A COMPARATIVE STUDY OF MATHEMATICS TEACHER EDUCATION PROGRAMMES FOR THE BASIC EDUCATION IN NIGERIA AND FINLAND

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Abstract
It is an undisputable fact that teachers are key players in achieving quality education particularly in bringing about reforms as Article 69 of the Dakar Framework for Action recognizes. Teachers are not just the hub around which every other factor affecting the quality of education revolves but advocates for and catalysts of change. This work looks at some of the similarities and differences between the mathematics teacher education and training given to the 9-year basic education teachers in Nigeria and Finland by examining (a) the education system in both countries b) the overview of mathematics education in both countries, and c) mathematics teacher education and training at the 9-year basic education level. The following points of comparison are covered: an overview of mathematics education and mathematics teacher education and training. Recommendations were made on how to improve mathematics education in Nigeria.

Introduction

The education system in Nigeria had a turning point in September 8, 1969 when the first National curriculum conference was held after Nigeria independence in 1960. Since then successive governments in Nigeria have tried to better education by the use of education policies. In 2004, the Federal Government of Nigeria launched a new educational policy, which has among other features, the Universal Basic Education (UBE) program; this takes care of all the educational necessities of basic one to nine as well as making sure that every Nigerian child gets at least 9 years basic education. The UBE curriculum at the lower basic level includes: primary 1 - 3, middle basic level, primary 4-6 and the upper basic levels, Junior secondary school (JSS) 1 -3. The compulsory and elective courses are to ensure that UBE graduates acquire an appropriate level of literacy, numeracy, manipulative, communicative and life coping skills. The UBE reform program of 2008 made a comprehensive review of basic education curriculum with a view to enhancing relevance to local and national aspirations. The commendable objectives of the UBE notwithstanding, the scheme has not sailed so smoothly to now.

The education system in Finland underwent extensive revision in the 1970s, which led to the main cause of Finland entering the information age (Lavonen, Meisalo, Sormunen, & Vesisenaho, 2010). The education system was rebuilt with careful attention given to every detail "from curriculum and textbooks to salaries and administration" (Aho, Pitkänen, & Sahlberg, 2006), with a particular focus on both teacher education and providing an equally high-quality education to all students across the country. Now, because of the immense amount of planning and attention paid to the education system and because enough time has passed to allow these changes to take effect, education in Finland has become a subject of interest for researchers around the world (Burridge, 2010). Due to government concern for the children and young

people's growth they provide for free, almost all types of services concerning them. Schools are favorite work environment the classrooms are well furnished and well equipped.

Finnish children's success in mathematics according to International comparisons was as a result of their impressive performance on the Programme for International Student Assessment (PISA) tests over the last decade in language, science, and mathematics. This has made their education system very much admired all over the world. In 2000, 2003 and 2006, they ranked very highly in mathematics, science and language on the Programme for International Student Assessment (PISA) tests organized by the Organisation for Economic Cooperation and Development (OECD, 2007; 2004; 2003). In addition, the children from Finland had high scores in the TIMSS tests in 1999. According to Partanen, (2011), Finnish pupil did very well due to their teachers' use of innovative teaching methods compared to other countries.

