

THE CULTURAL CONTEXT OF ADAPTATION WESTERN EDUCATION IN EAST-AFRICA: PARADOXONS AND MISSING LINKS

Ibolya Tomory
Óbuda University Ágoston Trefort Centre for Engineering Teacher Education
Budapest, Hungary

Abstract

Education can play a significant role in strengthening poor countries, it is not questionable why has it a central role in government programs. But there is a less visible and less well-known paradox that contributes to education, including western knowledge, like ICT failures, and its causes are deeply embedded in the complex historical and socio-cultural context of the countries.

In Eastern Africa, traditions are still part of everyday life. One of the most prominent elements of this is the content and meaning of learning, the centers of knowledge and the ways in which it is acquired, whose traditions are quite different from the Western-style education imported from outside. In this way, ICT for example is another tool for marginalization groups that are even more difficult to pass through the technology gap. The emphasis in the modern education system has been rearranged from cultural, human and social content to science and technology. According to the official education policy there is a need for more financial resources for technology-based disciplines and education than for human subjects, while these still providing many part of the identity.

The study discusses the dilemma of the cultural context as a missing intermediary element, based on observations made on the spot in the light of individual and community opinions, in the light of the interpretation of their own situation. I am conducting my research as a cultural anthropologist and a teacher that research based mainly on fieldwork, what provides impartiality independent of professionalism.

It can be stated that traditions should not be seen as an obstacle to formal education, but rather as a challenge to be solved.

Keywords: traditional education, development, western education, African education

1. Introduction

“Many dilemmas appear increasingly common to a wide range of countries, such as that of trying to find a balance between local and international engagement in research, or between basic and applied science, the generation of new knowledge and marketable knowledge, or public good science versus science to drive commerce” (UNESCO, 2015, p.2.). The role of science, technology and innovation (STI) is at the forefront and information and communication technology (ICT) become a basic requirement and skill. However, the role of science, technology and innovation (STI) is at the forefront, and the basis of information and communication technology (ICT) becomes a requirement and a skill.

Since 2009 there is a big interest in science and technology in East-Africa, it has been seen in long-term planning, future building and just like in the South and North of the continent the goal is to reach inclusive improvement and higher financial status (East African Regional Analysis, 2018). Several networks and excellence centers were established (Kenya has the East African Research Center), the East-African Community and the East-African University Council form common higher education areas for networking (UNESCO Science Report, 2015).

At the same time, paradoxically, according to the UNESCO statistics in 2017 there are 750 million people without the knowledge of writing, 40-50 % of them in Sub-Sahara countries. There is also a problem with the missing of ICT knowledge. Adding to the concept of illiteracy, this is accompanied by a lack of ICT skills. While ICT is improving in Western countries, African countries emphasize its importance, but implementation is at odds with economic, historical and cultural contexts, which further increases knowledge sharing and development support is needed to balance the situation (UNESCO, 2017). However, governments understandably seek investors rather than donors because paradoxically, dependency is maintained on development aid. Even in programs with great results, like

African Development Fund (ADF) or Education for All (EFA), where reductions in subsidies have arisen, some dependency remains (Tomory, 2018). There is a definite effort towards the improvement of independent integration engagements where they are trying to support local businesses and balance their programs with education.

Education and further studies are priorities and Science, Technology, Engineering, Mathematics (STEM) subjects are considered the best options for a successful future career rather than Arts and Humanities. However, enrollment rates are still largely in favor of human areas, human subjects are still more popular among students.

In the complex system and context of the causes, historical antecedents are decisive as their own experience as a way of thinking as a whole, as well as the whole lifestyle and lifestyle as a whole. This includes ideas and views on scientific subjects, and faith in the magical power and difficulty of science, technology.

2. Methods

The study is exploratory, comprehensive, it based on official research, ethnographical data collection and personal experience gained during the on-site visit (fieldwork). The research has a social-historical approach, its main goal being to raise the issue of education and learning from situations taken from everyday life.

The author has been studying the East-African educational system for years during field works. The specific method of cultural anthropology, participatory observation is the main method, which provides an opportunity for observation, interviewing, gathering information from spontaneous situations. This social science technique is an excellent tool for the development of socio-cultural ciphers, and is the basis for an analytical-analytical work.

“Cultural anthropology puts culture in the center as the connection between the individual and society. For example, the culture of an individual can be determined by his or her group of qualification, such as objective attribute, personal psychological characteristics, traditions in its environment, etc.” (Kapitány, 1995, p.4.).

Fieldwork often takes place only during the first preparatory phase of research, but some topics require longer-term fieldwork or shorter but repetitive ones. (Shorter here means at least a few weeks.) Babbie says these include attitudinal and behavioral tests and the so-called community studies to study social phenomena (Babbie, 1998).

