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Jako Olivier <sup>a</sup>

<sup>a</sup> School of Languages, Potchefstroom Campus of the North-West University, Private Bag x6001, Potchefstroom, 2520, South Africa

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## Accommodating multilingualism in IT classrooms in the Free State province<sup>1</sup>

Jako Olivier

*School of Languages, Potchefstroom Campus of the North-West University, Private Bag x6001,  
Potchefstroom, 2520, South Africa  
e-mail: Jako.Olivier@nwu.ac.za*

**Abstract:** This article explores the language context of Information Technology (IT) classes in the Free State province. An overview of the multilingual context within which the research was done is provided through a brief historical background of language accommodation and recognition in South Africa in general, and then specifically in schools. Attention is paid to the role of English in contrast to that of the other official languages as well as code-switching as a method of accommodating multilingualism. Details are also provided on the language requirements of the subject Information Technology. Through questionnaires completed by Information Technology teachers and an interview with the provincial subject specialist, the language profiles of teachers and learners are explored and current multilingual practice is described. It is determined that Information Technology classes in the Free State province are multilingual by nature and that some accommodation of multilingualism is done by teachers through code-switching, but that not all teachers are able to do this. Finally, based on the response of the provincial subject specialist, it is clear that increased multilingual accommodation is necessary in Information Technology as adequate knowledge of English is required in addition to mother tongue instruction.

### Introduction

The South African society can be described as being culturally diverse and hence multilingual by nature (Mutasa, 2003). Furthermore, many South Africans are multilingual themselves and use more than one language within different situations as required. This is also common in South African schools and is therefore relevant to this article where the language situation and needs of Information Technology (IT) classes within the Free State province are explored in order to make recommendations for the accommodation of multilingualism in these classes.

The historical language background of South Africa, the context within which this study was undertaken, can be traced back to the presence of a heterogeneous group of Khoe- and San-speaking people, followed by the introduction of African and European languages (Mesthrie, 2002). Yet, in terms of documented language use in education, especially with regard to language policy, the emphasis in the literature has been on the emergence of colonial languages such as English and Dutch. English and Dutch became the official languages of the Union of South Africa in 1910 and of the Republic after 1961. The official status of Afrikaans (with Dutch) was recognised in 1925 with Dutch only being removed as official language in 1983. With the establishment of the so-called 'Bantustans', nine African languages were used as official languages in the Bantustans and language was used as a way of separating groups of people. This situation, in which two official languages were recognised in South Africa with nine languages recognised in the Bantustans, continued up to 1993 (Herbert, 1992; Du Plessis, 2000; Laufer, 2000; Webb & Kembo-Sure, 2000; Mesthrie, 2002; Du Plessis, 2003). Within this context, it is important to take note of the policy of apartheid (literally meaning 'separateness' in Afrikaans) according to which 'the Afrikaner-dominated National Party identified a key role for language policy and planning in advancing and implementing a policy of separate development' (Orman, 2008: 85).

The national language debate – stirred up by political changes in South Africa at the beginning of the 1990s – was democratised by the National Language Project (NLP) established by Neville

Alexander in 1986 (Du Plessis, 2000). Furthermore, Du Plessis (2000) also states that a 1992 press release by the African National Congress (ANC) set out the party's position in terms of developing 11 official languages, differentiation in terms of national regional language policies, empowerment of marginalised languages and the prevention of domination and division through language. The recognition of 11 official languages at national level was officially accepted in the 1993 interim constitution and ultimately the Constitution of South Africa, Act 108 of 1996 (South Africa, 1996), hereafter referred to as 'the Constitution (1996)'. Du Plessis (2000: 104) is of the opinion that the 11-language policy included in the Constitution (1996) is 'no more than a compromise between the ANC's covert English agenda and the overt Afrikaans agenda of the Afrikaner negotiators' during the negotiations that took place at the end of the apartheid era. Ultimately, the following languages were designated as official languages in the Constitution (1996): Sepedi, Sesotho, Setswana, siSwati, Tshivenda, Xitsonga, Afrikaans, English, isiNdebele, isiXhosa and isiZulu (Olivier, 2003; Orman, 2008).

Non-racial education was introduced in South Africa in 1992 and was discussed in the *Educational renewal strategy : Discussion document* released in 1991. This report suggested a move towards a single Department of Education with divisions in terms of regions. The report still advocated a sense of ethnicity and incomplete integration as race was still considered a factor in terms of control at schools (DNE, 1991). Criticism against the report included very little input from black stakeholders and no plans for the improvement of the quality of black education (Nkabinde, 1997; Nyembe, 2003). In 1995, the government of national unity announced the official merging of the 18 different education departments into a single education system (Nkabinde, 1997).

### Language in schools

Based on the aforementioned contextualisation, it can also be concluded that schools and classrooms in South Africa are also multilingual by nature. In this article, the term 'multilingualism' is used to refer to learners who speak different languages as mother tongues (Nkabinde, 1997; Laufer, 2000) and not to refer to individual multilingual capabilities. As such, accommodating classroom multilingualism needs to be managed and to better understand this phenomenon the classroom situation is explored in the literature as well as through empirical research.

