ASSESSMENT OF THE RELEVANCE OF SCIENCE AND TECHNOLOGY EDUCATION IN THE ATTAINMENT OF NIGERIA VISION 20:2020

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Abstract

The study examined the relevance of Science and Technology Education in the attainment of the Nigeria Vision 20:2020. Three hundred and sixty (360) Secondary School Teachers from Oyo-East, Oyo-West and Atiba Local Government Areas of Oyo State were sampled for this study using stratified random sampling technique. The design of the study was survey type of descriptive research using an instrument titled Nigeria Vision 20:2020 Science and Technology Education Relevance Questionnaire (NV20STERQ) with t-test and Regression analytical tools for its analysis. The result of the study revealed that teachers educational qualification and age differences influence their opinion on the relevance of Science and Technology Education in the attainment of NV 20:2020 (t-cal = 2.61, 5.37, df = 359, crit-t = 1.96) while the respondents gender did not influence their opinion on the issue. This is clearly observed from the Calculated t-value of 2.61 for educational qualification, 5.37 for Age-differences and 0.53 for Gender at the same degree of freedom(359) and Critical-Value of 1.96 at 0.05 level of significance. It was therefore recommended that conducive environment be created for teaching and learning Science and Technology Education to enhance Nigeria Vision 20:2020 actualization.

Introduction

The Nigeria Vision (NV) 20:2020 reflects the intent of the Federal Republic of Nigeria to become one of the top twenty economies in the world by the year 2020, with an overarching growth target of no less than $900 billion in GDP and a per capital income of no less than $4,000 per annum. The NV 20:2020 are indicative of Nigeria's desire to achieve two broad objectives over medium and long term/periods:

1. Optimise her human and natural resources potential to achieve rapid and sustained economic growth; and
2. Translate economic growth into equitable social development that guarantees a dignified and meaningful existence for all her citizens.

By 2020, Nigeria envisioned to have a large, strong, diversified, sustainable and competive economy that effectively harnesses the talents and energies of its people and responsibly exploits its natural endowments to guarantee a high standard of living and quality of life to its citizens (NV 20:2020, 2009).

The NV 20:2020 economic transformation blueprint is a long term plan for stimulating Nigeria's economic growth and launching the country onto a path of sustained and rapid socio-economic development. The blueprint articulates Nigeria's economic growth and development strategies for the eleven year period between 2009 and 2020, and will be implemented using a series of medium term national development plans.

NV 20:2020 is a rallying call for all Nigerians, regardless of ethnicity, economic status, or religion to unite and stand behind a common cause of placing the country firmly on a path of sustainable growth, and taking it to its rightful place in the comity of nations. The vision is

underpinned by the need to effectively and efficiently mobilize the nation's resources to serve and improve the lives of its citizens and to respond appropriately to the growing challenges of an increasingly smaller, mutually dependent and inter-connected world (NV 20:2020, 2009).

The NV 20:2020 encapsulates the key principles and thrusts of the National economic Empowerment and Development Strategy (NEEDS) and the seven points Agenda of the current democratic administration (2007 – 2011), situating both within a single, long term strategic planning perspective.

The NV 20:2020 economic transformation plan was developed for and by the Nigerian people. It realized the role Nigerian citizens play in achieving the targets set forth by NV 20:2020, and rightly places on citizens and their welfare at the forefront of the agenda. The vision priotises and offers strategies to drive the full realization of Nigeria's potential and her emergence as one of the leading global economies in the world within the next decade.

Nigeria's targets for 2020 are based on a dynamic comparative analysis of the country's potential growth rate and economic structure vis-à-vis those of other Top 40 economies of the world. This implies that the Nigerian economy must grow at an average of 13.8 percent during the term horizon, driven by the agricultural and industrial sectors over the medium term while a transition to a service-based economy is envisaged from 2018

The aspiration for NV 20:2020 are defined across four dimensions:

(i) *Social Dimension*: A peaceful, equitable, harmonius and just society where every citizen has a strong sense of national identity and citizens are supported by an educational and health care system that caters for all, and sustains a life expectancy of not less than 70 years.

