# Challenges Posed by the Use of English in the Teaching and Learning of Technology in Grade 9 at Some Schools in Eastern Cape Province, South Africa

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**Abstract:** English is the language of learning and teaching in many schools in South Africa. The ability of teachers and students to understand and communicate with each other in English contributes to better performance in science and technology subjects. This study explores the challenges posed by the use of English in the teaching and learning of technology at schools in Eastern Cape. The study was undertaken in order to clarify the commonality of problems related to the use of English. The sample for the questionnaire comprised 57 teachers who taught technology at different schools in the district. Semi-structured interviews were also conducted with five subject specialists in technology. The findings revealed that the use of English militates against effective learning and teaching of technology. In order to enhance the communication skills of students, it is recommended that teachers increase dialogue in English by means of small-group discussion, exploratory talk and argumentation.

**Key words:** Technology, language, challenges, Eastern Cape, students

## INTRODUCTION

Effective learning depends on the ability of teachers to communicate in a manner that is comprehensible to students. The most important function of education is that teaching should result in effective learning. Furthermore, learners should be able to seek knowledge through communication with their peers, reading and research. However, despite the fact that the language of instruction is English, communication between learners and teachers is easier when the mother tongue or any African language is spoken as in many South African schools (Alidou and Maman, 2003; Brock-Utne, 2005). In many schools in South Africa, learners begin to read and write in English in grade 4. A popular belief is that the sooner the child is exposed to English in the classroom, the better he/she will learn the language. To date, many studies that have been conducted in Africa and abroad have indicated that learners perform poorly in mathematics and sciences because of the use of a second language as a medium of instruction (Mekonnen, 2005; Wilmot, 2003; Fredua-Kwarteng and Ahia, 2005; Reddy, 2005). In addition, the Language in Education Policy (LiEP) is not monitored by the Department of Education and consequently it is not properly implemented in schools.

This study is an exegesis of the challenges posed by the use of English in the teaching and learning of technology in schools. The survey was undertaken in order to clarify the commonality of problems related to the use of English. This study draws from existing studies on the problems regarding the use of English as a Language of Learning and Teaching (LoLT) in Mathematics and Science (Setati and Barwell, 2006; Probyn, 2004; Setati and Adler, 2001; Dutcher, 2004). These were mostly longitudinal studies that focused on one to six classes. The recurring failure rate of grade 12 learners in Mathematics, Science and Technology subjects calls for a concerted effort to improve not only their understanding of the subject but also their ability to use English in the teaching and learning context. Studies that involve a large number of schools, particularly in other related subjects, are important in order to understand the scope of the barriers of using English in teaching and learning. The majority of South African learners cannot express their understanding of the subject through English which is the language of instruction (Probyn, 2006). In their study, Myburg et al. (2004) found that learners do not accept the language of teaching as their own. While technology is imbued with its own 'language' or terminology, concepts are explained in English by the teacher because it is the LoLT in schools.

There are many problems in schools today that render the learning and teaching process difficult. The use of English in teaching and learning science and technology subjects is one of the factors that contribute to the poor performance of learners in schools (Ferreira, 2011). Serious communication and learning problems are

faced daily by teachers and learners in African classrooms. Brock-Utne *et al.* (2004) argue that most African teachers experience difficulty in presenting subject matter in English, owing to their lack of fluency. The purpose of this study is to shed light on the scope of the barriers caused by the use of English in teaching and learning technology subjects in schools. In this study, the terms 'students' and 'learners' are used alternately. The terms educator and teacher are also used interchangeably.

**English as a language of teaching and learning:** English, to a large extent, has escaped the antagonism that was directed towards the ex-colonial languages as most language education policy proposals envisaged a central place for English (Alidou *et al.*, 2006). Heugh (2000) states that the primary goal of bilingualism proposed by the National Language Project is that English and one dominant regional language will be used for teaching. There is a continuous reduction of the use of early mother tongue as the language of teaching and learning in many South African Schools. According to Muyeeba (2004), the latest change in language policy has resulted in a continuation of English as the LoLT during earlier school years. African languages such as isiZulu, seSotho and tshiVenda are used only for initial literacy in Grade 1 but the LoLT remains English, even in grade 1 (ibid). Alidou *et al.* (2006) report that even in the new South Africa, African languages appear to be gradually ceding importance to the English language. The dominant use of English in schools is a natural historic process, owing to the status of English in society. Bamgbose (2005) observed two stages of decreased use of a black African language at schools: from 8-4 years during apartheid education 1977-1993 and from 4-3 years after the new democratic government introduced the Outcomes Based Education (OBE) curriculum in 1997.