The Education System in Nigeria

One of the main objectives of Nigerian education system is the inculcation of the right type of values and attitudes for the survival of the individual and the Nigerian society. The training of the mind in the understanding of the world, the acquisition of appropriate skills and the development of mental, physical and social abilities and competencies as equipment for the individual to live in and contribute to the development of the society National Policy on Education (NPE, 2020). The current education system in Nigeria called Universal Basic Education (UBE) which is free, compulsory and the duration is nine years. According to Nigerian Educational Research and Development Council, (2008), the philosophy of the UBE is to make sure that the children acquire the appropriate levels of literacy, numeracy, manipulative, communicative and life skills as well as ethical, moral and civil values needed to lay a solid foundation for lifelong as a basis for scientific and reflective thinking. From the UBE programme, the children will start school at the age of six years and graduate at the age of twelve years. At the end of six years the child is awarded Certificate of Primary Education (CPE), this qualifies him/her to move to the junior secondary school (JSS) which serves as a terminal point and a foundation for the senior secondary stage or an apprenticeship or some other scheme for out-of-school vocational training. The post-junior secondary education is determined based on the result of their Junior Secondary Certificate Examination (JSCE) examination at the end of three years. The Federal Ministry of Education administers this (JSCE) for students of the Federal Government Secondary Schools (Unity Colleges) which is owned, run and financed by them, whereas, each of the 36 states of Nigeria including Abuja is responsible for the administration of her own Junior JSCE. After the JSCE the students may continue their post-junior secondary education or craft/vocational school for three years. After three years of post-junior secondary education or craft/vocational school, students who pass the West African Senior Secondary Certificate examination (WASSCE) and National Examination Council (NECO) with credit grades in at least five subjects (including English and Mathematics) if successful in Joint Admission and Matriculation Board (JAMB) may then continue their studies at a university where they would follow four-year courses leading to Bachelor's degrees. The students who could not meet up the JAMB cut-off mark for University admission then go to either the college of education which runs for three years, leading to the Nigeria Certificate of Education (NCE) which is currently the highest non-degree level of professional teacher training qualifying the holder for primary and lower secondary levels of teaching. The greater part of college of education students are drawn from: senior secondary school and vocational school graduates.

The adopted subjects for UBE are: English Studies, Mathematics, Cultural and Creative Arts, One Nigerian Language, Basic Science, Basic Technology, Physical and Health Education Information Technology (IT), Home Economics, Agriculture, Entrepreneurship, Christian Religious Studies/Islamic Studies, Social Studies, Civic Education, Security Education, French to be introduced from primary 4 as a core subject, Business Education is to be introduced in JSS one, The Arabic Language is optional. Primary 1-3 are to offer a minimum of 7 subjects and a maximum of 8 subjects, primary 4-6 to offer a minimum of 8 subjects and a maximum of 9 subjects, then the Junior Secondary School (JSS) 1-3 students are expected to offer a minimum of 9 and a maximum of 10 subjects. The following subjects were also included: Entrepreneurship in Pre-Vocational Studies, IT in Basic Science and Technology, Creative and critical thinking and relevant elements of the National Economic Empowerment and Development Strategy (NEEDS) into the relevant contents of the curriculum, others are: Drug Abuse Education, Peace Education, Road Safety Education, Consumer education, Food, and Drug Safety element, National Values and Orientation, Disaster Risk Reduction Education etc. in the curriculum. The implementation of the new BEC structure began in September 2013.

The Education System in Finland

Today's school system of Education in Finland is a result of the related reform of the 1970s. The major reform was in the establishment of the Comprehensive School upon the School System law of 1968. Finish education system has not only become an attractive and internationally examined example of a well-performing system that successfully combines high quality with widespread equity and social cohesion through reasonable public financing (Sahlberg, 2006) but its outcomes have received wide international attention since the beginning of the new millennium due to the so-called "PISA effect". The education system consists of a compulsory education which lasts nine years and it is called a comprehensive school which consists of two levels: Lower Level for grades 1 to 6 and Upper Level for grades 7 to 9. The Lower level is the Primary School which includes grades 1 to 6 and teaching is provided by classroom teachers then the Upper level is Junior Secondary School which includes grades 7 to 9, teaching is provided by subject teachers. The upper secondary school includes grade 10 to 12, teachers are subject teachers and they usually teach one or two subjects. After attending comprehensive schools, children can attend either an upper secondary school or a vocational school for the three years and both can lead to higher education. Entrance requirements to upper secondary school are good grades in comprehensive school. It depends on the upper secondary school how high the average value of grades must be at the end of comprehensive school. According to law, the entrance requirement to upper secondary school is the syllabus of comprehensive school (Ministry of Education, Finland, 2009). Teaching in Upper Secondary Schools and Vocational Schools is provided by subject teachers as earlier stated. A remarkable difference between upper secondary school and comprehensive schools is that, in upper secondary schools, students have to buy textbooks, notebooks, pencils, calculators themselves and transportation to school is not the responsibility of the school, whereas in comprehensive school practically everything is free; besides, the pupils get a free warm meal at school every day. Private schools are exceptional and even though the school is private, there are no tuition fees. Thus the school does not depend on parent's wealth. The comprehensive school attended depends mainly on geographical position, in other words, a pupil's domicile. More than half of the pupils go on to upper secondary schooling after completing comprehensive schooling, which ends with the matriculation examination which is required for pursuing university studies. The final stage is higher education

