The Role of Kiswahili in Enhancing the Potential of Science and Technology

by

Isaac Ipara, Ph.D. and Bob Mbori, D.Phil.
iparaodeo@yahoo.com
Masinde University of Science & Technology,
Kakamega, Kenya

Abstract

The 21st Century is widely considered to be the epoch of science and technology. Many institutions of higher learning, including Masinde Muliro University of Science and Technology in Kenya, are developing academic programmes in Science and Technology in order to foster national development and ultimately improve the quality of life in society. For this reason, most institutions embrace a multidisciplinary approach where programmes in science, engineering, humanities and languages are integrated. The integrated approach in higher education has raised a number of pertinent questions: What is the role of higher institutions of science and technology? What is the place of language within the integrated approach? Can Kiswahili make any contribution in enhancing the potential of science and technology in development?

This paper seeks to provide answers to the foregoing questions by illustrating the centrality of language as a medium of creating, transmitting and disseminating knowledge in science and technology, with specific reference to English and Kiswahili in Kenya. It is observed that the current age of science and technology is characterized by knowledge and information explosion; whoever accesses and utilizes these two commodities speedily has advantage over others. Efficiency and effectiveness of the medium that the knowledge and information are transmitted in thus becomes a key factor. Thus, the paper suggests concrete steps that can be taken by institutions of higher learning, planners, policy makers and scholars to ensure that the two languages, Kiswahili and English, facilitate the contribution of science and technology to development.

Introduction

The languages of a nation are part of its natural resources and are on the same level as its petroleum, minerals and other natural resources (Wolff, 2006). Indeed, a number of countries in Africa are blessed with natural resources. For example, countries like Angola, Sudan and the Democratic Republic of Congo (DRC) boast of abundant deposits of different minerals. A twin blessing that Africa also has is its linguistic resources, evidenced by the number of African languages that range from the endangered Omotik language in Kenya to international languages such as Kiswahili which are used for communication in several countries on the African continent and the rest of the world. The number of African languages range from 2000-2500 (Batibo, 2005). Hence, in an era of science and technology, development in Africa should ideally hinge on using both the natural physical resources and the natural linguistic resources that the continent possesses.

A number of societies in Africa rather than utilizing the natural resources have instead tended to rely on borrowing. The countries depend on aid from donors who are also called development partners, on science and technology borrowed from the West, and even depending on borrowed languages such as English and French in order to harness the borrowed science and technology. For a number of decades during Africa's post-independence period, the borrowing has tended to create a mismatch between resource availability, resource utilization and the socio-economic benefits of the resources. Sy (2005) points out that slavery and colonization have been the major impetus for Africa's lack of its own identity. Mazrui and Mazrui (1998) also consider colonial education and Christianity as agents that denigrate the culture of the African people. Added to the proposition by Sy (2205) and Mazrui and Mazrui (1998) is the propensity for Africa to borrow, which in most times is excessive or if not absolutely unnecessary.

The mismatch between resource utilization and development is epitomized by Africa's developmental stagnation, a situation that may be illustrated by the many failed states dotted all over the African continent. Invariably, science and technology is now being hailed as a panacea in alleviating poverty and reversing this trend. In a number of fora, African countries have been encouraged to show their commitment in integrating science and technology into their development plans.

One way of showing the commitment to integrate is for higher learning institutions to take up the challenge and be at the forefront in developing programmes whose focus is to improve the quality of life of the African people and in the process contribute to Africa's development. As an illustration, the most recent public universities in Kenya, Jomo Kenyatta University of Science and Technology (JKUAT) and Masinde Muliro University College of Science and Technology (MMUST) have been founded on a pedestal of science and technology. In one of the Universities (JKUAT), already advertisements have appeared in the print media that seek professionals who would prepare graduates in science, technology and Kiswahili.

In another University (MMUST) an integrated approach in the academic programmes offered has been adopted. Perhaps soon, Bachelor of Education programmes in university may have subject combinations such Kiswahili/Physics or Kiswahili/ Mathematics and may not be frowned upon as has been the case in the Kenyan universities before. The older universities in Kenya such as Nairobi, Egerton and Moi have also started putting emphasis on technologically-oriented programmes.

