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RESEARCH ARTICLE

EXPLORING THE RELATIONSHIPS BETWEEN STUDENTS' ACADEMIC PERFORMANCE IN LANGUAGES, BASIC SCIENCE AND BASIC INTRODUCTORY TECHNOLOGY IN NIGERIA

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ABSTRACT

The study focused on the importance of language proficiency in the learning of science and technology with attention given to the review of research studies on language proficiency and students' academic performance in science and technology within the context of the debate on the choice of language of instruction in schools. This study employed a descriptive survey type. Pearson Product Moment Correlation Co-efficient and Descriptive Statistics were statistical tools used. Proforma was used to collect students' examination scores of one hundred and ninety-six students in English Language, Yoruba Language, Basic Science, and Basic Introductory Technology in selected Junior Secondary Schools (JSS) in Offa Local Government Area of Kwara State, Nigeria. It was discovered that good language academic footings could be a template for good academic performance in Basic Science and Basic Introductory Technology. Recommendations were put to the fore based on the findings of the research.

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INTRODUCTION

Science is "a body of knowledge, a way or method of investigating and a way of thinking in the pursuit of an understanding of nature" (Abimbola, 2006; 2011). Basic science is an infrequent synonym of fundamental science also called pure science, principally in natural sciences such as Biology, Chemistry, Physics and so on (Encyclopedia, 2014). Daluba and Ekeyi (2013) Basic Introductory Technology is the acquisition of practical and technical skills at the lower craft level. Olaitan (1996) Introductory technology is one of the skill-oriented subjects such as carpentry, masonry, metal fabrication etc. that enable the individuals to acquire appropriate skills, abilities and competence to live in and contribute effectively to the development of his society. In view of the aforesaid, without the knowledge of Basic science and Basic Introductory Technology in schools, Nigeria as a nation might be left behind in the search for scientific and technological know-how. This then means that there is the need for adequate commitment to the teaching of Basic Science and the teaching and training of pupils in the Basic Introductory Technology at Junior Secondary Schools (JSS) in Nigeria via the medium of

the language of instruction that could enhance scientific knowledge and Basic Introductory Technological skills as habit.

The essence of language in any human territory cannot be over-emphasized. Language exists since man exists and certainly, it is for the benefit of man (Olanipekun 2012). Ezeokoli (2005) Language is considered as one of the critical resources in all human endeavors, especially in the educative process. This supports Loci (1998)'s view that language is an indispensable tool for effective communication. Language performs three basic functions of informing, expressing and directing. Again, Ezeokoli (2005) reiterated that it is regarded as the vehicle of learning and proficiency in the language of instruction no doubt facilitates learning.

Cognitive ability and linguistic processes are of great significant to students' academic success, more specifically to non-native English learners (Cummins, 1981, 1986, 1996). Cummins (1980) has also identified two type of language proficiency which are Basic interpersonal communicative skills (BICS) and Cognitive academic language proficiency (CALP).] However, according to Cummins (1980, 1981), Krashen and Biber (1987), Rosenthal (1996) and Spurlin (1995), CALP is the type of language proficiency needed to read textbooks, to participate in dialogue and debate, and to provide written

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responses to texts. Students who have not developed their CALP could be at disadvantage in learning science or Introductory Technology.

Nevertheless, the case for English has always been overstated since it is the official language of administration and commerce in Nigeria (Olanipekun 2013). It is the major language of science and the importance of English language acquisition as a stepping-stone for proficiency in other school subjects say it all (Oluwole 2008). One could not then blame Ojo (2008) and Obemeata (1995) that have indicated proficiency in English language to be a cogent factor in relation to students' academic performance even in other subject areas. Itsuokor (1987) in his work proved that competency in English significantly determine performances in intelligence or academic tests. This revelation seem to suggest that mastery of English language is very importance even in students' academic performances in intelligence tests, especially when it comes to the issues of science and technical education that involves a lot of laboratory and workshop practical in the acquisition of skills. Aina, Ogundele, and Olanipekun, (2013) also reiterated their believed in the above assertion about English language. To them, students' language proficiency and competency in English language strongly influenced academic performance in science and technical education. Olanipekun *et al.* (2014) strongly opined that students' proficiency in General English is a virile factor to be considered to outstanding performance(s) in vocational education (Agricultural science education and Economics education).

