

ENHANCING MULTILINGUALISM IN BASIC EDUCATION: THE INTEGRATION OF ISIZULU INTO TECHNOLOGY IN KWAZULU-NATAL

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Abstract: The marginalization of indigenous African languages in the South African education system has been a persistent issue despite legislative frameworks aimed at promoting multilingualism and language rights. This paper explores the integration of isiZulu into information and communication technology (ICT) in the basic education sector in KwaZulu-Natal as a potential solution to elevate the status of indigenous African languages. Drawing on the language-as-a-resource position, this paper discusses the benefits of integrating isiZulu into technology, including enhancing learning and addressing the low performance of South African schools. However, the implementation of multilingual language policies remains a challenge, leading to obstacles in integrating indigenous African languages into ICT. To address this, the paper proposes pedagogical training of teachers and the use of relevant resources tailored to subject teaching contexts. The paper concludes that the integration of indigenous African languages into ICT has the potential to positively fast-track efforts towards promoting these languages as a medium of instruction.

Keywords: Indigenous African languages, Information and communication technology (ICT), basic education sector, language-as-a-resource position, multilingualism, language rights, pedagogical training.

INTRODUCTION

South Africa's transformative legislative frameworks have sought to elevate the status of indigenous African languages in education, but the implementation of these policies has been a challenge. Despite legislative interventions to promote multilingualism and language rights, indigenous African languages remain marginalized in the education system. The integration of indigenous African languages into information and communication technology (ICT) in the basic education sector in KwaZulu-Natal presents an opportunity to promote these languages as a medium of instruction and elevate their status.

This paper aims to investigate language issues associated with the marginalization of indigenous African languages in South African basic education, explore opportunities for integrating IsiZulu into ICT in schools, and interrogate obstacles hindering the integration of indigenous African languages into ICT. The paper is grounded in the language-as-a-resource position and highlights existing legislative frameworks supporting multilingualism and language rights.

The South African Department of Communications has developed ICT initiatives to promote access and use of ICT in education, including the establishment of a Universal Service and Access Agency and a Universal Service Fund. However, a disjuncture exists between existing legislative policies and their implementation, making it difficult for indigenous African languages to be seriously considered within the education sector. Consequently, the implementation of multilingual language policies remains a pipedream for a majority of South Africans.

This paper proposes the integration of indigenous African languages into ICT as a potential solution to elevate their status and promote multilingualism in the education system. However, obstacles associated with the implementation of such initiatives need to be addressed, including the need for pedagogical training and the development of relevant resources tailored to subject teaching contexts.

In conclusion, this paper argues that the integration of indigenous African languages into ICT has the potential to positively fast-track efforts aimed at promoting multilingualism and language rights in the education system.

BACKGROUND

A number of initiatives have been put in place in South Africa and elsewhere in the world, in an effort to empower African languages. In some countries in Africa, most of these aspirations have been achieved through the advocacy of the United Nations and the African Union (AU) in the form of charters and plans of action. These may include, the Language Plan of Action for Africa (OAU 1986); Charter for the Promotion of African Languages in Education (OAU 1996); The Harare Declaration (UNESCO and OAU 1997); The Asmara Declaration (Asmara Declaration 2000) and The UN Declaration on the Rights of Indigenous People, Article 13 and 14 (United Nations 2007). Other efforts include the founding of organisations which are committed to addressing this challenge. These are in a form of organisations such as UNESCO, the Regional Centre of Documentation on Oral Traditions and African languages (CERDOTOLA), the Centre of linguistic and historical studies through Oral tradition (CELHTO), the African Academy of Languages (ACALAN) and the Open Society Initiative for Southern Africa (OSISA). The Department of Education (DoE) stipulates that participation in the information society means that, “Every South African learner in the general and further education and training bands will be *ICT capable* by the year 2013” (DoE, Draft White Paper ,2003:17). ICT is central to the changes taking place throughout the world (DoE White Paper 7, 2004). A Successful integration of indigenous African languages into ICT in schools could ideally have a transformative effect on schools and the education system as a whole (ICT4RED, 2015). Despite a number of democratic policy framework such as the constitution (Republic of South Africa 1996), Language-in Education Policy (1997), the National Language Policy Framework (Department of Arts and Culture 2003), among others, that seek to promote indigenous African languages, these languages are still discriminated against in terms of their inclusion and usage within basic education sector. English is still dominant in ICT, at the expense of indigenous African linguistic heritage. Although some schools in other provinces other than KwaZulu- Natal may have come up with multilingual language policies, the implementation however of these policies still remains a major challenge and a pipe dream for most learners that speak African languages as home language.