(ii) *Economic Dimension*: A globally competive economy that is resilient and diversified with a globally competive manufacturing sector, that is tightly integrated and contributes no less than 25% to Gross Domestic Product.

(iii) *Institutional Dimension*: A stable and functional democracy where the rights of the citizens to determine their leaders are guaranteed, and adequate infrastructure exists to support a market-friendly and globally competive business environment.

(iv) *Environmental Dimension*: A level of environmental consciousness that enables and supports sustainable management of the nation's God-given natural endowments to ensure their preservation for the benefits of present and future generations.

The NV 20:2020 proposes the formulation and implementation of a sound frame work that would enable the relevant implementing authorities to expand access, increase equity and enhance the quality of educational provision, while promoting international-standards in teaching resources, contacts and methodologies, across all levels. The capacity building for NVision 20:2020 was based upon clear and dynamic strategies geared towards policy measures that:

(a) Strengthen education as the foundation for life long learning;
(b) Foster the development of research and development;
(c) Promote worker education and training;
(d) Foster innovation and entrepreneurship;
(e) Facilitate the diffusion of information and Communication Technology as well as;
(f) Seek equal access and opportunity for women and other vulnerable groups.

NV 20:2020 lays stringent emphasy on educational reform as fundamental to human capacity building, one of such aspects of educational reforms that can enhance NV 20:2020 attainment is science and technology education.

According to Bolaji & Babajide (2010) science and technology are two basic concepts which cannot be separated from one another. Science is the mother of technology (Raimi, Bolaji & Babajide, 2003).

It is the body of knowledge in form of ideas, facts, concepts, theories, laws and principles which science teachers must be acquainted with if they are to transmit valid knowledge of science to their students and make students understand science (Mbah & Leaghara, 2008, Erinosho, 2008).

Akinkugbe (2007) affirmed the importance of science to human development in the areas of human genome, information and communication technology – ICT (the fax, the electronic mail, mobile phones etc), the computer world, human reproduction, gene therapy, genetic engineering and stem – cell research which have significantly high-rates in developed world over the developing countries. Corroborating the above, Olatunbosun (2004) opined that the influence of science is readily seen around us in the area of medicine, agriculture, pharmacy, engineering, geology, petroleum etc.

According to Adesoji (2002) when quoting Ogunniyi (1983) identified objectives of science education widely as:

1. Development of knowledge and understanding of the world;
2. Development of desirable scientific skills and attitudes;
3. Development of scientific and technological manpower;
4. Recognition of social functions of science;
5. Production of scientifically literate society.

Justaposing the science education objectives above with the NV 20:2020 objectives, there seem a positive correlation between the two. Thus attainment of the science educational objectives is tantamount to the actualization of the NV 20:2020.

Researchers have highlighted a number of ways of improving science and technology education, some of which are: Provision of qualitative and quantitative human and material resources (Orukotan, 2007; Okebukola, 2007; Akinkugbe, 2007; Ayogu, 2007; Adeniyi, 2010; Olagunju, 2010) stable policy, positive attitudes and honesty (Iloputaife, 2001; Ayogu, 2007; Orukotan, 2007; Adeniyi, 2010).

One basic objective of NV 20:2020 is the optimizing of human and natural resources to achieve rapid and sustained economy growth, Osofisan (2009) highlighted the requirements for a revived economy, viz: National security social stability, National growth, improved efficiency and quality of life, creation of a new culture and society. In addition to these requirements are agricultural production of food, improvement in health sector as well as poverty alleviation all of which science and technology education can assists to attain. It is against this background that this study assessed the opinions of the secondary school teachers on the relevance of science and technology education on the attainment of NV 20:2020

Statement of the Problem

There is declining performance of the students in Nigeria. Evidence is seen at the recent study conducted by Tell National Magazine showing that if the educational stakeholders do not tackle the challenges facing the sector, the performance of the students in the Senior Secondary Schools Examinations would continue to fall (Tell, 2010).