Lofland speaks about focus points that requires collecting these type of data collection. These focus points can be social interactions, behaviour, relationships, small groups, subcultures communities and the most importantly for me schools and other institutions (Lofland, 1971).

Earning the trust of locals is very important which is facilitated if you have a contact person, as it helps to become a part of the community and to get key people to help collecting information. They will be the key informants. Other people can also be a big help but we only meet them sometimes at rare occasions, or in a targeted way. They are the occasional informants (White, 1999). During these type of research it's important to have trust and keep the trust in long-term. The occasional informative sources can become to key informants during the research just like it happened several times to the author.

One of the most important tools of the research is the fieldwork-diary (notes). First of all, the observed situations, events, and the reports are recorded by the fieldwork-diary and various technical devices (video recorder, camera, dictaphone, mobile phone). It is important to describe and record the events with the greatest detail and depth. In this respect the virtue of the method is objectivity. The author linked the field research with collecting artefact collection (ethnographic objects), which in most cases facilitated his work.

I had done research more times, in more phase at the areas of Tanzania, Uganda, Kenya. The first phase is a preparation phase, the further ones are more focused, depending on circumstances of schools, learning, environment and attitude. Direct, indirect observation, unstructured-interviews, some structured interviews are among the methods, but the researcher can be a witness of community talk/discussion, can become the part of a public situation.

2.1. The informants

The structured interview was used more in the case of professionals, managers and teachers representing the official side of education, less structured methods for pupils in secondary and higher education and their environment.

The number of key informants are less probably around 40-45, most of them are teachers, educational institutes, development programs, workers at schools or universities, and 5 of their students. The number of occasional informants are around 80, they are the students of universities and their micro-environment. The number of students and educated individuals were studying human and real subjects in 50-50 % proportion and there were some uneducated individuals like parents, grandparents, relatives.

3. The integration of technological knowledge into education

One of the manifestations of the development of technical knowledge and science subjects is the improved numbers of universities and colleges. This also means the transformation in human areas and the shifting from human subjects to science ones. Higher education systems trying to keep up with the tendencies of science, this impacts the amount of support the science and ICT educational areas get. At the same time, it also influences the rates of support for education for the benefit of technical and ICT areas. High-quality education is often mentioned as a factor, especially in secondary and tertiary education, while developing the skills of technical and vocational training institutions. Accordingly, education is today one of the main drivers of the development agenda of the East African Community (EAC) countries. For example, Uganda's second National Development Plan (NDP II), Rwanda's 2020 vision, Kenya's 2030 vision, and Tanzania's 2025 Vision see every priority as a skilled and competitive workforce, education and training are key pillars of socio-economic development. If we look at the key elements and goals of these countries' education policies, vocational training and the strengthening of science and technology are among the most important.

Kenya	Rwanda	Tanzania	Uganda
Revise the curriculum and make ICT central to it. Develop a TVET training curriculum; Establish and equip TVET centres of specialisation with state of the art training facilities.	Enhance the status and attractiveness of TVET to young people; Promote a curriculum reflecting changes in technology, workplace... Ensure students develop employability skills including ICT skills;.	Strengthen teaching of science and technology in technical secondary schools... Impart technical skills to youth ...Reserve specific vacancies for qualified women in technical training institutions.	Create employability skills ... Aims to strengthen the role of the business community and employers in Tertiary and vocational education.
Integrate IT subjects at all education levels; Promote the development of integrated e-learning curriculum to support ICT in education; distance education and virtual institutions, particularly in higher education and training; Create opportunities for acquire IT skills.	Integrate ICT subjects in curriculum and teaching methods at all levels of education; Promote use of Open Distance and e-Learning (ODEL); Ensuring the availability of infrastructure that is critical to successfully integrate ICTs at all levels of education.	Create supportive environment for collaboration with the private sector in development of ICT skills while encouraging lifelong learning through the use of ICT; Ensure effective use of ICT in teaching and learning throughout the formal and informal education system	Encourage... computer literacy module in the curriculum at all levels of education; Establish an accreditation council to ensure quality IT education and training; Encourage IT companies to play a significant role in IT education

Table 1: Education policies and their objectives targeting youth in the EAC

(Source: East-African Regional Analysis of Youth Demographics, UK Department, 2018)

The professional, technical knowledge and ICT field thus play an indisputable role in African education, in which labor market representatives, support programs and the learned layer play a major role. However, access to tertiary-level science education, ICT education and quality of science education is generally difficult and uneven across Africa. This has a causal relationship with primary and secondary education but in wider context, means the all economical, cultural heritage and context.

