

~ Dawn Garbett ~

Facilitator: Professional Development in Science ~

Auckland College of Education

The person factor in professional development~

The past five years have seen the most radical restructuring of the ~~

~:New Zealand Educational system in 100 years (Codd 1990). ~~

~;Central to this restructuring has been the "devolution" of ~~

~=autonomy to schools. Curriculum development and Inservice ~~

~@Professional Development are now viewed as "products", in line ~~

~Cwith the New Right discourse motivating the restructuring, and as ~~

~Csuch they are sub-contracted to the most competitive bidder. This ~~

~Bpaper is not setting out to evaluate the pro's and con's of these ~~

changes nor to discuss the present environment inservice ~~

educators find themselves in. What I would like to do is outline ~~

my personal experience of working under a contract and relate the ~~

difficulties encountered working within a particular model of ~

inservice education for science teachers.~

Background~

The past five years have seen the most radical restructuring of the New  
Zealand ~~

Educational system in 100 years (Codd 1990). The Government intends to  
~~

~Sintroduce a new national curriculum for science in all schools within the  
next two ~

~ years. ~~

~PDr. Lockwood Smith, the Minister of Education, has stated that the new  
draft in ~

~science Ä~~L~~~~~ä~.,~0 ~

~C"sets out a progression of learning objectives in science within a ~~

framework that gives a coherent structure to school science

from the first day through to the final day at school".

He has also stated that "our teaching of science in primary schools is not of the

standard that it could be." (Smith,1992) He goes on to say that "[Primary] teachers are not confident when teaching science, particularly sciences other than biology or the environment... The new national curriculum, combined with the teacher development programme announced in the budget, are the first steps in addressing these problems.... By the end of 1995, nearly 60% of primary teachers will have extra professional development in science.."

Curriculum development and Inservice Professional Development are now viewed as

"products", in line with the New Right discourse motivating the restructuring, and

as such they are sub-contracted to the most competitive bidder. In 1991, the

Auckland College of Education won a sizeable contract from the Ministry of

Education to deliver "professional development" to science teachers in the Auckland area.

There were two separate models. Model A was based on a five-day intensive workshop,

followed by several days of observations, analysis of progress and evaluation. Two

groups of twelve teachers from primary and secondary schools were selected for this

model. They were to then assist other colleagues to adopt a more student centred,

constructivist, approach to science teaching. In effect they were to be empowered to

become "leading teachers". Model B involved six groups of up to twenty teachers in a

series of two-hour workshops, held after school on a fortnightly basis, throughout the

second term. This was followed by several days of observation and evaluation. The

philosophical framework which supported Model B was to introduce and explore a

constructivist approach to the teaching and learning of science.

The 120 teachers who were selected for this model were from both primary

and

~Secondary schools. Because far more primary school teachers applied to be on the

~Course than secondary school teachers the ratio was approximately 3:1.

~The actual implementation of the contract was overseen by a Programme Steering

~Committee. There were six milestones to be met over the course of the contract and a

~Written report to be submitted to the Ministry at each date. My employment commenced

~[the day before the first course was scheduled to run. Advertising and recruitment for the

~Course had been organised in the first term by the project coordinator. Together, we had

