

TECHNOLOGICAL UPDATING OF VOCATIONAL
AND TECHNICAL TEACHERS

By

S. I. Nkinseinde

ABSTRACT

The purpose of the study was to investigate the perceptions of Vocational and Technical Teachers about technological updating and the extent to which it affects different occupational fields. By using a Likert-type questionnaire, Vocational and Technical Teachers at the post-secondary institutions were asked to rate statements about Technology which best expressed their opinion. Their responses were scored and analysed. It was revealed that differences exist in the perception of the need to know more about the technologies of their fields. The mean of occupational groups revealed that Home Economics teachers perceived the need most, and was followed by Technical Education, Fine Arts and Music teachers in that order. It was suggested that technical updating programme should be organised for Vocational and Technical Teachers on a regular basis.

Introduction

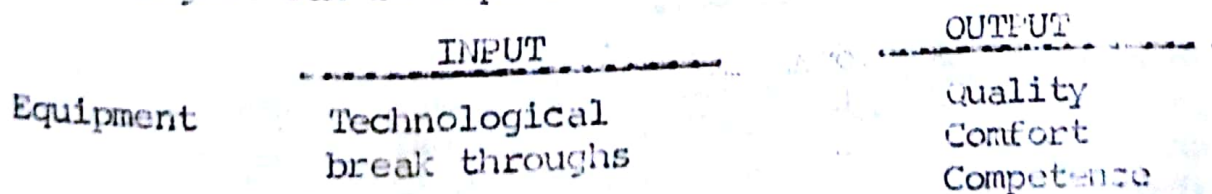
Technologies are changing worldwide at a fast rate because of new breakthroughs in scientific and technical fields. Such technological development are more likely to improve techniques, increase productivity and affect our jobs, life-styles and environment. One of the aims of technical Education (as stipulated in the National Policy on Education, 1981 p. 49) is to enable young men and women understand the increasing complexity of technology. In order to achieve the educational policy objectives, educators ought to keep themselves abreast of new developments.

Teachers are supposed to be the link between the new knowledge to be imparted and the students to be taught. Since Vocational teachers can only teach what they know, they ought to be current in the technologies in their fields so that the students they teach can benefit from them. The main focus on the study was to know the perceptions of vocational and technical teachers about technological updating and the extent to which it affects different occupational fields. Such a knowledge will help to provide the necessary support that is required for keeping Vocational/Technical teachers up-to-date.

Nigerian National Policy on Education attaches great importance to vocational and technical education because they are considered prime-movers for achieving the desired technological development. Bartel (1978 p. 1) remarked that "instructional areas classified within vocational or occupational education are not static in nature and content. Rather, they do and should change as the technology itself changes and also as the individual's needs change". This implies that education will be a life long learning or continuous process for those working in technology related fields. As a result vocational and technical teachers should be prepared to face the challenges of technology and its implications for teaching and learning.

Technological advancement is on the increase and there is a decrease in the time lag between the establishment of scientific knowledge and its technological application. Fischer (1971) commented that although Faraday reported on the laws of magnetic induction in 1832, the first electromagnetic generator was built 53 years later (i.e. 1885). Benson (1985) said that although it took 35 years to implement radio receiver after its invention in 1885, it took just 8 years to implement moon landing after its invention in 1965. Modern technologies are bringing new equipment, materials and methods. The use of computers, Laser, Fiber Optics, Robots, Computer aided Designs and Computer aided Manufacturing (CAD/CAM) is on the increase.

The field of Music has been influenced by modern technology like electronic organs and pianos, electrical and electronic amplifiers for guitars and other stringed instruments for various effects. In the home, microwave and ultra-sonic ovens are overtaking gas and electric cooking as cooking appliances. Those with vocational and technical skills should be able to adapt and change to new developments as technology advances. The need for updating teachers for current technologies can be represented in the diagram below:



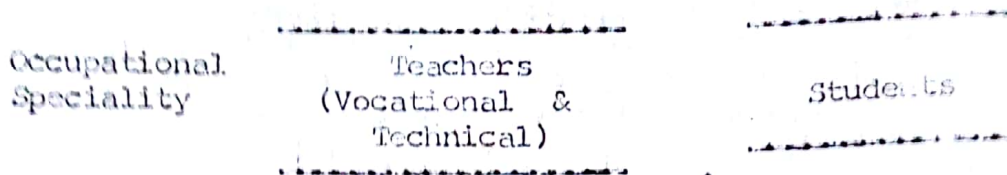


FIG. 1: Hypothetical Model for Technological Updating Needs.

