Self-directed professional development – Hope for teachers working in deprived environments?

Emmanuel Mushayikwa, Fred Lubben

School of Education, University of Cape Town, University Avenue, Upper Campus Rondebosch, Cape Town, Western Cape, 7701 South Africa

Department of Educational Studies, University of York, York, UK

Article info

Article history:
Received 30 June 2008
Received in revised form 31 October 2008
Accepted 3 December 2008

Keywords:
Self-directed professional development
A-level Science and Mathematics teachers
Grounded theory
Teacher efficacy
Professional efficacy
Classroom efficacy

Abstract

Self-direction has been identified as a potential key to the success of professional development of teachers, especially those working in deprived environments. This paper develops a model for self-directed professional development using interview data from 55 Zimbabwean A-level Science and Mathematics teachers. It focuses on teachers’ decisions about using ICT in their own professional development. Grounded theory analysis suggests seven themes underlying such decisions making, in turn representing two major attractors of self-directed professional development. These were identified as classroom efficacy, i.e. the ability to teach effectively, and professional efficacy, i.e. the ability to relate effectively within the teaching profession. This paper explores the potential of using these attractors to stimulate self-directed professional development within formal professional development programmes especially in disadvantaged communities.

1. Introduction

Researchers across several educational disciplines (e.g. Andrews, 2004 in linguistics; Wellington, 2005 in ICT; Crossley & Guthrie, 1987 in curriculum studies) have reported their frustration at the inconclusiveness of determining the impact of educational innovations on teachers’ classroom and professional practice. Some staff-developers (e.g. Chambers, 2001; Harland & Kinder, 1997) have reported similar difficulties with regard to evaluating the effectiveness of professional development programmes. Cunningham (2001) and Jay and Johnson (2002) have attributed these difficulties to the complex nature of the teaching profession, and the fact that innovations operate within a context in which teachers are constantly trying to find a balance between professional, systemic and classroom influences that they are subjected to on a daily basis.

Professional development is taken as the process of accumulating skills, professional knowledge, values and personal qualities that enables teachers to continually adapt within the educational system (Vonk, 1991). This implies that professional development is experiential. However, other researchers (Bell & Gilbert 1996; Harland & Kinder 1997; Steffy, 1987) recognize that experience alone cannot account for the way teachers learn and develop within their careers, or the decisions they make to adopt or not to adopt innovations. Sawyer (2001) has determined that, over the years, the focus for professional development programmes has shifted from a deficit approach (focusing on content knowledge: use of external expertise) to a technical approach (focusing on teaching practice: school-based with outside help) to continuing professional development (focusing on teacher professionalism and context: collaborative practice). Thus the provision of professional development changed from external expertise to empowerment. By empowering teachers, professional developers encourage them to take the initiative in identifying and acting on their own individual needs.

Each of the three approaches was associated with models that describe the professional development process. Whilst these models were useful in designing centrally directed professional development programmes, they did not shed light on the uptake of innovations by teachers once the professional development programme had been completed (Desimone, Garet, Birman, Porter, & Yoon, 2003; Garet, Porter, Desimone, Birman, & Yoon, 2001; Howe & Stubbs, 1997). For example, the models do not explain why some teachers easily integrate what they learn during the planned professional development process, whilst others soon go back to their prior practice without any signs of having gained from the experience. As a result, staff-developers still suffer from anxiety...
when evaluating the impact of their professional development interventions.

Recent studies however, are beginning to unravel the factors that are influential in predicting whether teachers are likely to adopt an innovation, or not. One such factor is the role of self-direction, as embodied in "the will to learn". Van Eekelen, Vermunt, and Boshuizen Eekelen (2006) have described the will to learn as being characterised by having the ambition to discover new practices, being open to experiences and other people, being proactive, attribution of success and failure in terms of internal causes, question-asking after performance, undertaking action to learn, and recognition of learning processes and results" (p. 408).