To date, there has been a paucity of findings and recommendations in literature supporting the transition to English by the end of grade 3 or earlier. No recognised expert in psycholinguistics has suggested that switching from the first language (mother tongue) as LoLT to English by the end of grade 3 will enable learners to perform well across the curriculum (Alidou *et al.*, 2006). Research has indicated that learners who had used their mother tongue as LoLT to the end of primary school (7 years), followed by dual medium of Afrikaans-English (grades 8-12), performed better than learners with monolingual Afrikaans or monolingual English. Studies conducted by Bamgbose (2000) indicate that learners who had 6 years of their mother tongue as LoLT performed better in the English subject as well as other content subjects. Bamgbose (2005) argues that 3 years of the

mother tongue as LoLT at school is not adequate. From 1976 onwards, the pass rate of grade 12 learners has been dropping, due to the substitution of L1 as LoLT with English by the end of grade 3 (ibid). For example, the pass rate of learners in this grade, dropped from 83.7% in 1976 to 44% in 1992 (Alidou *et al.*, 2006). From grade 4 onwards, the achievement of these learners dropped significantly in relation to the national standard (ibid). Alidou *et al.* (2006) argue that the longer the L1 of learners is retained at school as a LoLT, the better the performance in mathematics, science and technology. Collier and Thomas (2004) confirm the findings of the USA study (Alidou *et al.*, 2006) by indicating that the benefits of dual-medium instruction models narrowed the gap in performance between L1 and L2 learners of English.

Bamgbose (2005) argues that the fallacy that proficient competence in English can only be achieved if it is used as a language of teaching and learning is part of the colonial legacy of South Africa. Baker (2002) agrees that immersing children in an English school or replacing their first language with English has never worked anywhere in helping children to perform. Competence in the language of instruction on the part of both teachers and learners is crucial for effective teaching and learning. According to the DoE (2008), the majority of South African teachers do not possess the necessary knowledge and skills to support English language learning and to teach literacy skills across the entire curriculum. Howie (Blaine, 2007) attributes the poor literacy in English in South Africa to the fact that many primary school learners experience reading problems due to the poor reading skills taught at school. He further argues that poor literacy results cannot be solely attributed to second-language instruction as teachers and learners are struggling with literacy in the African languages as well as in the English language.

## MATERIALS AND METHODS

In this study, both quantitative and qualitative methods were employed. A questionnaire was used to collect quantitative data from as many educators at selected schools as possible within a short period. The interviews with Technology subject specialists were conducted to support and substantiate data obtained from the questionnaire.

**Participants and study context:** According to the Continuous Assessment (CASS) register for technology in October 2007, there were 320 General Education and Training (GET) schools in the King Sabata Dalindyebo district of the Eastern Cape. The population consisted of 117 urban schools and 203 rural schools.

The 23 (20%) of the 117 urban schools were selected in a simple random sample. A sample of 41 of the 203 rural schools was used in the study. The study covered a total of 64 schools. The grade 9 technology teachers in each of the selected schools answered the questionnaires, however, only 57 teachers from 57 schools responded to the questionnaire.

Semi-structured interviews were employed to elicit responses from five technology specialists for the GET band concerning the use of the English language in class discussions of grade 9 learners in the King Sabata Dalindyebo district. The subject specialist were selected purposively on the basis of their expertise in subjects technology and use of LoIT in the classroom. The subject specialists interact with the teachers and learners daily by monitoring and assessing their performance. Three subject specialists were from rural area while two of them were from urban location. These interviews were conducted 'face to face' with the technology specialists at their offices on different 'prearranged' dates.