This paper considers the central role that language would play in science and technology in Kenya's quest for development so that '…all good things go together' to use the words of Sorensen (1991). The concrete steps suggested in this paper use Kiswahili as a springboard in Kenya's endeavour to develop programmes in science and technology. As Sy (2005) aptly notes '…true development moves along a course propelled by native forces.' Kiswahili is one such native force.

Conceptual Foundation

The thrust of the discussion in this paper draws from language planning and development theories. Many theories have emerged in this field since it became a distinct area of study in the 1960s. The paper is guided by the *Standardization Model,* which focuses on structural and functional development of language. Structural development refers to corpus planning. In this exercise the planner is preoccupied with the development of the lexicon, syntax and morphology of language (Kembo-Sure and Ogechi, 2006). This activity is based on the assumption that some languages and especially African languages are deficient and require some deliberate additional input and development so that they become effective tools of communication in a variety of communication situations.

The major tenet of this theory is exemplified by the dilemma faced by many African countries at independence regarding whether to choose indigenous languages or European languages to play the role of official languages or languages of instruction in the new states. Persuaded that ex-colonial languages would be a better tool for transfer of scientific knowledge and technology from the developed world, some countries like Ghana and Zambia opted for foreign languages as official languages. Others like Kenya and Nigeria opted for a blended policy where an African language was co-official with a European language. Yet other countries like Tanzania and Somali settled on an African language to replace the European language.

The second tenet of the *Standardization Model* is functional development, which relates to the deliberate expansion of the uses of language and its roles in the society. This is based on the assumption that some languages are better endowed and therefore suited for certain functions. Invariably then, some languages cannot perform certain tasks unless they undergo status planning. What this means is that such languages require intervention to enhance their capacity.

Relationship between Language and Development

Development has been defined in a number of ways. One way is to define development in terms of progress towards a complex of welfare goals. But development as a process also entails participatory characteristics (Bosire–Ogechi, 2002; Chakava, 1988). The participatory characteristics are tied to the participatory function of language as identified by Webb and Kembo (2000). The participatory function of language would ideally offer a framework that closely relates language, science, technology and development in Kenya.

The welfare goals of development in any nation do not operate in a vacuum but occur in a specific setting, and are punctuated by the linguistic code or codes within that setting. For Kenya, the most appropriate code would be Kiswahili. One obvious reason is that Kiswahili is the language spoken by a majority of the Kenyan people. As Mbori (2008) has argued, development needs to be grounded on indigenous linguistic resources. For an engineer for instance, he would dream things that never were in Kenya and say, why not?-to paraphrase a famous saying by Irish writer, George Bernard Shaw. But for that specific scientist or engineer to say why not, he would need to depend on some conceptualization that is rooted in a specific language. In this paper the contention is that this conceptualization can be captured in the Kiswahili language. The Kenyan engineer should be able to say why not in Kiswahili. Further, the conceptualization of skills in science and technology is best illustrated by the view held by Frawley (1992) He points out, '…that language is the principal means of representing information ... a function of the cosmologies in which it is embedded and serves to propagate, science and technology operate within the cosmologies of a nation and are intertwined with the previous, current and future cosmologies of a people.'

Kiswahili is used as the second language in Kenya. It is also used as the national language. In the definition of Trask (1997), a national language is the chief language in a country. Kiswahili ranks highly in the cosmologies in Kenya. It is spoken by 65% of the population (Webb and Kembo, 2000) although the users have varying degrees of competence. Kiswahili is the language used in parliament together with English; it is a medium of instruction in lower primary school, and currently a compulsory and examinable subject up to the end of the secondary school cycle of education in Kenya. There also exists a growing literature in the Kiswahili language. It is also increasingly being used in the electronic media. In addition, there has also been a creation of a 3000-word Kiswahili computer glossary by Microsoft (Microsoft, 2004). In terms of language policy and planning, the Kiswahili language has been standardized and coded. For instance, within the East African region, there exist discipline specific dictionaries. On the Internet, there have been attempts to use Kiswahili alongside other languages such as English and French. Thus, the wide range of applications of Kiswahili in Kenya, (in part) make the language to be well-prepared in representing knowledge and information in science and technology.

