The PETS Foundation
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A new model for in-service teacher training

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Summary

Part of the reason for the poor results of both basic and continuing training in the health and education sectors can be attributed to the model used in the production and transmission of knowledge. In both cases a highly centralized model has been deployed. Participants are transported to a central venue where they are taught, housed and fed. It is costly, time consuming, takes staff away from their place of employment and ensures that learners remain passive recipients of new information.

The innovative Perinatal Education Programme(PEP) self-help, distance education model developed for the health sector, and extensively evaluated over the past 20 years aims at enabling learners to manage their own continuing education. It is economic, saves time and places the responsibility of learning on the students at their place of work so that they become active participants in acquiring of new knowledge and understanding.

This paper explores ways the PEP model could be adapted and developed for in-service teacher training (INSET) using IT (website, cell phones, tablets and readers) to facilitate self-tuition groups and cooperative learning, and promote individual responsibility for professional development, while at the same time suggesting some of the cost benefits to the fiscus.

Some benefits include: it is not centralized. No costs are involved in finding and paying substitute teachers. No costs in transporting teachers to a central venue. No costs in hiring or maintaining a venue. No costs in accommodating teachers. No costs in feeding them. No costs in paying for trainers. No costs for study material. Responsibility is placed on teachers for their own learning. Teachers invest psychologically as well as financially in their own professional development and are left with a sense of pride and achievement.

Introduction

It is quite clear that there are no silver bullets to fix education. None of the government's schemes to transform education since 1994 has worked. Billions have been wasted. 80% of the schools are dysfunctional. OBE was an unmitigated disaster. Literacy and numeracy rates are abysmal. Teacher training is in disarray. Between a third and half of all children entering the system don't reach matric.

It should be clear by now that grand plans don't work. That doesn't mean we must give up. But it does mean we need to make a radical change in the way we do things. That means, instead of looking for instant solutions we should exercise our imagination, be patient and take a long view. Instead of trying to fix the whole system at once let's look at the most important element in the education equation, the teacher, and the means to transform the teaching corps.

The time has come to explore radical alternatives.

In an article published recently in the South African Medical Journal (2012:102; 100-101) "Text messages as a learning tool for midwives" the authors D Woods, A Attwell, K Ross, and G Theron, reported on the capacity "of cell phone messaging to improve access to healthcare education in under-resourced settings." The project they describe, its methodology and the results of a recent survey, holds interesting possibilities for distance education for in-service maths teachers.

The health and education sectors in South Africa have similar histories, and face similar challenges for similar reasons. Under Apartheid they were perceived as avenues of escape from poverty, particularly though not exclusively, by young black women. Colleges of nursing and education proliferated in the rural areas in response to particular resource needs and shortages, but also as a means of dispensing patronage and advancing political ambitions. All in all 105 nursing colleges and 102 teachers' training colleges were established. Entry requirements were low, often just a Junior Certificate (Grade 10) or even lower. The National Audit on Teacher Education (1997) showed that there had been a massive over-production of poorly qualified teachers. These teachers, the Audit also revealed, were characterized by a lack of commitment to education and low levels of professionalism.

With the advent of the new democratic dispensation in 1994 Government decided to close down all the colleges and transfer the training of nurses and teachers to the universities. Entry qualifications now had to conform to university standards. Previously, the training of nurses and teachers, which had been a provincial competency, was now the responsibility of the national government. Bursaries, which had previously been available through the provincial administrations, were no longer obtainable because the national departments of health and education did not have the budgets to support them. The consequence was a massive falling off of new recruits in both professions. Morale plummeted. And, while enormous efforts were made to improve the capacity and qualifications of under and unqualified teachers and nurses with literarily billions of rands being spent on in-service training, these efforts were to little effect as declining standards and performance, well documented over the last decade and a half, attest.

Part of the reason for the poor results of both basic and continuing training in the health and education sectors can be attributed to the model used in the production and transmission of knowledge applied to the nurses' and teachers' professional development and in-service training. In both cases a highly

centralized model has been deployed. That is, participants are transported to a central venue where they are taught, housed and fed. It is costly, time consuming and ensures that learners remain passive recipients of new information rather than active makers of meaning.

An innovative self-help model for distance education
However, an innovative distance education self-help model, the Perinatal Education Programme (PEP), developed and extensively evaluated by Woods et al, over the past 20 years involving over 70 000 nurses, aims at providing nurses with the ability to manage their own continuing education. It is economic, saves time and places the responsibility of learning on the students at their place of work so that they become active rather than passive participants in the acquisition of new knowledge and understanding. It is a viable model for in-service teacher training (INSET).

