

[Keynote Speech]

“Teachers: the Bridge to Future of African Education”

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From Chemistry to Education

When the organizers of this Forum saw my short biography they thought it might be interesting for me to talk about how I went from chemistry to education. The simple explanation is that this journey is in large part due to a series of fortuitous events, perhaps being in the wrong place at the wrong time. Although my doctorate is in physical chemistry and I taught the subject in two universities, in Ireland and Zambia, I have betrayed my training and spent nearly 40 years of my working life in education. But I have no regrets because it has been a fulfilling career.

While driving from the University of Zambia campus in April 1975 I saw a Land Rover with wounded people sitting by the roadside. Out of curiosity I stopped to check and was surprised to hear them speak my mother tongue. I then found they were wounded combatants coming from the war front. This incident had a profound effect on me. For days on end all I could think of was the site of those wounded soldiers fighting to free the people of Zimbabwe, then Rhodesia including me. The more I thought about the sacrifices they were making the more my life appeared empty.

It did not take me long before I resigned my teaching job – actually broke my contract with the university and joined the struggle. At first the fighters were very suspicious of me -- why would a person with a comfy teaching job join their struggle. A couple of years later I was elected into the leadership and assigned the portfolio of human resources including education. My remit was to organize education programs for youths who were too young to fight i.e. under 18 years of age and training programs for wounded fighters.

In Mozambique I organized 12 schools for over 12,000 students and a teachers college. The college and schools were all under trees. I learnt a lot about education specifically that with competent and motivated teachers, appropriate learning materials and willing students, one can implement a very good system of education. When we were not being attacked by the Rhodesian forces, my colleagues and I spent our time researching and developing the underpinnings of Zimbabwe's future education system. The efforts culminated in two important innovations that we took to the new education system; (i) a new system of training teachers that formed the basis of ZINTEC -- Zimbabwe Integrated National Teacher Education Course and (ii) ZIMSCI – Zimbabwe Science, an approach that uses kits to teach science without the use of conventional laboratories. The latter played a central role in the teaching and learning of science and mathematics as secondary education was expanded more than 400% in the early years of independence. Many people have said that in the early years of independence Zimbabwe had one of the best education systems in Africa. This is in large part due to the foundations laid down during the struggle for independence.

In addition, I organized training programs for wounded combatants and other students in various disciplines including aircraft pilots, engineers, doctors, economists etc. in a number of countries, for example, Ethiopia, the Federal Republic of Germany, Malta, Cyprus, Pakistan and Guyana. I basically sought and took every opportunity to get our people trained for when the country would be free and in need of skills.

After nine years as education minister I went to the World Bank where I served in various capacities including as Sector Manager for Human Development – Education and Training, Health and HIV/AIDS and Social Protection for 16 countries in Eastern and Southern Africa. Since retired, I have been Chair of the Association for the Development of Education in Africa (ADEA), continued to consult and sit on the boards of a number of organizations including Results for Development Institute, a Washington think tank and Friends of FAWE USA, all concerned with education. That in a nutshell is how a chemist betrayed his profession.

Teachers

Now I will turn and talk about teachers. Nelson Mandela has said, “Education is the most important weapon with which to change society”. Education is particularly important, if Africa is to develop its human resources and catch up with the rest of the world. Education is capital and labor intensive. This is why there has been a preoccupation with initiatives that could replace classroom teachers. When the radio was invented many thought it could serve as a substitute. There have been many pilots of using the radio for instructional purpose, some of them quite successful. The advent of TV generated a lot of hype. From TV we have progressed to experimenting with videos, computers and the internet. While these tools have certainly helped in substituting some aspects of a teacher’s role they have so far failed to completely replace the classroom teacher.

Last month I read about a self teaching experiment called the *Miracle of Wenchi* in which Ethiopian kids are using tablets to teach themselves. The bold idea behind the pilot which is sponsored by the Massachusetts Institute of Technology (MIT) in Boston is that children can learn independently if they are provided with computers loaded learning programs, films about animals and far away countries, arithmetic games in both English and Amharic. The children are allowed to do as they please in the hope that they can teach themselves and learn from each other. If the experiment is a success, could the same approach be used to help over 60 million children worldwide who have no access to school? The hypothesis is that children are autodidacts – they do not have to be taught to walk or speak. The jury is still out as to whether this will work or like so many other hypes before it will prove that you cannot completely do without teachers.