and adult education. The basic education syllabus includes at least the following subjects: mother tongue and literature (Finnish or Swedish), the other national language (Swedish or Finnish), foreign languages, environmental studies, civics, religion or ethics, history, social studies, mathematics, physics, chemistry, biology, geography, physical education, music, visual arts, craft and home economics.

Overview of Mathematics Education in Nigeria

Mathematics is one of the key subjects, hence it is made compulsory from Primary to Secondary school levels. The restructured national mathematics curriculum for the basic education (primary and junior secondary schools) is focused on giving the children the opportunity to acquire mathematical literacy to function in an information age, cultivate understanding of the skills necessary for the changing technical world, develop the essential element of problem solving, communication, reasoning and connection within the study of mathematics and understand the major ideas of mathematics bearing in mind that the world has changed and is still changing Nigerian Educational Research and Development Council (NERDC, 2007). The curriculum tries to make mathematics more of real life than an abstract concept and advocate training and re-training of mathematics teachers to update their technology and competence and acquire more teaching skills (Ekwueme & Meremukwu, 2010). The new national mathematics curriculum has come from basics one to nine, hierarchically arranged. The pupils at the nine years compulsory basic level would now be taught core basic subjects: English language, mathematics, and basic science (NERDC, 2009). This national position reflects the importance attached to mathematics in the educational system and the vital role it plays in the contemporary society. At the most basic level, the knowledge of mathematics is essential in the conduct of everyday living. In commerce, engineering, and the natural and social sciences, advanced mathematical concepts and techniques are indispensable tools. Apart from the fact that success in Mathematics enhances the quality of students' General Certificate of Education (GCE) certificates, the trend has shown that in order to secure admission into all courses at university level, a credit pass in the subject is needed. Thus the study of mathematics in schools represents a basic preparation for adult life and a gateway to a vast array of career choices. From the societal perspectives, mathematics competence is essential for the preparation of an informed citizenry and for the production of highly skilled personnel required by industry, science and technology. Enumerated below are the essential characteristics of the new Nigeria National Mathematics Curriculum (NNMC): (a) Its layout has five headings:-topic, objectives, content, activities/materials and remarks. (b) The integration of all the relevant and useful ideas from the so-called 'modern' and 'traditional' mathematics. (c) The attempt, as much as possible, to relate mathematics to other subjects as well as to everyday activities. (d) Its presentation of contents as activity packages: various essential activities leading to the mastery of concepts are specified more than ever before; it provides useful guides to the teacher without the slightest suppression of his initiative. (e) The syllabus is divided into two levels: i) the junior secondary mathematics curriculum(JSMC) for the first three years of secondary education in Nigeria; and (ii) the senior secondary school mathematics curriculum (SSMC) for the last three years of secondary education in Nigeria; Each level is compulsory at the appropriate level. (f) The SSMC is split further into two sections: (i) The General mathematics [SSMC(gm)] and (ii) The Further Mathematics [SSMC(fm)]

The core content of the new 9-year basic education mathematics curriculum is arranged in themes for the nine-year period of primary 1 to 6 and junior secondary school years 1 to 3. By the completion of junior secondary school, a Nigerian student is expected to be proficient in

number and numeration, basic (mathematics) operations, measurement, algebraic processes, elementary geometry and mensuration, and everyday statistics. The new 9-year basic education mathematics curriculum has a three level structure namely: Lower Basic Education Curriculum (Primary 1-3), Middle Basic Education Curriculum (Primary 4-6) and Upper Basic Education Curriculum (JSS 1-3). There is a natural link between the primary school teaching and the junior secondary school materials. This, it was intended, should make the transition from primary to secondary as smooth as possible.