AIMS

This article aims to:

1. To investigate the language issues that are associated with the marginalisation of indigenous African languages in South African basic education, in KwaZulu-Natal;
2. To explore the various opportunities of integrating isiZulu as an indigenous African languages into ICT in schools ; and
3. To interrogate obstacles in integrating indigenous African languages into ICT.

THEORETICAL FRAMEWORK

The current South African constitutional and language policy frameworks put at the forefront the growth of previously discriminated indigenous African languages. It further recommends both positive and practical initiatives to be employed by all government parastatals and private sector for the promotion of indigenous African languages (Beukes, 2008). The Department of Basic Education is committed to the implementation of multilingualism agenda, the development of all official languages and the equal treatment of all languages used in the country, including South African sign languages and other languages referred to in the Constitution (Department of Education, 1997). It is for this reason therefore that this paper is theoretically grounded on the concept of language-as-a-resource position which stresses the importance of multilingualism, as a facilitator of

access to learning and as a door to economic opportunities (Jernudd et al., 1971, as cited by Gumbi et al., 2015). The language-as-a-resource position is also found in the language planning model by Ruiz (1984). Braam (2004, as cited by Gumbi et al., 2015) posits that language policy as formulated in the South African Constitution (1996) and the Language in Education Policy (LiEP) (1997) takes a particular paradigm, namely, that South Africa is characterized as a country that is multilingual in nature, with different languages as resources that promotes multilingualism as any other economic resource. This paradigm position and policy framework is designed to promote this multilingualism and build upon the linguistic knowledge that students from various linguistic communities bring to the classroom (Hornberger, 1991). According to Cluver (1996, as cited by Gumbi et al., 2015), the Japanese language, in Australia is not viewed as an impediment but as an alternative linguistic resource that smoothes successful business transactions with Japan better than any other countries that use English for trading with the same country. Within the context of South Africa, the plan to advance indigenous African languages has also been observed mainly through the attempts of the Department of Arts and Culture.

The South African Department of Communications has deliberated all ICT initiatives in South African schools through its Electronic Communications and Transactions Act (2002). These initiatives seek to promote the establishment of a Universal Service Agency (known as the Universal Service and Access Agency of Southern Africa (USAASA), a Universal Service Fund and Education Network (EduNet) all of which seek to support and promote access and use of ICT in education institutions. These attempts are informed by the South Africa's democratic constitutional framework that place at the centre multilingualism, language rights and the promotion of previously disadvantaged indigenous local languages. The South African Government is still striving towards achieving the practical benefits of digital technology. ICT is seen as the future and indeed the key to 21st Century teaching and learning goals (Department of Education, 2007). The post-Apartheid Language Policy Framework (Department of Arts and Culture 2003) is one of the significant documents that have sought to obligate all government departments to a multilingual stance (Mesthrie 2006). Other vital national imperatives include the Language in-Education Policy (1997) and the South African constitution (Republic of South Africa 1996).

