

ENHANCING FEMALE ACQUISITION OF SCIENCE, TECHNOLOGY AND MATHEMATICS EDUCATION IN KANO STATE

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The research was intended to assess the relative abundance of females in Science, Technology and Mathematics Education (STME) in Colleges of Education in Kano State. These females would later become teachers of sciences and introductory technology courses under the new moral code of the state which de-emphasizes unmarried male-female interactions in most spheres of life. A compendium of female enrolment in these colleges in the 2000 /2001 academic session revealed that the colleges are seriously recording very low level of feminine presence in STME disciplines. It is recommended that the state government should create the enabling environment for intensive female education by removing the notable roadblocks on the path of females wishing to take up the challenges of enrolment for STME in Colleges of Education.

INTRODUCTION:

The education of the female folks in Nigeria has witnessed a very slow growth as it was thought a sacrilege to bring them up to be educationally at par with their male counterparts. This is in response to the age long erroneous belief that the roles of women should focus primarily on child bearing and rearing as well as in home making. The adherents to this belief see it as a waste of resources to expose females to functional formal education to equip them with the needed credentials to effectively compete with their male counterparts for formal job placement and other considerations. Preference for children education was usually given to the boys in families where both the boys and girls are of school age.

Kano State is predominantly a moslem state and embraces Islamic education to the-hilt. The scholars avail themselves of available opportunities to acquire traditional vocational education, which the system affords. However, this type of education does not expose its recipients to the tenets of scientific and technological literacy as is known today.

The local custom encourages the practice of early marriages under which females are married off before attaining the age of seventeen. Soon after such marriages the females are locked off from further education and civilization as most of them are confined to purdha. Hence, Ifeyori (1996) asserted that most women in the rural areas of Nigeria lack education to secure employment in the formal sector.

The attitude of females from this part of the country also predisposes them to explore less viable means of self-sustenance. Such means include food vending, hawking of articles, operating of drinking parlours, brothels or engaging in outright prostitution. They shun formal Western Education for lack of proper foundation and orientation.

The realization of the enormous roles women play in the society as housewives, mothers, social mobilizers, breadwinners and citizens (Ugwuogo, 1998), informs the call for a well planned programme for female education and emancipation from squalor. Efforts towards female emancipation from cultural restrictions have been reported in Sokoto State where Hajiya Nana Sifawa (a female) operates a commuter bus service as a driver for transporting only female passengers (Weekly Trust,

2001: 26), as well as in Fagge Local Government Area of Kano State which acquired two vehicles and five motorcycles to be operated on commercial basis and hopes to train female drivers and conductors (New Nigerian Newspaper, 2001: 1).

In its endeavor to enhance women empowerment, scientific and technological literacy, self-fulfillment, as well as ensure their optimum contribution to the technological development of Nigeria, the Katsina State Government of Nigeria has established a Government Girls Technical College at Chiranchi. Similarly, the Federal Government of Nigeria has established the Federal College of Education (Technical) Gusau, Zamfara State, for females only. Notably, no such technical institutions exist in Kano State for females only. However, its encouragement for mass grassroots education for all through provision of free lunch to all primary school pupils in the state is noted and commendable.

Despite these and other innovations towards the education of the girl-child, Akambi, Alhamdu and Muhammad (1995), lamented that women are still plagued by a low-level enrolment into tertiary education. The negative societal perception of the educated women also gives credence to the low motivation women receive to study Science, Technology, and Mathematics Education in Colleges of Education. This negative perception on the girl-child education is partly responsible for their being brought up (Amazygbo, 1992) to be less analytical and less capable in mathematical subjects. Ayanniyi, (1997), further regrets a situation where an educated woman is rated as good as a counterfeit man. Another possible contributing factor for the lack of zeal for STME in Kano State by females is the lack of utilitarian status ascribed to most certificates acquired by women. Alhamdu and Eniayeju, (1995), noted that some men are resentful of their wives picking up paid employment. The reason for this being either to prevent them from having social contacts with male colleagues or rather to perpetuate their traditional roles of baby making and house keeping.

