Assessment of the Skills Possessed By Teachers of Metalwork in the Use of Interactive Whiteboard in Technical Colleges in Oyo State

Ariyo Samson O
Department of Industrial Teacher Education,
University of Nigeria, Nsukka
Email : ariyotimi@yahoo.com
Bamgboye Sikemi Oyin
Department of Industrial Teacher Education,
University of Nigeria, Nsukka
Email : adefolusikemi86@gmail.com

Abstract

The purpose of this study was to assess the skills possessed by the teachers of metalwork in the use of interactive whiteboard in technical colleges in Oyo State. Two research questions guided the study. A survey research design was adopted for the study. The population for the study comprised of all the 35 metalwork teachers in the technical colleges in Oyo State. A structured questionnaire consisting of 32 items was used for data collection. Three experts from the Department of Vocational Teacher Education, University of Nigeria, Nsukka, face validated the instrument. The reliability co-efficience of the instrument was 0.86. Data collected were analyzed using mean and standard deviation for the research questions. It was found from the study that ten skills were not possessed by metalwork teachers in the use of interactive whiteboard, while one pedagogical skill was not possessed. It was recommended that regular and systematic retraining should be organized for metalwork teachers who lack required skills in using this technology.

Keywords: *Assessment, Technical College, Interactive Whiteboard, Skills*

INTRODUCTION

Background of the Study

Technical and vocational education is the foundation of a nation's wealth and development. It is a type of education that is meant to provide trained manpower in the applied sciences, technology and business particularly at craft, advanced craft and technical levels (Federal Government of Nigeria, 2013). This specialized education is offered in technical institutions including technical colleges.

Technical colleges are institutions where students are trained to acquire relevant knowledge and skills in different occupations for employment in the world of work. Okorie (2005) explained that technical colleges in Nigeria are established to prepare individuals to acquire practical skills and basic scientific knowledge within the confinement of a technical institution or industrial technical education unit. According to the National Board for Technical Education (NBTE, 2000), Technical colleges in Nigeria are established to produce craftsmen at the craft (secondary) level and master craftsmen at the advanced craft (post-secondary) level. Programmes of technical colleges are grouped into related trades, which include metalwork trades.

Metalwork technology comprises of a blend of both theory and practical that leads to the production of goods and services by the use of tools, equipment and metalwork materials (NBTE, 2001). It has been observed that the performance of student in metalwork technology has been below average, according to the 2015 NABTEB May/June result statistics, only 19,000 candidates out of a total of 75,468 candidates that sat for the NBC and NTC examinations obtained credit pass. This poor performance might be as a result of the method of instruction adopted in teaching metalwork, Dawodu (2013) observed that the use of computer assisted instruction enhances the performance of students in metalwork technology.

To improve the performance of students in metalwork technology, the use of teaching tools like the interactive white board which supports computer assisted instructional method is important.

Interactive White Board (IWB) is an emerging technology in the area of teaching. The Interactive White Board is a piece of hardware that looks much like a standard whiteboard but it connects to a computer and a projector in the classroom to make a very powerful tool. When connected the interactive white board becomes a giant, touch-sensitive version of the computer screen. Instead of using the mouse, you can control your computer through the interactive white screen just by touching it with a special pen called stylus. The Interactive White Board is very useful for teaching students computer Aided Manufacturing (CAM); Computer Aided Design (CAD) and AUTOCAD to mention a few. To effectively use this technology the teacher must possess the relevant pedagogical skills, using the interactive whiteboard is different from the conventional classroom boards the pedagogical skills needed by the teacher will be different from the conventional pedagogical skills already possessed therefore the current skills possessed by metalwork teachers need to be assessed.

Assessment according to Goldrick (2002) is the process by which teachers are appraised professionally Goldrick also asserted that it is an informal tool to help administrators identify teachers who need additional or specialized assistance and to help individual teachers improve their instructional practices. In this study assessment refers to the determination of the extent of performance or judging the overall abilities of metalwork teachers in the use of emerging technologies.

Statement of the Problem

There is a noticeable drop in the performance of metalwork students, this might be due to the fact that students are not finding classes interesting and simulating enough to hold their attention for effective learning to take place. The use of the interactive whiteboard might be able to address this poor performance and stimulate their interest in learning. It therefore becomes important to determine if the

teachers have the relevant skills needed in using this interactive whiteboard to effectively teach the students. It is in respect of this that this study will seek to assess the skills possessed by the teachers of metalwork in the use of interactive whiteboard for effective teaching of metalwork in technical colleges in Oyo State.

Purpose of the Study

The purpose of the study is to assess the skills possessed by the teachers of metalwork in the use of interactive whiteboard for effective teaching of metalwork in technical colleges in Oyo State.

Specifically the study will seek to:

1. Determine the skills possessed by metalwork teachers in the use of an Interactive White board.
2. Determine the pedagogical skills possessed by metalwork teachers.

Research Questions

1. What are the skills possessed by metalwork teachers in the use of an interactive white board?
2. What are the pedagogical skills possessed by metalwork teachers?