**Data collection and analysis:** A questionnaire with response options on a four-point Likert-type scale was developed for this study. The themes covered in the questionnaire included educators' views on the use of English in teaching technology whether learner participation is better when taught in the home language and code switching to the home language when teaching the said subject. These themes were informed by the literature review which shaped this research concerning the use of English language as a Medium of Instruction (MoI) in the classrooms. In addition, provision was made in the questionnaires for respondents to express themselves with regards to issues of concern in response to open-ended questions.

The coded responses of the quantitative data obtained from the questionnaires were captured and presented in the form of a computer spreadsheet. In the discussion of the Likert scale responses, the positive responses ('Strongly agree' and 'Agree') were collapsed and summated. This was likewise performed for the negative responses ('Strongly disagree' and 'Disagree'). The data obtained from the interviews were analysed

qualitatively which requires a systematic selection, categorisation, comparison, synthesis and interpretation of the data in order to furnish an explanation of a single phenomenon of interest (White, 2005). Each of the responses to the open-ended questions in the interviews was summarised. All the respondents were afforded an opportunity to voice their personal views during the interview.

## RESULTS AND DISCUSSION

In order to determine the commonality of the challenges of using English in the teaching and learning of technology, a sample was selected as explained earlier. Of this sample, 36 questionnaires were returned from the rural areas and 21 from the urban areas. The responses of educators were categorised and summarised accordingly. The data is discussed according the statements posed in the questionnaire and linked with the theoretical perspectives. The findings were further explored during the interviews conducted with technology education specialists.

**Quantitative data:** Teachers from the participating schools (rural and urban) were requested to respond to statements that relate to their experience when teaching learners in English.

Table 1 indicates statements that represent challenges that teachers experience during the teaching of Technology. These statements reflect challenges because if learners don't communicate and participate in English as medium instruction, they will eventually be unable to express and articulates well in English, hence perform poor in the subject. One of the critical outcome of education is that learners should be able to communicate effectively using appropriate symbolic and/or language skills in various modes.

The majority of respondents (91.6%) from rural schools and 95.3% from urban schools agreed that they don't use English regularly as a medium of instruction when teaching technology lessons. In contrast, others (13.2%) stated that using English as a medium of instruction complicates the teaching of Technology

Table 1: Summary of the findings on the use of English and the home language

| Statement | Strongly agree/agree | | Strongly disagree/disagree | |
|---|---|---|---|---|
| | Rural (%) | Urban (%) | Rural (%) | Urban (%) |
| Teachers don't use English regularly as a medium to teach Technology lesson in grade 9 | 91.6 | 95.3 | 8.5 | 4.7 |
| Learners' participation is not good in Technology lessons when English is used compared to when home language is used in teaching | 77.7 | 57.1 | 19.5 | 38.1 |
| Teachers code switching to home language when teaching Technology to facilitate learners' understanding | 86.1 | 28.6 | 13.9 | 71.4 |

subject because learners in the rural schools prefer their home language as a medium of instruction. As a result, teachers do most of the talking while learners sit silently or become passive participants during the rest of the lessons (Alidou, 2003; Rubagumya, 2003). However, the ability of learners to express themselves in English as a language of teaching and learning gives them pride. The pride in learners is based on the fact that English is associated with future economic and social welfare (Neito, 2000). There is also the view that "students who speak home language instead of English are perceived as 'handicapped' and they are urged, through both subtle and direct means to abandon their home language" (Neito, 2000).

Most of the teachers from both rural and urban schools (77.7 and 57%, respectively) agreed that students participate actively in the classroom when the teacher uses their home language in teaching and learning. This was not different from the findings of the study conducted by Alidou and Maman (2003) which found that when learners are taught in their African language, they are more active than when taught in English. To reiterate this point, Chekaraou (2004) who conducted a comprehensive study in Niger, reports that in a class where the home language was predominant "the entire class wanted to participate so much that they would stand up from their seats, move towards the teacher and wanting to be called upon to answer questions" (Chekaraou, 2004).