Although Kano State is noted for its traditional excellence in metal works, designs and fabrications, a large percentage of its women population is still tied to the apron strings of poverty, early marriages, religious and other cultural restrictions which impede their innate desire to enroll as Science, Technology, and Mathematics Education trainees. Ukpene (2001), noted that a nation or state whose large population of women are illiterates is strongly deviated from meeting its developmental needs

THE PROBLEM:

According to Akanbi, *et. al.* (1995), women face discrimination in enrolment into tertiary education in Nigeria. With the shift in social values from attaining lofty heights through education to materialism, fewer females in Kano (and in the country as a whole) want to pass through the tedious process of learning before "making it". And under the new moral dispensation in Kano State the craving is that males should have very minimum social contacts with females. How ready is the Kano State Government in translating this standard to its educational institutions? What instruments are on the

ground to ensure that only males teach in male schools and only females teach in female schools? Hence this paper is motivated to: -

- i. Assess the distribution of females studying Science, Technology and Mathematics Education in Colleges of Education in Kano State that is capable of taking over the teaching jobs in girls institutions;
- ii. Suggest criteria for beefing up female enrolment in STME so that girls secondary schools in the state will be adequately staffed with female teachers to teach sciences and related subjects in future; and
- iii. Suggest ways through which the industrial potentials of Kano State could provide the needed breakthrough for effective science and technology development in the country.

METHODOLOGY:

The sample used in the study were students studying Science, Technology and Mathematics Education related courses at the State College of Education Kumbotso, the Federal College of Education, Kano, and the Federal College of Education (Technical) Bichi, respectively, all in Kano State. Kumbotso and Kano run purely conventional courses while Bichi runs technical courses and a few conventional courses in the natural sciences. A compilation of the population of male and female teacher trainees from NCE I to III in the 2000/2001 academic session was done. The result was interpreted using percentages.

RESULT:

The result of the study is presented in table 1 in the appendix. It is noted that only 11, representing 3.16% of the total student population registered for technical education are females. Similarly, 5.0% of them registered to study Physical and Health Education (PHE). Other subject combinations that recorded unimpressive female enrolment are Chemistry / Mathematics (16.18%) and Mathematics / Physics (15.91%). The highest female enrolment were observed in Biology / Chemistry (40.4%) and Biology / Geography (48.15%) respectively. A comparable female enrolment statistic was noted for Integrated Science (DM), Biology / Integrated Science, Mathematics / Integrated Science, Mathematics / Primary Education Studies (PES) as well as in Chemistry / Integrated Science. In all, only 345 females out of a student population of 1549 representing a dismal 22.27% registered for STME as teacher trainees.

DISCUSSION:

The study notes a very low-level enrolment of females to study technical courses as well as Physical and Health Education in Kano State. It is feared that the state may find it difficult to meet its need for teaching personnel in the sciences and introductory technology courses in girls' secondary schools

without having to resort to engaging the services of male teachers for them. PHE is indispensable from the school curriculum if sound minds must be developed in sound bodies, which is necessary for learning. It looks odd for men to teach this subject in girls' schools as the former may find it morally absurd to teach the latter on certain gaming positions, techniques and aerobics. As PHE practical is contact oriented, a male teacher – female student interaction on the field could predispose them to avoidable awkward gestures and intimacy.

However, the study could not establish whether females face any form of gender discrimination in selection for enrolment into STME or other courses in the colleges. Admission is readily given to students who qualify for intended courses based on government guidelines. The level of female enrolment in Biology/Integrated Science and Biology/Chemistry support the assertion of Amazygbo (1992) that women seem to prefer courses that are less analytical and less mathematical in nature.

The economic viability of academic programmes may not be ignored in the choice of course of study before enrolment. Science, Technology and Mathematics Education courses are perceived not to give immediate financial rewards, hence, most females prefer enrolment in business and vocational courses that ensure immediate self employment and enhanced positive societal acclaim (Ukpene, 2001). It is therefore very strategic for the Kano State Government to devise means by which female enrolment into STME could be beefed up and sustained in the state.