Further, Kiswahili would also play a role in detribalizing Kenya. Taylor (1980) has observed that there exist an intimate relationship between language and ethnicity. Selecting a language that does not specifically represent an ethnic grouping can help to counter tribalism. Indeed, this is an important point because the choice of a colonial language such as English or French in Africa was partly motivated by the quest for unity, and the search for a new identity for the multi-ethnic independent states in Africa. A sense of unity and identity enables people to focus their energies on socioeconomic development rather than expending the same energies on ethnicity-related issues. As Mbori (2008) points out, 'development cannot meaningfully occur if a society is full of suspicion and mistrust among its language users'. The role of language as a unifier notwithstanding, there have been cases such as Somalia and Rwanda that are almost monolingual but where the one language widely used has not automatically brought about unity.

The English Question and Development in Kenya

The position of English in Kenya is captured in the statement '…In short, we have no doubt about the advantages of the English medium to the whole educational process' (Republic of Kenya Education Report, 1981). The assertion in the Report is an illustration of the culture of dependency that permeates much of Africa. The 1981 Report for a long time determined the direction that education in Kenya took. Two dimensions of this dependency exist (Mazrui, 1977). One type of dependency is cultural and, according to Mbaabu (1996), it is a dependency that is supported strongly by the system of education, electronic media and the colonial languages inherited.

The case of Ghana also serves to illustrate the dependency on colonial languages. When Ghana's first Republic debated the question of a national language, it was pointed out in the Ghanaian parliament that '…The English language now serves to bind together all the tribes and cultures, which constitute Ghana as a nation – and to impose a Ghanaian language in place of it, might provoke resentment of other languages as happened in India and Ceylon' (Bodomo, 1996). For almost the same reasons as Ghana, Kenya selected English. However, Kenyan policy makers have rarely stopped to consider the other side of the coin: What would have been lost by selecting and concentrating on English as the language for science and technology and not perhaps, an African language such as Kiswahili? One obvious cost is that the use of English has locked out people from mainstream development since this ex-colonial language is spoken by 16% of the population (Webb and Kembo,). Unfortunately, English is the language of scientific, technological and intellectual discourse. It is argued in this paper that most Kenyans operate outside the socio-economic and technological mainstream. The Kenya National Examinations Council annual report (KNEC, 2006) states that only 554 candidates scored an A grade in English in the 2005 Kenya Certificate of Secondary Education (KCSE) out of the 260,000 candidates who took the examination that year. Such a statistic on language confirms the claim that many Kenyans are locked out of the development paradigm by their lack of competence in the colonial language, English.

A number of the users of English in Kenya, many having gone through a Western style education system, operate within the axis of knowledge, creativity and entertainment of the Western world. Many of these speakers consider this to be an advantage. They also consider the fact that English enables them to participate in global trade and commerce as an advantage. However, this advantage is in fact an illustration of the economic, structural and linguistic dependency that is historically linked and which has raised the status of English in Kenya.

The local languages in Kenya represent some of the allegiances that Kiswahili would supplement. There are over forty local languages in Kenya with varying proportions of speakers. These languages and dialects are mainly used in intra-ethnic communication not only in private domains but also in interpersonal and social interaction. The languages are used as the medium of instruction at lower primary schools in rural areas where they dominate. These languages while functional, however, have limited literature and limited use in the mass media.

There may not be as many speakers of English as there are for Kiswahili which is spoken by 65% of the population in Kenya. One additional point that stands out though is that English is an ethnic identity marker among Kenyan language users. One can easily identify the linguistic background of the speakers by the way they speak English. While this may be a moot point linguistically, it is a socially potential source of regional profiling which in effect would take us back to the problems that the choice of English sought to initially solve.