Table 1: WASSCE Results, 2005 – 2009

Year	No of Students May/June	No of Students Nov/Dec	% with > = 5 Credit	% with > = 5 Credit
2005	1,091,676	398,689	27.53	-
2006	1,184,384	423,518	15.56	11.6
2007	1,275,330	378,018	25.54	19.87
2008	1,369,142	372,600	13.76	-
2009	1,373,009	342,442	25.99	31.07

Source: Culled from Tell Magazine, May 17, 2010 p. 46.

There is also high price of essential commodities; the total monthly income can no longer meet the monthly expenditure of an individual. The country economy is dwindling; Nigeria graduates are roaming the street without job and skills needed to start their business. The study therefore surveyed the opinions of the secondary school teachers in Oyo-East, Oyo-West and Atiba Local Government Areas of Oyo State on the relevance of science and technology education in the attainment of Nigeria Vision 20:2020.

Purpose of the Study

The purpose of this study is to assess the opinions of secondary schools teaching staffs in Oyo-East, Oyo-West and Atiba Local Government Areas of Oyo State on the relevance of Science and Technology in the attainment of Nigeria Vision 20:2020. It equally examined the influence of gender, educational qualification and age differences of the respondents on the relevance of Science and Technology Education in the attainment of NV 20:2020.

Research Questions

1. What is the opinion of teachers on the relevance of Science and Technology Education in the attainment of NV 20:2020?
2. Are there any difference in male and female teachers opinion on the relevance of Science and Technology Education in the attainment of NV 20:2020?
3. Are there any difference among teachers based on their educational qualification on the relevance of Science and Technology Education in the attainment of NV 20:2020?
4. Is there any difference in the opinion of teachers on the account of their age difference about the relevance of Science and Technology Education in the attainment of NV 20:2020?
5. What is the interactive effects of gender, educational qualification and age-differences among Secondary School Teachers on the relevance of Science and Technology Education in the attainment of NV 20:2020?

Hypotheses

Ho_1: There will be no significant difference in male and female teachers opinion on the relevance of Science and Technology Education in the attainment of NV 20:2020.

Ho_2: There will be no significant difference between the NCE and First Degree Holders opinion on the relevance of Science and Technology Education in the attainment of NV 20:2020.

Ho_3: There will be no significant difference in old and young teachers opinion on the relevance of Science and Technology Education in the attainment of NV 20:2020.

Ho_4: There will be no significant interactive effects of gender, educational qualification and age difference among Secondary School Teachers on the relevance of Science and Technology Education in the attainment of NV 20:2020.

Methodology

Design of the Study

The study adopted a survey type of descriptive research. The research design is deemed appropriate because it involves direct contact with a population or sample that has characteristics, personality qualities or attributes which are relevant to this investigation (Akinsola & Ogunleye, 2004).

Sample and Sampling Technique

The sample for this study consisted of three hundred and sixty (360) secondary school teachers in Oyo-Atiba, East and West Local Government Areas of Oyo State. The selection was gender conscious as it involves one hundred and eighty male and female teachers in the study, the stratified random sampling technique was employed in the selection of the sample.

Research Instrument

The instrument for the study was a structured questionnaire titled Nigeria Vision 20:2020 Science and Technology Education Relevance Questionnaire (NV20STERQ) drawn by the researchers for the study. The sixteen items structured questionnaire is of two sections; A and B, section A consisted of the respondents socio-demographic data while the section B consisted of sixteen positively and negatively worded items with a four Likert scale format of strongly agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), 4, 3, 2, 1 are allotted values of SA, A D and SD respectively for positively worded items and vice versa for negative items. The items focused on the relevance of science and technology to the attainment of Nigeria Vision 20:2020.

Validation and Reliability of the Instrument

The instrument was subjected to face and content validity by giving the questionnaire to experts in Science Education and in Measurement and Evaluation. The trial-testing of the instrument was done at Afijio Local Government Area of Oyo State on thirty-six (36) secondary school teachers, the Pearson product moment correlation coefficient of 0.79 was gotten which on split-half reliability method yielded a co-efficient of 0.88.