However, literature is also replete of findings indicating national languages in Nigeria as a central marker for students' academic performance in other subjects. One of such findings is Obaiya and Ihenacho (1981) who discovered that pupils, taught entirely in Yoruba in the primary school have had no problem of adjustment in secondary schools; where the medium of instruction is entirely in English. Olarewaju (1986) has since established that students and teachers consented that science should be taught to Nigerian students in Nigerian languages and so this was considered as a veritable solution to students' under-performance in science. Araromi (2005) reiterated that children taught in the mother tongue are less inhibited in class, and tend to participate more actively in classroom activities and discussions but tend to perform better in test of reasoning than those taught in English. Olarewaju and Akinwumi (1988) exposed some junior secondary school (JSS) students to treatment of teaching integrated science in Yoruba language as the experimental group while the other group-control was exposed to the teaching integrated science in English. The results showed that the experimental group performed significantly better than the control group. On the basis of gender, gender refers to attitudes, values and roles ascribed by the society to male and female sex (Faust, 1975; Okolo 1998). The superiority of male over female is noticeable in many facets of human societies. Bello (2002) on gender difference in school science voiced out that right from the beginning, science was regarded and presented as a male enterprise. However, Olanipekun and Zaku (2013) on language studies concluded that performance of students in English language is not gender bias. This means that, academic

performance of students could also vary in relation to gender factor.

That aside, it will be observed in this study may be language proficiency could determine students' academic performance in Basic Science and in Basic Introductory Technology. Poor performance has been partly ascribed to the language of instruction with which students are taught since the medium of communication determines to a large extent the success or failure of any curriculum (Awofala *et al.*, 2012).

Procedure

This research work employed descriptive survey method where students' scores in English language, Yoruba language along sides their scores in Basic Science, and Basic Introductory Technology were collected and analyzed for the purpose of this study. The sample population comprises of students from Junior Secondary Schools (JSS) in Offa Local Government Area of Kwara State. Pro-forma was used to collect students' examination scores (mock result) of Junior Secondary Schools. The result has been moderated by experts in each subject before being released. The study will only investigate the correlation between language proficiency on students' academic performance in Basic science and Basic Introductory Technology in Junior Secondary Schools (JSS) alone in Offa. A total number of one hundred and ninety-six students were randomly sampled from the graduating students of 2012/2013 academic session from some selected Junior Secondary Schools in Offa, Kwara State, Nigeria.

Purpose of the study

The general purpose of this study is to find out the relationship between language proficiency (English and Yoruba) and students' academic performance in Basic Science and Basic Introductory Technology. Specifically, the study will find out:

1. The correlation between students' academic performance in English language and Yoruba language.

Research hypotheses

Five hypotheses are generated to guide the study.

- H₀₁.** There is no relationship between students' academic performance in English language and Basic Science.
- H₀₂.** There is no relationship between students' academic performance in Yoruba language and Basic Science.
- H₀₃.** There is no relationship between students' academic performance in English language and Basic Introductory Technology.
- H₀₄.** There is no relationship between students' academic performance in Yoruba language and Basic Introductory Technology.
- H₀₅.** There is no relationship between students' academic performance in English language and Yoruba language.

Research question

1. Is there any relationship between students' academic performance in English language and Yoruba language?

Empirical findings

Table 1. Correlation coefficients (r)

	Basic intro. Tech	Basic Sci.	Eng. language	Yoruba
Eng. language	.582	.460	1	.343
N	195	195	195	195
r_{table}	0.168	0.168		0.168
Yoruba	.407	.347	.343	1
N	195	195	195	195
r_{table}	0.168	0.168	0.168	

Significant at 0.05

Table 2. Descriptive statistic of students' scores in English and Yoruba language

Variables & Groups	Mean	Std. dev.	N
English	41.4609	11.37936	96
Yoruba	51.9435	10.63041	96

From the correlation Table 1, it is observed that correlation between English language and basic Introductory Technology is 0.582 which is strong and positive. In the same table, correlation between English language and basic science is 0.460 also a positive correlation while correlation between English language and Yoruba is 0.343. Correlation between Yoruba and Introductory Technology is 0.407 and correlation between Yoruba and basic science is 0.347 as the table indicates. In Table 2, the mean score of students in Yoruba language is higher than that of English language. This implies that students performed better in Yoruba language than English language therefore, the only research question in this study is answered. To this dead end, the calculated r was greater than table r ($r_{cal} > r_{tab}$) in all the five null hypotheses formulated in this research. In this sense, all the research hypotheses were hereby rejected. The implication is that good language academic status could enhance better academic performance in Basic Science and Basic Introductory Technology.