Profiling or ethnic differentiation is an aspect that can negatively affect development especially since development is participatory. While it is not possible to completely eliminate this ethnic differentiation or even completely obliterate its impact on development, encouraging the use of Kiswahili in Kenya would help in establishing newer allegiances; what Mazrui (1995) calls '…a shift towards a more cosmopolitan style of life'. According to Mazrui (1995) the role of Kiswahili would not just be to supplant but also to supplement new linguistic allegiances.

The Kiswahili question and development in Kenya

Can Kiswahili measure up to the task in its new role in science, technology and development? To answer this question, let us consider Webb and Kembo's (2000) proposition, basically a follow–up of the initial theoretical propositions on the functions of language in society. One function is the instrumental function that is, using language as a tool of giving and receiving information, knowledge, education or as an instrument that allows people to participate in activities and enjoy certain privileges. A language also serves a symbolic function; it symbolizes identity and finally, it determines thought and perception. Kiswahili can serve many of the facets of the instrumental function in Kenya.

Kiswahili has been forced to change according to the exigencies of the situation. Once upon a time, it was the language of Islamization. The Kiswahili language changed and embodied the Swahili culture. In the words of Mazrui (1995) the language subsequently established '…its own world-view, its own dress culture, its own cuisine, its own ethics and aesthetics.' Kiswahili language adjusted its function because of the multiple heritage in which it found itself. At present, we also have a multiple heritage in Kenya with over forty ethnic identities. It is strongly believed in this paper that the Kiswahili language is best suited to harness and manage the ethnic identities while at the same time operating as the cog in development in the global village. Indeed, the language has played such a changing role before as illustrated by the part that Kiswahili played in Christianization. One would therefore agree with Mazrui (1995) that Kiswahili was the language for Christian proselytism.

A further illustration of Kiswahili's ability to adjust to changing circumstances can be shown from a country such as Rwanda. Rwanda is basically monolingual where 95% of the population speaks Kinyarwanda. Members of the same speech community have fought and slaughtered one another even though they share a linguistic identity. At present, however, in post-genocide Rwanda, Kiswahili is being used as the very first language on Radio Rwanda in the early morning transmission before any transmission in other languages. Further, most football commentaries are either in the native Kinyarwanda or in Kiswahili even if the language is not recognized as Rwanda's national or official language. Yet it has adjusted to fit the post-genocide setting. Kiswahili has for a long time been an orphaned language in Rwanda. We thus have a situation in the country where society depends on a linguistic orphan rather than the linguistic orphan depending on society. In this paper, a linguistic orphan is taken to be a language whose roots in society seem to have been shaken due to lack of use.

In the Rwandan case, Kiswahili has adapted to fit specific social functions. Similarly in the Kenyan case, it can also adopt to fit a broader role as the language of science and technology. If the Kenyan engineer is to be a problem solver, his/her practicality in solving problems can be aided in the use of an available language code which in Kenya would be Kiswahili. Bodomo (1996) presents the view that there are those who '…often say that it may be better to use "scientific" languages such as English and French since African languages are incapable of expressing … all the technical expressions that are inherent in many academic fields'. Such propositions forget that the English language was itself a vernacular during the Early Modern English period (A.D. 1500 – 1800) when languages like Latin were considered to be the languages of learning. In any case, some of the countries now referred to as the Asian Tigers have used some of the Asian languages as the languages of technology. The Malaysian use of Malay is one illustration. Equally, Kiswahili may be the language that brings out the tiger in Kenya.

Technology encompasses knowledge which includes methods, materials, tools and processes for solving a problem. It does also include the application of resources to solve a problem. Thus, technology like language is a cultural activity. Since language is culture–specific it is possible to encode science and technology to reflect the peculiarities of the Kenyan linguo-cultural environment. This encoding has been tried before where English has been used as the language of science in Kenya. The results of using Kiswahili have however not been impressive with the general cry being that Kenya lags behind in science and technology. Few people have bothered to ask why it is that only 60,000 form four secondary school students register for the Physics subject at the terminal examinations. Then a much smaller number study the subject at university level. A small percentage of the undergraduate students have opted to take Physics at Masinde Muliro University of Science and Technology.