Overview of mathematics education in Finland

The objectives of mathematics education in Finland lay emphasis on problem-solving and application of mathematical knowledge and skills and the contents of mathematics education are presented in a concise and generic form by school level. The overall objective is to create uniform basic education, i.e. a continuum through grades 1-9. Perhaps the most significant feature behind the Finnish success in PISA mathematics has been the systematic development of comprehensive school mathematics curriculum which has continued since the early 1980s. Mathematics education in Finland has essentially two types of goals: improving student skills and changing student perspectives on mathematics Finnish National Board of Education (FNBE, 2003). The skills that Finland wants its students to acquire include (a) communication (both oral and written) of mathematical ideas, (b) the ability to solve application-type problems by making connections between mathematics and other topics, and (c) improvement of their calculation and problem-solving skills (FNBE, 2003). The Finnish curriculum also addresses the student's ability to explore mathematics through inquiry, to make predictions and conjectures and support them logically, and to find creative solutions to their problems; in short, the curriculum is designed to acclimatize students to a mathematical way of thinking (FNBE, 2003). The goals of the Advanced and the Basic curriculum in schools differ somewhat in their focus, but both curricula aim at instilling a confidence with mathematics in the students so that they are able to be creative with the subject and can explore it themselves through inquiry-based approaches. Both curricula also propose a certain perspective on mathematics itself as a goal, each stating that students should be able to understand the nature of mathematical knowledge as a logical structure. Both curricula also want to give their students a sense that mathematics is useful for something: the Advanced curriculum wanting its students to find mathematics as being critical for the development of science and technology, and the Basic curriculum wanting its students to see mathematics as playing a role in the development of culture, as well as being an essential tool for describing and modelling real-world phenomena. The Advanced curriculum is designed to prepare students for university or vocational school. Unlike the Basic curriculum, it alludes to getting students to see mathematics as its own subject with its own conventions and syntax, rather than being simply a tool for studying other subjects in applications. Until upper secondary school, all pupils study basically the same amount of mathematics.

Comparison of the Overview of Mathematics Education in Nigeria and Finland

Both the Nigeria and the Finnish mathematics curricula emphasize the effectiveness of inquiry-based methods to teach mathematics, thereby encouraging students to conjecture, experiment, and learn independently. It is prudent of the Finnish curriculum to note that this goal requires students to have mathematical confidence, as an increased level of confidence will make students more willing to experiment with ideas, thus increasing the effectiveness of inquiry-based learning methods.

Both the Nigeria and Finnish documents also maintain that mathematics is useful for students, regardless of whether or not they continue to study it or a related field in an academic setting. Additionally, both curricula cite creative and logical thinking as benefits to be gained from a mathematics education. The education system of both countries consists of a compulsory education which lasts nine years and it is called Universal Basic Education (UBE) in Nigeria and a comprehensive school in Finland, which consists of two levels: Lower Level for grades 1 to 6 and Upper Level for grades 7 to 9. Perhaps the most significant difference is the fact that there has been a continued systematic development of comprehensive school mathematics curriculum in Finland since the early 1980s.

Mathematics Teacher Education and Training in Nigeria

According to FRN (2004), teacher education program in Nigeria is offered in Colleges of Education, the National Teachers Institutes (NTI), Faculties of Education in Nigeria Universities, National Mathematical Centre and the Nigeria Language centre. Ejima (2010) also pointed out that Schools of Education in many polytechnics also offer teacher education programs. In Nigeria, the institutions and bodies are so many that one cannot vouch for uniformity and standards. According to National Policy on Education (2004), the objectives of teacher education in Nigeria are as follows: (i) To produce highly motivated, conscientious and efficient classroom teachers for all levels of our education system. (ii) To encourage further the spirits of inquiry and creativity in teachers. (iii) To help the teacher to fit into the social life of the community and society at large and enhance their commitment to national goals. (iv) To provide the teacher with the intellectual and professional background adequate for their assignment to changing situations. (v) To enhance teachers' commitment to the teaching profession (FRN 2004), to realize these objectives, certain institutions are charged with the responsibility to provide professional training for teachers. These are: a. Faculties/ Institutes of Education of Universities; b. Colleges of Education; (c) The National Teacher's Institute (NTI); (d) Schools of Education in Polytechnics; (e) National Mathematical Centre and; (f) The National Institute of Nigerian Languages