DISCUSSION

The implication from the above results is that good and outstanding students' performance in English and Yoruba language could invariably leads to better academic performance in other subjects. Thus, this support the earlier findings of Olanipekun and Ishola (2014) that language proficiency in English language was one of the contributing factor to good academic performance in Mathematics. In the same vein, in another research by Olanipekun *et al.* (2014) on students' English proficiency and academic performance in vocational education has also revealed that students' proficiency in English is a virile factor to academic performance in both Economics education and Agricultural science education. This therefore posits that where students' academic performance is high in English language, there is possibility for good academic performance in other subjects. However, literature is also replete of findings indicating national languages in Nigeria as a central marker for students' academic performance in other subjects. One of such findings is Obaiya *et al.* (1981) who discovered that pupils, taught entirely in Yoruba in the primary school have had no problem of adjustment in secondary schools; where the medium of

instruction is entirely in English. Olarewaju (1986) has since established that students and teachers consented that science should be taught to Nigerian students in Nigerian languages and so this was considered as a veritable solution to students' under-performance in science. Students performing better in Yoruba language than English language is supporting the earlier recommendation Aina and Olanipekun (2013) made that, Nigerian languages should be used as classroom language of instructions.

Conclusion

There are relationships between students' academic performance in language proficiency (English and Yoruba Language), Basic Science and Basic Introductory Technology. This therefore posits that good language proficiency in either English or Yoruba language could influence students' academic performance in Basic Science and Basic Introductory Technology. It was also discovered that there is a difference in the academic performance of students both in English language and Yoruba language. However, students performed better in Yoruba language than they did in English language. In this sense, further experimental research could be carried out on the possibility of the effect and influence of mother tongue over students' academic performance in other subjects and disciplines.

Recommendations

- First, a Presidential National Commission be set up to cross-examine the role of Nigeria languages in all facets of our national life and make recommendations on how to make them effective instruments of language of instructions and integration in nation-building.
- Qualified language teachers should be employed for both English language and Yoruba language. Thus, Yoruba should also be a compulsory subject at the secondary school level.

REFERENCES

- Abimbola, I. O. 2006. *Philosophy of science for degree students*. Osogbo: Olatunbosun Publishers.
- Abimbola, I. O. 2011. Scientific literacy and the African worldview: Implications for sustainable development of science education in Africa. In K. Opoku-Agyemang, *Culture, science and sustainable development in Africa* (pp. 344-362). Cape Coast, Ghana: The University Press, Cape Coast, Ghana.
- Aina, J.K., and Olanipekun, S.S. 2013. Effect of English Language on Academic Performance in
- Aina, J.K., Ogundele G.O and Olanipekun, S.S. 2013. Students' proficiency in English Language Relationship with Academic Performance in Science and Technical Education. *American Journal of Educational Research*, 1 (9), 355-358.
- Araromi A. 2005. The mother tongue, language of instruction and issues in methodology: The Nigerian experience in Dauda, A., Abimbola, A., and Kolawole, O.O. (eds). *Issues in language communication and education*, Ibadan : Constellation Books pp. 15 – 31.