An empirical study by Nyembe (2003) found that former Model-C schools were becoming more multicultural. This has implications in terms of the languages represented in such schools. After the end of apartheid, a number of African-language-speaking learners went to former white, Indian and coloured schools. In these cases, the new schools did not change their language policies but rather used language as a way of controlling admission (Murray, 2002). In some cases, learners living in multilingual (mostly metropolitan) areas went to the nearest school regardless of their own mother tongue (Murray, 2002). In this regard, Kroes (2005: 241) states '[t]oday, many of the more well-to-do black parents enrol their children in the formerly white public schools or in private schools from the very beginning'. In the schools mentioned by Kroes (2005), the medium of instruction is often English regardless of the mother tongues used by the learners.

Despite the fact that, from a sociolinguistic and educational point of view, mother tongue education is the ideal (Van der Walt, 2003), English is generally preferred as the medium of instruction at schools, especially by African-language-speaking parents (Nkabinde, 1997; Laufer, 2000; Webb & Kembo-Sure, 2000; Murray, 2002; Webb, 2002; Mutasa, 2003; Nyembe, 2003; Van der Walt, 2003; Ferguson, 2006; Nomlomo, 2006; Setati, 2008).

Alexander (2001) also states that there is a resistance against mother-tongue education by people whose mother tongues are African languages. Furthermore, Alexander (2001) adds that, apart from English- and Afrikaans-speaking learners, other learners (more than 80% of the school-going population) are taught in their second or even third languages in contexts where they and their teachers may have limited proficiency in the language of learning and teaching (LoLT). A further source of rejection of mother-tongue education can be traced to the history of education in South Africa. Many parents reject mother-tongue education due to the stigma associated with the so-called 'Bantu Education' of the past (Louw, 1996; Van der Walt, 2003; Ferguson, 2006; Orman, 2008).

One of the reasons for the preference of English is the fact that it is spoken and is dominant internationally (Kembo, 2000; Webb & Kembo-Sure, 2000; Van der Walt, 2003; Setati, 2008). However, statements of English being a true world language are contradicted by research of certain language communities. Smit (1996: 96) notes that in South Africa 'there is a shortage of local communicative needs for English paralleled by a relatively low percentage of competent speakers as well as a substantial lack of resources'. Furthermore, Smit (1996: 96) notes that 'it seems unlikely that country-wide communicative competence in English could be reached at present'. In support of Smit's opinion, Webb (1998) states that among black trainee teachers in four northern provinces, only five per cent were found to be functionally literate in English, which is the language of learning for these teachers. The low literacy level has implications for the schools where these teachers are teaching, especially where English is the LoLT.

English is considered to have economic power and is at least associated with economic opportunities (Nkabinde, 1997; Webb & Kembo-Sure, 2000; Murray, 2002; Dalvit *et al.*, 2005). Moreover, a national sociolinguistic survey completed by PanSALB (2001: 10) notes a 'massive dominance of English in the educational setting'. It must be noted that their research focused on participants of 16 years and older. Nomlomo (2006) is of the opinion that parents choose English because of the economic advancement it promises, the high status of English, as well as its acceptance and accommodation of other language and racial groups when the language is used. Despite the preference for English, parents may still feel that a loss of the mother tongue may have an impact on the culture and identity of learners (Nomlomo, 2006).

English is also preferred in some instances because African languages are not sufficiently developed in terms of terminology and especially resources such as text books (Nkabinde, 1997; Webb, 2002; Van der Walt, 2003; Dalvit *et al.*, 2005). Mutasa (2003: 7) observed that 'some educators still use English to teach African languages because they do not have the academic jargon or register for the concepts they teach'. Ferguson (2006) also observes that throughout Africa there are parents who believe that education through the medium of indigenous languages is not feasible due to limited material in the languages, as well as the few well-paid work opportunities that can be accessed through knowledge of the indigenous languages. Another perception that exists is that learners do not need to learn a particular language because parents and others believe that they already know these languages. This is, of course, usually not the case (Kembo, 2000; Nomlomo, 2006). It is therefore not surprising that Louw (1996) notes the frequent use of borrowed Afrikaans and English terms in African language teaching and the rare use of African languages as medium of instruction at secondary schools.

Van der Walt (2003) also notes that support for English as LoLT is drawn from the fact that it can serve national unity. According to Alexander (2001: 116), national unity does not depend on a single language and is rather 'constituted by the ability of people to communicate with one another without too much effort'. The emphasis on mother tongue education is even seen as a way in which people are segregated instead of unified. In a study by Nyembe (2003) it was found that a significant number of teachers indicated that English should be advanced as a national language. In contrast, Nkabinde (1997) notes that developing English as a national language in South Africa would contribute to perpetuating class divisions among South Africans because the majority of South Africans are not proficient in English. The degree of English proficiency is an issue that would require further research and testing. Yet it is clear that at least the degree of proficiency among the majority of South Africans would imply that mother tongue education should be developed.