Method of Data collection

The researchers along with their assistance took the questionnaire to the selected schools for administration. The completed questionnaire were collected from the respondents on the spot ensuring its hundred percent retrieval.

Method of Data Analysis

The data collected were analysed using a descriptive statistics such as frequency count and simple percentage to answer the research questions while t-test was used to test hypotheses with singular factor and multiple regression analysis to test hypothesis with multiple factors.

Results and Discussions

Table 2: Descriptive statistic of the opinion of teachers on the relevance of science and technology education in the attainment of NV 20:2020

ITEMS	SA (%)	A (%)	D (%)	SD (%)	TOTAL (%)
+ve 1.	162 (45.00)	158 (43.89)	28 (7.78)	12 (3.33)	360 (100)
+ve 2.	194 (53.89)	126 (35.00)	18 (5.00)	22 (6.11)	360 (100)
+ve 3.	128 (35.56)	192 (53.33)	20 (5.56)	20 (5.56)	360 (100)
+ve 4.	194 (53.89)	136 (37.78)	19 (5.28)	11 (3.06)	360 (100)
+ve 5.	182 (50.56)	127 (35.28)	22 (6.11)	29 (8.06)	360 (100)
+ve 6.	166 (46.11)	148 (41.11)	27 (7.5)	19 (5.28)	360 (100)
+ve 7.	156 (43.33)	154 (42.78)	32 (8.89)	18 (5.00)	360 (100)
+ve 8.	201 (55.83)	102 (28.33)	25 (6.94)	32 (8.89)	360 (100)
-ve 9.	32 (8.89)	62 (17.22)	168 (46.67)	98 (27.22)	360 (100)
-ve 10.	27 (7.5)	43 (11.94)	132 (36.67)	158 (43.89)	360 (100)
-ve 11.	46 (12.78)	52 (14.44)	148 (41.11)	114 (31.67)	360 (100)
-ve 12.	28 (7.78)	16 (4.44)	172 (47.78)	144 (40.00)	360 (100)
-ve 13.	35 (9.72)	52 (14.44)	126 (35.00)	147 (40.83)	360 (100)
-ve 14.	34 (9.44)	56 (15.56)	158 (43.89)	112 (33.89)	360 (100)
-ve 15.	62 (17.22)	23 (6.39)	149 (41.39)	126 (35.00)	360 (100)
-ve 16.	46 (12.78)	38 (10.56)	122 (33.89)	154 (42.78)	360 (100)
Total	1693 (29.39)	1485 (25.78)	1366 (23.72)	1216 (21.11)	5760 (100)

From table 1, items 1 to 8 are positive and greater number of the respondents agreed with the statements, while items 9 to 16 are negative and greater number of the respondents also disagreed with the statements.

The overall responses of the respondents showed that greater percentages of them are of the opinion that science and technology education is essential ingredient in the attainment of the Nigeria Vision 20:2020 (Answer Research Question One).

Hypothesis Testing

Ho_1: "There will be no significant difference in male and female teachers opinion on the relevance of Science and Technology Education in the attainment of NV 20:2020"

Table 3: T-test analysis on male and female teachers opinion on the relevance of science and technology education in the attainment of NV 20:2020

Science & Technology Education Relevance	N	Mean	SD	Crit-t	Cal-t	R
Male	180	41.08	6.14			
Female	180	39.74	4.75	1.96	0.53	NS

Table 3 above showed the influence of gender on the respondents opinion of influence of science and technology education in the attainment of NV 20:2020. The calculated-t 0.53 is lesser than the critical-t value of 1.96 at 0.05 level of significance. Therefore the null-hypothesis was held. This means that gender do not influence the opinion of the respondents on the effects of science and technology education on the attainment of Nigeria Vision 20:2020.

The findings is corroborated by the results of Bolaji & Babajide (2010), Iloputaife (2002) that gender did not influence the perception of the efficacy of science and technology education in national development.

