activities like these address the outcome Investigating from the Science Outcomes and Standards Framework, which is used to assess achievement targets in Years 3, 5, 7 and 9.

The bottle rockets allow the students to investigate whether the rockets go further with or without water – then they have to explain the reason for this. They can also investigate the optimum amount of water to get the rocket the furthest and why having too much water doesn't work. They can also investigate the size of the bottle and in this case they will learn that size in actual fact does matter! They can investigate the angle of projection – does that have an influence on the distance the rocket goes? They will learn that even if they keep many factors the same, even firing at the same angle will produce slightly different distances – so they use replicate data, and calculate averages to get more accurate results. They can also investigate the difference achieved in firing the

rocket into the wind as opposed to firing with the wind. All of these factors can be predicted and students can then compare their predictions with the actual results.

So in conclusion, living in a remote community can be challenging, but finding the right PD can have significant impacts on changes within schools and classrooms. I will continue to choose the PDs that will have maximum benefit for me as a professional in the hope it will lead to effective learning for my students.