In this paper a systemic model of self-directed professional development is advanced arising from the teachers' interactions with ICT. This model serves to enhance our understanding of the process by which teachers make professional development decisions, i.e. select activities for their own learning. The use of self-directed professional development may reduce the mismatch between continuing professional development (cpd) inputs (teacher learning activities) and the outputs (teacher cognition and classroom practice), a mismatch so often reported for centrally directed professional development initiatives (see, for instance, Cochran-Smith & Lytle, 1999; Kwakman, 2003). It is hoped that such a model could be also be used to verify the relationship between teacher-defined drivers for self-directed professional development and the impact of professional development programmes. Such a relationship, if it exists, has been elusive in professional development literature to date.

2. The context of this study

In recent years, the Zimbabwean education system has experienced several upheavals. In 1998, the Zimbabwe Schools Examinations Council (ZIMSEC) took over the administration of Ordinary-level (O-level) examinations from the UK-based University of Cambridge Local Examinations Syndicate (UCLES). Localisation of these examinations at the end of Form 4 resulted in the introduction of new O-level curricula and was accompanied by a shift in emphasis and perspective from traditional approaches to science teaching to a more practical and application-centred approach (Machinga, 2000). However, UCLES still oversaw the administration of pre-university Advanced-level (A-level) examinations at the end of Form 6 and this created a mismatch between what learners brought to Form 5 and what they were expected to know in order to cope with A-level work. This gap was perceived as a drop in the quality of educational provision at O-level (Tambo, Mukono, Mushaiwka, Chavunduka, & Mtetwa, 1999). Consequently, A-level teachers had to teach A-level pre-requisite knowledge as well as cover the already content-rich A-level syllabus within the designated 18 months. Also, teachers were faced with the onerous task of finding ways to assist increasingly large numbers of less able students to cope with the demands of A-level work. In addition, Maths and Science A-level curricula saw the introduction of new topics such as remote sensing, astronomy and biotechnology – topics that the teachers themselves had not studied during their initial teacher training (McKenney, 2001).

At the same time, the turn of the millennium marked an unprecedented decline of the Zimbabwean economy, with both health and education services bearing the brunt of the economic fall-out. The changes and expansion resulting from the localisation of the Zimbabwean O-level curricula could not be matched with professional support and additional resources. Instead teachers found themselves having to cope with large classes of ill-prepared students with limited textbooks and equipment. Typical A-level classes in high density areas and public boarding schools increased from below 20 in 1992 to around 40 students in 2000. The decrease in school funds and in real-value teacher income reduced their mobility (for instance for attending in-service workshops) and access to communication (post, telephone and internet). In addition, as part of the political chaos, teachers and health workers were perceived as potential local leaders of opposition to the ruling party, and thus specific target of political violence. Thus economic deprivation and political instability led to teacher withdrawal and isolation, even amongst colleagues at the same school.

All these challenges, compounded by the introduction of a performance appraisal system that tended to heighten anxiety among teachers (Mushayikwa, Mtetwa, Mukono, Ncube, & Tambo, 1999) represent what we call "deprived professional environments", i.e. environments in which teachers work in isolation and with minimum support from the education system. Such environments are characterised by high teacher stress, anxiety and frustration, as the teachers are still expected to produce good passes at the end of A-level. In some cases this means that they have to use their own resources to ensure that their students develop their abilities. How teachers react to such an environment, and the decisions that they take to remain functional or to survive as professionals, lead to the process commonly termed 'self-directed professional development' because it epitomises the teachers' will to learn.

There are numerous reports of ICT being used as an intervention strategy in professional development (for instance, Preston, 2000) enabling teachers to take responsibility for their professional development as free agent learners. In Zimbabwe, three donor organisations initiated ICT access programmes for teachers at the turn of the century. The Science Education In-service Teacher Training Programme (SEITT) set up 10 Science and Mathematics Resource Centres at various regional locations throughout the country. These centres were equipped with libraries, computers, printers and photocopiers and were meant to be drop-in centres where teachers could access ICT and develop teaching materials. Like wise, the Better Schools Programme (BSPZ) established 52 similar drop-in centres in all educational districts of the country. The World Links programme also added another 20 dedicated ICT centres equipped with electronic media and video equipment for teachers. As none of these programmes provided professional development programmes, apart from the initial ICT training courses, we wish to survey how teachers made use of the ICT provisions available to them in these centres, and why they chose these particular uses of ICT.