Despite the prominence of English, there are teachers who attempt to use the mother tongues of learners through the use of code-switching and code mixing (Van der Walt & Mabule, 2001). 'Code-switching' refers to changing from one language to another within a particular context that may require its use or where a speaker chooses to do so (Herbert, 1992; Myers-Scotton, 1992; Rose, 2006). Crystal (1997: 423) defines code-switching as '[c]hanging from the use of one language or variety to another'. Furthermore, Holmarsdottir (2006: 194) defines it as 'a bi-/multilingual communication strategy consisting of the alternate use of two (or more) languages in the same utterance'. Herbert (1992) states that code-switching tends to be common in multilingual communities.

Code-switching is regarded as a way in which difficulties in learning through a second (by implication even third, fourth or other) language can be handled (Ferguson, 2006). In a study within a multicultural, multilingual school, Rose (2006: 73) identified the following functions of code-switching: clarification, humour, translations, expansion, confirmation, reprimanding, social, expression of identity as well as word-finding. Furthermore, Rose (2006: 80) makes the observation that 'code switching in the classroom is ... effective in the process of teaching and learning, and ... improves intercultural communication'.

Where code-switching refers to alternating between languages across sentence boundaries, 'code mixing' refers to alternating between languages within a sentence (Kamwangamalu, 2000: 92). Kamwangamalu (2000) also notes that recent studies tend to use code-switching as an umbrella term for both concepts. Myers-Scotton (1992) states that code-switching may be used by speakers to present a particular persona, to identify themselves with a particular group or to be able to negotiate their position within interpersonal relations. The last reason is especially relevant to teachers and learners within a classroom situation, as negotiation of meaning can be achieved through the mixing of codes and especially languages. In the context of this article it is important to take note of this form of language accommodation as this was also explored in the empirical part of the research.

### **IT and language**

The focus of the research in this article was on the language needs of Information Technology (IT) classes. Due to the nature of the subject in the South African context, IT is generally only accessible through the medium of English (Dalvit *et al.*, 2005; Njobe, 2007). This can be traced to the fact that the contents of the subject is related to computers and programming or software development through English computer interfaces and programming languages based on English. In the Free State, the area in which this research was conducted, the programming environment of Borland Delphi is used.

Marchant (2004) identifies language as a barrier to effective teaching, learning and assessing of IT outcomes. Marchant (2004: 24) states that, due to the fact that the language of many IT learners is not the same as the LoLT and because of the 'special terminology and writing style used' in IT, the problem of languages is compounded. In addition, Marchant (2004: 24) lists the following strategies that can be used to address language problems in IT:

- The use of alternative communication systems
- Allowing mother tongue to be used to consolidate concepts
- Allowing a less rigid style of reporting and use of terms
- The use of diagrams, models, and mind maps instead of descriptions in words.

Despite the limited view that Njobe (2007) presents in terms of what IT involves at school level, it is important to take the conclusions made in terms of IT and language use into consideration. In the research conducted by Njobe (2007) at both school and tertiary level it was found that learners improved in terms of marks when they used interfaces in isiZulu, their mother tongue, rather than using one in English. The respondents in the study by Njobe (2007) also indicated the importance of both English and their mother tongue in the instruction of IT. Furthermore, the use of dual-medium technology was received positively and the use of the respondents' mother tongue in the teaching of IT was acknowledged as a solution to problems experienced in terms of language.

Serfontein (2009) discusses how inclusivity and learner diversity can inform the development of IT learning programmes. Despite the fact that Serfontein (2009) states that the diversity of learners should be acknowledged in terms of learning styles, pace of learning, levels of achievement, gender and cultural diversity, no mention is made of language diversity. The only related concept is that of cultural diversity and in this regard Serfontein (2009: 24) maintains that learning programmes should 'recognise, celebrate and be sensitive when choosing content, assessment tasks and LTSM [Learning Teaching Support Materials]'. As such, this statement does not directly relate to language or even sensitivity towards multilingualism although such customised content could potentially allow for greater multilingual accommodation. Havenga (2009: 120) states that the action of learning how to program 'is a complex cognitive task that includes learning the programming language,

comprehending existing programs, modifying written programs, composing new programs and using debugging techniques'. Furthermore, programming requires specific cognitive knowledge and skills. In particular, higher cognitive functions such as 'reasoning, language processing and problem solving' are necessary (Havenga, 2009: 121). Therefore, as with other subjects, language can be considered as the key to the acquisition of the problem solving and programming skills required for the subject IT.

Du Plessis and Janse van Rensburg (2006) found that for an ICT (Information and Communication Technology) course at a South African university of technology, it was necessary to implement an English language proficiency intervention course. The need for this course was, *inter alia*, based on the link between teaching programming and the development of language competence (Du Plessis & Janse van Rensburg, 2006). According to Clancy (2004), linguistic transfer is a source of confusion in terms of programming as terms may not have the same meaning in English as in the programming language. This problem can be compounded by weaker or limited knowledge of English.