Students who pass the West African Senior Secondary Certificate examination (WASSCE) and National Examination Council (NECO) with credit grades in at least five subjects (including English and Mathematics) if successful in Joint Admission and Matriculation Board (JAMB) may then continue their studies at a university where they would follow four-year courses leading to Bachelor's degrees. The students who could not meet up the JAMB cut-off mark for University admission then go to either the college of education which runs for three years, leading to the Nigeria Certificate of Education (NCE) which is currently the highest non-degree level of professional teacher training qualifying the holder for primary and lower secondary levels of teaching or polytechnics for 2 years leading to Ordinary National Diploma or Certificate (OND/ONC) and then qualify for further 2 years education at polytechnic schools for Higher National Diploma or Certificate (HND/HNC). The bulk of college of education intakes is thus drawn from two main sources: senior secondary school and vocational school graduates. The NCE primary/secondary is awarded to students who successfully complete a three-year post-senior school certificate teacher education program in a college of education. Beyond the NCE, Nigerian universities offer courses leading to BEd, BA(Ed) or the BSc(Ed) degrees for teachers who wish to teach in Primary school, senior secondary school or post-secondary institutions (e.g. colleges of education). In the newly celebrated Approved Minimum Academic standard (AMAS) produced by the National Universities Commission (NUC), students in the Faculty of

Education offering mathematics with one of the following, physics, Chemistry, Statistics, Geography, and Economics will be awarded the B.Sc. (Ed) (Mathematics as major). The mathematics component is made of ratio 2:1 i.e. for one course in education, students must offer 2 courses in mathematics, or 67% of the total course offerings should be mathematics and the education component should be 33%. This shows that much attention is focused on the acquisition of the subject matter of mathematics. The 33% given to education is shared between theory and practical. A closer look at the AMAS reveals that only 3 to 4 hours of courses in methods are recommended for the entire period of training.

Class Teacher Education (Primarily 1-6)

The minimum entry qualification into the teaching profession in Nigeria is the Nigeria Certificate in Education (NCE). For class teachers of primarily 1-6, it is NCE primary; while that of JS1-JS3 is NCE secondary. As stated by FRN (2004), NCE holders are prepared and made to teach in the primary and junior secondary levels of education in Nigeria. Both the FRN (2004) and Teachers Registration Certificate of Nigeria (2007) pegged the minimum benchmark qualification to be registered at NCE.

Student Selection for Teacher Education

Teachers Registration Certificate of Nigeria does not regulate entrance into the teacher professional development in Nigeria. For instance, anyone can seek to be employed as teachers in Nigeria. In Nigeria, both the government and the private school proprietors employ anyone who has qualifications beyond the ordinary level or school certificate no matter the discipline. The matter is worse in the private schools where proprietors employ even secondary school dropouts and failures. This discourages people willing to enter the profession and so the profession becomes open to frustrated individuals who are not able to enter other professions or people who use teaching as stepping stone to other vocations. The major focus on high standards that support and extend teacher professional development is lacking.

Mathematics teacher education and training in Finland

Entry into a permanent teaching position in Finland is through a Master's degree, which normally takes five years to complete. The main routes to becoming a primary class teacher, a secondary mathematics teacher or a special teacher are different. It consists of many separate units which students study at different rates. Finnish teacher education has two traditional lines of development. The first and older line concerns the education of teachers for secondary education, and the second line refers to the education of teachers for elementary schools. Closely linked to this second line is the education and training of Kindergarten teachers. Today teacher education is a many-faceted field involving various groups of teachers including those working in day-care centers, vocational institutions, and adult education. Primary trainees generally embark on the five-year initial teacher education program to become a class teacher, having studied at least basic level mathematics in upper secondary school. After graduation from a university, students are licensed as teachers and may apply for teaching positions in schools. There is a very high application rate for primary teacher training, with only a small minority of applicants being successful. Universities are the institutions in which all the teachers have their pre-service education. Mathematics teacher education is still as before, and for more than 200 years, the responsibility of mainly university mathematicians. Educational studies for mathematics teachers are provided by the Faculty of Education. The Ministry of Education forms different

commissions and working groups to coordinate teacher education at different universities and assist the development of teacher education. In addition, the Ministry of Education and the National Board of Education set up working groups primarily of experts (Hytönen, 1996).