TOWARDS ENHANCING FEMALE ENROLMENT INTO STME COURSES:

As a means of enhancing female enrolment into STME courses in Kano State, it is hereby suggested that:

1. The news media pronouncements that parents should discourage early marriages among their children should be enforced by legislation. Also, already married females should be encouraged to go back to school.
2. Comfortable education relief packages such as free tuition, meal subsidy, books and monthly allowances, amongst others, should be evolved for females of Kano State origin studying STME at tertiary level in any part of the country.
3. There should be equal opportunity for males and females in terms of career choice and development. The society should not see females as intruders or second best in the scheme of things; rather they should be encouraged to excel in all positive human endeavours.
4. There should be a well motivated cream of qualified teachers to teach STME in primary and secondary schools so that products of these would have very good foundation for tertiary education..
5. The Kano State Government should establish technical science schools for girls only so as to generate their interest for science, technology and mathematics education

6. The government, voluntary agencies and philanthropists in the state should ameliorate the dearth of human and material resources facing most secondary schools in the state in the areas of science and introductory technology courses.

CONCLUSION:

Kano State has the potentials for vibrant technological breakthrough in Nigeria. However, the traditional excellence of the state in technical works cannot be completely translated into modern science and technology if its female population (though lack of STME experiences) continues to occupy an unenviable position in the scheme of things. Even though responses to the call for females to embrace STME is slow, concerted efforts should continue to be made by the appropriate authority by removing inhibitions from early marriages, attitudes, local customs and general ineptitude of parents and siblings, so as to pave way for enhanced female desire to study and pick up careers in Science, Technology and Mathematics Education in Kano State.

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APPENDIX

TABLE I: STUDENTS' DISTRIBUTION IN STME BY GENDER IN THREE COLLEGES OF

EDUCATION IN KANO STATE, APRIL 2001.

Course	FCE (T) BICHI						FCE KANO						COE KUMBOTSO						TOTAL		PERCENT.			
	NCE I		II		III		I		II		III		I		II		III		M	F	M	F	M	F
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F						
Course Comb.	155	2	73	7	56	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	294	11	96.39	3.61		
Tech. Educ.	NA	NA	NA	NA	NA	NA	21	31	14	8	20	34	83	25	8	3	0	0	149	101	59.6	40.4		
Bio/Chem.	NA	NA	NA	NA	NA	NA	22	26	11	19	16	15	17	4	4	1	-	-	70	65	51.85	48.15		
Bio/Geo.	NA	NA	NA	NA	NA	NA	*	*	3	1	4	1	13	9	24	1	2	0	46	12	79.31	20.69		
Phy/Chem.	NA	NA	NA	NA	NA	NA	9	9	9	10	7	15	99	28	45	8	13	5	182	75	70.82	29.18		
Int. Sci. (DM)	NA	NA	NA	NA	NA	NA	*	*	41	3	25	4	110	5	52	0	-	-	228	12	95.0	5.0		
PHE (DM)	5	0	-	-	-	-	*	*	10	3	0	1	33	7	8	0	1	0	57	11	83.8	16.18		
Chem./Mat	17	10	10	6	-	-	*	*	-	-	13	4	NA	NA	NA	NA	NA	40	20	66.67	33.33			
Mat/Comp.	3	1	-	-	-	-	*	*	23	4	11	4	23	5	13	0	1	0	74	14	84.09	15.91		
Mat/Phy.	4	4	-	-	-	-	NA	NA	NA	NA	NA	NA	33	9	2	1	1	1	40	15	72.73	27.27		
Bio./Int. Sci.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5	3	3	0	-	-	8	3	72.73	27.27		
Mat/Int. Sci.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	2	2	0	-	-	6	2	75.0	25.0		
Mat/PES	0	3	-	-	-	-	NA	NA	NA	NA	NA	NA	4	1	6	0	-	-	10	4	71.43	28.57		
Chem./Int. Sci.																			1204	345				