

Educator discourses on ICT in education: A critical analysis

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ABSTRACT

This paper presents a Critical Discourse Analysis (CDA) of Primary School Educators' dialogue on the use of ICT in an under-resourced schooling context. Educators play a pivotal role in the education system. Information and Communication Technology (ICT) interventions in schools will be effective only if educators are willing and able to appropriate the intervention to their existent needs, and derive real benefits. One of the barriers to the meaningful integration of ICTs in education in developing countries is the lack of alignment between what funders and project implementers intended (on the one hand) and the social meanings educators assign to the technology (on the other). The aim of this study was to understand the discourses around education and technology, as articulated by educators in under-resourced contexts in South Africa. Data for the study was collected through in-depth interviews with educators from under-resourced schools in Cape Town, in the Western Cape in South Africa. The results show that educators appreciate the value of ICT in education and are willing to adopt it. However, at the same time, they feel they lack capacity and support to achieve that goal effectively. The study also shows that global discourses on ICT may deny educators in disadvantaged communities the power to voice the challenges they face when integrating ICTs in their teaching processes.

Keywords: *ICT, education, discourse, under-resourced areas*

1 INTRODUCTION

The use of Information and Communication Technology (ICT) in teaching and learning can enhance curriculum delivery, and concurrently improve the quality of education, provided that there is appropriate attention to pedagogy (Louw et al., 2008; Bytheway et al., 2010). However, in developing countries where the repercussions of poverty, unemployment, and a lack of resources are widespread, the large-scale and sustainable integration of ICTs in schools is yet to be realised, particularly in those institutions that are under-resourced. Research has indicated that, despite the provision of infrastructure, ICT adoption is not necessarily a viable outcome (Bytheway et al., 2010). Numerous factors influence both the introduction and eventual acceptance of ICTs in educational environments: personal and professional cognition and efficacy, a lack of knowledge and skills, and unfavourable socio-economic dynamics (Fanni et al., 2010; Van Zyl & Rega, 2011).

The role of educators is pivotal in the integration of ICT in education, as is the case with most educational innovation. (Demitriadis et al., 2003). It is, therefore, important to understand the

meanings educators attach to technology and its use in the educational context. Research has shown that one of the barriers to meaningful integration of ICTs in education in developing countries is the lack of alignment between what the funders and project implementers intended (on the one hand) and the social meanings the educators assign to the technology (on the other). This paper examines discourses articulated by educators through the Critical Discourse Analysis (CDA) framework; an analysis which may assist respective policy makers in aligning strategies with actual teaching experiences.

The study is guided by the research question:

What are the dominant discourses around ICT in an educational context, as expressed by educators working in disadvantaged contexts?

Recent work has revealed a variety of prevailing discourses, for example “globalisation”, “learning”, “determinism”, “liberation”, “productivity”, “disembodiment” (Brown, 2010). Hence, secondary research questions for this study include:

- *How do discourses impact on ICT interventions?*
- *What contextual elements shape dominant discourses?*
- *What is the role and impact of related macro discourses concerning local and national government policy, school, and implementation management?*

The focus on educators in disadvantaged communities is of particular academic interest because of the promise that ICT holds for schools in such environments (Bytheway et al., 2010). In the South African context, such schools are bedevilled (tormented?) by inadequate resources and under-qualified educators¹ (Hardman, 2005). ICT can potentially help address such challenges yet it is in these environments that educators are having most difficulty in integrating the use of ICTs into teaching and learning. By addressing the ICT needs for educators in these communities, the prospects for both education and the community at large may be improved.

The primary data for the study was drawn from semi-structured interviews with educators from under-resourced schools in Cape Town, in the Western Cape in South Africa. The schools had received ICT infrastructure and basic ICT training under the Khanya Project, a provincial government initiative in the Western Cape (Khanya, 2008). Data analysis was done within the framework proposed by Fairclough (2009) and adapted by Brown (2010).