The PEP, available in book and electronic format, encourages learners to take responsibility for their own learning and professional growth. Learners have to manage their own training programmes and are encouraged to form study groups drawn from colleagues in their immediate communities to promote cooperative learning communities and peer tuition. These self-directed learning groups meet every few weeks and are supported by regional mentors and facilitators who are responsible for logistics and give support, but do not take an active role as a teacher. The study group is also responsible for managing a formal multiple- choice examination for which a pass mark of 80% is required.

A number of prospective studies has shown that groups of midwives and neonatal nurses in rural and urban hospitals can significantly increase their knowledge of perinatal care using this mix of study methods. In a study by Woods and Greenfield (2010) a multiple-choice test, plus case studies with further questions, was used to determine the improvement in their cognitive knowledge before starting the PEP course. The same test was used at the end of the course without prior warning. The pre-course mean score was 55%. The post-course mean was 88%. The pre- and post-course scores for five practical skills were 45% and 83%. The standard of clinical care also improved after completion of the programme. The costs of the PEP are relatively low and are born in the main by the recipients, who are encouraged to invest in and take responsibility for their own learning.

In addition, a pilot programme, developed by Woods et al (2010) and recently surveyed, aimed to assess whether weekly text messaging from PEP is a viable option in promoting the in-service training of midwives. The pilot used the cell phone numbers of 2 500 practicing midwives to whom 26 short essential learning text messages were sent. The messages were selected from the Perinatal Education Programme (PEP) course book *Maternal Care*. Each message, limited to 160 characters, was sent to the midwives every Tuesday morning over a six month period. The messages were linked to a website where the corresponding chapter from *Maternal Care* could be read and from which midwives with access to the internet could retrieve supplementary information.

A survey of 50 randomly chosen recipients revealed that 86% enjoyed and learned from the weekly text messages. 72% believed the text messages helped their clinical practice. 68% regularly shared and discussed the messages with their colleagues. 68% had access to the Internet, but only half used it. 98% thought that the PEP books would help their clinical practice and 84% had already bought the books or intended to do so. All wanted text messaging in related topics.

These findings appear to corroborate a study done in Kenya in which it was shown that "personal text messages to healthcare workers over a period of 6 months significantly improved the management of children with malaria." (Zurovac et al., 2011)

Urgent need for a new model of in-service teacher training (INSET)
A new INSET model that is cost effective, professionally viable and educationally sound is urgently needed. Such a model of in-service professional development could make a meaningful contribution to the improvement of teaching in our schools and substantially improve examination performance throughout the system.

The focus of the rest of this paper is on exploring ways the PEP model could be adapted and developed for in-service maths teacher training using IT (website, cell phones, tablets and readers) to facilitate self-tuition groups and cooperative learning, and promote individual responsibility for professional development, while at the same time suggesting some of the cost benefits to the fiscus.

The arrival of e-readers and interactive devices such as the Kindle and iPad has already had a massive impact on the publishing industry. The implications for education are no less profound. New models for teaching and learning using information technology are being experimented with all over the world. For example, a cursory glance at a website 'e-readers in schools' reveals that in many parts of the world (e.g. USA, Britain, Holland, Israel, Ghana, India, Bangladesh, Taiwan and China) educationalists are seriously exploring the possibilities of switching to digital textbooks. Tablets, readers, smart-boards are changing modes of delivery and classroom management. In some quarters the notion of the conventional classroom is being questioned.

The primary driver for this transformation in education is the challenge of global competitiveness in the 21st century.

It is generally accepted that if South Africa is to meet this challenge it is going to have to join the communications revolution. If we are going to be globally competitive, our education system is going to have to embrace e-technology and digital content.

The challenge for teachers is how to make the best use of technology and digital content to support their own continuing education and how to adapt their classroom methodologies and teaching styles to the demands of a new world.

That is, to make learning more student-centered, interactive, collaborative and flexible. The digitization provides just such an opportunity.

Justification
Literacy and numeracy levels, the bedrock of our education system, are, by common consent, disastrous. Every year hundreds of thousands of youngsters leave the system to all intents and purposes illiterate and innumerate with little prospect of employment. The impact on South Africa's capacity to compete globally is undermined at its very foundations.