3. The process of self-directed professional development

Self-directed professional development is defined as the professional development arising from the teachers’ own initiative, i.e. the process is internally determined and initiated (van Eekelen et al., 2006). Early research (see, for instance, Hall, 1997) suggests that self-directed professional development could be a key determinant in the success or failure of professional development programmes. Bouchard (1996) observes that self-directed professional development appears to be most prominent when teachers or professionals are operating in deprived environments. Perhaps this is precisely the reason why researchers have missed it – researchers have tended to concentrate more on evaluating effects of centrally directed professional development. They have tended to overlook the fact that teachers are continually engaged in professional development even in the absence of, or in between, supported professional development programmes.

The fact that several models have been developed to describe the professional development process underlines the multifaceted nature of the process. The professional development process...
Individual teachers will adopt professional practices that they perceive to be own ways of dealing with the transformation. Where mirroring the changes in society, it forces individuals to adjust and accommodate the new needs created by its transformation. Where the system is dynamic and changes, there needs to be a basic level of symbiosis if teachers are to be retained by the institution. The apparent contradiction is again identified as the needs of the individual and there is a shared vision and high delivery. On the other hand, where there is strain between the institution and the individual, there are lower shared values, lower retention and the individual does not feel obligated to identify with the needs of the institution. In such a case, school-based professional development will not necessarily result in an uptake and adoption of an innovation. However, some researchers (i.e. Little, 1999; Richardson & Placier, 2001) contend that cordial (symbiotic) working relationships are not always conducive to educational reform, as good working relationships tend to favour conservatism. Our contention is that in situations of depravity, there needs to be a basic level of symbiosis if teachers are to be retained by the institution. The apparent contradiction is again a demonstration of the complex nature of the education system.

Both the individual teacher and the institution are components of the complex educational system. In complex systems, individual needs are often super-ceded by systemic self-organising forces (Merry, 1995; Sawyer, 2001). As the system is dynamic and changes, mirroring the changes in society, it forces individuals to adjust and accommodate the new needs created by its transformation. Where transformation is not accompanied by systemic support, as is the case in impoverished societies, teachers often have to find their own ways of dealing with the transformation.

It seems plausible that teacher concerns precede behaviour, i.e. teachers will adopt professional practices that they perceive to be beneficial to them (Doyle & Ponder, 1978). If this is the case, then teachers’ use of ICT for their own professional development would be determined by concerns emerging from their specific professional environment. Such contextual aspects could be the main drivers for teachers’ self-directed professional development. This paper seeks to answer the following questions:

a) What drives the self-directed professional development of teachers working in deprived environments?

b) How can these drivers be conceptually organised in a professional development model to enhance our understanding of ways of increasing the impact of professional development programmes?

4. Methodology

Interview data were collected from 55 A-level science and mathematics teachers over a period of two years. In the first year, 38 teachers (12 female) were interviewed. 24 of these teachers were interviewed at teacher resources centres, and the remaining 14 teachers at their schools. The interviews were semi-structured and lasted for about 30 min on average. They served to identify the main concerns teachers had regarding their professional development. They were also used to select teachers who would be willing to participate in more elaborate follow-up interviews. During the second year, 17 teachers, 8 female and 9 male, were interviewed at their schools. These interviews were much longer and sought teachers’ views about their reasons for directing their own professional development; the strategies that they used and the reasons for these choices; the benefits they gained from their professional development activities; and how these impacted on their students and their professional standing.

All in all, 17 high schools across the country were visited. Whilst the in-depth interviews only covered teachers from these schools, the semi-structured interviews included also teachers from other schools. The teacher centres are open to all teachers within the region who wish to use their services. The researcher interviewed all willing teachers who happened to visit the centre on the particular day.