The study contributes to both theory and practice. Although there is a growing body of literature on ICT in education, only a few studies have focused on the educators' perspectives and perceptions. A critical approach adds to our practical and theoretical understanding of educators' roles in ICT interventions. Findings from this study contribute to the development of evidence-based policies in ICT intervention.

2 LITERATURE REVIEW

2.1 ICT in education in South Africa

ICT is considered to have the power to improve teaching and learning (Lundall et al., 2000; Hardman, 2005; Louw et al., 2008). The purported positive impact of technology on education is particularly noted in developing countries where most schools are tackling issues such as lack of resources and under-qualified teachers (Koo, 2008). This perception has resulted in a growing investment in government initiatives implementing ICT in schools in developing countries, often with the support and involvement of donor agencies. In the South African public education

system, such projects are informed by national policies, but are implemented at the provincial level.

2.2 ICT Adoption and Integration in South African Schools

Drent and Meelissen (2008) note that ICT skill levels are critical for the successful integration of ICT in schools. Although educators received training, most still felt the training was not adequate (Miller et al., 2006; Davids, 2009). Recent work suggests that the problem may not necessarily lie with technical skills, but rather the combination of ICT skills, content management skills, and an understanding of pedagogy (Chigona et al., 2010). Anecdotal evidence and a range of emerging studies showed that the integration of the technology in teaching and learning in schools had not been completely successful. In most cases integration of ICT into educational activities was hindered by technological, pedagogical and social factors (Miller et al., 2006; Davids, 2009; Chigona et al., 2010).

School management policies and methods also have an impact on the adoption of ICT in schools (Anderson et al., 2007). In some cases, school management does not provide incentives for educators, nor does management appreciate the consequences of ICT adoption (Miller et al., 2006; Davids, 2009). Related to this is the feeling amongst educators that the current curriculum does not require them to use ICT for curriculum delivery and, by implication, that the integration of ICT is not perceived as important by the Department of Education (DoE) (Davids, 2009). In most cases schools were provided with several computers. The high learner:computer ratio challenged school management to organise laboratory sessions in an equitable manner (Davids, 2009). While the schools located in middle- to high-income areas may have raised their own financial resources through parent donations (for example to supplement the equipment provided) schools in low-income areas had no such opportunity (Miller et al., 2006; Isaacs, 2007). In addition, these schools received limited technical support resulting in maintenance challenges. Most schools in under-resourced areas could not afford in-house technical support; they relied on the support arrangements provided, which was insufficient. Furthermore, most educators have inadequate ICT and pedagogical competencies for effective integration of ICT into their work.

Integration is challenged by the ICT skills of learners as well as the lack of facilities to enable learners to improve their skills (Davids, 2009; Chigona et al., 2010). Learners from disadvantaged backgrounds often have low technical skills, and because most of them do not have computers at home they have no opportunity to practice what is covered in lessons. Consequently, educators expend time dealing with the use of technology, instead of teaching the subject content. Hence, some go to great lengths to avoid the technology (Alba-Juez, 2009; Chigona & Mooketsi, 2011). It is within this context that one needs to understand educators' perspectives of technology in teaching and learning.

3 CRITICAL DISCOURSE ANALYSIS (CDA)

The term "discourse" may refer to everyday conversation where it is used in the sense of "talk" or "speech" (Robinson-Pant, 2001), which is the micro level of the social order., Speech characterised by power, dominance and inequality belongs to the macro level of the social order (Van Dijk, 1998). Critical discourse analysis (CDA) focuses on the way discourse structures enact, authenticate, legitimate, imitate or challenge relations of power and political dominance in a society; i.e. the meso level or intermediary level (Van Dijk, 1998). Doodley (2008) explains that "Discourse is not an amorphous mass ... it has both structural and conceptual patterns, and readers and hearers use both, in a framework of contextual information and in interpreting the text". It can however, have a more particular meaning: Brown (2010) explains discourses as

“systematically organised sets of statements which give expression to the meanings and values of an institution.”