~Worked a great deal on preparing support material for our courses.

~~~~~"Evaluation of Model B:"

~[An evaluation of Model B has been carried out for several reasons.

Firstly it was part of

~the contract proposal to evaluate the effectiveness of the model and to compare it with

~model A.

~Secondly, over the duration of the "after-school" component of the course, nearly one

~third of the original participants "dropped out". While this is probably not surprising

~Given the difficulties of implementing such a large professional development programme,

~there was pressure to find out the reasons why. It was as though the success of model

~could be judged in part by the number of participants continuing the course.

~Thirdly, there was a desire to improve the delivery of subsequent professional

~development courses run through the Auckland College of Education.

Negative feedback

~about the course content and structure needed to be addressed.

~The initial step was to send a postal questionnaire to every participant who had been

~selected for the course regardless of whether or not they had attended any or all of the

~sessions. It attempted to ascertain which factors motivated or deterred teachers from

~attending. Five questions were asked.

1 Were there events before the course that deterred people from attending?

~e.g. Did the people who were selected for the course but never attended, have some

Reason beyond our control. Was the union ban on implementing any curriculum initiatives important or had personal circumstances changed?

2 Were there factors outside the course which deterred people from attending? e.g. Did ill health, family pressures, other commitments at school, inconvenient hours, poor facilities or too far to travel play a part?

3 What aspects of the course itself deterred people? e.g. Was the course content inappropriate or too challenging, were no new resources shared, did participants feel insecure in their knowledge?

4 What was important in motivating teachers to attend the sessions? e.g. Was it that their ideas about learning were challenged? or that they thought about teaching. Did they enjoy reading the course material, meeting other teachers, journal writing etc?

5 What could have been done to improve attendance at the sessions? [e.g. Would it have helped to limit the course to only primary or secondary teachers or to have more than one teacher attend from each school. Would it have been better held in a different term, at a different time or in a different location? A further survey, with more open ended questions, has been sent to 50 course members asking them what impact the course has had on their teaching and which aspects were most beneficial to them. Responses are still coming in and they have not yet been analysed.

Results

The response rate to the questionnaire has been around 85%. It has been difficult to access what people really thought about the after-school component of the course. It appears that while people have pulled out of the course they do not feel inclined to explain their reasons. And that while there has been some negative feedback, people are generally loathe to offend.

The results from the questionnaire have highlighted some general trends. Broadly speaking, the questions have been answered in the following way.

1. Those people who did not attend any sessions were most inclined to have had a change in personal circumstances which prevented them although union pressure was also

^Eimportant. (1/3 of the non respondents did not attend any sessions) ^^  
2. ^Reasons why participants did not attend all the sessions were as  
expected.

Family ^^

^\pressure, parent-teacher meetings, report writing and ill health were  
cited most frequently ^^

^Ras being either quite important or the main reason. Sports coaching  
commitments, ^^

^Qinconvenient hours and too much personal time being involved were also  
important ^

^considerations. ^

3.^^The single most important factor within the course which deterred  
participants was that ^^

^[it failed to deliver information on the implementation of the new, draft  
curriculum. From ^^

^Vthe responses it appears that the way in which the course was advertised  
and what was ^^

^Tdelivered were quite different. The expectations of many course  
members were not ^^

^Umet. A greater opportunity to share resources and more practical  
activities for the ^^

^Tclassroom were required. Many felt that there was too much work expected  
of them ^^

^MFor a few, the loosely structured format and non-directive facilitation  
were ^

^considerations. ^

4. ^^Of the course itself the most important reasons why teachers kept  
attending were that ^^

^Sthe course challenged their ideas on teaching and learning and that it  
offered the ^^

^Yopportunity to share ideas, new teaching strategies and resources with  
others. The fact ^

^Jthat it was government funded was important to many course participants.

^ZAspects of the course which had a negative effect on attendance included  
journal writing, ^^

^Wthe photographic assignment, and giving students questionnaires to  
complete before the ^

^next session. ^

5. ^Factors concerning the course structure which ^  
would^

have motivated greater ^^

^Qattendance were related to encouraging more commitment. For example, a  
full-day ^^

^Uworkshop at the start of the course, having two people from each school  
attend and a ^

^(recognised certificate at the end of it.@^