In Finland, Primary Teacher education is one of the most favourite fields of Study of Higher Education and Teachers' status makes teacher education a favourite field for study in Finland, especially primary teacher education, where learning reading and writing has given a special merit to Primary School Teachers for about one hundred and fifty years. At the moment all the school teachers in Finland must get a master degree, with one exception; M.Ed. (Master of Education) in the case of primary school teachers (Grades 1-6) and M.A. or M.Sc. for secondary school teachers (Grades 7-12). The exception is given to Day Care Centres (Kindergartens) teachers. The success in recruitment is to only a satisfactory level in the case of mathematics teacher education, but it is one of the most popular studies in higher education in the case of Primary teacher education. There is free access to computers and printers and all computers are linked to the Internet. Students have daily access to computers, so that, among others, they can check their e-mails. Teachers have no restrictions to the number of photocopies they make and distribute to children as learning materials. Such materials and others, for art for example, are free. So this interest of the state in the growth of children and young people attracts young people to apply for teacher education study.

Class teacher education (Grades 1-6)

Teachers of grades 1-6 are class teachers with responsibility for teaching all the school subjects for one class. In larger schools, there are teachers who teach normally only one of the two first grades. Most of these teachers have an initial education specialization in the teaching of these two grades. Also, in larger schools, there are teachers who normally teach only two grades, grades 3 and 4, or grades 5 and 6. It could be also that some teachers teach the last three grades, 4-6. The most common situation is to have teachers for grades 1-2 and others for grades 3-6. A teacher usually moves to the next grade as his/her students' progress through the school. In class teacher education, the major field of study is education and not subjects. The usual pattern for mathematics and mathematics education in Primary School teacher education is to have about 2 or (30-40 teaching hours) for studying mathematics and an equal amount for mathematics education. In both studies, and in most departments, this amount is divided into two equal parts, one part for lectures and the other one for practices. Practices usually take place in groups of about 15-20 students. In the case of the mathematics course, the content could be mainly in studying Mathematical Logic, Sets, Relations and Functions, or just dealing with primary school mathematics content or something between. It could also be a study in which the main part is related to studying the nature of mathematics, mathematics as an element of culture and the development of mathematical ideas.

Teacher Education of Mathematics Teachers (Grades 7-12)

In Finland, Mathematics teaching in Secondary schools (Grades7-12) is provided by subject teachers, those who have received their education at the Faculty of Mathematics and Natural Sciences, referred to here as the Faculty of Science. In most cases, students train for mathematics teaching and physics teaching and/or information technology. In addition, he/she could train to be a teacher of chemistry. Mathematics might be not the major field of teacher pre-service education, especially for those who are teaching in Grades 7-9. It could be the second and, in some Junior Secondary Schools (Grades 7-9), the third field of specialization. By choosing to specialize further in mathematics during the final two years of their course, primary teachers can

become qualified to teach mathematics at lower secondary schools too, although not all choose to do so. For secondary trainees, the majority of time is allocated to mathematics, sometime to a subsidiary subject and some to education. Many complete a three-year undergraduate degree in mathematics before converting to secondary teaching and gaining their Master's degree. Some gain experience through temporary teaching before or during their studies.

Student Selection for Teacher Education

In Finland, the recruitment situation for classroom and subject teacher applicants is different in the sense that those who want to become classroom teachers study education as their major subject and begin their studies in a teacher education program. Prospective subject teachers apply to be admitted to studies in the respective subject in another faculty and choose teacher education later, usually after two years. There are two phases to the selection process for primary school teacher education: First, a group of candidates is selected based on matriculation examination results, the high school diploma issued by the school, and relevant records of out-of-school accomplishments. In the second phase: (1) Candidates complete a written exam on assigned books on pedagogy. (2) Candidates engage in an observed clinical activity replicating school situations, where social interaction and communication skills come into play. (3_ Top candidates are interviewed and asked to explain why they have decided to become teachers. These highly capable candidates complete a rigorous teacher education program at government expense. They then participate in given teaching situations and take part in a personal interview. The students continue their studies in their own departments and at the same time undertake studies in education, usually for two additional years (35 credits in education).