Text and discourse are employed in a variety of research traditions. Various theoretical approaches are applied to Text Linguistics and Discourse Analysis, yet they share similar systems of basic belief. A common characteristic of these traditions is that they do not focus on language as an abstract system (Alba-Juez, 2009). Instead, they all tend to be interested in what happens when people use language, based on what they have said, heard or seen before, as well as how they utilise the language, such as expressing feelings, entertaining others and exchanging information. Van Dijk (1998) argues that those groups controlling the most influential discourse also have more chance to control the minds and actions of others. Hence, the respective context is seen to be as important as the language itself.

Context is thus key to CDA as it frames the discourse within its employed conditions. CDA is used in this paper to understand people’s interactions with ICTs, their perceptions thereof, and to examine the social relationships and identities of the users in under-resourced schools in South Africa. It aims to assist in the understanding of different interpretations and how the interpretations affect use (Stahl, 2004). It explores possible new insights into the execution of ICT-related interventions and policy evaluation through using the conceptual lens of discourse analysis. This knowledge may, in turn, assist those implementing ICTs in under-resourced schools. Hence, we trained a group of educators in ICT to analyse the impact of thereof (empowerment) on the educator discourses regarding the use of ICT in schools.

CDA is used as a tool to address questions on the relationships between language and society. It is an analytical tool used to obtain the thoughts and perceptions of real people within real situations. It is used to determine what certain texts may refer to, or not, so as to understand the speaker more subjectively, and to evaluate how the speaker is perceived by others. Robinson-Pant (2001) postulates that discourse analysis also implies analysis of what is excluded, what cannot be said, and what cannot be done.

Researchers agree that different elements, themes, genres, styles and sub-discourses emerge in the analysis of a discourse (Fairclough, 2009; Gee, 2005; Doodley, 2008). These can be referred to as thematic constructs within a particular order of discourse (Brown, 2010). The elements may be diverse, but are never fully inseparable. Doodley (2008) echoes this thought by saying “although their criteria are seldom explicit, they are often in basic agreement”. Fairclough (2009) explains that each internalises the others in a sense without being reducible to them, and that they are situated within an order of discourse which is a dimension of social practices. Given the social context within which this study was undertaken, this is a most useful feature of CDA.

4 METHODOLOGY

The Khanya project, a Western Cape Education Department initiative, had the objective to equip schools in the Western Cape with ICTs, in order to improve teaching and learning through more effective curriculum delivery. The project began in 2001 and aimed (by the start of the 2012 academic year) to empower “every educator in every school of the Province ... to use appropriate and available technology to deliver curriculum to each and every learner in the province” (Khanya, 2008). On their website, Khanya reported to have implemented ICT laboratories in 85% of schools in the province, with 11% of schools still in process (Khanya, 2011). Delivery continued to progress and at the time of writing it was likely that the project would reach its targets.

Since the focus was educators’ attitudes towards technology and actual use thereof, the sample was limited to schools which already had technology in place – all the schools in the sample were

part of the Khanya Project and had already received basic training in the use of selected educational software. The six schools selected were located in Cape Town communities which themselves were economically under-resourced. For purposes of anonymity, the names of these schools and the educators involved in the study are withheld.

Educators from two schools (Group 1) were invited to participate in a specially designed training curriculum in the use of ICT in education, with the intention to empower them in their work as educators. Details of the curriculum that was offered are outlined elsewhere (Bytheway et al., 2010); here, it is referred to as the “MELISSA training”. At the time of data collection, educators from Group 1 had received MELISSA training for almost one year; the educators from the other four schools (Group 2) had not at that stage received the MELISSA training. The sample for the study consisted of 40 educators: 20 educators randomly drawn from group 1 and 20 educators randomly drawn from group 2.