^ZFactors which were suggested as possible means of encouraging attendance  
which were ^

]not  
 supported were to have a course fee refundable at the completion of the course, to  
 Have it later in the evening, to have only primary or secondary school teachers and to  
 Have a larger group. Having the course in the third term was not seen as desirable, but  
 neither was having it in the first term.

Reflections

One of the fundamental philosophies underpinning the contract proposal was that the  
 actual course content would be influenced by the discovered needs of the course  
 participants, in line with the constructivist approach to teaching and learning." (A.C.E. p6)  
 On reflection, this may not have been the most effective strategy to employ. Wanting to  
 give teachers ownership and control of the course meant that many different expectations  
 were voiced. These ranged from teachers wanting to know how best to spend their

[allocated science budget, practical ideas to use in the classroom and how to implement the  
 new National Curriculum to wanting to discuss the philosophy and research behind  
 teaching and learning in science. It was obvious that as a group we would be unable to  
 fulfill everyone's needs. Elizabeth Jones (1986) wrote:  
 "The clearer I can be about my expectations at the beginning of a class, the more likely students are to feel secure and trust me, themselves and each other." (p8)  
 [ If a more directive and structured course had been implemented from the outset, I believe  
 participants may have felt more comfortable and perhaps would have been more open to  
 change. The actual contact hours were too limited, and teacher time too precious, to  
 allow for a truly constructivist approach. I know that this is the argument that teachers  
 use in their own classrooms and as professionals, we counter it by saying that there is a  
 vast difference between what we teach and what the students learn. We forget this at our  
 peril but the reality is that it is not possible to ascertain where each individual is at in such  
 a short time.  
 Anthony Cassidy wrote:  
 "Instigating and encouraging change in teachers' methods and

=attitudes can be like sweeping porridge uphill, through long  
Agrass. Large injections of time, energy, patience and ingenuity  
?are required to produce even the smallest discernable result.  
Once this is accepted, however, and expectations revised  
Accordingly, the exercise can be rewarding, and genuine  
progress can be made." (Cassidy: source unknown)  
Asking teachers to reflect on aspects of their own practice also requires  
a great deal of  
time. Various researchers (e.g. Wildman and Niles) suggest that " 20-30  
hours of  
instruction is needed to assist teachers...with another 20-30 hours  
spent in practice" in  
order to give them the necessary skills. Within the time frame of six  
two-hour sessions  
there was little time for an indepth study of these techniques. However,  
the seeds were  
sown and participants were conscious of the philosophical perspective of  
the course. It  
is hoped that they will come to accept that they are professionals with  
the expertise to  
effect positive changes in their own classrooms.  
Using journal writing as a tool for reflecting on their practice met with  
enormous  
resistance. Very few could be coerced or persuaded to write in a  
journal. They claimed  
]that filling in forms, keeping records and report writing took far too  
much of their time as  
it was and that to spend any more time writing was inconceivable. From  
the responses  
of the questionnaire, journal writing was considered as unimportant by  
more than half of  
the participants. Many claimed that they did reflect on their teaching  
daily but that they  
were not prepared to commit their thoughts to paper. (It makes me wonder  
what they  
really think about teaching) This was a resistance I was unable to  
overcome during the  
course.  
David Tripp (1987) commented:

The major problem I encounter with in-service action research is  
?the desire to change. The teachers see themselves, as indeed  
>they are, as successful in their classrooms: how else could  
they teach, study and have family and other social  
commitments, if their teaching were not relatively  
straightforward?" (pg 215).

As I worked with participants I realised that this was not always the  
case. Many of the

Teachers did not see themselves as successful in the classroom. In fact, many of them felt

that they were only just coping with the ever increasing expectations of society. In

recent years, all teachers have faced classes with an increasing ethnic and language

diversity. "Mainstreaming" and a reduction of Government funding to support services

has meant more special needs children in classes where there is little teacher-aide time and

no teacher training or support. Many more students enter school from impoverished

backgrounds. Meanwhile, the educational goals have been expanded to encompass a

mastery of basic skills, intellectual development, career education, citizenship

participation, moral and ethical character development, emotional and physical well

being, creativity and self-realisation. As well, teachers are required to collect money for

photographs, mark registers, chase unpaid school fees, help sell raffle tickets, check

uniforms, do crossing patrol, wipe up accidents, coach sports teams and encourage the

cultural group. The draft New Zealand Curriculum Statement in Science (1992)