4. Paradoxons and missing links

East African countries: Kenya, Tanzania, and Uganda have a similar history given that they are neighbors and were colonized by the same colonial power—the British, although the Germans colonized Tanzania for a short time. The three countries became independent in the early 1960s. This colonial period has continued to influence the education and language policies in the education system of the three countries since independence.

Differences between tribal education and Western education, the spread of Western education and the "magic" that surrounds it, the inequality and quality of education, opportunities for primary and secondary education, learning difficulties in science subjects, and missing links that hinder the change that governments are pushing and are expected from outside.

4.1. The economic context as a missing mediation element

ICT and scientific disciplines are therefore considered to be the keys to equal opportunities. One of the obstacles is funding, the issue of available resources, and the other is the cultural lock that is rooted in the colonial past and the difference between traditional African and Western education.

The African context and its material and asset conditions are so far away from the Western opportunities that it failed to overcome in the long term. The weakness of the infrastructure, the unavailability of the electricity supply, the weak Internet connection are the basic and common attendants of the everyday life of Africa (Kessy-Kaemba-Gachoka, 2006).

The effective integration of ICT requires the support of foreign sources, in addition to spending on state resources. The proper distribution of these in many developing countries has not been resolved, the lack of ICT policy, poor ICT project management and corruption are the paths for effective implementation. Efforts are often uncoordinated, competing initiatives make successful implementation difficult. In addition, there are a number of unsustainable ICT programs where schools have computers that do not work properly. (Ford, 2007)

One of the biggest challenges in East African Community is the new areas of economic development: tourism and technical training and vocational training. However parallel with formal forms of education, the popularity of traditional forms of learning is maintained, integrated or informally, as "shadow education" work in certain professional areas. Interest is durable because of the cost-effective and pragmatic approach in the informal sector (traditional education elements). It would be in the interest of the economy to establish a partnership between the informal and the formal sector, which is slow because the "parallel" informal education is popular but not always public due to its unofficial side. The informal sector is understood to mean, for example, a small craft run by a craftsman/owner, some assistants, and students. These educational systems are closer to local thinking, better build on local culture, social relationships, and align them with modern professions such as car mechanics.

4.2. Traditional learning, education

Traditions on East-Africa are still a part of every day life. One of the most important part is the content, meaning of learning and value of studies, the centers of learning, and methods of getting the knowledge which is very different from style and method in Western countries.

In today's Africa, we can observe that we cannot find traditional education in a completely clean, truly only traditional way of education which is not influenced by different effects from other countries. There were several influences that clearly effected traditions depending on the area, ethnic group, society, family and individual circumstances. However traditions never fully disappeared regardless of the different effects of history, nowhere did the colonizers permanently and wholeheartedly place western education. Even in urban environments in the cities the

elements of indigenous culture continue to live, traditional habits and behaviours remain visible. The majority of learners/students bring and hold what is often provided by the home environment.

A very good example of this is the appearance of ngoma phenomenon which can be seen in schools and home environment too. The word ngoma represents drum as the instrument in a broader sense, the Swahili tradition of music and dance (ngoma). Ngoma refers to the tradition of music, drumming, dancing and storytelling.

There were and there are some local philosophical foundations of education, but against the European individualist approach, the communalist principle of group together was dominant. The individual, as an integral part of the community, has grown up and is prepared to be a useful member of the household, village, tribe, age-group, based on the principle of preparation.

The goal is to get prepared for life, so studying was very practical that included choosing the area of studies, career orientation and career socialization, involvement in work, community activities, moral values and spirituality. Because of its practicality there was always enough learning motivation to remain (Sifuna, 1990). There were elements in education system which were improving healthy competitiveness and pragmatic competencies, but they were subordinated to the purpose of right behavior and the importance of being part of a unit.

The principle of permanence didn't mean it was unflexible from changes despite the negative stereotypes, it just meant continuous support and the economical and social inheritance of the generations. „It was a collective means through which society initiated its young generation.” (Sifuna, 1990, p.11.)

In the holistic point of view of education goals, methods and elements were all connected, studying had more goals than one and prepared students for different specific knowledge but always in every day life environment using realistic day to day contents and situations. Theoretic side was easier to understand and wasn't more valued than practical knowledge not like in new Western type education.

Most important is the balance of elements and methods and the strong artistic and human side of it. They applied also formal and informal methods, but they stayed tuned with literature and music. The myths, legends and sayings all represented the importance of wisdom, their social and moral meanings and their connection to the past, present and future. Children often studied with the help of music and dancing, through the rhythm, music was part of the daily life and a big part of celebrations. Rituals, daily activities and celebrations always happened with the appearance of music, rhythmic text accompaniment, narration. Theatre is still very popular nowadays and it was a huge part of education. At the ngoma celebrations schools are still using dancing, music and singing to their story-telling. The important steps in life like getting a higher social status or getting into a different stage of age, are all followed by ngoma just like solving conflicts.