Ho_2: "There will be no significant difference between the NCE and First Degree Holders opinion on the relevance of Science and Technology Education in the attainment of NV 20:2020"

Table 4: T-test analysis on nce and degree holders opinion on the relevance of science and technology education in the attainment of NV 20:2020

Science & Technology Education Relevance	N	Mean	SD	Crit-t	Cal-t	R
NCE	84	34.68	5.26			
First Degree	276	45.31	3.69	1.96	2.61	S*

From table 4 above, the calculated value of 2.61 is greater than the critical value of 1.96. Therefore, the null-hypothesis was hot held. This shows that educational qualification of the respondents influenced their perception on the effects of science and technology education in the attainment of NV 20:2020.

This findings is corroborated by the work of Orukotan (2007), Okebukola (2007), Akinkuigbe (2007), Adeniyi (2010) that teachers qualification do influence their perception of science and technology education effects on nation development.

Ho_3: "There will be no significant difference in old and young teachers opinion on the relevance of Science and Technology Education in the attainment of NV 20:2020"

Table 5: T-test Analysis on Young and Old Teachers opinion on the Relevance of Science and Technology Education in the attainment of NV 20:2020

Science & Technology Education Relevance	N	Mean	SD	Crit-t	Cal-t	R
Young	168	52.64	4.68			
Old	192	37.35	5.17	1.96	5.37	S*

Table 5 above showed the calculated-t value as 5.37 which was greater than the critical value of 1.96 at 0.05 level of significance. Therefore, the null hypothesis is not held. This shows that age influenced the perception of the respondents on the imparts of science and technology education in the attainment of NV 20:2020.

These findings is supported by the work of Bolaji & Babajide (2010), Iloputaife (2002), Orukotan (2007) that age influence the attitudes and perception of the teachers on the effectiveness of science and technology education on nation development.

Ho_4: "There will be no significant interactive effects of gender, educational qualification and age differences among Secondary School Teachers on the relevance of Science and Technology Education in the attainment of NV 20:2020"

Table 6: Regression Analysis of Interactive Effects of Gender, Educational Qualification and Age-differences of Teachers on the Relevance of Science and Technology Education in the attainment of NV 20:2020

Sources of Variations	SS	DF	MS	R-Ratio	Sig. of P	R	R^2
Regression	658.18	4	164.55				
Residual	5064.64	355	14.27	11.53	.000	.649	.328
Total	5722.82	359	164.55				

Table 6 above shows that the linear combination effect of sex, educational qualification, religion and age on respondents opinion of influence of science and technology education in the attainment of Nigeria Vision 20:2020 is significant ($F_{4, 355} = 11.53$, $P < 0.05$).

Therefore, the null-hypothesis that says there is no significant joint effect of gender, educational qualification and age differences among secondary school teachers on the relevance of Science and Technology Education in the attainment of NV 20:2020 is not held.

This findings is corroborated by the work of Bolaji & Babajide (2010), Iloputaife (2002), Orukotan (2007), that there is joint effect of sex, educational qualification and age on the perception of respondents in efficacy of Science and Technology Education on national economic development.

Recommendations and Conclusion

The potency of science and technology education for the attainment of Nigeria Vision 20:2020 objectives for improved national productivity and socio-economic transformation of Nigeria cannot be over-emphasized. The researchers therefore recommend the following:

i. Government at National, State and Local levels should provide a conducive and child friendly environment for effective teaching and learning of science and technology in schools;
ii. Government with public-private partnership (P.P.P) should provide adequate and appropriate funding of schools for the provision and upgrading of necessary teaching aids;
iii. Government should implement the science allowance and robust hazard allowance for science and technology teachers to stimulate their commitment on job;

iv. Researches and programmes on science and technology education should be generously sponsored and encouraged by the government for local production of goods and services;

Conclusively, this study discovered that Science and Technology Education is a stringent tool in the actualization of Nigeria Vision 20:2020 and that sex of the teachers did not influence their opinion on the relevance of Science and Technology Education in the attainment of NV 20:2020. However, the educational qualification and age-differences of the respondents did influence their opinion on Science and Technology Education relevance in the attainment of the NV 20:2020.

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