### **Algorithms as a way of multilingual accommodation**

A possible solution to the accommodation of different languages in IT classes is the use of algorithms that can be used in the construction or planning of computer programs. According to Goosen (2004: 46), the reason for using an algorithm is 'to focus on understanding new concepts during the initial sessions with natural language, and ... then [to] tie these concepts to the syntax of the programming language in the subsequent sessions'. Stasko and Hundhausen (2004) highlight the importance of algorithm data structures in terms of learning how to program. Data structures are 'collections of data that are organized to particular conventions' while the algorithms refer to abstract descriptions of the programming process (Stasko & Hundhausen, 2004: 200). Stasko and Hundhausen (2004: 199) define an algorithm as a 'set of operations that are carried out to achieve some objective or to perform some task'. In addition, Stasko and Hundhausen (2004) state that algorithms could be difficult for learners to learn as they can be highly complex and include many steps. Furthermore, algorithms are expressed using prose or pseudo code.

It is therefore clear that some programming languages, such as the one used in the Delphi environment, are based on English. This means that different languages cannot be used in the actual programming, yet planning activities such as algorithms can be done in different languages.

### **IT teaching and languages in South Africa**

Through research done by Dalvit *et al.* (2005), Mandisa (2007), Njobe (2007) and Olivier (2011), it is clear that the use of African languages, specifically in the teaching of IT at tertiary level, has advantages. Dalvit *et al.* (2005: 124) maintain that 'their stronger language (i.e. their mother tongue) could give students increased and more meaningful access to an educationally and economically empowering field of study'.

In his study, Mandisa (2007) focused on the use of isiZulu in IT teaching. He found that almost every research participant in his sample 'believed that the language problem could be overcome by introducing isiZulu as the medium of instruction in the IT learning environment' (Mandisa, 2007: 137). Mandisa (2007: 127) noted improvements in learner results for Computer Literacy after content in isiZulu was used in addition to the existing English content.

From the literature, it is therefore evident that at a tertiary level the use of languages other than English had positive results. It is proposed in this article that such a multilingual approach could also be necessary and feasible in a high-school environment.

### **Empirical research: Questionnaire**

The research for this article was done using a structured questionnaire with both open-ended and closed-ended questions (Cohen *et al.*, 2007). The purpose of the questionnaire was to obtain a description of the current situation in IT classrooms in the Free State in terms of the accommodation and promotion of multilingualism (Olivier, 2011).

The research participants in this empirical research refer to the total population of IT teachers at secondary schools in the Free State province ( $n = 17$ ). A purposeful sample (McMillan &

Schumacher, 2006) was used and the criteria for selecting participants were based on the fact that all these teachers work within a similar context with regard to the use of the same programming language (in other provinces some schools use Java and not Delphi as in the Free State). In total, 11 respondents completed the questionnaire.

In sum, 63.5% of the IT teachers in the Free State responded to the questionnaire. Delport (2002) notes that a response rate of 60% is deemed to be good and 70% to be excellent. It could therefore be said that the responses were representative of IT teachers in the Free State.

For the sake of this article, responses related only to selected language-related questions are highlighted as the questionnaire also focused on the use of blended learning technologies (Olivier, 2011). Where the content of the question is not clear, the question is provided before the discussion of the responses.

**IT teacher language profile**

In terms of the teachers’ mother tongues, a clear majority (72.7%) of Afrikaans mother tongue speakers ( $n = 8$ ) could be identified among the respondents. This is followed by a 27% total of mother tongue African-language speakers, with two Sesotho speakers and one Setswana speaker. The teacher profiles are illustrated in Table 1.

None of the IT teachers in the Free State had English as a mother tongue, despite the prominence of the language as a LoLT. However, English is used by the teachers as an additional language. Furthermore the importance of Afrikaans and Sesotho as provincial languages in the Free State was affirmed. This data provide an indication of the mother tongue diversity of teachers, yet it does not account for their knowledge of other languages. As such, it can only be used to describe the respondent population. In these open-ended questions, teachers could list any four additional languages they command.

From the responses, the prominence of English was evident as all respondents listed it as an additional language spoken by them. The importance attached to English echoes the findings of the literature. Furthermore, some African languages were also listed, with Sesotho and isiZulu listed by most respondents. The fact that Sesotho is spoken as an additional language by at least three respondents in addition to the two mother tongue respondents can be traced to the fact that, geographically, Sesotho is an important language in the Free State province. The presence of isiZulu, isiXhosa and Setswana emphasized the fact that even the teacher population in the Free State is multilingual by nature. Finally, it is noticeable that only one respondent indicated that Afrikaans was used as an additional language. If the teachers’ language profiles are taken into account, it is clear that three respondents (Sesotho and Setswana mother tongue speakers) could potentially have indicated that they speak Afrikaans. Being teachers within a historical South African context, it could be assumed that they could have been exposed to Afrikaans in their training or at least in their schooling. These responses could therefore potentially imply an intentional decision to omit Afrikaans.