In schools, they still follow singing, moving, rhythmic accompaniment and daily celebrations and special festive occasions. Stepping into a higher social role, passing through different stages of the life cycle (transitional rites - passage rolling), conflict resolution are all accompanied by ngoma. The formal language of social-economical safety networks, group identity and the connection to spiritual world is ngoma. It's the base of history, daily activities, education, values and identity between generations. It plays an important role in the recreation and rebirth of culture and social life and in school life (Gearhart, 2005; Vinesett-Whaley 2017).

All the places I have been visited, ngoma was part of life in schools, even at the conference of internationalisation of higher education. In the conference break the ngoma group of the university appeared and the African participants slowly joined them in their performance.

All the informants mentioned it without exception and said that it is necessary because it has a positive effect on reducing the stress effects of today's life and successful learning. It is said to and improve motivation in studies, so it's supported in education in every school, and they have their own ngoma groups and uniforms at each place. In Kenya at the start of the school year they have a ngoma celebration, in Uganda I have witnessed the same in mission school where at the end of the semester the students took part in a ngoma ritual. They paint the face and hands of the new students white and they have to follow a route and the older students follow them with their drums and music and with small tree branches which they use to slightly hit the younger students as part of the ritual.

For me, this phenomenon was almost incompatible with an old and well-known Christian mission in education. Then I thought we were in Africa. When I asked the senior nun, if I saw well, it was an initiation ceremony she commented that cultural excitement, which is almost insoluble, would result from the exclusion of African traditions. They experienced that if they only include European type of education, the physical and mental health of students decreases, even with physical signs. The parents and relatives feel better about letting their children go to school as they see there are some traditions they keep there, not afraid of an „culture-alien” educational environment. This way more students stay here and learn more. "What it was for the Africans, we have to give it back," said the head of nuns, and the others vividly agreed.

In Tanzania in a school at the bottom of Kilimanjaro one of the leaders of a secondary school told me, ngoma is part of life so they hold it every day. There are many students from different part of the country who travel from a further distance or staying in college in the school and they can't just cut them off their traditions, suddenly create a gap between the school and home worlds they have seen growing up. They find ways to have balance between Christian habits and tribal education. I experienced that parents support their children's studies more enthusiastically if they choose human areas because it is closer to their beliefs and traditional point of view. One of them said this way they are not looked down at for being uneducated.

In tribal life the content of education was always connected to society and every day life. Becoming part of the society was connected to culture, habits and how they view the world. Students had to learn what their part is in the family and society. He had to learn, for example, what the role of an individual is in the network of extensive relationships, what rights and responsibilities he has (Maraire, 1997; Reagan, 2005)

The individual became a community member, a qualified person and a cultural entity at the same time. Therefore in my opinion this process would be called enculturation according to the concept of cultural anthropology instead of the usual socialization (Tomory, 2004). Kron (1997) in his book Pedagogy belongs to those who agree with the statements above.

Traditional education is not a suddenly disappearing phenomenon but instead changing step by step and searching for different, new forms of existence. The western type schools way often very far from the traditional point of view and values. The missing link is somewhere in between the decrease of social and cultural heritage and it can be seen efforts to preserve culture and keeping of the traditions. Besides trying to keep the African values and traditions western style knowledge, especially science and technique, will be known as almost mythical power.

4.3. Traditional education versus Western education

Traditional African and western education differs on many points, although both are based on similar universal foundations and have common points. My key informants formulated that the two will disappear along their approach and socio-cultural embeddedness. Many perspectives have been mentioned in everyday, simple terms, which mostly suggest that the western educational style is already different in its basic philosophy. There are differences in the perception of the human being as a formable, educated being, and in the relationship between the individual and the community, and last but not least in terms of the content of knowledge, which also determines the direction of interest in African education, and especially in higher education today (see Table 2).

Western Education style	Traditional tribal education style
Individualist approach	Collectivist approach
Education is formed by the individuality of the child	Education interprets the individual as part of the community
Supporting competitiveness	Supporting co-operation/teamwork
Self-esteem is primary important	Social skills are primary important
Many continuous praise	Incentive criticism
Representation of individual values	Representation of spiritual and moral values

A variety of worldviews, values side by side	A variety of worldviews, values side by side, but many similarities: Religion and moral values, respect for the ancestors
Parallels between human and social side, Emphasizing the scientific side	Human and social focus
The omnipotence of science and technical knowledge	Transplanting culture, adapting to the physical and human environment

Table 2. Some characteristics of Western and African education
(Source: Own creation)

A fundamental difference is the collectivist and individualistic approach, but any other difference confirms that the social and human side is central. This does not mean that science and technology are being squeezed out, but not in Western understanding, but rather as part of a holistic, culture and community-oriented system. Western science, such as mathematics, is less needed in this system, so it was hard to insert. This fundamental difference is one of the missing links.