Part of the answer to the problem between resource availability, science and technology and development would lie in the fact that it has not been possible to capture the repository of the world view of the Kenyan language users. The world-view is in Kiswahili or any of the 40 or 50 Kenyan languages while the target in science and technology is encapsulated in an English language based world – view. It is time that an affinity was created between the Kenyan people's world-view and their technological needs. If emphasis is to be placed on Physics, then let the concepts in Physics be captured in the Kiswahili language.

Development and Language in Kenya: A Historical Basis

Development in Kenya is mainly looked at from a post-colonial prism. The very initial targets of development focused on the aspirations of an emerging state. In fact, the development strategies adapted were based on what was identified to be the needs of the new nation. One of the needs of the new nation was an enabling and efficient education system. The other was the adoption of new technologies in order to create a vibrant economy and improve the quality of life of the Kenyan people. Emphasis was put on science and like in many African countries; little regard was given to the role of language. The Kenya Government Report (1964), commonly known as the Ominde Report, agreed on the use of the English language as the medium of instruction in Kenya from Primary I. The same Report was however not as explicit when it came to the issue of Kiswahili where it noted that the Kiswahili language would warrant attention'…from the lowest practicable level' (Republic of Kenya, 1964). Semantically, the phrase 'warrant attention' would not capture the full contribution that Kiswahili would make in enhancing science and technology.

Science and technology is one way of man hunting to satisfy his needs. It has also been argued that the concept of needs in society should ideally explain the instrumental function of language with regard to Kiswahili in Kenya. A number of needs drive society towards a goal. The move towards achieving this goal makes man to be creative and innovative.

Innovation itself is to be understood in a conceptual reality mediated through language. It is perhaps no coincidence that through the ages, great innovations in science and technology have been made using language which the innovators understood best. The Asian Tigers have developed without downgrading their native languages. The Great Zimbabwean civilization took place using indigenous African languages. How then can we expect Kenyans (whose competence in the borrowed languages may be questionable) to rely on the same borrowed languages in order to innovate, create and satisfy needs through science and technology?

The proposal to adopt Kiswahili as the language of science and technology in Kenya is not a romantic streak of over-zealous activists but a practical plan in Kenya's quest to industrialize. In the words of the Senegalese President, Abdoulaye Wade, African countries should not '…be passive consumers of new technologies but to keep in step with the rest of the world in developing an effective research capacity' (Mbaabu, 1996). The gist of this paper is that this capacity in Kenya can be strengthened and enhanced if focus shifts to natural African linguistic resources such as Kiswahili.

The Practical Plan for Kiswahili in Science and Development in Kenya

The scenarios obtained in Kenya and outlined above point at one major impact of the multilingual situation. This is the inadequate development of human resources (Webb and Kembo, 2002), and the restricted access to knowledge and skills because of using a foreign medium which locks many out of science, technology and economy. This state of affairs arises from two divergent views. One view considers African languages to be of low status and therefore insufficiently adapted to the needs of science and technology. Some of the arguments that are used to lend credence to this include the lack of vocabulary and speech styles in these African languages. These arguments also include the lack of sufficient status for the languages to be used spontaneously in the public domains. However, Kiswahili has a well entrenched status in Kenya that makes it qualify to be used in a number of domains.

In the practical plan for Kiswahili for development, we wish to propose in this paper a number of courses that can be incorporated in the science and technology curriculum at Kenyan universities. In proposing such a plan, we will use one of the proposals of the Mackay Report (1981) on the establishment of the Second University in Kenya. The Report noted that the Second University should have a bias towards technology in addition to the University having a socio-cultural instruction and orientation. Kiswahili was to be offered and made a compulsory subject at the Second University. More than twenty years later, Kiswahili is nowhere near being a compulsory subject in any university in Kenya. Instead, Kenyan universities embraced Communication Skills in English, especially after the initial sponsorship from Britain. In this paper we propose the course 'Communication Skills in Kiswahili' as part of the 8-Course Package for Science and Technology in Kenya.