THE LANGUAGE EDUCATION POLICY AND ICT LEGISLATION FRAMEWORK IN THE KWAZULU NATAL PROVINCE

Disappointingly there is still a disjuncture between policies and their implementation especially the Language Education policies and the e-Education legislation framework in particular. There has been a lack of progress in this regard, since the new constitutional dispensation in 1994 (Heugh, 2006). According to Heugh (2006) the ANC-led government is to be blamed for a slow pace and stalling progress in implementing these legislations that are potentially empowering. He further posits that this failure has had disadvantageous effects on the achievement of multilingualism and integration of indigenous African languages into ICT within the current education system. A number of ICT in Education initiatives (government, NGOs, private etc.) are implemented in an *ad hoc* fashion, i.e., without any proper coordination, support and leadership of the basic education department. Furthermore these initiatives do not focus on the professional development of teachers, maintenance support, technical support and pedagogical support, thus becoming unsustainable (Department of Education, KwaZulu -Natal Circular no. 10 of 2015:1-3). The Provincial Language policy of KwaZulu-Natal (2008:3) seeks to promote the equitable use of, as well as access to the four main official languages spoken in KwaZulu-Natal, viz, isiZulu, English, isiXhosa and Afrikaans in public institution, institutions of learning and to ensure the development and use of previously marginalized official African languages. Furthermore, the KwaZulu-Natal position on ICT in education (Department of Education, KwaZulu-Natal Circular no. 10 of 2015:4-5), support the White paper on e-education (2003). It further regards the e-education policy framework as a clear roadmap to deliver and manage curriculum

in KwaZulu-Natal schools. It was on this reason that on 16th January 2015, the HoD for Education in the province approved a summit where the KwaZulu-Natal Department of Education officials were to engage with significant stakeholders on the integration of ICT into schools (Department of Education, KwaZulu-Natal Circular no. 10 of 2015:4-5). The MEC for Education; Honorable Peggy Nkonyeni re-iterated the same position when she said 'The need for the provision of ICT for learning and teaching is increasingly high and many educational institutions, especially public schools must explore these benefits to heighten the quality of learning and teaching' (Ibid).

DISCUSSION ON LEGISLATION IMPLEMENTATION

A study on the attitudes on the utilization of African languages as additional languages of the medium of instruction in KwaZulu-Natal schools shows that while the dominance of English as a language teaching and learning is acknowledged in the South African education sector, isiZulu can also play a significant role as an additional medium of instruction (Gumbi et al., 2015). South Africa is twenty three years into Democracy yet indigenous African Languages are still isolated from ICT and Education. Skutnabb-Kangas and McCarty (2008) posits that assimilation in education should be viewed as the process whereby marginalised languages and groups are coerced to conform to dominant languages and groups by means of coercive strategies aimed at substituting the indigenous language and culture with the dominant one. Furthermore, the omission of indigenous African languages in ICT, and the lack of the language policy implementation in the country further account for their absence in the ICT field, despite a large amount of existing legislations and other initiatives. Factors such as the digital divide, the hegemony of the English language and negative language attitudes towards African indigenous languages are amongst a plethora of contributory factors that are a tribute to this problem (Gudmundsdottir, 2010; Djite, 2005; Osborn, 2006). With regards to the digital divide, according to Osborn (2006) this problem continues because not much attention is being given to language problems in this country. Matula (2004) adds that the discussion on the integration of African languages into ICT has been sidelined in a number of African countries, including South Africa and this according to him is an indication of the lack of a meaningful and implementable ICT legislative framework. More-over South Africa lacks a comprehensive policy on ICT in education that covers all sectors in education (Isaacs, 2007). Omojola (2009:33) further argues that the possible opportunities which ICT presents should not be over emphasised within the context of indigenous populace of Africa, most of which usually use ICT gadgets and applications that are built into languages not familiar to them. Nonetheless, Omojola (2009) argues further to say that there is a dire need though to integrate indigenous African languages into ICT. He also posits that the process of ICT policy implementation should start with local initiatives in developing indigenous African languages through various initiatives such as the publishing of media content on the internet and this would play a significant role in developing responsiveness amongst ICT product designers and according him to improve the negative attitudes associated with these languages.