Meanwhile teachers will continue to constitute the single-most important input into the education process, be it in terms of determining learning outcomes, success of education reforms or costs. They also often constitute the largest share of a country’s civil servants. And yet, education strategies often pay little attention to factors affecting teacher effectiveness, such as policies for training, deployment, management, incentives, supervision and accountability for learning outcomes. Moreover, in many countries, and especially in SSA, the economic stagnation in the 1980s and 1990s led to drastic decline in salaries, with associated decline in teacher morale.

Despite some progress over the last decade, *on average* (there are variations between countries) the real value of primary school teacher salaries in SSA is just back to where it was in the mid-1970s (UNESCO-UIS, 2011). Despite some progress over the last decade, teachers’ working conditions remain poor in most low-income countries, with large class sizes and limited access to professional support, in-service training, and learning materials.

Despite the progress made in closing the gap in teacher provision a lot remains to be done. According to UIS, 1.7 million new teaching posts are needed globally to achieve UPE by 2015 with the majority, 993,000 in Africa. Because of attrition, SSA will need to recruit 1.8 million to achieve UPE and maintain the current work force levels. Within the

continent there is a wide variation in the demand for teachers. While some countries have adequate teachers the greatest need is in 24 countries situated in Central and West Africa, with Eritrea (24%), the Central African Republic (16%), Chad (16%) having the largest gaps.

This does not include the even more difficult need to provide for the rapidly expanding coverage of ECCE. Currently the Gross Enrolment Ratio (GER) in pre-primary in SSA is only 17% compared to the next lowest region, 48% in South Asia. Expansion of ECCE will demand larger numbers of new teachers than the above figures.

While most of my focus is on primary teachers because of the EFA target to be made by 2015, one cannot ignore the needs of secondary education which are even more serious than those of primary. Because of the poor quality and lack of motivation of secondary teachers the education outcomes at this level are appalling.

Overall, the capacity of training institutions to “produce” teachers is weak, but varies greatly from country to country. For example, Kenya and Zimbabwe produce surpluses that exceed their demand. On the other hand, in Francophone West Africa, capacity is very weak. For example, Mali’s 13 teachers colleges produce 1500 teachers annually when the need is for 2000.

Because of poor working conditions teaching is viewed by many as a lowly profession, with only those students failing to enter prestigious occupations opting for teaching as a career. Many governments lack the resources to hire newly trained teachers. The result is that teacher-student ratios are often unacceptably high. For example, in some schools in Malawi ratios of 1: 80 are common.

While developing the teacher training, capacity needed is a huge challenge, that obstacle is often minor compared to the problem of financing the salaries of the teachers once trained. Therefore, recruitment of more teachers needs to be accompanied by concerted and consultative efforts to use available teachers more effectively. As shown in Bruns et al. (2011), many developing countries are now developing strategies for doing that by introducing a variety of reforms to increase teachers’ accountability for education outcomes through interventions such as generating and disseminating information about schooling rights and responsibilities, resources received and outcomes; decentralization of school-level decisions to various types of school-level bodies; and policies that link pay or regular recruitment to performance. But developing sustainable options is complicated by the fact that the ability of ministries of education and teacher unions to interact constructively is often quite poor. In many African countries these issues are often either neglected or given scant attention.

A number of factors impact on the demand for teachers including population growth, policies on repetition, teacher-student ratios, attrition rates, and conflict. The population of Africa continues to grow at an average of 1.75 annually. This means additional teachers are needed.

Repetition has serious implications for the demand of teachers and education cost. Although this varies from country to country on average 6% of students repeat a grade. Many ministries cannot even explain why students have to repeat a grade. On average teacher-student ratios were 1:53 across Africa. When I was minister of education our ratios were much more favorable than these. However there were times when we tinkered with the ratios in order to accommodate budgetary constraints.

Attrition rate – the flow of teachers leaving the system every year for various reasons – varies widely from a low of 2% in Eritrea and a high of 9% in Zambia. Conflict is very destabilizing for education as parents become preoccupied with the safety of their children. In 2007 there were 22 armed conflicts in Africa. For example, the post election violence in Kenya displaced 1800 teachers while over 80,000 students and teachers were displaced by armed conflict in the Eastern Democratic Republic Congo (DRC) this last November.