Based on the aforementioned data, it is possible to compare the individual respondents in terms of the number of additional languages indicated by them. English is clearly the most prominent additional language as this was listed by all the respondents. The Afrikaans-speaking respondents indicated that they were bilingual and were proficient in both Afrikaans and English. However, it is clear that knowledge of more than one additional language tends to be more prevalent among mother tongue speakers of African languages than among Afrikaans speakers, with the exception of two Afrikaans speakers who indicated that they had knowledge of Sesotho. None of the African

**Table 1:** Number of IT teachers by mother tongue

Language	<i>n</i>	%
Afrikaans	8	72.7
Sesotho	2	18.2
Setswana	1	9.1
<b>Number of teachers</b>	<b>11</b>	<b>100</b>

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language speakers knew fewer than two additional languages. Unfortunately this questionnaire does not account for the proficiency in the languages or the extent to which these languages are used. This issue warrants further investigation, yet for the sake of this study, this data confirm the multilingual skills of some of the teacher population, but they also confirm the need for alternative ways in which multilingualism can be accommodated and promoted in classrooms, as not all the teachers may have the language skills to do this.

### ***IT learner language profile***

In the questionnaire, the teachers indicated that classes are very multilingual in nature. Only one respondent, from a former Model-C school, indicated that only Afrikaans and no other language was used at that school. This seems to be an exception rather than the rule, as all other respondents from both former Model-C and township schools indicated that learners use more than one language at school. Nevertheless, this does indicate the independence of Afrikaans as LoLT whereas other speakers depend on English for these purposes. Furthermore, the result is a comment on the extent of linguistic integration in the sense that the majority of schools (91%) where IT is taught as a subject are multilingual by nature. In addition, the use of more than one language observed shows at least a degree of language accommodation by the respondents.

The data in Table 2 show the total Grade 10 learner population for the schools that took part in this study. The presence of a variety of languages among the Grade 10 IT learners in the Free State is evident. Since 63.5% of the learner population in the Free State have Sesotho as a mother tongue, it is essential to consider including Sesotho as LoLT, especially for a subject such as IT. Furthermore, this language is followed by Afrikaans, which constitutes just over 17% of the learner population. This, in turn, is followed by English with 8.9% and isiZulu with 6.8%. Other languages with a smaller number of speakers include Setswana, isiXhosa, Xitsonga, Greek and Hindi. From this data, the complexity of the language distribution at schools is evident. Moreover, the complexity is further emphasised by the presence of Greek and Hindi, neither of which are recognised as official languages in the Constitution (1996). From the responses, it is clear that the province is truly multilingual in nature, yet in terms of the data collected, prominence should be given to Sesotho, Afrikaans and English as languages of learning and teaching for IT in the Free State.

### ***Frequency of languages as used by learners in class per language: Once a month/ Once a week/ Every day/ Every lesson***

When the respondents were asked about the LoLT, the importance of English became apparent as seven respondents noted that this language is used in every lesson. Afrikaans is the next most frequently used language with three respondents listing the language as used in every lesson. Looking at languages used every day, Sesotho was listed by most (four) respondents, followed by Afrikaans (three). Apart from the single listing of English and Setswana every day, the fairly low use of other languages makes their presence not so noticeable.

**Table 2:** Number of Grade 10 IT learners in the Free State per mother tongue

<b>Language</b>	<b><i>n</i></b>	<b>%</b>
Sesotho	235	63.5
Afrikaans	63	17
English	33	8.9
isiZulu	25	6.8
Setswana	7	1.9
isiXhosa	3	0.8
Xitsonga	2	0.5
Greek	1	0.3
Hindi	1	0.3
<b>Number of learners</b>	<b>370</b>	<b>100</b>

The multilingual reality of South African schools, as explained in the literature, is confirmed by these results. Hence it is clear that, despite the fact that the majority of learners speak African languages and Afrikaans, in this instance as mother tongues, most learning takes place in English. The prominence of Afrikaans is shown to a degree, but English is clearly the most notable language. In terms of this study these findings support the need for the accommodation and promotion of languages other than English and hence multilingualism in IT classrooms.

*Strategies that are facilitated/ used to accommodate and promote multilingualism in class by also indicating its frequency: Never/ Once a day/ Every lesson/ Every month  
Code-switching (mixing languages)/ Interpreting (other teacher/adult in class)/ Interpreting (other learners)/ Terminology lists in different languages/ Textbooks in different languages/ Electronic multilingual resources/ Multilingual resources on the Internet*

For this study, a strategy used 'every lesson' is regarded as being quite noteworthy, followed by 'every day', which also implies repeated use. The most prominent methods used to accommodate and promote multilingualism in classes by IT teachers include code-switching, the use of textbooks in different languages, as well as terminology lists. If the multilingual language capabilities of the teachers are taken into account, it is to be expected that code-switching can be accommodated in the majority of the classrooms. However, the effectiveness of code-switching prompts concern in terms of how it would directly influence the performance of the learners, yet this falls outside the focus of this study. According to the respondents, it is evident that to a lesser degree – therefore used every day – the following strategies for accommodating and promoting multilingualism were employed: interpreting by other adults in the classroom, interpreting by learners, electronic multilingual resources and multilingual resources on the Internet.