The model explains that equipment, material and methods are possible aspects of technological advancement. Vocational and technical teachers are equipped with specialised skills but need to update knowledge in their fields. Acquisition of current knowledge and skills will influence what they teach and their students will be equipped with up-to-date skill to be productive. Competent workers in the world of work who design, invent and conduct research can develop improved products that are useful to the society. It is against this background that this study was conducted.

Purpose of the Study

The purpose of the study was to find out the perceptions of vocational and technical teachers about technological updating with a view to answering the following questions:

1. Do Vocational and Technical Teachers perceive the need to know more about technologies in their fields?
2. Do teachers in different areas of specialisation differ in their perception of the degree of needs for technological updating?

Hypotheses

Two hypotheses were tested.

1. There will be no significant difference in the perceptions of vocational and technical teachers on the need to know more about technologies in their fields.
2. There will be no significant difference (P. .05) in the mean rating of the need for technological updating within occupational fields of vocational and technical teachers.

METHODSubjects

The population of the study consisted of all Vocational and technical teachers in post secondary schools in Bendel State in areas of Home Economics, Technical Education, Fine Arts and Music. Altogether, 91% of the population (N = 128) were used in this study.

Instrument

The data for this study were collected using a questionnaire. The instrument was made of two parts. The first part identified the impact of technology, interest in technology and the need for technological updating while the second part focused on personal updating needs with respect to specific area of specialisation. Respondents were required to rate statements about technology which best expressed their opinion. They were asked to indicate the extent to which they agree or disagree with each item on a 5-point Likert scale and were assigned values as follows:

Strongly agree	5
Agree	4
Undecided	3
Disagree	2
Strongly Disagree	1

The instrument was validated by four colleagues and pilot-tested on eight vocational and technical teachers in different areas of specialisation. The comments of the pilot jurors and results of the pilot test formed the basis for a revision of the instrument to its final form. A split - half reliability of 0.86 was determined for the final form of the instrument.

Data Collection and Analysis

Copies of the questionnaire were distributed to respondents by hand. Out of the 140 questionnaires administered to post-secondary vocational and technical teachers, 128 (i.e. 91%) were duly completed and returned. Analysis was executed to ascertain the direction and magnitude of the differences observed among group means.

FINDINGS

The results of the data analysis relating to the first hypothesis of the study are presented in Table I. The null hypothesis states that there is no significant difference in the perception of vocational and technical teachers on the need to know more about technologies in their fields. A summary of the ANOVA test for hypothesis I showed the calculated variance ratio (F) to be 3.28. The given critical value of F is 2.68 with 3 and 124 degrees of freedom. The observed F ratio is greater than the table value at the 5 percent alpha level. Consequently, the null hypothesis asserting no such difference is rejected. It can safely be concluded that obvious differences exist in the perception of the needs to know more about technologies in their fields.

Hypothesis II states that there is no significant difference ($P = .05$) in the mean rating of the need for technological updating within occupational fields of vocational and technical teachers. The assumption of the null hypothesis is that the mean of the groups are the same and that their variance are equally the same. The t-test analysis of Table 2 presents data for the comparison.

Table 1

Summary of One-way ANOVA tests of Perceptions of Vocational and Technical Teachers on the need to know more about Technologies in their Fields.

Source of Variance	SS	df	MS	F
Between-groups	4.51	3	1.50	*
Within-groups	56.71	124	0.457	3.28
Total	61.22	127		

Critical value of F = 2.68

*p .05

Table 2

T-test Analysis of mean difference in needs for Technological Updating within Occupational fields