51 of the 55 interviews were audio-recorded, transcribed verbatim and typed into a word document. Four teachers declined audio-recording their interviews, often for fear of political scrutiny, and notes were made with as much detail as possible. All data were analysed using grounded theory principles to determine the areas of professional concerns for the teachers in order to generate a model for self-directed professional development. The analysis was based on the constructionist (Strauss & Corbin, 1998) approach which ascribes the value of coding in grounded theory to the construction of meaning from the wording used by the participants to provide succinct descriptions of the teachers’ activities. Attempts were made of cultural immersion (Manning, 1995) with accompanying reflexivity among researchers, as the focus moves from mere data collection, to the active role of the researcher as a co-constructor of knowledge.

All records of the 38 initial interviews and 17 follow-up interviews were read several times in order to identify recurring ideas across transcripts. In-vivo codes were used to mark transcript sections where repeating ideas (i.e. teachers’ perceived reasons for and effects of taking up, or not taking up, professional development activities) were identified, using the “comment” function in the word-processor for highlighting text sections and inserting a code. The ideas consisted of single words or phrases expressing some attribute of the teacher’s perception of the influence of ICT. These single ideas were further grouped according to the aspect that they described. For example, several teachers talked of the use of ICT as increasing their self-confidence. Some claimed that the use of ICT increased their self-esteem, and made them feel empowered. Self-esteem, self-confidence, self-respect and empowerment are terms that can be said to describe a person’s state of well-being. Thus the first group of repeating ideas was coded as “well-being”. The notion of “well-being” was found to unify the repeating ideas and was used as an “analysis issue” by way of an organiser (Auerbach & Silverstein, 2003). The repeating ideas were coded and recoded until saturation was achieved, when no new issues could be identified from the raw data. Fig. 2 provides a summary of the process of coding and analysis framework development.

Several times the framework was put aside and the researcher worked through the transcripts redeveloping the framework anew. The completed framework was then compared to the original and
variations in the issues and themes were clarified and re-assigned. This was done to check the reliability of the emerging framework.

In order to ensure the validity of the analysis framework three researchers independently generated the issues and themes from a third of the transcripts. They then compared and agreed between them whether the issues and themes were concise and mutually exclusive and whether the hierarchy of issues and themes was logical. By the end of the framework development, the agreement rate was close to 93%. Only at this point ‘sensitising concepts’ (Van den Hoonaard, 1997) were used from Shulman’s (1986) different types of teacher’s knowledge and to some extent from Gee’s (2001) components of teacher identity in order to group issues into “themes” by identifying unifying factors across the constructs, and those in turn into overarching “goals”.

The resulting framework was the chief instrument to be used in analysing the data and is shown in Table 1.

Using the final version of the framework, five scripts were coded independently by three researchers. The codes were then cross checked to determine the reliability of the code allocation, and an inter-coder agreement of 84% was achieved.

Although the interview questions were posed in English, several teachers used code-switching during their discussions thus increasing the authenticity of their views. In the transcripts, the original expressions were preserved. Translations were only made when the script was being quoted – the original script was presented along with an English translation in brackets.

5. Results

5.1. Concerns leading to self-directed professional development

The analysis of the teachers’ perceptions revealed that teachers were driven by seven main concerns when engaging in self-directed professional development. These concerns are highlighted below, together with some of the ideas that teachers used to bring the concerns forward. The seven concerns were used to develop a model of what teachers considered the most important “attractors” to self-directed professional development.

The first concern shaping self-directed professional development, as mentioned earlier, centred around professional identity. This emerged partly as a concern for professional well-being (i.e. self-esteem, self-respect, self-confidence) and partly for professional recognition (i.e. commanding respect, trust and credibility from students, colleagues and society), as illustrated in the following examples.

The internet widens my horizon by providing more teaching approaches. If you have a wider choice you can become more responsive to the needs of your students. I feel I have become a better teacher. (teacher A)

I was given the Maths syllabus and was told that I was teaching lower 6th, and carrying them up to upper 6th. The students were quite sceptical because I was young and being a woman. I guess they did not think I could meet the challenge. I think that is what inspired me to use ICT packages in the first place – the need to prove that I was capable. It made me more confident to realise the support I could get from the internet. (teacher B)

The second concern attracting teachers to ICT for self-directed professional development was the need for career development, i.e. keeping abreast with developments in their teaching subject, getting support for life long learning, and routes to higher qualifications and job changes, as illustrated below.