EXPLANATION OF ATTITUDES

Negative language attitudes according to Djite (2008) were inherited from the colonial legacy in the African continent. They have a significant contribution towards the exclusion of indigenous African languages in ICT. It has also been strongly argued that colonialism destroyed the importance as well as the role of indigenous African languages in the African continent, resulting in the myth that these languages do not have intellectual capacity, educational value and economic thus posing a barrier to social and economic growth (Djite 2008). English and other colonial languages are usually the primary languages by which people in the world access formal education and information. This is perpetuated not only by the speakers of Western languages but also by indigenous African language speakers themselves (Maseko et al., 2010). Furthermore, the influence of the English language has growth over the years to a level of a gate keeper in ICT against communities of indigenous African languages origin, in particular learners (Dalvit 2010). Given the purported instrumental role of ICT in advocating curriculum

transformation, lifelong learning, and breaking the digital divide, diverse participation and enhancement of the quality of education (Kajee et al., 2011), the integration of indigenous African languages is highly imperative. A majority of learners in KwaZulu-Natal rural and Township schools and are always exposed to one language, which is mother tongue and have no contact with other languages that are outside the classroom setup. These students therefore are bound to struggle to learn when lessons are only taught in English. This further contributes immensely to a plethora of problems including low literacy rates, early school drop-out rate and poor education quality. In contrary, however the integration of indigenous African languages into ICT shall address these problems and could further provide a platform for academic improvement, political, and socio-economic development (Webb, 2012).

LACK OF TEACHER TRAINING IN ICT

The lack of Indigenous African language teacher training in ICT has also been pointed out as one of the major reason for the slow pace of the integration of these languages into ITC. Their knowledge and abilities of using ICT is somewhat restricted. The ICT skills that educators possess are not at a level where they are confident enough to use them to enhance learning. Other challenges will range from the teacher's lack of skills to tailor-make learning activities that will promote learning through ICT. When there is low quality ICT teacher training, the use of ICT is compromised thus educators fail to achieve educational goals, learning and teaching suffers (Wilson-Strydom et al., 2005). The lack of knowledge of ICT in teaching hinders educator's readiness and confidence in using ICT for educational purposes. Consequently less confidence educator in ICT do not develop competence in using ICT for teaching. This is because confidence is acquired through the use of computers over time and lack of accessibility is another challenge for educators. It is therefore expected that educators will lack ICT acumen if they cannot be in a position to make decisions on how and what content should be taught (Hennessy et al., 2010). Most teachers in South African public schools who have attended ICT training, their computer skills are generally at a very basic level. More-over their basic skills have proved inadequate to equip them with the abilities they so need in infusing African languages in ICT during their teaching (Isaacs, 2007). The South African Education sector is faced with a plethora of challenges from un-implemented policies to lack of resources. Nonetheless, it still has a huge obligation in delivering on public expectations of both an equal and quality education for social growth, economic growth and social inclusion.

POOR INFRASTRUCTURE

In reality however, the integration of African languages into learning and ICT still remains a complex and a challenging process for schools, especially where there is limited previous experience in the use of ICT to support learning. Infrastructural challenges and the absence of indigenous languages in education in particular have compromised the nation-wide application of ICT in education (ICT4RED, 2015). Infrastructure may refer to resources and access to ICT and technical support. A comparative study done in

South Africa, in 2015 on the roll-out of ICT to schools shows that KwaZulu-Natal is still lagging behind, due to poor infrastructure. According this study Western Cape Province (56.8%) is leading all other provinces with schools using ICT for teaching and learning followed by, Gauteng (45.4%) and KwaZulu-Natal (10.4%) (Department of Education, 2003:12–13) Schools that have limited software and hardware, stand a minimal chance to roll-out ICT initiatives in their schools. Ertmer et al. (2012) posits that, there are various types of technical support that are a requirement to ensure effective integration of ICT into education. These may include peer administrative, professional and technological support. Teachers on the other hand need some kind of support that will deal with different technical and technological difficulties. Lack of this support in schools therefore hinders ICT roll-out in schools.