*Indicate the language of the following learning and teaching materials used: Textbooks/ Notes and additional printed material/ Electronic presentations.*

With regard to learning and teaching support material, it is important to note that despite the focus being on an IT class very few respondents indicated that they use electronic multilingual resources and multilingual resources on the Internet. This could be traced back to the fact that little multilingual material exists online. As before, English is most prominent in terms of language and teaching material. The absence of any textbooks in any language other than Afrikaans and English is noticeable from the responses. The absence of notes and additional printed material as well as electronic presentations in Afrikaans is clear in that this implies that – at least in terms of learning and teaching support material – the focus is undoubtedly on English despite its not being the mother tongue of most IT learners or any of the teachers in the Free State.

Respondents had to indicate in an open-ended question how their respective schools accommodate and promote multilingualism through learning and teaching. Only four of the respondents reacted and their responses were:

- Respondent 1: *Classes are thought (sic) both in English and in Afrikaans where Afrikaans learners are present. Teachers are undergoing Sotho classes, to try and bridge the multi-cultural gap between teachers and learners.*
- Respondent 2: *Our school only uses Sotho/Tswana and English and all of these languages are known by all learners who register at our school.*
- Respondent 3: *I teach using English and Sesotho in class.*
- Respondent 4: *It is expected of teachers to teach in Afrikaans and English – shared equally as far as possible.*

These responses display a positive move towards actively accommodating and promoting multilingualism. Based on the above-mentioned responses, it is meaningful that only four of the respondents indicated that measures were being taken at their schools to accommodate and promote multilingualism. Significant is also the fact that a bilingual approach is mostly used. In the case of Respondent 1, the importance of language training for teachers is emphasised, which points to the fact that only by using an additional language can teachers ensure that multilingualism is accommodated and promoted. However, knowledge of a language may not be the complete

solution towards bridging the multicultural gap between teachers and learners. Respondent 2 refers to the languages being 'known by all learners'. This does not imply that the LoLT is necessarily the mother tongue of the learners. Furthermore, the grouping of both Sesotho and Setswana as 'Sotho/Tswana' indicate that some form of spontaneous harmonisation<sup>2</sup> takes place in terms of combining related languages. Respondent 3 indicates that both English and Sesotho are used in class, implying that a type of bilingual instruction is followed. Respondent 4 notes that the use of Afrikaans and English should be shared equally and, as such, declares that the two languages are considered to be equally important, with equal time being spent using both as LoLT.

### Empirical research: Interview

In addition to the questionnaire that was completed by IT teachers, the Free State provincial IT subject specialist was interviewed. This interview was done to determine how language-related issues were perceived from the point of view of a provincial departmental official (Olivier, 2011:265–267).

In terms of multilingualism, the provincial IT subject specialist made the following observation:

*There are barriers to learning especially with learners from disadvantaged communities. The mother tongue language is mostly Sesotho and the language of instruction is then mostly English. With learners where Afrikaans or English is the major language of the mother tongue speakers there are no major barriers at all.*

This statement is very similar to the responses recorded in the teachers' questionnaires. The participant also confirmed that not much is being done in terms of multilingualism. When asked about the use of English as LoLT despite the fact that 63.5% of the learners speak Sesotho as a mother tongue, the following observation was made:

*I do agree that this fact can lead to many problems and misconceptions in the classroom. Learners will not be able to comprehend all the technological facts as well as most of the problem-solving effects and concepts used when programming is done.*

The disparity between mother tongue and medium of instruction is clearly a concern, yet no solutions are presented by the respondent. In terms of programming language and medium of instruction it was noted that the 'programming language can be seen as independent but all the coding words that are used about all the programming languages are mostly English.'

This emphasises the unique situation in terms of the subject IT where, regardless of the medium of instruction, some knowledge of English is still necessary. As such, English cannot be disregarded in any teaching of IT. However, the effect of English knowledge on programming would require further research to confirm any substantial influence on the teaching of the subject.

### Conclusion

From the literature review and empirical research completed, the accommodation of multilingualism in IT classes was explored. The multilingual nature of IT classes in the Free State can be traced to multilingualism in the province and the country due to the historic linguistic diversity in South Africa. However, English is the main language used for learning and teaching. This situation is due to the status of English compared to the status and possibilities provided by other official languages. It is important to note that code-switching does take place in South African classrooms and that it provides for a way in which languages other than English can be accommodated.

The subject IT is generally associated with English due to the subject content. It is important to note the importance of language in the learning and teaching of the key components of programming and problem solving within the subject of IT. Previous studies have shown the positive role the use of African languages can play at tertiary level and it is proposed that the same can be applied to the high-school environment.