In-service Teacher Education in Finland

The in-service education of teachers is well organized in Finland, with different organizations providing different types of courses. For instance, the ministry of education and the national board of Education provide different types of in-service education in mathematics teaching and local educational authorities of different levels up to school level provide in-service education courses for primary and secondary school teachers. Universities and teachers' associations also provide in-service education on mathematics teaching both locally and nationally. Furthermore, Mathematical Subjects Teachers Association, Class Teachers Association, Teachers of Early School Grades Association (Grades 1 and 2) and Specialist Teachers association provide in-service education at different levels, local and national level. Each university has a centre for continuing education and each province has a Summer University. Both provide different types of education, including in-service education for teachers. Teachers in comprehensive and upper secondary schools have some yearly mandatory in-service training days.

Comparison of Mathematics Teacher Education and Training in Nigeria and Finland

A comparison of mathematics teacher training and curricula in Nigeria and in Finland reveals structural and content-related differences. These differences, however, show the strengths and challenges in both countries. The minimum entry qualification into the teaching profession in Nigeria is the Nigeria Certificate in Education (NCE) whereas all Finnish teachers are required to have a Master's degree in pedagogy or in the subject they will teach. In Nigeria, a mathematics teacher must have a diploma or/ degree but not necessarily in mathematics. In Finland, secondary school teachers must have a degree in their field (to be a mathematics teacher in Finland you must have a Master of Science (M.Sc.) degree), and all Finnish teachers must conduct their own

research to complete their Master's thesis. In both countries, there are education studies and also teaching practice which is, however, supervised slightly differently. Universities offer education for secondary school mathematics teachers both in Nigeria and in Finland. Admission to university in Nigeria requires passing Joint Admission and Matriculation Board (JAMB), whereas in Finland there are also entrance examinations.

Conclusion

Nigeria educational practices cannot adopt that of Finnish indiscriminately; there are significant differences between Nigeria and Finnish societies that would make such a move untenable. However, there are key lessons that can be distilled from the Finnish system and applied to Nigeria to improve mathematics education. Since it emerged in 2000 as the top-scoring OECD nation on the international PISA assessments, researchers have been pouring into the country to study the "Finnish miracle." How did a country with an undistinguished education system in the 1980s surge to the head of the global class in just a few decades? Research and experience suggest one element trumps all others: excellent teachers. This was made possible by the crucial role that teachers and teacher education have played in the dramatic transformation of Finland's education system. For Nigeria to thrive in our quest for excellence in mathematics education I will make the following suggestions:

Suggestions

1. The status of the teaching profession

The government and Policymakers should overhaul the structure of the teaching profession in Nigeria; to do this i) get those essentials right drives up the status of the profession; ii) make teaching a preferred career choice for large numbers of top-performers; iii) make entry to teacher training highly selective iv) develop effective processes for selecting the right applicants to become teachers; v) pay good starting compensation; vi) recruit the top-performing graduating mathematics students from the University as teachers. It should be noted that in Finland, the status of the profession was one of the most important factors in their decision to become a teacher.

2. Regular in-service mathematics teacher education

Teacher education and teacher professional development should form a stronger continuum, with induction available to all teachers and included as part of lifelong professional development. The only way to improve outcomes is to improve instruction and to improve instruction you must improve the teacher.

3. Creating satisfactory conditions of work

Funding of educational institutions has to be undertaken in a manner to ensure the provision of needed materials in schools. There is a seemingly complete absence of furniture in most if not all public schools in Nigeria. Adequate funds must be voted to cater for infrastructures, facilities such as classrooms, computers, internet facilities, laboratories, furniture, conve-niences, teaching and learning materials.

4. Research-based teacher education programs

There should be the development of rigorous, research-based teacher education programs that prepare teachers in content, pedagogy, and educational theory, as well as the capacity to do their own research, and that includes field work mentored by expert veterans.

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