OPPORTUNITIES OF INTEGRATING INDIGENOUS LANGUAGES WITHIN BASIC EDUCATION SECTOR

The integration of indigenous African languages into ICT and learning in the South Africa education sector would be of huge significance in improving indigenous African languages and the state of education. Osborn (2010) argues that, knowledge reproduction and dissemination of local content and knowledge in ICT is impossible in the absence of indigenous languages. It is a widely accepted view that learning and knowledge production in class through a primary language and in literacy must be promoted through the implementation of initiatives that supports multilingualism (Cummings 2000). It is further asserted that learning through the use of indigenous African language preserves these languages and improves the quality of education and if they are integrated into ICT especially if introduced in the early years of childhood (Kamwangamalu 2000). Disappointingly so, the use of indigenous African languages as alternative tools for learning and teaching is still continuously restricted to disadvantaged schools in the townships and rural areas (Lafon 2008). Kamwangamalu (2000) posits that the use of home languages for teaching and learning enhances lessons and making them more interesting. Learning takes occurs when the cognitive system is able to store information for further use (Dror, 2008). If the process has gaps, learning does not take place and even if some knowledge has been acquired, the learner may struggle to remember and also battle to use the knowledge to extend their own understanding or even to engage in thinking exercises that requires merging of different ideas in solving complex tasks. Effective learning therefore, occurs when the teaching tools or learning activities are utilized and designed such that they develop the learning process in a way that the learner is in a position to independently operate at a higher order thinking level in addressing abstract forms of knowledge with ease (Dror, 2008). In this context, when teaching strategies integrate indigenous African languages into ICT to create less difficult conditions in a learning environment, the likelihood of attaining a more advanced skill to obtain, preserve and apply knowledge is both possible and higher. In this manner, the quality of education and usage of African languages in ICT as an additional tool to learning is achieved. Associating Indigenous African languages with ICT is driven by notions that technology has a role of facilitating learning and enables the dissemination of the curriculum content. Such a view has its origins in the constructivist's theory that regards learning, firstly as an active process of constructing knowledge rather than acquiring knowledge. Secondly it considers instruction as a process of supporting knowledge construction rather than communicating knowledge (Dror, 2008). This integration therefore given the role of ICT and Indigenous African languages will ensure learners interaction with knowledge, using the integration as tools to improve the understanding of subject matter. Such usage of ICT and indigenous African languages demands new approaches to the curriculum. This approach advocates for a humanistic model of ICT integration where African languages and technology are viewed as a tool which will empower learners with subject knowledge, problem solving skills and thinking skills, in this way the learner play a role of a constructor of knowledge who through exposure to ICT in home language is able to perform at a higher level. Therefore ICT and home language use in a learning environment becomes quality when it indigenous African languages use.

CHALLENGES OF INTEGRATING INDIGENOUS AFRICAN LANGUAGES INTO ICT IN BASIC EDUCATION

In practice however, the adoption and integration of African languages into ICT is a challenging and complex process for schools, particularly where there are limited resources in ICT to support teaching and learning. Infrastructural challenges and absence of indigenous languages in education in particular have compromised the nation-wide application of ICT in education initiatives (ICT4RED, 2015). More-over there is insufficient comprehensive policy on ICT in education that covers all sectors in education (Isaacs, 2007). Other problems that seems to affect the integration of indigenous African languages into ICT must be viewed within the context of the