Data for the study was obtained from semi-structured, open-ended interviews with these educators during July 2009. The interviews were conducted on the school premises. The data was transcribed by the interviewers as well as by post-graduate students external to the project. Analysis using a mental model technique (Carley, 1992; Johnson et al., 2006), involved listening to the interviews and reading the transcripts several times, and developing a Code Book to ensure a common understanding of the coding process. The discourses were coded with the support of a qualitative analysis software package, after which primary and secondary meanings were identified with possible relations between them being highlighted.

All data was obtained with the full consent of the participants, the school management, and the provincial educational authorities. The aims of the study were explained to the respondents prior to the interviews.

5 RESULTS AND IMPLICATIONS

This study investigated educator discourses relating to their perceptions, interactions and uses of ICT in education. These were categorised as follows:

- dominant discourses;
- factors affecting ICT interventions;
- the context; and
- related macro discourses at government and management levels.

5.1 Dominant discourses

The data suggests that the educators are re-contextualising Gee’s “Big C Conversations” (significant conversations in the public sphere) within their discourses. The educators are active agents in the political and social sphere. Their own values, experiences, interests, beliefs, political commitments, wider aims in life and social identities are deeply embedded in the political climate and social context of the world in which they live. Educators’ conversations about ICTs are thus guided and influenced by the macro socio-political context. It is arguable that the macro socio-political discourse is again embedded in the so-called expert Western consensual-dominant discourse (Brown, 2010). For example, in assessing the educators’ views about their working contexts, independent of the issues of ICT use, we noted that they regarded this environment as challenging. The educators experienced their principal activities to be those of a “*social worker*”. For some, their social climate was characterised by broken homes, incidences of rape, violence, alcoholism, disrespect of learners towards educators, learners’ lack of interest in schooling, and lack of accountability by both parents and learners.

The educators felt the propagation of children's rights strengthening learners in their rebellion against authoritative figures²:

We have those different kinds of learners, these days learners have more rights than the teachers; secondly the department is always against the teachers ... sides with the learners most of the time.

Badly behaving children hey ... Yes it can become very stressful because you have to do the basic things of discipline. Stay in your seat ... listen ... you know? Basic, basic things in a Grade 3 class, so yes it can make you feel like you're not progressing. You're not making enough progress.

Furthermore, the respondents felt the DoE was reluctant to support them in these struggles. However, in this study much of the expressed external concern was quite pragmatic and focused (for example), on keeping up with developments and governmental interventions:

I think we need more training, because each and every day there is something new that the Department of Education introduces. I think there must be a continuous training because sometimes there are new areas that the Department introduces and it becomes difficult for teachers to keep abreast with the changes if they are not properly trained.

Some say it takes a lot of their time, some feel that the government (DoE) must employ someone who will be responsible to deal with ICT only.

Ah, the way things are, the Department is chop and changing things every now and again, they introduce this kind of system. Before you even get used to it they, introduce something else (that really puts someone down).

The educators' discourses were dominated by the perception of disempowerment by the teaching context. The impact of this disempowerment is evident in educators' inability to verbalise the challenges that were experienced in the integration ICTs in the teaching context. Researchers delivering the training were, for example, exposed to computer laboratories that required constant maintenance and interruptions such as Internet services being persistently down, as well as PCs and printers not working, which was often time-consuming and costly in terms of the effort involved in delivery.

The general view of the educators on ICTs was that it was beneficial; it makes their job easier, and eases access of knowledge to both learners and educators. Educators believed that ICT will advance the literacy levels of their learners, allowing them to become independent thinkers:

Like you can just download pictures relevant to what you're teaching, and print it in colour as opposed to making the drawings yourself or going to the library to search from the books. If you have the resource on your computer you can re-use it over and over, provided you save it on your computer. The learners benefit because they can use the computer and learn about things in a funny way because they enjoy playing on the computers.