I use e-mail to keep in contact with friends and colleagues abroad, for instance in South Africa and Botswana. They may have some ideas on where to apply for teaching jobs in these countries. (teacher C)

I organised a search for greener pastures. I got the application forms for Masters studies at several universities in the UK. (teacher D)

The current political situation in Zimbabwe has turned this concern from a search for promotion to administrative levels within the education system and for job openings outside the school system (for instance as human resource managers in the private sector) to a search for teaching and further training opportunities abroad.

Thirdly, teachers used self-directed professional development to address concerns about their own subject content knowledge. This emerged in cases where the school curriculum changed, or where teachers felt they needed to extend their repertoire of content applications. They searched for textbook supplementary materials to provide background resources for subject content.
Table 1
Interview analysis coding framework.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Repeating ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perceived professional identity</td>
<td>1.1 Well-being; self-esteem/respect/confidence;</td>
</tr>
<tr>
<td></td>
<td>1.2 Social status; (commanding) respect/trust from fellow teachers/students/society;</td>
</tr>
<tr>
<td></td>
<td>1.3 Perceived role of teacher: control vs facilitator/guide;</td>
</tr>
<tr>
<td>2. Career development needs</td>
<td>2.1 Career change; job applications; searching greener pastures/opportunities outside education;</td>
</tr>
<tr>
<td></td>
<td>2.2 continuing professional development/training; keeping abreast with developments; life long learning;</td>
</tr>
<tr>
<td></td>
<td>2.3 Further study; improvement of qualifications;</td>
</tr>
<tr>
<td>3. Theoretical and content knowledge</td>
<td>3.1 New content; interest in new knowledge; deepening/broadening/updating/enriching content understanding;</td>
</tr>
<tr>
<td></td>
<td>3.2 Textbook supplements/alternatives; background/variety of reading; revision; correction of misconceptions</td>
</tr>
<tr>
<td>4. Practical knowledge and professional skills</td>
<td>4.1 Teaching resources; demonstrations; simulations; practicals; use of equipment/models/illustrations;</td>
</tr>
<tr>
<td></td>
<td>4.2 Organisation of teaching and assessment; syllabus; examination materials; teaching administration;</td>
</tr>
<tr>
<td></td>
<td>4.3 Ideas on improving teaching approaches; variety of teaching approaches; innovative/creative ideas;</td>
</tr>
<tr>
<td>5. Pedagogical content knowledge</td>
<td>5.1 Adaptation to syllabus depth/requirements; differentiation for student abilities/learning and teaching styles;</td>
</tr>
<tr>
<td></td>
<td>5.2 Modification of materials to suit local conditions/context/language level/learning needs;</td>
</tr>
<tr>
<td>6. Professional networking</td>
<td>6.1 Collaboration; comparing/sharing experiences/teaching skills; jointly developing ideas;</td>
</tr>
<tr>
<td></td>
<td>6.2 Peer support/encouragement; online coaching; peer review; mentoring/tutoring;</td>
</tr>
<tr>
<td></td>
<td>6.3 Professional communications; peer communications; making contacts; online discussion groups</td>
</tr>
<tr>
<td>7. Benefits to teachers and students</td>
<td>7.1 Student performance/achievement; quality of passes;</td>
</tr>
<tr>
<td></td>
<td>7.2 Affective issues: teaching becomes interesting/enjoyable; students gain interest/confidence in learning;</td>
</tr>
<tr>
<td></td>
<td>7.3 Cognitive issues: students understanding/appreciation improves; critical reasoning; creativity;</td>
</tr>
<tr>
<td></td>
<td>7.4 Reflective/critical practitioner; developing coping mechanisms;</td>
</tr>
<tr>
<td></td>
<td>7.5 Student participation/attentiveness/discipline increases; memory retention.</td>
</tr>
</tbody>
</table>