The key to national development and global competiveness is education. Our students perform poorly by international standards. The Department of Education has admitted that 80% of its public schools are dysfunctional. According to the latest (2011) Annual National Assessment (ANA) results, in literacy the national average performance for Grade 3s was 35% and in numeracy 28%. Among Grade 6s the average for languages was 28% and for maths 30%.

The key to correcting this lamentable state of affairs is the teaching corps, which by common consent is under qualified, lacking in motivation, and has little professional commitment. However, international drives to implement digitisation in education together with the PEP experience, suggest opportunities for circumventing some of these seemingly intractable problems.

Exciting developments are taking place in the United States, Britain, Ghana, India, Taiwan, China and Bangladesh where educationists are rapidly switching to e-tablet technology and digital textbooks as a means of enhancing learning. Nor are South Africa's universities lagging behind. The use of cell phones and lap top computers on our campuses is ubiquitous. For example, at UWC there are a number of computer labs on campus, many students have their own laptops/tablets. There are always students around wireless hot spots. Assignments can be handed in centrally by email. There is a whole unit, as in most universities, devoted to e-learning. Lecturers are encouraged to take advantage of the e-learning unit but at this stage it is not obligatory. Some lecturers put their notes usually in PowerPoint on line. The question of students' lecture notes being put on line and marked is currently being discussed. UCT has all lectures and assignments on line and accessible by password. Stellenbosch issued every first year student on registration this year in the sciences with a flash drive, on which are stored all the texts necessary for the year. The SciMathUS maths and science bridging programme for disadvantaged students has introduced tablets for the first time to this year's new intake. The universities of the Free State, Johannesburg, Wits, UNISA and Pretoria are all actively exploring the educational opportunities digitization offers, as are many schools.

Theoretical (pedagogic) foundation
The INSET model suggested in this article rests on an important educational theory regarding the ways in which learners make meaning and consolidate their understanding when confronted with new information and learning

situations. This theory, enunciated by James Britten in *Language and Learning*(1970) and tested extensively in the then Johannesburg College of Education's (JCE) language and learning across the curriculum programme run over ten years in the 1980s, has been described more recently in an academic paper by Jodi Tutty and Barbara White: "Tablet classroom interactions" (2006).

The theory, which Tutty and White describe as 'constructivist', holds that unless learners can reproduce new knowledge in their own language (ideolect) there is no way of guaranteeing that they have achieved genuine understanding. Neither rote learning nor the reproduction of formulae are guarantees that understanding has taken place; that the learner has incorporated the new information and has made meaning. Mere "knowledge of a formula can lead to the illusion that one fully understands the process it describes" Wenger (1998 p.61).

The test is when the learner encounters a new situation in which the new understanding must be demonstrated. This theory of making meaning necessarily implies that it is primarily social. Meaning is negotiated through a process by which we encounter and experience the world. Our engagement in it is meaningful. Wenger goes on to suggest that meaning exists only in negotiation and that the process by which meaning is made and the product are not distinct. "By living in the world we do not make up meanings independently of the world, but neither does the world simply impose meanings on us" (*ibid* p.53). This theory was amply tested by the JCE language and learning across the curriculum programme which placed a heavy emphasis on students negotiating meaning and demonstrating their understanding in small groups while focusing on mathematical or science problem solving in which the teacher played the role of facilitator or mentor.

While the introduction of wireless enabled tablets may suggest that learners could become more independent or even isolated, access to information via the Internet does not discount the importance of social contact for making meaning. Information is not knowledge; it is not understanding. The popularity of smart phones and of social networking sites such as Facebook, for example, attests to the need people have to establish and maintain social relationships in order to understand the world they find themselves in. The flexibility of emerging e-technology presents challenges and opportunities for teachers and learners to facilitate and acquire understanding in ways hitherto never anticipated.

Whereas, for example, traditional educational materials are stored on paper in textbooks, graphs, charts, or on records, tapes, videotape and film, digital content, by contrast, is stored in electronic or digital form on any of the scores of digital memory technologies that now exist, from hard drives to flash drives. And, because of the power of networks and the Internet, digital content can be stored anywhere in the virtual universe. With the advent of the Internet, educational materials can now be transmitted and copied without significant cost or delay. In the digital world, content can be active and interactive. Content can be linked to other materials on the Internet in a way that permits students to explore. Content can demand responses and answers from the student to

promote timely self-assessment and immediate feedback.