The teacher benefits but the learners also benefit. The teacher saves much of his time, because if you look for information on the internet it does not take much time. The whole community and South Africa because we are exposing our learners at primary school already there will become a computer literacy at primary level so the

nation will benefit from them. One day they will be parents and coach their children. So the whole world will benefit from this ICT.

As the quotations above indicate, some educators felt that technology was key to individual empowerment, expanding knowledge through online research and improving learning, for example, via visual and interactive lesson material. Probed on the benefits of ICTs, respondents claimed increased productivity and simplified administrative duties. The relief of administrative duties is one of the most significant advantages quoted by study respondents.

It has changed also because sometimes when you've got access to the Internet you don't have to go and look for books or all the information you can get in front of the computer without stressing too much because it take longer in terms of which book or which topics you need.

We do the admin and everything of that sort on the computer, but since I am dealing with small children I mostly use it for arts and crafts regarding children's work.

It makes the work easier like when you use it for administrative purpose, for example you type the register once and you can print it many times and use it for different purposes it is so convenient.

The data also suggests that the educators did not see themselves as active agents within the ICT world, i.e. they did not view themselves as part of the communities of independent computer users.

Yes, there are issues because I am only trained to be an educator not a computer educator. Meaning, I need more training.

The educators portrayed themselves as helpless agents (outsiders) in need of support from an external agent in order to advance their personal and/or professional development. Their locus of control was external; they experienced their own professional development to be dependent on a trainer, thus resisting learning through discovery. This discourse, however, is in line with the Selwyn's view that concluded that "novice users will almost invariably turn to either the tutor or peers for support before looking in the manual, while on-line help is an absolute last resort" (Selwyn, 1997). It is directly in contrast to educators' belief that computers make them independent agents.

Although educators viewed ICT as an important aspect in their work environment, their discourses also suggest that they felt disempowered and could not keep up with increasingly sophisticated digital technology.

Yes you know, not being able to fix a problem like if the screen freezes so now what do you do? Those little things. Not knowing enough to be able to fix things yourself, now you have to call - 'please come and look at this'.

There are challenges because I am not an expert. Sometimes if I have a problem I just ask other teachers that are better than me and help me.

Although the data does not indicate fear of computers, it does indicate that educators felt exposed and confounded by ICTs. This again signifies that educators were struggling conceptually between their responsibility to educate themselves and the requirements of the DoE for professional development. This may have affected attitudes towards ICT in the classroom, to an extent where educators felt that ICT was being forced upon them.

In summary, educators from Group 1 expressed more negative or neutral views regarding technologies than positive ones. However, their negative opinion did not diminish their optimism, but rather complemented (or elaborated on) their existing experiences with ICTs. Social representations attached to technology were more thorough and descriptive. This first group of educators attributed more characteristics to ICTs, indicating that they had more closely “come to terms with” ICTs, and they recounted a variety of advantages and disadvantages. Direct exposure to technological elements thus seemed to invoke more complex perceptions than those of Group 2.

Although the context was marked by a lack of formal policy (few respondents could pinpoint direct ICT policies enacted within their school), and a lack of directives on future use, training, and sustainability, unequal or disintegrated adoption was a key concern. Many of the older educators expressed their frustration at ‘lagging behind’ their younger colleagues.

Respondents with a better-than-average understanding of the use of ICTs in teaching were able to criticise school management bodies, and pursued more responsibility in the management of ICT resources without constraints. They sought collective ownership by all parties to ensure successful training and adoption.