various related factors of localization ecology that affect the process of ICT localization namely society, language, economics, technology, education and politics (Osborn, 2010). These factors overlap since they are inter-related to provide a complete understanding of the challenges associated with the integration of indigenous African languages into ICT. Insufficient expertise and absence of collaboration between ICT experts and language experts presents another big challenge to ICT localization initiatives. There is somewhat a lack of interest if not an awareness of the impact of ICT localization among language experts, technological experts and government officials alike. At the same wave length, most language experts do not have the necessary ICT skills to design and tailor-make teaching and learning software. These challenges also translate into a shortfall of coherence between language and ICT policies in the South African education sector. Other factors are a shortage of financial resources to support localization initiatives. Localization is a costly process involving computer expertise, software and translation expertise among other things and is also a lengthy process. The current situation South Africa is that the stakeholders and investors are highly motivated to invest in localization initiatives as they view indigenous African languages as insignificant. It is also argued that negative perceptions towards indigenous African languages may contribute to a failure of localization initiatives. There is therefore a need for the department of basic education to introduce effective marketing approaches for localized education software to promote the use of indigenous African languages by learners, educators, and the local community. It is further argued that indigenous African language content is contributing a considerably low percentage of the entire web content. There is therefore an urgent need to increase the amount of localized web content and software as well as translation. The translation process however could require a huge effort and great deal of time as well as financial resources. More-over most translation tools lack accuracy and yet machine translation cannot be considered as an option to address such challenges. Furthermore, there is no enough grammar and therefore, there is a need for development and modification.

CONCLUSION

If South Africans are really serious and committed to partake in the knowledge economy, therefore every effort must be must be put in place to prevent digital exclusion of indigenous African languages. This is mainly because a global revolution is currently taking place in the education sector. This revolution is not only driven by changing nature of work but also by government's obligation (the people's contract) to distribute equal educational opportunities. The integration of African languages into ICT is essential not only in preserving indigenous African languages but in enhancing learning in the basic education system. The major opportunities available the inclusion of these languages as additional tools learning to address the already ailing education sector. The majority of South African educators are from disadvantaged schools and hence they need pedagogical knowledge to transform ICT content. Consequently so, ICT Training of teachers is imperative and shall play a critical role in enabling them to develop and for them to use ICT tailor-made resources. The focus has got to be on real-life and relevant experiences of both learners and teachers with the available instruments in their subject teaching contexts whilst integrating African languages.

REFERENCES

- Beukes M (2008). Language policy implementation in South Africa: How Kempton Park's great expectations are dashed in Tshwane1. Stellenbosch Papers in Linguistics38, 1-26.
- Cluver AD (1996). Towards a language policy for UNISA. Pretoria: Muckleneuk.

- Cummins J (2000). *Language, power, and pedagogy: Bilingual children in the crossfire*. Clevedon: Multilingual Matters.
- Dalvit L (2010). *Multilingualism and ICT Education at Rhodes University: An Exploratory Study*. Unpublished Ph.D. thesis, Rhodes University.
- Department of Arts and Culture (2003). *National Language Policy Framework*. Pretoria, RSA: Government Printers.
- Department of Arts & Culture (2002). *Electronic Communications and Transactions Act 25 of 2002*. Pretoria, RSA: Government Printers.
- Department of Education (1997). *Language in Education Policy*. Pretoria: DoE.
- Department of Education (2003). *Draft White Paper on e-Education: Transforming learning and teaching through ICT*. Pretoria: Government Printer Pretoria: DoE.
- Department of Education (2004). *White Paper on e-Education. Transforming Learning and Teaching through Information and Communication Technologies*. South Africa.
- Department of Education (2007). *Guidelines for Teacher Training and Professional Development in ICT*.
- Department of Education (2015). *KwaZulu-Natal Circular no. 10*.
- Djite P (2005). From Liturgy to Technology: Modernising the Languages of Africa. *Language Problems and Language Planning*, 32(2), 133-152.
- Dror IE (2008). Technology enhanced learning: The good, the bad and the ugly. *Pragmatis and Cognition*: 16(2), 215-223.
- Ertmer PA, Ottenbreit-Leftwich AT, Sadik O, Sendurur E, Sendurur P (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education* 59 (2), 423-435.
- Gudmundsdottir G. 2010. When does ICT Support Education in South Africa? The Importance of Teachers' Capabilities and the Relevance of Language. *Information Technology for Development* 16,3: 174-190.
- Gumbi P and Ndimande- Hlongwa N (2015). Embracing the use of African languages as additional languages of teaching and learning in KwaZulu-Natal schools. *South African Journal of African Languages*, 35(2), 157-162.
- Harare Declaration (1997). *Inter-governmental Conference of Ministers on Language Policy in Africa, 20-21 March 1997, Harare*.
- Heugh K (2006). Language and Literacy Issues in South Africa. In Rassool, N(ed): *Global Issues in Language, Education and Development: Perspectives from Postcolonial Countries*. Clevedon: Multilingual Matters.