Far from isolating the learner, such interactivity promotes the negotiation of making meaning, and encourages collaborative learning and peer tuition. However, it is important to remember that no one mode or teaching methodology provides an instant solution to all teaching and learning problems. The digital revolution provides incremental opportunities to enhance, supplement and support well tried more conventional approaches. It represents an additional, admittedly very powerful, weapon to the teaching and learning armory, which must be used tactically in order to assist in the achievement of long-term strategic educational goals.

Distance education
One of the key ingredients to a successful distance education programme is a positive attitude towards distance students and distance programmes. However, there are deep-rooted prejudices against open distance learning (0DL) which is often deemed inferior to conventional face to face classroom learning. What with the exponential growth in demand for education worldwide, rising costs and serious questions being asked about conventional modes of academic delivery there is a need to overcome resistance to it. (Wright 2011, Burns 2012) A well managed and structured distance education programme that offers human and digital support is a viable alternative to the current model of professional development currently in use.

The PETS model does this by providing supportive human resources and effective modules for professional development that nurture authentic engagement and encourage critical thinking, creativity and problem-solving. It also facilitates interaction between students, between students and instructors, and between students and the community. The object is to create a community of practice, coupled with an efficient programme delivery and quality assurance systems.

Structure is vital for ensuring participants do not drop out. The PETS model based on a combination of online and collaborative learning ensures that participants have regular contact with one another both in the work place and in scheduled study groups. The study groups ensure that specific times are dedicated to learning, making it easier for them to organize their learning at times that do not clash with their other work and social activities. The role of the facilitator is crucial in this regard to ensure that participants are monitored, encouraged, and that the logistics of arranging meetings, dealing with technical issues and arranging tests and exams are efficiently handled. At the same time, it seeks to cultivate self-reliance.

But, the qualities needed for high quality teaching are incredibly complex and take years to develop. It is important to understand that the PETS model is not a quick fix. One of the reasons the current model has failed is that it has attempted to turn poorly trained, unmotivated and under qualified teachers into high quality teachers in a very compressed amounts of time with little if any follow up and support. The PETS model understands that change takes time. Though there

is no "correct" number of professional development hours per year, research suggests that on average teachers need at least 49 hours per academic year before they show any sign of improvement (Darling-Hammond, 2008). Sweden requires 104 hours and the Netherlands 169 hours of professional development learning per year. South Korean teachers must do 90 hours every three years, most of which is done online.

Further, the focus by decision makers has almost inevitably been on what can be quantified. That is, numbers, replication, expansion. How many teachers are trained? What are the priority subjects? How much will it cost? All of which are at odds with what sorts of practices are to be delivered or cultivated. The focus has been on easily identified deficiencies (which are easy to quantify) rather than focusing on the complex set of characteristics that actually define good teaching.

Support is essential for successful distance education, particularly with regard to keeping students self-directed, managing their time and managing information. A major part of that support comes from the students remaining in their communities. And, although there is no correct model of professional development, research (Sparks & Loucks-Horsley, 1989; OECD, 2008) also indicates that certain forms of professional development—such as coaching and mentoring, study groups, lesson study, action research, and observation and assessment—are more effective than workshops or trainings, and can in fact improve the efficacy of workshops and trainings alone.

"Any distance education program must cultivate in teachers the skills, knowledge, and dispositions necessary to succeed in a world that increasingly demands workers who are creative, collaborative problem solvers and critical thinkers. Without this understanding, and without professional learning opportunities and instruction that are grounded in best practices associated with high-quality professional development, distance learning programs and distance learners themselves risk failure ."(Burns 2011; Commonwealth of Learning, 2008; Dede et al., 2005a; Sparks, 2002).

Some advantages of digitization
The PETS INSET model places a premium on appropriate, rather than sexy technology, to provide digital support. In other words websites, tablets smart phones, ordinary cell phones and telematic centres etc. should be used in any combination that will ensure the efficient and effective engagement of student learning. What follows are some suggestions in which digitization can help achieve those goals.

Digitization allows greater efficiency and timeliness in updating information**.** Textbooks often take more than a year to be updated and usually longer to be created. Digital content allows textbooks to be easily kept up to date. It also enhances the speed of obtaining books for a particular class or course. This is particularly pertinent for those areas of study in which there is a constant stream of new discoveries and information and in which textbooks soon become outdated.

Digitization helps teachers and students create their own instructional and learning resource materials. Teachers and students can produce and recombine content to create their own resources and libraries. Digital content allows students to annotate their textbooks without damaging them. Self-study groups find this especially useful as they can adapt material to their local circumstances.