- Awofala, A.O.A, Awofala, A.A, Nneji, L.M and Fataji, A.O. 2012. The Relation between Language and Science, Technology and Mathematics in Nigerian Schools, *International Journal of Mathematics Trends and Technology*, vol. 3 (3); 118 – 124
- Bello, G.Y. 2002. Gender difference in school science: Implication for science teachers education, *Journal of Curriculum and Instruction*, vol. 6 (1&2) ; 55 – 63.
- Cummins, J. 1980. Teaching English through content-area activities. In P. Rigg and V. Allen (Eds.), when they don't speak English (pp. 139 - 151). Urbana, IL: National Council of Teachers of English
- Cummins, J. 1981. The role of primary language development in promoting educational success for language minority students. In California State Department of Education (Eds.) schooling and language minority (PP. 3 - 49). Los Angeles, C.A : California State University
- Cummins, J. 1982. Interdependence and bicultural ambivalence: Regarding the pedagogical rationale for bilingual education Rosslyn, VA : National clearinghouse for Bilingual Education
- Cummins, J. 1986. Empowering minority students : A Framework for intervention, *Harvard Education Review*, 56, 18 - 36
- Daluba, N.T.O and Ekeyi, N. 2013. Students' performance in introductory technology at the Junior Secondary School Certificate Examinations in Akpam Local Government Area of Kwara State, *Journal Education and practice*, vol. 4 (3); 150 – 158.
- Encyclopedia 2014. Fundamental Science. Retrieved from www.en.wikipedia.org/wiki/fundamental_science.
- Ezeokoli, F.O. 2005. Home language as Determinant of Reading Interests of Senior Secondary Students in Oyo State, Nigeria in Dauda, A., Abimbola, A., and Kolawole, O.O. (eds). Issues in language communication and education, Ibadan : Constellation Books pp. 15 – 31.
- Faust, J. 1975. Words that oppress. Pittsburgh KNOW publishing Company
- Itsuokor, D.S. 1987. Effects of improved comprehension skills on intelligence test performance of Nigeria secondary schools. Ph.D Thesis University of Ibadan.
- Krashen, S.D and Biber, D. 1987. On Course. Los Angeles : California State University.
- Loci, I.M. 1998. Introduction to Logic, New Yoke, Prentice Hall.
- Obaiya, P.A.I and Ihenacho, A. 1981. Language Arts Method. Heinemann Educational Books, Nigeria Ltd.
- Obemeata, J.O. 1995. *Education:an unprofitable industry in Nigeria Postgraduates School Interdisciplinary Research Discourse University*. University of Ibadan, Ibadan, Nigeria.
- Ojo, J.K. 2008. Students' problems in English reading comprehension(ECR):some observations and research findings. *Nigeria Journal of Educational Studies and Research (NJESR)*, 5 (1);25-29.
- Okolo, G. 1998. Language and gender inequality. *Journal of women in College of Education* vol. 2, 18 - 20
- Olaitan, S. O. 1996. Vocational and Technical Education in Nigeria:Issues and Analysis. Onitsha: Noble Graphic press.
- Olanipekun S.S. 2013. Appraisal of Nigerian senior secondary school's English language curriculum in the light of modern curriculum, *Advances in Arts, Social Sciences and Educational Research*, vol. 3 (7) ; 527 – 532.
- Olanipekun, S.S, Garuba, I.A, Mohammed, Y.K and Ohiemi, A.E. 2014. Students' English language Proficiency and academic performance in vocational education in College of Education (Tech.), Laafiagi. *IOSR Journal of Research and Method in Education*, ISSN: 2320-7388,p-ISSN: 2320-737X vol. 4 (5); 63 – 66, Sept. – Oct., 2014.
- Olanipekun, S.S, Garuba, I.A. and Mohammed, Y.K 2014. Correlation analysis of students' academic performance in General English and vocational education in College of Education (Tech.), Laafiagi. A paper presented at the 2nd National Conference of the School of Sciences in Kwara State College of Education (Tech.), Lafiaagi, Nigeria. Vol. 2 (1); 43 – 47.
- Olanipekun, S.S. 2012. Language: its concept, properties and essence to man.Retrieved from www.articlebase.com/article/language/itsconcept/properties/essence/to/man/6182820
- Olanipekun, S.S. and Ishola, S.S. 2014. Proficiency in English language asa factor contributing to competency in Mathematics of Primary School Pupils. American Association for Science and Technology, *International Journal of Modern Education*, 1 (4); 90 – 91.
- Olanipekun, S.S. and Zaku, J.A. 2013. Gender analysis of students' entry qualification in English Language in Colleges of Education in Kwara, *International Journal of Secondary Education*, vol. 1 (5) ; 23 - 25
- Olarewaju, A.O and Akinwumi, A. 1988. Remedying students underachievement in science through the use of mother tongue as language of instruction: *An Experimental Approach Niggeerian Journal of Curriculum Studies* vol. vI, pp. 41 – 49
- Olarewaju, A.O. 1986. Cuases of students' underachievement in Science, Proceedings of the 27th Annual Conference of the Science Trend Association of Nigeria pp. 95 - 99
- Oluwole, D.A. 2008. The impact of mother tongue on students' achievement in English language in Junior Secondary Certificate Examination in Western Nigeria, *Journal of Social Sciences, Kamla-Raj*, 17 (1);41-49
- Physics and Computer Science among College of Education Students. *American International Journal of Research in Humanities, Arts and Social Sciences*, 13(352), 114-117.
- Rosenthal, J.W. 1996. Teaching science to language minority students. English Matters Ltd.
- Spurlin, Q. 1995. Making science comprehensive for language minority students. *Jouranal of science Teacher Education*, 6 (2) ; 71 – 78