The majority of the respondents (86.1%) from the rural schools and less than half (28.6%) from the urban schools agreed that code switching should be employed. This is confirmed by other studies (Probyn, 2006) in which teachers used code switching to isiXhosa as a support strategy to enable learners to understand concepts. However, in this study most teachers (71.4%) from urban schools disagreed with code switching. This is not surprising because in urban areas (townships and suburban areas), people are multicultural and multilingual due to the historical background of the colonial and apartheid systems where many people from different African cultures lived together in metropolitan areas (Johannesburg and Pretoria).

**Qualitative data:** The results indicate that in both urban and rural schools, a large number of educators prefer to use English as a medium of instruction in the classroom. The subject specialists rated the ability of technology teachers to use English as an LoLT in the classroom as "fair". However, one technology specialist said:

> The poor level of English on the part of the learners makes it difficult for the teachers to communicate freely and also use the English medium effectively to teach

They further indicated that the challenge is not limited to technology educators but rather for most teachers in the GET schools. This utterance with regards to technology is not different from other similar studies which agreed that retaining English as the LoLT from the lower grades creates teaching and learning problems in African schools.

Although, teachers use English to teach Technology, students do not necessarily understand it. This is confirmed by other research findings in South Africa that English frequently creates a barrier to learning when it is not the learners home language. This problem can be attributed to two reasons: learners have very little exposure to English outside the classroom (Probyn, 2006) and teachers had received no or little training to teach through the medium of English (Alidou *et al.*, 2006). The questionnaire responses as well as the interviews indicate that it appears that teachers use English in the classroom even though learners do not understand them. This becomes a vicious cycle of continuously producing future teachers who cannot communicate effectively with learners in the classroom. The results further indicate that the participation of learners in a classroom where technology is being taught is minimal unless they are allowed to use their home language.

**Students' participation in technology lessons when using the home language:** The interview question which teachers were asked to respond was "What is the ability of learners to participate in group discussions using English language? The responses of the respondents indicate a disparity between the rural and urban schools, once again revealing the impact of the rural-urban divide with regard to the student levels of literacy in English. Some respondents from the urban schools commented in the questionnaire that learners in their schools have a good foundation in English because the schools are English-medium. On the other hand, others commented that English remains a barrier to learner participation in the classroom. The challenge here is that only a few students are able to participate in the lesson while others become passive receivers of knowledge. This defeats the objective of active learning that is to involve all learners in classroom activities. Studies conducted by Setati and Barwell (2006) confirmed that students participate better in the discussion if they are also allowed to express themselves in their home language. This is supported subject specialist during interview who says:

> That most learners in the rural schools can hardly speak a full sentence in English

For example, Setati and Barwell refer to a student who asked the teacher to express himself/herself in Setswana. In that classroom, the teacher enabled students to

participate freely in the discussion. In another study (Probyn, 2004), it was found that approximately, 85% of the time, the teacher spoke isiXhosa. The teacher's lesson consisted of reading a portion of English from the textbook and then translating and explaining it in isiXhosa. Myburg *et al.* (2004) also observed that whenever a genuine communicative need arose, the students automatically and instantly resorted to the use of their home language. Myburg *et al.* (2004) observations is supported by the utterance of Technology specialist when saying:

> Learners simply refuse to speak when discussions are made in English but they participate well when discussions are done in their local language

A lack of insight into what is being taught in class leads a student to feel helpless and despondent. This is supported by a comment made by a learner in the Myburg *et al.* (2004) study:

> I feel lost. The teacher stands there and explains and I'm the one that does not understand

The Technology specialists unanimously responded during an interview in the current study, that in most of the schools that they visit, particularly in the rural areas, students hardly use English during class discussions. The Technology specialist said:

> In many Black people schools, the inability of teachers and learners to understand each other in English compels teachers to teach in vernacular

According to Myburg *et al.* (2004), schools are unable to adjust to individual differences of students, hence, children face daily depreciation in their learning performance. Consequently, many children drop out of school early. One of the strategies used to assist learners in understanding technology is known as 'code switching' which is popular in many science and mathematics classrooms (Setati and Barwell, 2006).