Several key informants told me that the missionaries helped them in certain ways but they have brought different cultural approaches and they expected the Africans to adapt to the new environmental circumstances like it was their own culture. It's clearly different nowadays, but the negative experiences remained in the society from the times they couldn't keep their loyalty to their own traditions. Near the city of Mbale in Uganda South, teachers claim that it's very important to help students adapt to the modern world but it's also important to keep human subjects valuable. African traditions and roots have to remain in schools and the easiest way to support that is with human and art subjects with national elements and spirit instead of the imported knowledge. It also had to do with the fact that science and technology subjects are more difficult for the majority, they are unable to make up for the missing funds and prefer to go further and move closer to their way of thinking.

4.3. *The myth of Western education*

During the colonial rule the traditions used to fade some of them completely disappeared. The base of the European political approach was that the less traditions, weaker roots of the local cultures easier it is to keep them under control, the more exploitable. That's why they tried to replace the traditions with Western cultural habits. One of the most important tools for that was education, however there was no intention of having equal knowledge and education, the locals weren't valued as equal parts of the society by the Europeans. According to their goals they selected a layer (few individuals) they were enrolled in, but always only up to a level that kept them dependent of them but didn't reach a high educational level. A colonial institutional and clerical system was built on this and the layer chosen for this was the mediator between the local communities and the colonial supervision.

School visit has become a major aspect of the distinction between modern and traditional segments of the population. It was closely connected with imagination, being a European, or having a European attitude and wealth, that is, having great advantages. The spread and dominance of textual, written communication was related to this.

A new two-sided point of view was born that was based on the difference between educated people who had higher social status and enjoyed advantages of society and the uneducated layer of society who didn't reach higher status and respect. This is a widespread division of the world with dominance and lower status. Avoidance of handling, almost forced the faith in the magical effectiveness of European education. For many, enrolling in school as a way of avoiding discouragement has been the goal of basic education, guided by the belief that their lives will change in a moment. (This image still exists today.) Essentially, African countries were given a break with the past and a higher-ranked cultural and educational system, which is part of the culture of power and alienated from its own values and culture as a glamorous gemstone.

Paradoxically, however, the obligatory side of Western schools and the passing of school attendance has helped to maintain the indigenous education. There was a qualitative difference between schools and education for Europeans and locals, and they often had to compete with modern schools, spreading new skills and ideals. (Sifuna, 1990)

One of the central goals of the East African countries that became independent in the 1960s was to build national identity through the retention of the formal education system. The belief was that with the European educational system would create a quick and efficient standard of living similar to that of Europe, they can reach a better quality life. To reach this goal not only the form of western education but also its contents were integrated into their own system but its precedents missed from the knowledge base of the enrollers (words and expressions, English language knowledge, historical identity and science knowledge, especially the foundations of more complex mathematics, etc.).

There were committees established just to find out how to integrate different ethnical backgrounds together under one roof in schools through subjects. Human subjects seemed to be the most suitable for this goal such as history and civics and related areas, like social studies, and literature. School became an indicator of economical and social development. This has also been a bridge to traditional system and a trend towards human subjects, the impression of which is still remains in the education these days.

Western education, as a magical power, became part of the public consciousness, to which the proclamation of the "redeeming" power of science and technology was associated with an obsession. Cause: the image of the divided world, which is the result of the constant emphasis on Western knowledge.

At the same time, the continent did not have electricity, running water, telephone, bicycle, razor, car, built asphalt roads, airplanes and computers. These disadvantages have diminished to the present (although they have not ceased), but the effect, as if they were blocked from the world, and the idea of a split world only intensified.

The feeling of helplessness prevailed, as one teacher at a development organization (Unicef Tanzania) said at one of our meetings: "The average African thought has become involved in not owning, doing these things, because Africans do not have the same conditions and capabilities. This is the legacy of the colonization period, which was further strengthened by the dependence, the attitude and the structure of later development programs."