There are a number of challenges around teacher issues. First, in Africa trained teachers are not necessarily knowledgeable or professionally skilled to be considered qualified. Several countries have had to resort less qualified or even untrained teachers to man their schools. Ivory Coast, Djibouti, Mauritania, Morocco and Mauritius report that all their primary teachers are trained. Sixteen (16) countries out of 34 for which data were available in 2009 -2010 report an average of 75-99% qualified teachers. Six (6) countries (Benin, Chad, Equatorial Guinea, Ethiopia, Guinea Bissau and Sao Tome and Principe report an average of 50% trained teachers.

Second, as stated earlier that there is a high variability of average teacher's salaries, across the continent the range is 1.6 to 9 times per capita GDP. The average was reported to be 3.5 times of per capita GDP in 2006 and to have increased to 4.5 times in 2010. If this trend were to continue what are the implications for education expenditure?

Third, a key challenge is the undersupply of science, mathematics and technology teachers with serious implications for Africa's ability to produce a critical mass of scientists who will play a decisive role in propelling the continent into the knowledge economy of the 21st century. A plethora of initiatives have been launched to address this including Next Einstein Initiatives in Cape Town (South Africa), African Union (AU), African Development Bank (AfDB) and United Nations Economic Commission for Africa (UNECA) Initiative on Science in Africa.

Here I would like to acknowledge with appreciation the tremendous contribution of JICA to the training of Math and Science teachers under the rubric of ADEA's Working Group on Science and Mathematics Education, SMASE, a program that is based in Nairobi, Kenya. Under its Third Country Training Program (TCTP) the WG has trained 1,300 math and science teachers. As these trainees are Training of Trainers (TOTs) the multiplier effect has been huge. In addition SMASE has launched a large number of workshops and conferences on the teaching of math and science.

Fourth, improving coherence in teacher allocation to schools is a key challenge. A basic criterion is that schools with similar size of enrollment should have more or the same number of teachers. This should be applied throughout the territory to combat urban/rural and rich/poor disparity. Inequitable distribution can compromise the achievement of UPE and negatively impact on education quality. For example, in Burkina Faso some schools with 400 students have 8 teachers, while others have as few as four. Similarly schools with 10 teachers can have enrollments varying from 210 to 877 students.

Fifth, service conditions, status and motivation have a direct impact on whether the profession can attract the best talent. Teaching is today viewed in very unfavorable terms and fails to attract and retain the brightest talent. ADEA has done some work on this under the Bamako Initiative (2004) and Bamako+5 (2009) focused on contract teachers but also taking on board various category of teachers, civil servants, contract, community, voluntary and others.

Several initiatives are in play to address the need for qualified teachers in Africa with the following being the most

significant:

- UNESCO Teacher Training Initiative for Sub-Saharan Africa (TTISA) launched in 2005 aims at improving the quality and supply of teachers.
- African Union Pan-African Conference on Teacher Education and Development (PACTED) launched in 2011 aims at also improving conditions of service and the supply of primary teachers.
- Commonwealth Secretariat Teacher Education in Sub-Saharan Africa (TESSA) launched in 2006 aims at improving the supply and quantity of teachers in Africa.
- International Task Force on Teachers for EFA, an initiative hosted by UNESCO Headquarters in Paris strives to improve the supply of teachers to meet the EFA goals by 2015.

In short, from whatever angle the “teacher issue” is approached, it is a major concern for education policy makers, a concern that will grow in importance in the coming decades.

Dzingai Mutumbuka is Chair of the Association for the Development of Education in Africa (ADEA), a network that brings together all African education ministers, researchers and donors supporting education in Africa. He also serves on the Board of a Washington Think Tank, Results for Development and is a Board member of the Forum of African Women Educationists (FAWE), USA. Previously, Mr. Mutumbuka held various senior positions in the education sector at the World Bank from 1990-2007. Prior to joining the World Bank, he held major elected and political appointments in Zimbabwe, including supervising the implementation policies in six ministries (Education, Health, Social Welfare, Youth and Sports, Community Development and Women's Affairs). He served as Minister of Education and Culture from 1980 to 1998 and Minister of Higher Education from 1988 to 1989 when the former portfolio was split into two ministries, Primary and Secondary Education and Higher Education. He served as Chairman of the Zimbabwe National Commission since Zimbabwe joined UNESCO in 1980. Mr. Mutumbuka holds a B.Sc from the University of London and a Doctorate in Physical Chemistry from the University of Sussex in the UK.