Dependent Variable	Groups	Mean	SE	df	t	P
	Home-Economics	3.35	0.09	32	3.25	.05
	VS					
	Technical Education	3.06	0.092			
	Home-Economics	3.35	0.09	64	2.45	.05
	Vs					
	Fine Arts	2.94	0.14			
	Home-Economics	3.35	0.09	44	2.55	.05
	Vs					
	Music					
Perceived needs for Technological Updating	Tech. Education	3.06	0.092	80	0.714	N.S
	Vs					
	Fine Arts	2.94	0.14			
	Tech. Education	3.06	0.92	60	1.314	N.S
	Vs					
	Music	2.75	0.217			
	Fine Arts	2.94	0.14	42	0.73	N.S.
	Vs					
	Music	2.75	0.217			

NS = Not significant

Table value $t = 1.96$ for .05 level

The mean ratings ranged from 2.75 to 3.35 for the four occupational fields. Home Economics had the highest mean rating of 3.35 followed by Technical Education with a mean of 3.06. The Fine Arts had a mean of 2.94 while Music had a mean of 2.75. Table 2 indicates that there was a significant difference in the mean rating of the need for technological updating within occupational fields of vocational and technical teachers. Consequently, null hypothesis II was rejected.

DISCUSSION

The purpose of this study was to find out the perceptions of vocational and technical teachers about technological updating needs. The Home Economics group is superior in perception of technological updating needs. The group had a significantly higher mean when compared to other groups while Technical Education, Fine Arts and Music groups do not differ significantly from each other.

The high mean of the Home Economics group could be attributed to the fact that the programme is family centered and products of technology are used in the home to lighten the burden involved in maintaining the home. Also, the programme must be responsive to current development in fashion design, food processing/equipment, housing design, home management, family economics and extension services. Onogwuwe (1986 p. 30) suggested that "the Home Economics students need to keep up to date with modern technological developments and to benefit from innovations in education".

The Technical Education group did not perceive the need more than Fine Arts and Music group since these three groups were not statistically different. The lower perception of technological updating needs by the Technical teachers may be caused by the lack of awareness of the degree of need. The new emphasis on functional Education and technological development will make the need to be conspicuous. The curriculum will regularly undergo revision in order to prepare students for the occupational challenges of today and tomorrow. The workshop/laboratory equipment are being modernised by the use of microprocessors, automated operations, improved materials and processes. It is most logical and appropriate that technical teachers be equipped with new knowledge to enable them use the modern technologies and improve on them if possible.

In the same token, the Fine Arts and Music teachers need to know current practices in their occupational fields. A feeling that one knows in a world of technological explosion could be caused by an information gap or "break" between technological innovation/applications and the vocational teachers in their respective areas of specialisation. There is the influence of computers on graphics in the advertising agencies and general documentary matters. Also, the analyses of old painting and art objects make use of

X-ray radiography. Robots have taken over painting, welding and casting to a high degree of precision. In view of these developments, it is essential that a workable approach to technological updating be devised to suit the needs of vocational and technical teachers.

RECOMMENDATIONS

In the light of the findings of this study, the following recommendations are made:

1. There should be vocational education personnel development programme to update the competencies of vocational educators. This should be based on needs assessment of the teachers.
2. There is the need for constant or regular workshop for technological updating of vocational and technical teachers in post-secondary institutions in Bendel State. Such workshops or seminars/conferences should include "hands on" (i.e. practical/experimental work) activities.

REFERENCES

- Bartel, C.R. (1976); Instructional Analysis and Materials Development. Illinois: American Technical Publishers, Inc.
- Bensen, M.J. (1985); "The Searing Technology Revolution". The Technology Teacher.
- Federal Republic of Nigeria (1981); National Policy on Education. Lagos: NERC Press.
- Fisher, R.B. (1971); Science, Man and Society. Philadelphia: W.B. Saunders Company.
- Jones, W.B. (1988); Problems in Teaching Industrial Arts and Vocational Education. USA: Library of Congress. Catalog Card 58-6897.
- Naibitt, J. (1984); Magatrends: Ten New Directions Transforming our Lives. New York: Warner Books Inc.
- Onogwuwe, J.U. (1986); "A Case for Individualized Instruction Strategy in Home Economics". Journal of Technical Teacher Education. Vol. 1, No. 1.
- Tidewater Technology Associates (1984); "Resources in Technology". The Technology Teacher. Sept/Oct. 1984.
- Wonacott, M.E. and Hamilton, J.B. (1983); Undating Teachers for Tomorrows Technology: Programs and Practices. Ohio: National Center for Research in Vocational Education.