Nozipo Maraire, a writer from Zimbabwe shows many aspects of this phenomenon in her book, *Zenzele*, presents many aspects and shades of this process. A mother whose daughter wants to go abroad remembers the magic of mythical and mystical, freedom and infinite knowledge, remembers the mystical, magical expectations of her daughter:

"You with restless confidence, expounding of the necessity of going abroad for university. For months, you toted that bright red prospectus like a new Bible. There was undeniable proof of the merits of an American college education. During my spring cleaning I was tempted (with fervent urging by your siblings) to discard it accidentally.....any heretic was immediately set aright by printed word, the gospel truth of higher education, as proclaimed by that book. I became the unfortunate target of your crusade. "Mama, they have so many subjects. Look, the psychoanalytic theories of political anthropology! I don't even know what means. ...Was I too distant? Perhaps. I was often bewildered by the task of motherhood, and that precarious balance between total surrender and totalitarianism. How could I prepare you for a world that I did not even understand." (Maraire, 1997, 2-3.p.)

4.4. The quality of education and the links between further education

After the independence in East African countries was a strong focus on fighting poverty, urging primary education for the majority. Developing skills for livelihood has become a priority, especially in rural life. Post-primary education fell into the background, with the emphasis on labor market needs. A typical example of this in Tanzania is Nyerere's Ujamaa program, which based on the philosophy of self reliance. Primary education was emphasized and supported from outside, from the western part, too. At the end of the 70s, reaching the Universal Primary Education (UPE) was the main goal throughout Africa. Expansion of primary without expansion of secondary led to reduced transition rates. By the end of the twentieth century, the quality of the education system reached a crisis point. So much so that the parents' initial enthusiasm was replaced by a mistrust. (Lwaitama, Mtalo et al. 2001)

"Only two in three adolescent finish lower secondary school on countries with low or middle income. (UNESCO EFA, 2015:7, p.12.)

Teachers were encouraged to work in remote areas. In Tanzania, it was compulsory to spend their practical time in the countryside in teacher training. They built teachers' houses, but they went slowly and placed them in schools

without any support. This had several negative consequences: poor professional development, career abandonment, and a decrease in the quality of education. This has hit rural schools in particular and there has been a deeper gap between rural and urban schools. Teachers' salaries were scarce, and they were often stagnant, even in forced situations. Another, and perhaps the most serious, consequence of this difficult process is that the motivation for teaching is lost in many people and that private lessons start to replace income. Later, it has spread to such an extent that it is almost natural in the life of the school. It is a great burden for the parent, tiring for the learner, and against motivation in every respect. It is a part of the fact that in many cases the extra paid job is not effective.

This process is still ongoing and has an impact on secondary school progress. Teachers who are often poorly educated are unable to prepare appropriately for pupils or for many occupations. One of the weakest areas is mathematics education, so those who get into high school are not necessarily well-prepared students.

Parallel to this, private schools have spread, but they are better qualified. This has increased the number of students enrolled in high school, but further education is still unattainable for the majority, and science areas are less popular among students in private schools.

The number of secondary schools is still less, there are not many places or there is one in a larger area, which is difficult to achieve. At the same time, however, there seems to be a need nowadays, because in many places local communities are starting to build. Poverty and limited state support limit opportunities, not to mention teacher shortages and quality of education. Under these circumstances, it is certainly understandable that the number of people entering higher education is not ideal, and the science and technology area is even a daunting challenge for those interested.

4.6. The popularity of humanities versus science

The previous problem is well reflected in the fact that the Humanities, Art, Social Science courses are much more popular.

The reports of the United Nations Educational Scientific and Cultural Organization (UNESCO) and the World Bank reports point out that although there was a positive change in enrollment rates across Africa, this difference unfortunately did not disappear, or even increased, between field and subject interest. It can be said that access is increasing, presence in scientific fields is not. This is also a paradox, as access to college and postgraduate education is expanding on the continent, and universities in Africa are among the newest and fastest growing countries in the world. Foreign students have more arts, humanities and social sciences than STEM disciplines. On the other hand while enrollment is growing, there is a corresponding outflow of intellectual talent. The reports also point out that the humanities and social sciences have priority over technical and research topics in the field of research. The consequence is a skills gap that also results the widening of the problem (UNESCO, 2015)

One of my data providers in a teacher training institute claimed that arts, human and social science students are more motivated in learning their subjects than science-opting students because they often choose their studying area because of a better career. In these cases the internal motivation is low.

In Uganda's example, the number of students enrolled in higher education, regardless of age, was only 6.2% in 2011 among the official school age. This is hardly above the South Sahara, 6.1%, well below the 24% world average, and it is not expected near to the 40% that would be needed for economic recovery.

The discipline enrollment rate shows that in 2010, the number of students in science and technology was 64,179 (37%), down 51322 (32%) in 2011, which is a decrease. (National Council for Higher Education, 2013)

Gross enrolment ratio is the students enrolled in higher education institutions, regardless of age, as a percentage of the population of the relevant age range we expect to be in higher education institutions. The ratio is 5.4% in 2010 and in 2011 was 6.2% so there was growth. This increase is still below the 17.4% average of the world. Most of the growth was in the fields of arts and humanities, not science and technology.