Digitization enables learning anywhere, anytime; a boon for distance education. Students can access their materials at any time. Late-night learners can be as easily satisfied as early morning ones. Digital content breaks the barriers of the classroom walls and facilitates interactivity not only within the community but wider afield.

Digitization facilitates personalized, tailored learning experiences, enabling all students to access appropriate materials for learning. Data banks containing detailed student information focus learning around student needs thus catering to individual, local and specific needs. Support and supplementary material is easily accessible. E-readers that have a text to speech function provide an extra tool. In the South African context this means that students who are learning in a language that is not their mother tongue can have access to bilingual texts and support material.

It is well attested that learners learn best in their mother tongue. Digitization provides an opportunity to give reality to mother tongue education in a country such as South Africa with its 11 official languages. This is particularly pertinent as most teachers do not have English as their mother tongue but are required to teach in English. This puts them and their learners at an added disadvantage, and must be a contributing factor to the continuing poor results our education system produces.

Digitization engages students in learning. People are much more e-technology savvy than ever before. Education that does not take this into account is missing a profound opportunity. Digital content allows students to use the devices with which they are accustomed and helps them remain engaged throughout the learning process.

Digitization makes immediate feedback possible. Assessment is central to teaching and learning. With technology-based assessment students and teachers can calibrate teaching and learning appropriately. Summative evaluation is also easily accessible and teachers can see how well students are learning a subject in order to make informed teaching decisions. It can cut marking time by up to 50%. Multiple choice tests can be assessed instantly.

Digitization allows students to match materials with preferred learning styles. Students take responsibility for their learning. The interactivity of devices enables students to demonstrate their knowledge and show their mastery of learning outcomes to their peers, thus enhancing collaborative learning. Digitization enables better management of resources. The logistics of classroom or self-study group management are much less time consuming.

Description

The PETS distance education INSET model is not conceived as a Grand Plan that is going to transform the entire teaching profession in an instant, but it does demand a commitment to the belief (an act of faith, if you will) that teachers are capable of taking responsibility for their own education, and holds them accountable for doing so. It starts where it is most likely to have success. That is, with teachers with a proven track record of commitment. As with the committed midwives who were first attracted to the PEP, the intention is to attract teachers who are committed professionals and who can act as role models for others who are less committed. Growth of the programme can be expected to be incremental.

The pedagogic content of the programme is based on a thoroughly tried and tested programme, the SAIDE in-service teacher up-grading course, *Mathematics for Primary School Teachers*, which provides both content knowledge and teaching methodologies. The course has been digitally published by SAIDE, with the Wits School of Education. It is a revised version of a course originally written for the Bureau for In-service Teacher Development (Bited) at the then Johannesburg College of Education (now Wits School of Education). The course is for primary school teachers (Foundation and Intermediate Phase) and consists of six content units on the topics of geometry, numeration, operations, fractions, statistics and measurement. It is widely acknowledged that it is at the Foundation and Intermediate phases that the greatest needs are experienced.

In addition, this material will be combined, where appropriate, with and enhanced by the National Numeracy Workbooks grades 1-6, published by the Department of Basic Education, most of which are available in the 11 official languages. The course will be structured to support teachers' lesson planning for each term.

Thus, participants will be getting a programme that provides them with subject knowledge, teaching methodology, additional supplementary and support teaching materials, and which assists with lesson planning in terms of the National Framework.

All the learning material will be available in both hard copy and electronic form on a website. The copyright to all these materials will remain with the holders. Cell phone numbers and/or email addresses will be used to communicate essential exercises and support material together with suggestions for its application where appropriate in the classroom.

Participants will work their way through a structured course towards a final exam and certification with cell phone/tablet material being sent to them once a week. This electronically communicated material will be integrated into the course in such a way that it can be accessed for private or group study. The amount of information that can fit onto a cell phone screen will be a necessary limitation. However, this limitation will not apply to tablets, which will provide fuller explanations and remediation opportunities. In any event, each message

will be linked to the website from which all course materials can be accessed and downloaded. Individual codes received by cell phone will allow timely access to specific sections of education material stored on a tablet. Exercises on the website will be structured so that the student must have mastered the particular skill being taught before continuing. Tests will precede and conclude each section of work so that participants can gauge in real time how much progress they are making. No section can be completed until the student has managed to pass it.