The empirical part of this study consisted of a questionnaire sent to IT teachers in the Free State and an interview with the provincial subject specialist. The limited multilingual skills of the IT teachers in the Free State are evident from this data. The importance of English as a distinguished additional language for learning and teaching is apparent. Despite the teacher respondents' only having Afrikaans, Sesotho and Setswana as mother tongues, the data shows that the

language profile of the learners is multilingual in nature. The majority of IT learners in the Free State speak Sesotho, followed by Afrikaans, as a mother tongue. Multilingualism is accommodated and promoted to some extent, especially in terms of using Afrikaans, English, Sesotho and Setswana. This is done mainly through code-switching, terminology lists and text books. Despite the accommodation and promotion of some languages, many other languages used by learners are not accommodated or promoted, which leads to a number of languages (such as isiZulu, Setswana, Xitsonga, isiXhosa, Greek and Hindi) being either rarely or never used. In terms of accommodating and promoting African languages such as Sesotho, this does not happen in classes where teachers have Afrikaans as mother tongue. From the responses of the subject specialist it is clear that language is a concern for the subject IT. The importance of English is emphasised as subject content does require knowledge of English. A multilingual approach to the instruction of IT is therefore essential.

### Notes

- <sup>1</sup> This article is based on research done for a PhD thesis on the accommodation and promotion of multilingualism through blended learning within the context of the subject IT (Olivier, 2011).
- <sup>2</sup> Harmonisation refers to a process of combining languages based on their similarities or being related, such as the Sotho or Nguni groups for example. The process can be traced to JM Nhlapo (1945), who called for the harmonisation of some South African languages in terms of orthography and grammar. However, there is some criticism towards harmonisation due to emotions around the independence of languages and the degree of similarity (Nhlapo, 1945; Webb, 2002; Olivier, 2003; Kroes, 2005; Orman, 2008.)

### References

- Alexander N.** 2001. Why a multilingual policy for South Africa? In Deprez K, Du Plessis T & Teck L (eds) *Multilingualism, the judiciary and security services*. Pretoria: Van Schaik, pp 115–122.
- Clancy M.** 2004. Misconceptions and attitudes that interfere with learning to program. In Fincher S & Petre M (eds) *Computer science education research*. London: Routledge Falmer, pp 85–100.
- Cohen L, Manion L & Morrison K.** 2007. *Research methods in education*. 6th edition. London: Routledge Falmer.
- Crystal D.** 1997. *The Cambridge encyclopedia of language*. 2nd edition. Cambridge: Cambridge University Press.
- Dalvit L, Murray S, Mini B, Terzoli A & Zhao X.** 2005. Computers and African languages in education: An ICT tool for the promotion of multilingualism at a South African university. *Perspectives in Education* **23**(4): 123–131.
- Delport CSL.** 2002. Quantitative data collection methods. In De Vos AS (ed.) *Research at grass roots: For the social sciences and human service professions*. 2nd edition. Pretoria: Van Schaik, pp 363–372.
- DNE (Department of National Education).** 1991. *Education renewal strategy: Discussion document*. Pretoria: Department of National Education.
- Du Plessis T.** 2000. South Africa from two to eleven official languages. In Deprez K & Du Plessis T (eds) *Multilingualism and government*. Pretoria: Van Schaik, pp 95–110.
- Du Plessis T.** 2003. Multilingualism and language-in-education policy in South Africa: A historical overview. In Cuvelier P, Du Plessis T & Teck K (eds) *Multilingualism, education and social integration*. Pretoria: Van Schaik, pp 99–119.
- Du Plessis L & Janse van Rensburg G.** 2006. Second-language intervention for prospective ICT learners at a university of technology. *Journal for Language Teaching* **40**(2): 111–125.
- Ferguson G.** 2006. *Language planning and education*. Edinburgh: Edinburgh University Press.
- Goosen L.** 2004. *Criteria and guidelines for the selection and implementation of a first programming language in high schools*. PhD thesis, North-West University.
- Havenga M.** 2009. Teaching and learning of programming languages. In Mentz E (ed.) *How to do IT: Teaching and learning Information Technology*. Orkney: EFJS Printers, pp 120–140.
- Herbert RK.** 1992. Language in a divided society. In Herbert RK (ed.) *Language and society in*