“At the Universities and affiliated colleges level, most students, as was the case last year, are enrolled in Arts and Humanities (74%) as against Science and Technology (26%). Compared to last year when enrolment in Arts and Humanities was 65% and in Science and Technology 35% there was a decline in the enrolment in Science and Technology. At the non-university level, 21888 out of 198,061 students are enrolled in commerce/ business and

related colleges. Naturally these are institutions, which are largely arts and humanities based (94%) as opposed to science and technology (6%). These 6% are enrolled for mainly computer science and related courses. The good news for overall enrolment is that in technical colleges enrolment has increased from 2911 in 2010 to 4,781 in 2011. The National Teacher Training Colleges reflected no enrolment in science and technology. Enrolment in Agriculture/Fisheries/Forestry has been fluctuating. It was 1651 in 2006, fell to 1293 in 2010 and has risen in 2011 to 1625. There is need to change these percentages to 60% for the arts and humanities and 40% for science and technology.” (National Council for Higher Education, 2013, 15.p.).

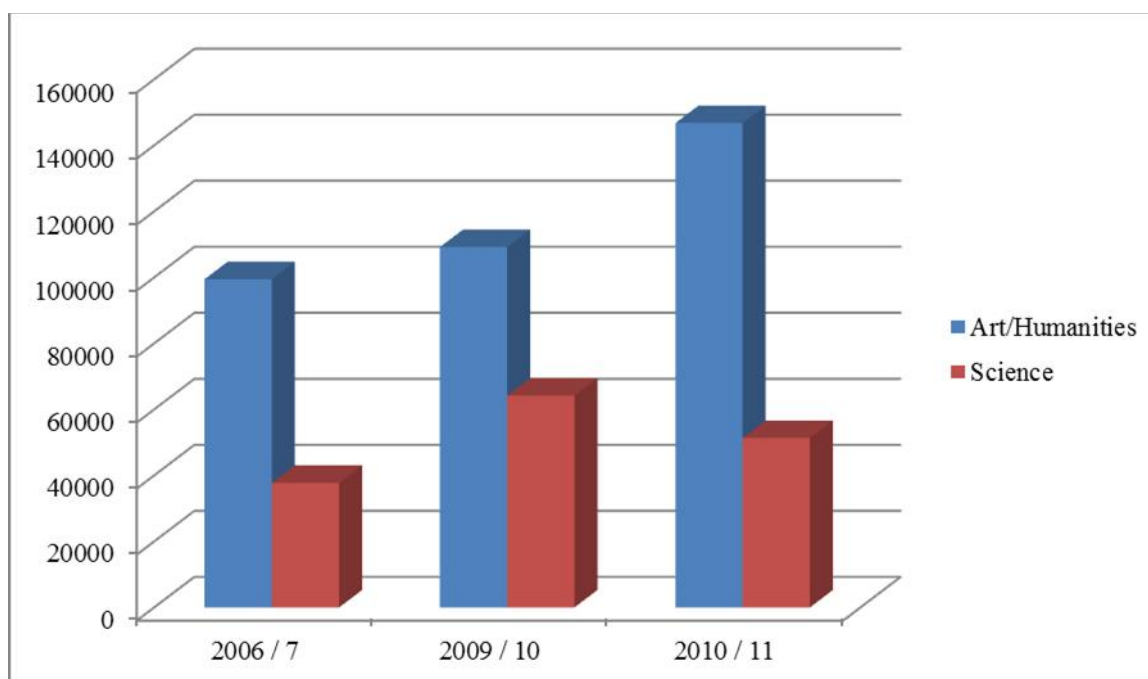


Diagram 1. Art/Humanities enrolment compared with Science enrolment, Uganda 2006-2010

(Source: National Council for Higher Education, 2013)

So science and technology enrollment dropped from 37% in the previous year to 32% and compared to the previous two years, it can be seen that its visibility increases, while science decreases.

There may be also a financial problem in the background, difficulties in obtaining a diploma, exam repetitions, and the expectation of students leaving school to support younger siblings.

4.7. The missing cultural context

The other aspect of technical knowledge and the introduction of ICT is cultural context. The language barriers and the approach of ICT impacts acceptance. While staying on the spot, you can experience that double vision that how much they want European habits to become part of their lives but how hard it is to integrate them to the daily traditions.

In many cases I heard it's too difficult for adults and also for children as they are used to be in different environments. There were few cases when somebody tried to learn computer skills but because it did not work fast enough they took it as a failure, he failed to make a definitive turn of opportunity. These experiences turn parents off from bringing their children to school as they don't see the possibilities in learning successfully.