5.2 Contextual elements

Those who challenge the technological imperative do so from various positions (Bates, 2000) but, in keeping with Brown’s argument, educators will be unlikely candidates to oppose the dominant system for fear of being labelled as backward, uncooperative, or ignorant (Brown, 2010). Bates’ position on the technological imperative is worthy of further exploration: it may be the case that both the Khanya and the MELISSA training instilled the purpose for using technology in the classroom but not the capability. This explains why educators are publicly in favour of using ICTs, yet (involuntarily?) exhibit their dismay in the practice thereof. They conformed to the local and provincial directive of using ICTs for teaching and learning, as that was the status quo. Coupled with an array of existing dynamics (e.g. lacking professional motivation, low wages, tough working conditions, ineffective training), ICT usage gradually declined. There is a feeling amongst educators that they are being left to their own devices., The option of becoming a self-taught, self-regulated user of technology is absent in their discourses.

Where (in exceptional cases) the use of ICTs had become a feature of their teaching, there is a variety of practices, and a new-found confidence:

They [learners] use ICT to listen to the stories from Encarta kids... Mostly I am using Word, Excel and PowerPoint for grade 9 learners; I use Encarta. We use Encarta for communication and understanding about the surroundings; Yes, I use ICT. I am currently using the program called CAMI Maths... I use Publisher to educate them in doing every day (tasks) like writing invitations, certificates and so; I use Synchronised Teacher; we use Edu-man for marks and schedule and all. Edu-man is very accurate, you just put marks for all the subjects, date etc. it’s not difficult at all.

This may suggest that educators are torn between their own desire to develop their technological skills and the DoE’s inability to implement and regulate technological development and sustainability in the schools. Consequently educators are driven to use “discovery learning” in developing their own capability as there is no trainer to guide and support them, creating yet another challenge to the successful integration of ICTs in education.

5.3 The macro discourses

Some of our findings are consistent with what Brown (2010) describes as the “globalisation discourse”, as well as the “deterministic” theme. These discourses link with the overarching or dominant government ideal to introduce and integrate ICTs with extant societal institutions, in this case education. The goal here is to conform (or respond) to an increasingly globalised world, in which rapid and simplified communication is the key advantage. The South African White Paper on e-Education provides a blueprint outlining this plan: “*The provision of a telecommunication infrastructure available for learning and teaching is gradually increasing, and many schools are exploiting the benefits of ICTs to enhance the quality of teaching and learning*” (SA Government, 2006). The educators in this study were direct beneficiaries of an affiliated government programme and consequently aware of government’s plans for increased globalisation. The notion in most narrative accounts was that “*technology is there to be used, and that it necessitates an appropriate response*”.

In light of the challenges, it was surprising that there are many negative aspects that educators do *not* refer to. Negative voices were in the minority, largely overshadowed by educators’ encouraging and deterministic attitudes toward ICT. They did not refer to a lack of resources or to any difficulty in integrating technology within traditional curriculum settings. Only one educator referred to the lack of a teacher-mentor for training in the use of specific educational software. They did not overtly refer to the availability of computers for use in their own classrooms, but as none of these educators had free access to computers in their own classroom (only in “the IT lab”) this might be expected.

A possible explanation could be that the technology did not actually matter to the lives of the educators; their view of teaching is still teacher-centred, using existing prescribed tools and administrative procedures to support traditional didactical instructional methods. However, it could be argued that the educators failed to verbalise the difficulties they experienced with the use of technology. This echoes what Brown (2010) describes as “Learning and Liberating Discourses”, where educators are optimistic about the positive outcomes of ICTs for learning and personal improvement. The approach to the use and implementation of ICT in under-resourced schools in South Africa, which had been beset with a myriad of challenges, was normalised in the discourse of the educators. The manner of deployment accords with a Western view that “technology is good” and that “it makes life easier”, thereby disregarding the critical concern of limited availability of computers in schools, limited access to computers, and limited skills and authority. Furthermore, the educator discourses could have been shaped by the media discourse on Khanya and ICTs in education. Since the media often portrayed Khanya as a successful project and was often silent on its short comings (Chigona & Mooketsi, 2011), the educators could have felt disempowered to voice negative views regarding the project.