I used internet articles of the last Earth Summit to link environmental mismanagement to global warming. I presented the argument that the prevalence of cyclones relate to global warming. By the time the actual cyclone Eline hit Zimbabwe the discussions became very real for my students – the winds, violence and downpours. They began to see the relevance of what they were learning. (teacher E)

I was researching into the historical origins of some constants like π and came across a web site, which was talking about ‘the golden ratio’. It was quite interesting and I was working towards introducing finnobacci numbers. It was interesting to find that these numbers could also be linked to the so-called golden ratio, its application in art, construction and the natural world. I had not been aware of this and it was a learning moment for me. (teacher F)

The fourth concern focused on the practical knowledge and professional skills such as the acquisition of teaching resources assisting in the organisation of teaching, i.e. for diversifying assessment; for developing skills to implement new teaching approaches; and for improving classroom interactions.

I have saved all my schemes electronically, so that each year I spend less time on copying, and more time on re-thinking and modifying them. I have actually become more reflective and say which approaches have worked best. Previously during the first two weeks of each term hardly any teaching took place because of the schemes. (teacher G)

A large number of teachers noted the use of self-directed professional development for improving their pedagogical content knowledge in adapting subject content to make it relevant to the local context, i.e. adapting content to the syllabus depth required and to different student abilities; adapting content to the local environment, taking into account language and numeracy proficiencies of the students; adapting content to the social and historical context of students, and thus making it relevant to their everyday experiences.

I have identified and modified notes from the internet for most of my lessons, and it has made my teaching less strenuous. I concentrate on the activities, demonstrations, main concepts and common problems. The students focus on understanding what we are doing rather than writing notes. They then use the notes I give them at the end of the lesson as reinforcement. (teacher H)

The sixth concern behind self-directed professional development focused on the need for peer networking, such as the practice of comparing and sharing experiences and skills. An equally important aspect was the notion of peer support, i.e. peer coaching, mentoring and tutoring often through professional discussion groups.

I've got a group of colleagues where we are discussing setting a chemistry L6 revision exam, but we have no money to come together so we keep discussing on the e-mail. (teacher I)

Lastly, a powerful driving force for self-directed professional development was the perceived benefits for teacher and students, i.e. the teacher's concern for improving students' performance, attitudes and classroom participation. Teachers also demonstrated concerns for being more reflective and critical of their teaching approaches.

I have had consistently high A-level results since I started to actively use ICT materials in my teaching. (teacher J)

Because of the class discussions we had on the basis of the downloaded information my students show more critical analysis. (teacher K)

Use of internet resources has made my students much more creative in designing experiments. I get more variety of experimental designs than I used to get before and I think it is a result of exposure to more resources. The students have also become more critical and independent in their thinking. (teacher L)

6. A model of self-directed professional development

Using the theory construction principles suggested by Auerbach and Silverstein (2003) and Strauss and Corbin (1998), and described earlier in Fig. 2, the seven types of concerns may be clustered into
two main categories. We have made use of the notion of 'efficacy' as used by Social Cognitive Theorists (Bandura, 1997; Goddard, Logerfo, & Hoy, 2004) to describe the agency which is initiated from internal factors to achieve certain goals. Self-efficacy was described as belief systems, including self-confidence, in the ability of influencing circumstances towards a desirable outcome. In terms of teachers' professional development actions, efficacy may thus operate as an internal conduit towards self-regulation. In this study of the self-directed professional development process, different types of efficacy may underlie the choices of teacher concerns on which they act by seeking to address those (and not other) concerns.

The seven types of concerns emerging from the data, are grouped according to the perceived intentions of the teachers:

a. An improvement in professional identity, career development and professional networking all depend on the professional efficacy of the teacher
b. An improvement in practical knowledge and skills, subject content knowledge and pedagogical content knowledge all point towards classroom efficacy.

Perceived student and teacher benefits were found to relate to both strands of efficacy because they were generalised. The single underlying organising principle for self-directed professional development was found to be related to the improvement of general efficacy, here called teacher efficacy, as shown in Fig. 3.