- Hornberger NH (1991). Extending enrichment bilingual education: Revisiting typologies and redirecting policy. In: Garcia O (ed.), *Bilingual education 1*. Philadelphia: John Benjamins, pp 215–234.
- Kajee L and Balfour R (2011). Students' Access to Digital Literacy in a South African University: Privilege and Marginalisation. *South African Linguistics and Applied Language Studies* 29(2), 185-194.
- Kamwangamalu NM (2000). A new policy, old language practices: Status planning for African languages in a multilingual South Africa. *South African Journal of African languages* 20(1), 50-60.
- KwaZulu-Natal Provincial Language Policy, (2008). ICT4RED (2015). *ICT4RED. A South African innovation*. Research Brief. Pretoria: CSIR.
- Lafon M (2008). Asikhulume! African Language for All. A Powerful Strategy for Spearheading Transformation and Improvement of the South African Education System. In Lafon, M, Webb V editors. *The Standardisation of African Languages in South Africa: Language Political Realities*. Johannesburg, South Africa: Institut Francaisd•Afrique du Sud.
- LANGTAG (1996). Towards a National Language for South Africa. Orientations in language planning, NABE Journal, 8(2), 15-34.
- Maseko P, Nosilela B, Sam M, Terzoli A, Dalvit L (2010). The Role of the Web in the Promotion of African Languages. *Alternation* 17(1), 312-327.
- Matula SM (2004). Bridging the digital divide through e-governance: implications for libraries in Africa. In: Standing Conference of Eastern, Central and Southern Africa Librarians, SCECSAL XVI, 5th- 9th July 2004, Kampala, Uganda P, Burungi, Musoke MG editors. Kampala: Uganda Library Association & National Library of Uganda: 89-104.
- Osborn DZ (2010). African Languages in a Digital Age: Challenges and Opportunities for Indigenous Language Computing. Cape Town: HSRC Press.
- Osborn DZ (2006). African Languages and Information and Communication Technologies: Literacy, Access, and the Future. *Selected Proceedings of the 35th Annual Conference on African Linguistics*. In Mugane, J et al (eds) *Linguistics*. Summerville, MA: Cascadilla Proceedings project.
- Isaacs S (2007). Survey of ICT and Education in Africa: South Africa Country Report South Africa - ICT in Education in South Africa.
- Republic of South Africa (1996). Constitution of the Republic of South Africa. Pretoria: Government Printers.
- Skutnabb-Kangas T, McCarty TL (2008). Key concepts in bilingual education: Ideological, historical, epistemological, and empirical foundations. *Encyclopedia of Language and Education* 17, 1466-1482.
- Omojola O (2009). English-oriented ICTs and Ethnic Language Survival Strategies in Africa. *Global Media Journal* 3(1), 1-18.

United Nations (2007). *United Nations Declaration on the Rights of Indigenous Peoples*. Resolution adopted by the General Assembly 61/295 on 13 September 2007.

Webb V (2012) . Managing multilingualism in Higher Education in post-1994 South Africa. *Language Matters: Studies in the Languages of Africa* 43(2), 202-220.

Wilson-Strydom M, Thomson J (2005). Understanding ICT Integration in South African Classrooms. *SchoolNet SA research and evaluation*.