- Africa: The theory and practice of sociolinguistics*. Johannesburg: Witwatersrand University Press, pp 1–19.
- Holmarsdottir H.** 2006. Language alternation as a coping strategy among teachers in South African classrooms. In Brock-Utne B, Desai Z & Qorro M (eds) *Focus on fresh data on the language of instruction debate in Tanzania and South Africa*. Cape Town: African Minds, pp 193–217.
- Kamwangamalu NM.** 2000. Languages in contact. In Webb V & Kembo-Sure (eds) *African voices: An introduction to the languages and linguistics of Africa*. Oxford: Oxford University Press, pp 88–108.
- Kembo J.** 2000. Language in education and language learning in Africa. In Webb V & Kembo-Sure (eds) *African voices: An introduction to the languages and linguistics of Africa*. Oxford: Oxford University Press, pp 286–311.
- Kroes H.** 2005. The language perspective. In Russo CJ, Beckmann J & Jansen JD (eds) *Equal educational opportunities: Comparative perspectives in education law*. Pretoria: Van Schaik, pp 236–256.
- Laufer M.** 2000. *The multilingual challenge*. Cape Town: Via Afrika.
- Louw JR.** 1996. *The eleven official languages policy and its implications for language teaching*. MA dissertation, PU for CHE.
- Mandisa PN.** 2007. *Understanding the influence of a second language on the academic performance of learners in Information Technology: A case study of isiZulu speaking English second language learners in KwaZulu-Natal*. MTech dissertation, Durban University of Technology.
- Marchant G.** 2004. *Information Technology: Grade 10 teaching and assessment guide*. Bramley: Guidelines Educational Publishers.
- McMillan JH & Schumacher S.** 2006. *Research in education: Evidence-based inquiry*. Boston, MA: Pearson.
- Mesthrie R.** 2002. South Africa: A sociolinguistic overview. In Mesthrie R (ed.) *Language in South Africa*. Cambridge: Cambridge University Press, pp 11–26.
- Murray S.** 2002. Language issues in South African education: An overview. In Mesthrie R (ed.) *Language in South Africa*. Cambridge: Cambridge University Press, pp 434–448.
- Mutasa DE.** 2003. *The language policy of South Africa: What do people say?* D.Litt. et Phil. thesis, University of South Africa.
- Myers-Scotton C.** 1992. Codeswitching in Africa: A model of the social functions of code selection. In Herbert, RK (ed.) *Language and society in Africa: The theory and practice of sociolinguistics*. Johannesburg: Witwatersrand University Press, pp 165–180.
- Nhlapo JM.** 1945. Nguni and Sotho: A practical plan for the unification of the South African Bantu languages. Cape Town: African Bookman.
- Njobe MP.** 2007. *Understanding the influence of a second language on the academic performance of learners in Information Technology: A case study of isiZulu-speaking English second language learners in KwaZulu Natal*. MTech dissertation, Durban University of Technology.
- Nkabinde ZP.** 1997. *An analysis of educational challenges in the New South Africa*. Lanham, MD: University Press of America.
- Nomlomo V.** 2006. Parents' choice of the medium of instruction in science: A case of one primary school in the Western Cape, South Africa. In Brock-Utne B, Desai Z & Qorro M (eds) *Focus on fresh data on the language of instruction debate in Tanzania and South Africa*. Cape Town: African Minds, pp 112–137.
- Nyembe SC.** 2003. *Migration patterns of learners from historically disadvantaged schools to ex-model C schools*. MEd dissertation, Vista University.
- Olivier JAK.** 2003. *Die moontlikhede wat onderskrifte die SABC-TV bied in die erkenning en beskerming van taalregte*. MA-verhandeling, PU vir CHO.
- Olivier JAK.** 2011. *Accommodating and promoting multilingualism through blended learning*. PhD thesis, North-West University.
- Orman J.** 2008. *Language policy and nation-building in post-apartheid South Africa*. Dordrecht: Springer.

- PanSALB.** 2000. *Language use and language interaction in South Africa*. Pretoria: PanSALB.
- Rose S.** 2006. *The functions of code switching in a multicultural and multilingual high school*. M.Phil thesis, Stellenbosch University.
- Serfontein CP.** 2009. Information technology learning programme. In Mentz E (ed.) *How to do IT: Teaching and learning Information Technology*. Orkney: EFJS Printers, pp 18–37.
- Setati M.** 2008. Access to mathematics versus access to the language of power: The struggle in multilingual mathematics classrooms. *South African Journal of Education* **28**:103–116.
- Smit U.** 1996. *A new English for a new South Africa? Language attitudes, language planning and education*. Wien: Braumüller.
- South Africa.** 1996. *Constitution of the Republic of South Africa as adopted by the Constitutional Assembly on 8 May 1996 and as amended on 11 October 1996*. (B34B-96)
- Stasko JT & Hundhausen CD.** 2004. Algorithm visualization. In Fincher S & Petre M (eds) *Computer Science education research*. London: Routledge Falmer, pp 199–228.
- Van der Walt IE.** 2003. *Persepsies oor die gebruik van die huistaal as taal van leer en onderrig (TLO) in die Vaaldriehoek*. PhD-tesis, PU vir CHO.
- Van der Walt C & Mabule DR.** 2001. Language status and covert prestige in the code switching practices of Mathematics, Science and Biology teachers. *Journal for Language Teaching* **35**(4): 294–306.
- Webb V.** 1998. Multilingualism as a developmental resource: Framework for a research program. *Multilingua* **17**(2/3): 125–154.
- Webb V.** 2002. *Language in South Africa: The role of language in national transformation, reconstruction and development*. Amsterdam: John Benjamins.
- Webb V & Kembo-Sure.** 2000. Language as a problem in Africa. In Webb V & Kembo-Sure (eds) *African voices: An introduction to the languages and linguistics of Africa*. Oxford: Oxford University Press, pp 1–25.