The study revealed that teachers had basic concerns related to either their professional efficacy or their classroom efficacy. When these concerns were not met, teachers could not operate effectively as teachers and so several tried to find ways of meeting these concerns. When this happened, self-directed professional development took place.

From the relationships between the themes and goals depicted in Fig. 3 a theoretical model of the self-directed professional development process emerges. The model represents a holistic view of the professional development process. It describes the process of self-directed professional development as a targeted process which is characterised by self-regulated and organised behaviour patterns aiming towards teacher efficacy. The process constantly recycles itself and adopts new properties that aid in its development whilst discarding those that do not. The model is presented in Fig. 4.

6.1. The professional platform

The professional platform enhances the teacher's professional efficacy (McLaughlin, 1992). Lee (1991) sees professional efficacy as being related to the environment in which teachers operate. Lasley (1989) further associates the development of professional efficacy in teachers with institutional development and increased responsibility, i.e. the development of leadership.

The professional platform is composed of three aspects, as derived from the study. These were found to be:

Networking: Associating with special interest groups whereby teachers were communicating with colleagues and institutions, led to opportunities to develop collaborative practice and personal development. For example, several teachers reported that they, together with colleagues, were developing subject modules in Chemistry and in Mathematics;

Career development: links personal needs to institutional needs and supports organisational development. For example, teachers were using ICT skills and resources to gain qualifications and skills that would enable them to leave their current posts or to effect career progression (promotion);

A positive professional identity: i.e. development of values, attitudes, ethics and morals associated with being a teacher. Teachers also reported that ICT made them aware of educational standards, reinforced their beliefs about teaching and what it means to be a teacher. Some of the values and attitudes were quite immanent in what they said about themselves and their profession.

The research established that activities in these areas on the professional platform resulted in teachers feeling empowered, respected and confident among their peers. Thus it can be concluded that their professional efficacy was raised.

6.2. The classroom practice platform

The classroom practice platform enhances the teacher's classroom efficacy. This is the efficacy associated with instruction (Yaghi & Ghaith, 1997), classroom management (Labone, 2004) and innovation (Guskey, 1988). In short, it is associated with the actual teaching and learning situation. This platform has three aspects as well. These are:

Subject content knowledge – teachers used ICT to access subject-based web resources from educational sites like the high schools hub. From these sites teachers were able to access and download teaching materials and notes, which improved their teaching resource-base.

Practical knowledge and skills – Knowledge about teaching methodology and presentation. Teachers reported that they were also able to benefit from new innovative teaching techniques. Teachers also revealed that they were now engaged in more reflective teaching and developing their classroom expertise.

Pedagogical content knowledge (PCK) – Adaptation of teaching to suit context/Integration of expertise. Teachers cited several examples in which they were able to modify and adapt Internet-derived teaching materials for use in their classrooms. Adaptations involved making use of current events or contextualising materials, modifying materials to suit the local conditions and adapting and organising materials to the depth required by the syllabus. These experiences helped teachers to experience an increase in their pedagogical content knowledge.

An increase in expertise at classroom practice level results in increased confidence in teaching, higher self-esteem and higher passes for the students. In return, the teacher's classroom efficacy increases.
6.3. Teacher efficacy

The aggregate of these two efficacies is what is commonly referred to as teacher efficacy. The broken lines connecting the two platforms directly denote the relationships and interconnectedness of the layers. There was evidence of the interplay between factors in the areas on the professional platform and those on the classroom practice platform. For example, the modules referred above, which were produced through collaborative activity, were then used in class to teach those topics. In addition the acquisition of ICT skills originally intended to enhance one teacher’s promotion prospects also resulted in the teacher being able to access ICT facilities at the new school, to make use of web-based teaching materials. Therefore, from the teachers’ perspectives, an increase in both professional efficacy and classroom efficacy resulted in an increase in the combined self-efficacy of the teacher.

Teacher efficacy (te – the centre circle) can be imagined as a translucent globe receiving light from both platforms, which act like light sources with variable power supply, and glowing in proportion to the light received. The light received represents the individual contributions of the platforms to teacher efficacy. An increase either in classroom efficacy (ce) or professional efficacy (pe) can be viewed as an increase in the currents for the corresponding light sources and will be reflected by a proportional increase in the glow of the translucent globe (te). Thus, under normal circumstances, (te) glows brighter than the two light sources because it radiates light from both sources.