It's clear that in between the amount of information that the programs of developing science education do not always take into account the important interactions of students' written, linguistic or cultural understanding. Practically don't always pay attention to the level of writing skills and to the understanding of language and cultural background of the

students. Several students think that the science and subjects like mathematics is a subculture, so they feel to be separat from that, they cant belong to it, while actaully they are already part of a subculture themselves.

Many informants have outlined the situation when students with African identity, often with different ethnic backgrounds, have to cross cultural boundaries by crossing their own family, their contemporary group, and their affiliation. When they enter into the subculture of school science, they face social and cultural barriers, their self-confidence is shaken and they hold on to the limits of their own abilities.

More of them have told me their own experiences about their studies and the difficulties in finding a job with good financies even afer completing their education. Even if they were encouraged, support from someone, along with its benefits, they were struggling with higher education, it is not easy to find a job that generates sufficient income. A local man who is working as an engineer in Nairobi experienced different treatment at his workplace from his Europian colleagues who own the same qualification. This has been confirmed by workers at human and technical areas too. They have unanimously stated that, despite their qualifications, their environments do not consider their knowledge and their self to be equal, and this is constantly evident during daily work and communication.

The most visible problem is the missing base of secondary education for science subjects. This is indicated by the informants when they list deficiencies such as proper tools, well-trained teachers, self-confident, methodological knowledge and aptitude of teachers. All educators also mention that private schools are generally exceptions to this. There are the same problems there, but they pay more attention to the encouragement and development of the students, but they are only available for a narrow layer.

It is a part of it - said a university lecturer from Eldoret, Moi University -, that many of them go to work abroad and the country loses them. Together with their colleagues, they are thought to be retained and involved in training, education. However, another question here is whether a good professional is a good teacher at the same time.

According to several students and teachers, school teaching is usually based on a usual way of frontal teaching and explanation, and pupils make a lot of notes and copy from the board. It is also alien to lifestyle-based learning. A group of eight students in mathematics thought that: "You have to use the methods and tools available from local traditions. For example, bao (a strategic board game requiring traditional calculation) is a good tool for developing logic, planning, and mathematical thinking, but no one is using it. They think too playful, not suited to science and a university degree. But I think so. How do I convince the teachers of European knowledge about this? I do not know."

Another student adds that reading habits also hinder successful learning, and that in higher education there is a lot of note-taking and writing-orientedness, but many do not complete it reading. More informants believe that they can now be read on electronic surfaces so the writing and reading books is not nedd any more.

It is also interesting that, despite all the difficulties, all complaints are generally positive for community secondary schools, even if they provide a poor environment for quality education. This is what I found out by locals about secondary schools in different areas.

Conclusion

The study reveals that the challenges facing Africa cannot be swept under the carpet, but there is a need to develop and develop modern techno-technology and science for the cultural confidence of countries, ethnic groups and individuals.

It can be deduced that sociocultural factors, including students' cultural identities and conflicts, influence their participation and consequently their learning. The lack of culture-friendly content and local knowledge in modern education is a lack of confidence, which leads to a loss of confidence.

It is important to have the self-esteem and self-confidence of communities and individuals. It is a condition for the assessment of skills to be in place and the belief in innovation capabilities to be permanent. Africa should therefore be at the center of its own continent, not just as a spectator, but as a role in recognizing its own societies, cultivating culture through education and not redrawing boundaries. Essential: community thinking, learning to accept, learn to participate. The school cannot be a representative of any foreign world but a mediator of one's own culture and confident action. The role of African graduates in the development process cannot be underestimated, but much more could be achieved if the system that produced them was based on a solid cultural background of the stakeholders.

To realize this, it needs to recognize and rehabilitate local culture. Technology, ICT, offers a good opportunity to gather and process local cultural knowledge in the education process. It has to be seen as an opportunity and to develop cultural content and forms of work to encourage students.

This can be done by attentive planning, developing new knowledge from the lower level of the school, if they pay attention from the beginning to reinforce the desired skills. It is therefore worth investing in teacher training programs and encouraging further education towards science and technology.

Author' biography

The author is an ass. Professor, Head of Management Office. She is a teacher of pedagogy and cultural anthropology.

Main interests: development of social skills, intercultural competence, cultures and educational systems outside Europe, international development programs, educational methods. She has a wide range of knowledge in African cultures, had done fieldworks in East-Africa. uses the participant observation in research, in her lectures. She also studied educational methods in a study tour to Asutralia.

She takes part in planning of teaching curriculum, teaching, training materials, in competence development programs. She teaches pedagogical, multicultural subjects for engineers and mentor specialized students.

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