Participating teachers will be encouraged to form study groups with colleagues based in their communities to encourage cooperative learning and peer group tuition. That is, teachers from the same or adjacent schools in the community, all of whom would be registered for the course, though not necessarily starting at the same time. Peer tuition and collaborative learning in a safe and familiar environment would be encouraged by having individual learners at different stages. Those in advance of beginners could act as mentors while at the same time testing and reinforcing their own recently acquired understanding. This would develop confidence and would be a continual check on whether they had mastered their newly acquired knowledge while providing them with practice in a safe environment. For those learners not at the same stage, they would have the advantage of receiving tuition from their peers who had been through the same challenges they may be encountering. All the participants would be in a position to negotiate their understanding while at the same time contributing to each other's professional development. They will also be able to test their new knowledge and skills in their own classrooms immediately.

The emphasis should be on self-reliance and confidence building. Once a study group is established it should be encouraged to find either an outside facilitator or nominate one from within the group who will take responsibility for organizing meetings, seeing that study material is ordered, field queries and manage the final examination etc. It is important that the facilitator does not take on the role of the teacher, as to do so would disempower the participants and reduce them to being passive recipients of information rather than active negotiators and makers of meaning, thus undermining the very theoretical principles on which meaning is made. The additional help of a local mentor would be invaluable.

Some anticipated benefits of the PETS adaption of the PEP model for in-service maths teachers' up-grading and professional development.
The anticipated benefits to the Department of Education will be educational and financial.
- Not centralized
- No costs involved in finding and paying substitute teachers
- No costs in transporting teachers to a central venue
- No costs in hiring or maintaining a venue
- No costs in accommodating teachers
- No costs in feeding them
- No costs in paying for trainers
- No costs for study material

- Responsibility placed on teachers for their own learning
- Teachers invest psychologically as well as financially in their own professional development
- Teachers work at their own pace through the material
- Additional support material on demand
- Tests evaluated instantly
- Uses proven educational learning theory in the production of new knowledge and understanding and establishing behaviour change
- Uses successful model adapted from the health sector which has experienced similar problems for similar reasons
- Promotes self-help individual and collaborative learning
- Promotes peer tuition
- Encourages collegiate atmosphere in the community
- Does not take teachers away from their home and familiar environments
- Students bear the costs of their professional development but are rewarded by having those costs repaid on successful completion of the course
- Students can get instant feedback on their progress using technology to access the website
- Students can apply and test what they are learning immediately in their own classrooms
- Promotes the use of and familiarises teachers with web-technology
- Can promote life long learning
- Is enjoyable, mutually supportive and self-fulfilling

The model offered above is truly democratic in that it gives back to teachers their dignity as self-empowering professionals.

Change is unnerving and is often, especially in the educational context, associated with the potential loss of control. But the alternatives to not accepting the challenges of change that the new technologies and this methodology offer will lead to escalating costs, more frustration with a system that is patently not working, and ultimately to educational failure and the sacrifice of millions of young lives.

Incentives

The PETS Foundation model contains incentives that have been shown by the PEP example to be effective. Firstly, it is voluntary. There is no coercion. Secondly, although participants must pay a modest fee for the course and final exam, on successfully passing, they will receive their money back. Participants remain in their familiar work and social environments. Further, the course content is based on the SAIDE *Mathematics for Primary School Teachers*, the National Numeracy Workbooks and conforms to the National Framework. It will provide content knowledge, practical teaching methodologies, supplementary teaching materials and lesson planning that participants can use immediately in their classrooms. And lastly, exam success and certification, with the cooperation of the provincial education authorities, could be linked to promotion and increased salaries.

Finally, it must be acknowledged that this proposal has not been conceived as a big bang approach that is going to solve all the in-service teacher training and professional development issues in one fell swoop. There is considerable resistance within the Profession to teachers taking on any responsibilities that might be perceived as adding to their workload. In addition, a culture of dependency has developed in which there is a general expectation that the Department of Education should provide for and support teachers in every aspect of their professional lives. This has resulted in resistance to attempts by the Department to hold teachers accountable for their professional performance and efforts to encourage their continuing professional development. However, if the PEP experience is anything to go by, we can expect this distance education model to attract those teachers who have a genuine interest in education and their own professional development. The programme can be expected to start slowly but grow incrementally, stimulated by word of mouth and peer pressure.

The PETS Foundation model for in-service distance education for maths teachers has been conceived without the active intervention of the Department of Education. However, if that were to eventuate the support and encouragement the Department could offer would make a considerable difference to the rate of take-up.

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