The seven other courses include: Translation, Scientific Fiction in Kiswahili, Public Speaking and the Art of Writing in Kiswahili. We also wish to focus on discipline specific language skills. Three courses are further proposed namely: Kiswahili for Specific Purposes, Kiswahili Lexicology, Lexicography and Basic Kiswahili Grammar.

Conclusion

This paper operates on one philosophy: that we need to use a well-developed native resource in order to achieve the Millennium Development Goals and be able to alleviate poverty. Ex-colonial languages may not have served us well in this regard. The whole concept of Third World Renaissance can only succeed if we are set to achieve the maximum within the shortest time possible. Using Kiswahili and communicating the results of our technological innovations in the language that the larger Kenyan population understands best is, we believe, one way of moving towards African Renaissance.

References

Batibo, H. 2005. *Language Decline and Death in Africa: Causes, Consequences and Challenges*. Clevedon: Multilingual Matters.

Bodomo, 1996. 'On Language and Development in Africa: The Case of Ghana' In *Nordic Journal Of African Studies, (5) 2:31-53.*

Bosire, E. and N.Ogechi 2002. 'Educational Publishing in African Languages with a focus on Swahili in Kenya.' In *Nordic Journal of African Studies. Vol II No. 2*, 2002.

Chakava, H. 1988. 'Towards a Reading Society as a Factor in National Development'. Report of Seminar for Re-Launching of the National Book Development Council of Kenya. Kenya National Commission of UNESCO. July 25-29, 1988.

Frawley 1992. *Linguistic Sewmantics*. New Jesrsey: Lawrence Erlbaum Associates.

Kembo-Sure and N.Ogechi, (2006. " Language Planning and Reform:An Alternative Language Poliy for Kenya". Kembo-Sure, Mwangi, S. and Ogechi, N.O. (2006) Eds. *Language Planning for Development in Africa. Eldoret:* Moi University Press.

Republic of Kenya. 1964. *Kenya Education Commission Report. Part 1. (Ominde Report)* Nairobi: Government Printer.

Republic of Kenya. 1981. *Second University in Kenya: Report of the Presidential Working Party. (Mackay Report).f* Nairobi: Government Printer.

Mazrui A and A. Mazrui 1998. *The Power of Babel; Language and Governance in the African Experience.* Oxford: James Currey Ltd.

Mazrui, A. A. 1977. *Africa's International Relations: The Diplomacy of Dependency and Change*. Nairobi: Heinemann

Mazrui, A.A 1995. *The Political Economy of an African Language*. Nairobi: EAEP.

Mbaabu, I. 1996. *Language Policy in East Africa*. Nairobi: Educational Research and Publication.

Mbori, B. J. O. 2008. T*he Interface between Language Attitudes and Language Use in a Post-Conflict Context: The case of Rwanda.* Unpublished PhD Thesis: University of South Africa.

Microsoft 2004. *Microsoft Kiswahili Computer Draft Glossary*. Nairobi: Microsoft.

Sorensen, G. 1991. *Democracy, Dictatorship and Development: Economic Development in Selected Regimes of the Third World*. London: MacMillan Press.

Sy, Habib J. 2001. 'Communications for Development, Democracy, National Independence and Economic Growth' In D. Nostbakken and C. Morrow (2001). Eds. *Cultural Expressions in the Global Village*. Southbound International Development Research Centre.

Taylor, D. M. 1980. 'Ethnicity and language : A Social Psychological Perspective ' In H. Giles, W. P. Robinson and P.M. Smith. 1980. *Language: Social Psychological Perspectives*. Oxford: Pergamon.

Trask, R. L. 1997. *A Student's Dictionary of Language and Linguistics*. London: Edward Arnold.

Webb, V. and S. Kembo 2000. Eds. *African Voices: An Introduction to the Languages and Linguistics of Africa*. Cape Town: Oxford University Press.

Wolff, H. E. 2006. 'The Language Factor in Discourse on Development and Education in Africa.' In Kembo-Sure, S. Mwangi, and N. O. Ogechi (2006). Eds. *Language Planning for Development in Africa. Eldoret:* Moi University Press.