promotes the role of the teacher as a facilitator of learning rather than a transmitter of

information. Teachers need to:

"provide a supportive atmosphere of mutual respect where all

experiences, ideas, and beliefs... are valued as starting points

for learning." (p9)

Many see this as yet another demand. In order to cope, many teachers are prioritising

where their energies are directed. As one participant commented,

"after an 18 hour day "professional development" is not top of

the list"

Apart from feeling threatened and pressured by increasing demands, secondary teachers

rarely are very reluctant to try new teaching methods because they feel hamstrung by the

imposition of external exams. While they have the content knowledge at their disposal,

their reasons for not wanting to adopt more student centred approach to learning are often

couched in statements such as "I would try that if I had the time" or "I have tried it with

my junior classes but the seniors have got exams." In one classroom I visited the teacher



^Eassured me that she had "done interactive teaching in the last unit." ^  
 ^[Primary school teachers, on the other hand, are far more aware of  
 "constructivist" methods ^^  
 ^Xbut lack content knowledge. Some had not taken science as a subject  
 since they were 14 ^^  
 ^Zyears old. I am in a quandary as to what to do in this situation.  
 Despite arguing that ^^

^]teachers do not have to be the "experts" on every aspect of science in  
 order to motivate and ^^  
 ^estimate the students' interest in the subject, I question the merits of  
 telling teachers that they ^^  
 ^[are capable of teaching science without a suitable depth of background  
 knowledge. Raising ^^  
 ^]awareness of the need to include science in topic work can have a minimal  
 effect on practice ^^  
 ^^if not accompanied by knowledge of the science itself. In the worse  
 scenario, teachers with ^  
 ^[a little bit of knowledge and a lot of enthusiasm can set up learning  
 experiences which are ^  
 ^Confusing, ill-informed or wrong! As Peter John commented:  
 (1992)Ä^^L^^^ä^B^A^UÄ^ ^  
 ^E "teachers who rely solely on their pedagogical knowhow will find it ^^  
 ^Gdifficult to explain, correct and reinterpret the subject for children ^  
 ^Unless they themselves know and understand it."  
 (p64)Ä^^L^^^UÄ^ ^^Ä^^L^^^',^0@^  
 ^I believe there is a need for intensive, short science courses to provide  
 better subject ^  
 ^matter knowledge. ^  
 ^ZPitching a professional development programme at the right level is very  
 difficult at the ^  
 ^Sbest of times. In a review of Kinder and Harland's book, Curren  
 concludes that Ä^^L^^^i^e^e ^  
 ^B"If the sights are set too high the result may be demoralisation, ^^  
 ^>anxiety and revolt. But if the expectations are too low, the @^  
 ^=intervention may soothe and reassure, and thereby even ^  
 ^@dissipate ^  
 ^ the momentum of change. There may be a region ^^  
 ^=between these two undesirable effects, leading to beneficial ^^  
 ^=curriculum development. But some of us... suspect that this ^  
 ^\$mid-point is too narrow to land on".Ä^^L^^^ä^',^0 ^

^WTrying to meet the needs to so many people, from such different  
 backgrounds, on a 1 : ^^  
 ^W120 basis was the most difficult and frustrating aspect of the contract.  
 Although the ^^  
 ^Xgroups did have quite a different character about them, it was difficult  
 to distinguish ^^  
 ^Sbetween them until the last few sessions. For example, one group were

stropky and ^

^Xpolitical, arguing about everything and anything. Another group turned into a womens' ^

^Vsupport unit. The range within each group was very diverse. There were teachers who ^

^Vhad been in the profession for over 20 years alongside first year teachers. Some had ^

^RMasters degrees in science while other had no science qualifications at all. The ^

^Uclassroom situation varied from private, single-sex schools to schools in lower socio ^

^X-economic areas, there were new entrant teachers and teachers of young adults. While I ^

^Tfound this difficult, the diversity was one of the strengths of the course in many ^

^Sparticipants eyes. They have commented positively on the opportunity to meet with ^

^&others teaching at different levels. ^

^WWith a union embargo currently in effect with regards implementing and developing the ^

^Rnew curriculum, some of the momentum has been lost. A new contract dealing with ^

^Uassessment has been won by the Auckland College of Education for 1993. Although the ^

^Ycontract was negotiated before an evaluation of this course had taken place some changes ^

^ [were made to the course structure. A full day workshop will be held at the start for each ^

^Zof the groups to help facilitate group dynamics and to set clearer expectations. Because ^

^Othe contract is focused on assessment it is doubtful that there will be such a ^

^Wmisconception as to the course content and a more structured outline will be possible. ^

^ ^But, a lone facilitator will still deliver the package to 120 participants and I do not envy ^

^them that task. ^

^RFullan (1991) quotes a deputy minister of education as having said to a colleague Ä^L^ä^.,^0 ^

^>"Well, the hard work is done. We have the policy passed; now ^ ^,all you have to do is implement it." (p65)Ä^L^ä^.,^0 ^

^RI would like to suggest that this is yet another politician who is unaware of the ^

^!practicalities of the real world.``

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