**The rationale for code switching to a home language when teaching technology:** Teachers were asked an interview question: to what extent is code switching to home language used when teaching Technology? Although, switching from English to the home language (code switching) when teaching enables educators to express themselves confidently and learners to participate in the lesson, 'code switching' is not possible in classes where teachers cannot speak the home language of the learners. Hence, 'code switching' in most of the urban schools will be impossible. However, in the rural schools, 88.9% of the respondents in the current study stated that they can speak the vernacular. Hence, 'code switching' is practised more frequently in the rural schools than in the

urban ones because of unicultural class. Although, 'code-switching' is common in many of the black South African classrooms, it is not permitted to be used all times.

In a study carried out by Mwinsheikhe (2003) in Tanzania, in an interview, the teacher said:

> I personally was compelled to switch to Kiswahili by a sense of helplessness born of the inability to make students understand the subject matter by using English

Teachers 'code-switch' in order to facilitate learning as well as to create a more relaxed atmosphere in class (Mwinsheikhe, 2003).

One of the respondents in the present study commented: "I switch to vernacular when teaching Technology to facilitate learners' understanding." Teachers encouraged learners to use isiXhosa if they experience difficulty when answering in English. Similarly, in a study conducted in schools in Botswana, it was found that code switching to seTswana was inevitable because learners did not understand English, even if the educator tried to explain in English (Kasule and Mapolelo, 2005). Lack of understanding English language appears to be a barrier in performing in key subjects such as mathematics, science and technology as this was supported by one of the Technology specialist in an interview when saying:

> Learners language competency affects their performance in all subjects at all grades poor language competence limits conceptual understanding

This utterance is in agreement with parents concern that children fail because of lack of understanding the subjects. Further, Professor Rollnick also supported the Technology specialist when she says that the majority of South African leaners will not be able to answer many of the science questions because of the language demand.

Alidou *et al.* (2006) argues that teachers switch codes because they are unable to express themselves fluently in English. This is supported by Technology specialist who said:

> However, in most of the rural schools, teachers use the home language to teach, since some of the teachers are not able to express themselves fluently in English language

All the subject specialists who were involved in this study indicated that code switching is common in schools and that it is not peculiar to Technology teachers only. The Technology specialist gave reason for code-switchibg by saying:

Nevertheless, there are situations where teachers have to result to code-switching and use the home language to facilitate learners' understanding

In all the other learning areas, they stressed that teachers resort to code switching (Setati and Barwell, 2006; Probyn, 2004; Setati *et al.*, 2002). However, the decision to use 'code-switching' is not an easy task for the teacher as Adler (2001) observed an ongoing dilemma in the classroom with regard to 'code switching' between the mother tongue of the learners and the LoLT that is English.

## CONCLUSION

Several studies on the use of English in teaching and learning indicate that there are still communication barriers to understanding science and technology subjects when English language is used as the MoI. It has also been shown that despite the good intention of the school language policy (LiEP) to promote black South African languages, English remains the dominant language in South African schools. Parents from black communities are interested in their children being taught science and technology in English, even in the lower grades. Teachers should employ 'code-switching' as a strategy to understand the subject with great care because if code switching to the home language is used too often, it may deprive students of communicating and writing using English language, both in the classroom and outside.

## RECOMMENDATIONS

Based on the arguments advanced in this study concerning the role that a mother-tongue language plays in the learning and development of the child, the following recommendations are made: the ministry of basic education should develop a communication or advocacy strategy which informs and engages parents with regard to language for learning and development debates; black African languages should be used as LoLT to at least the end of grade/year 6; bilingual programmes where English and the L1 of learners is used on a 50/50 basis, LoLT should be commonly employed at school and assessors of literacy and numeracy in African settings should possess appropriate expertise in biliteracy and bilingual development throughout primary school that is language acquisition and or psycholinguistics and applied linguistics. Teacher education programmes should be revised to integrate bi/multilingual education needs of bilingual teachers. The problem of student participation at higher education institutions is also serious due to the inability of students to express themselves in English. Teacher education programmes should integrate multilingual and intercultural education philosophies, theories and methodologies in the initial and continuous professional teacher development. Such initiatives will help teachers become familiar with first and second language acquisition as well as teaching theories and methodologies.

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