A number of critical factors that affected both the facilitation and use of ICTs in the schools are evident in the educators’ discourses. To simplify, these are aligned negatively, positively, and/or neutrally. At first, ICTs were thought to be a positive marker in the venturing of schools toward a modern educational approach. Under-resourced primary schools were joining the global knowledge society, with infrastructure and training (from both Khanya and MELISSA). This is clear in the majority of respondent discourses: educational software and accompanying technologies/platforms (however rudimentary they may seem) are seen to be colourful and interactive, engaging and inclusive. School management, overall, is perceived to be moving in the desired direction, and embracing broader changes in the global schooling framework by incorporating technology.

Educators described personal empowerment, and independent thought, as some of the direct advantages in the use of ICTs. Optimistic views, however, were in contrast to our in-field

experience at all the schools. During numerous training sessions and accompanying participant observations, it was perceived that the educators somewhat lacked interest in the training. Over a training period of three semesters, with scheduled sessions at least every (working) week, it appeared that the motivation of educators steadily reduced. They cancelled several sessions with short notice, absenteeism was high, sessions were interrupted and often not fully completed, and some attendees were becoming more impatient, as detailed elsewhere (Van Zyl & Rega, 2011).

The inconsistency between the espoused enthusiasm and the lack of motivation in the training and adoption of the technology may be ascribed to the training methodology adopted, which might not have responded sufficiently to surrounding dynamics. It could also be ascribed to Bates' technological imperative which asserts that we have to use technology because of a blind belief that it is good for us. Those who oppose the use of technology may lose their standing in the community. Given their deterministic responses, the educators were unlikely to oppose the dominant extant, optimistic and presumptuous discourse. Their positive attitudes to ICTs at the contextual level is not necessarily a true reflection of what they thought. They merely operate in a larger context where without negativity towards ICTs. Negativity regarding ICTs is perceived to be associated with ignorance and backwardness (Brown, 2010). The association of ICTs with "progress" and "rationality" in a cultural setting characterised by poor socio-economic circumstances will continue to prevail, together with a desire for greater exposure to ICTs.

6 CONCLUSION

Teaching with technology is growing fast, therefore it is important to question whether the increased investment in ICTs is translating into actual use and improved educational outcomes. The educator is critical to the integration of technology in education. For successful implementation of any ICT intervention in an educational institution, it is critical to understand the educators' motivations and the social meanings they ascribe to technology.

We noted that the educators in disadvantaged contexts appreciated the role of ICTs in education and expressed a willingness to adopt and integrate it into their teaching approach. However, due to a myriad of institutional and personal factors, they felt disempowered and less capable to manage their own use of technology. The sense of disempowerment limits the effectiveness of technology in education. ICT intervention strategies should go beyond provision of physical access and take cognisance of educators' discourses and concerns.

The study noted that the educators' discourses on ICTs in education were supporting the dominant discourse from the macro level, i.e. the use of ICTs in education only has positive effects. This is in direct contrast to the numerous challenges (all relating back to management) facing educators in their context and, the (consequent) low rate of uptake of the technology.. Educators perceptions of technology in education are somewhat shaped by technological determinism and imperialism (the perception that resisting technology is equivalent to being backward). While a positive attitude towards technology may be a prerequisite for adoption, it is advisable for policy makers and implementers to be aware of the sources of the discourse amongst the intended user groups. They should seek ways to empower the users to voice their concerns openly in order to bridge the gap between those with power and the powerless (i.e. the educators). A shared meaning of the term "technology" amongst all stakeholders such as learners, administrators, parents, technology suppliers and communities should be agreed. Future studies should look at the various discourses prevalent amongst a wider selection of stakeholders, and determine which synergies and conflicts are evident and how they affect the implementation of ICTs in schools.

ENDNOTES

- ¹ Because the nature of education is increasingly much more than just “teaching”, we choose in this discussion to refer to “teachers” as “educators”.
- ² The selected quotations provided here are *representative* of the most frequently occurring category codings in the analysis of the interview transcripts.

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