The study revealed that teachers perceived ICT as a versatile tool or pathway with which they could satisfy most of their professional development needs, relating to both institutional and personal development. It is conceivable that other tools or pathways could be used, but in each case, one would expect the impact of the professional development process to follow similar patterns, hence the systemic model can be considered to be generic. Teachers reported on the benefits that they and their students allegedly gained from their use of ICT. Among the benefits for students cited, teachers claimed that students were more motivated, their interest gained from their use of ICT. Among the benefits for students cited, teachers claimed that students were more motivated, their interest gained from their use of ICT.

It is important to highlight that the self-directed professional development model was developed from theory grounded in data and as such presents an authentic attempt to describe the behaviour of Zimbabwean A-level science and mathematics teachers who participated in the study. These teachers were operating in an environment that was politically, socially and economically constrained, and thus had little recourse to institutional support. The model provides a basis for both a longitudinal study of self-directed professional development and also for more representative studies in the future. The analysis framework matrix identified themes that teachers are concerned about, and these could be used as a basis for developing more refined future models.

Whilst one cannot do much about external socio-political constraints, it is also useful to consider that some researchers on self-directed professional development have noted that this process seems to become evident in conditions of adversity; i.e. when teachers are fighting for professional survival, they tend to become tenacious in their bid to improve themselves. As Bouchard (1996) noted:

“It is this problem-solving quality that makes self-directed professional development more likely to occur in conditions marked by a prevalence of opposing factors” (p. 15)

6.4. Implications to formal teacher professional development programs

Although self-directed professional development is a continuing process, under normal circumstances it is masked by other professional development processes such as planned programs. It is the researchers’ firm belief however, that the benefits of self-directed professional development as demonstrated by this study are worth investing in the process for every teacher. The goal of professional development should be to help teachers become effective in all spheres of their work. Self-directed professional development provides an internal locus of control that ensures that the teachers continue to build new understanding of teaching and learning.

In terms of interventions for professional development of teachers, this study also highlights that it is important to recognize the powerful influence that self-direction can have on sustaining professional development behaviour by teachers. Teacher concerns have long been recognized to be important considerations in professional development programmes (Fuller, 1969; Loucks-Horsely, Hewson, Love, & Stiles, 1998). Aligning teacher concerns to their efficacy in the classroom or within their profession will enable...
professional developers to design more effective and sustainable interventions. Instead of whole-sale interventions as is currently the practice, service providers need to recognize that teachers have an inherent yearning to learn, and use this drive, as the mainstay of the professional development process, with external support being provided drip-feed fashion at crucial points to enable the teachers to acquire the necessary means to progress to the next phase of their development. Whilst most externally directed interventions ignore the role of self-direction, they tend to develop dependency syndromes among the beneficiaries, and this results in unsustainable impact. Maximizing the self-direction drive, on the other hand, ensures that beneficiaries take ownership of the programmes and help in sustaining them.

7. Conclusions

In answer to the first research question, this paper has identified seven factors that drive teachers on the path of self-directed professional development. These factors, or attractors are: their perceived professional identity, their need for career development, their need for networking, their need to improve subject content knowledge, the need to adapt and integrate materials so as to teach for understanding (PCK), the need to acquire more practical knowledge and skills for the subject discipline and the perceived benefits which they derive from satisfying these needs.

In answer to the second research question, these seven factors were further grouped into two major themes: professional efficacy and classroom efficacy. Both themes describe the efficacy of the teacher. Therefore the paper concludes that teacher efficacy is the underlying organising force that powers self-directed professional development.

Acknowledgement

We are grateful to Bob Campbell for the contribution he has made to this study, and to the two anonymous reviewers for their critical and detailed comments on an earlier draft of the paper.

References

Richardson, V., & Placier, P. (2001). Teacher change. In V. Richardson (Ed.), Handbook of research on teaching (pp. 905–947). Washington, DC: AERA.