METHODOLOGY

A descriptive survey design was adopted for this study. The study was carried out in all the technical colleges in Oyo State. The population of the study consisted of all the 35 metalwork teachers from all the technical colleges in Oyo State. Since the numbers of the teachers are not too large, the entire population was used because it was manageable for the study. A structured questionnaire was the instrument for data collection. The response categories of the instrument used are Very Highly Possessed (VHP), Highly Possessed (HP), Moderately Possessed (MP), Barely Possessed (BP) and Not Possessed (NP), which were assigned numerical values of 5, 4, 3, 2, and 1 respectively. The instrument was subjected to face and content validation by three lecturers from the Department of Vocational Teacher Education, University of

Nigeria Nsukka, to attest the appropriateness of the instrument in measuring what it intended to measure. The instrument was trial tested on 20 metalwork teachers in four technical colleges in Lagos State. This yielded a reliability co-efficience of 0.86 using the Cronbach Alpha formula. The data was collected by administering the questionnaire directly on the respondents by the researcher.

Method of Data Analysis

The data collected from the study was analyzed using mean for answering the research questions. Any item with a mean value of 2.50 and above was regarded as possessed while any item with a mean below 2.50 was regarded as not possessed.

Analysis and Interpretation of Research Results

In this part of the paper, we aim to find out which skills metalwork teachers possess in the use of interactive whiteboard.

Results

Table 1: Mean of the Responses of Metalwork Teachers on Skills Possessed in the Use of Interactive whiteboard

S/N	Item Statement	$\bar{X}$	SD	Remarks
1.	Plug in all connections from the projector, interactive white board, to the computer	2.02	0.82	NP
2.	Use the appropriate function button to transfer the image from computer to the interactive white board	2.11	0.93	NP

3.	Ability to calibrate the interactive white board	1.88	0.98	NP
4.	Start up and shut down computer correctly	3.84	0.90	HP
5.	Navigate around desktop	3.66	0.95	HP
6.	Recognize start menu button	4.07	1.04	HP
7.	Recognize the Icons on the desktop	3.62	0.93	HP
8.	Recognize the interactive white board icon on the desktop	3.63	0.89	HP
9.	Know how to install software from a CD	1.92	1.09	NP
10.	Navigate a CD ROM and know how to use the back button to return to the start of the CD	1.81	0.88	NP
11.	Navigate through My Documents to find files and use back button to take you back the way you came	3.09	0.98	MP
12.	Load software/programs/folders from a desktop shortcut	3.78	0.85	HP
13.	Load software/programs/folders from the start menu	2.47	0.95	NP
14.	Know how to save a document and where it is being saved to	2.31	0.95	NP
15.	Know how to retrieve a document	3.27	0.83	MP

16	Know how to make folders to store documents under appropriate headings for easy retrieval	2.11	1.04	NP
17.	Rename documents and folders	1.91	0.89	NP
18.	Move/copy documents from folders	2.93	1.02	MP
19.	Know how to access the internet	2.25	0,93	NP

Note **X** = Grand Mean; HP = Highly Possessed; MP = Moderately Possessed; NP = Not Possessed.

Data presented in Table 1 shows that the skills with mean values from 2.93 – 4.07 are possessed by metalwork teachers while the skills with mean 1.81 – 2.47 are not possessed by metalwork teachers in the use of interactive whiteboard.

Table 2: Mean of the Responses of Metalwork Teachers on Pedagogical Skills Possessed

S/N	**Item Statement**	$\bar{X}$	**SD**	**Remarks**
20.	Produce checklist for performance evaluation during a practical class	3.52	0.82	HP
21.	Produce paper and pen test for practical class	4.03	1.03	HP
22.	Assign students into peer groups where students evaluate themselves	3.59	0.88	HP

23.	Use of self assessment techniques for student evaluation	3.34	0,92	MP
24.	Conduct demonstration sessions with students	4.43	1.05	HP
25.	Conduct discussion sessions with students	4.12	1.02	HP
26.	Apply coaching techniques in skill acquisition development	2.39	0.87	NP
27.	Provide devices that push students into trouble shooting on their own	2.61	0.91	MP
28.	Involve students in role-playing to bring about maximum participation in instructional process	4.23	1.01	HP
29.	Apply project method of teaching skills	3.88	0.98	HP
30.	Assign students to teams and assign projects to be carried out	4.46	0.96	HP
31.	Use competition to stimulate learning experiences	3.93	0.89	HP
32	Frequently change instructional delivery strategies to arouse students interest.	4.06	0.90	HP

Note **X** = Grand Mean; HP = Highly Possessed; MP = Moderately Possessed; NP = Not Possessed.

Data presented in Table 2 shows that the pedagogical skills with mean values from 2.61 – 4.46 are possessed by metalwork teachers while the skill with the mean of 2.39 was not possessed by metalwork teachers.

Discussion of the Results

The findings of the study showed that nine skills were not possessed by metalwork teachers in the use of interactive whiteboard. Further, the results of the study also showed that ten skills were not possessed by teachers of metalwork in the use of interactive whiteboard. This finding is in agreement with Miller (2006) who found out that, teachers of metalwork needed improvement in technological skills for teaching metalwork effectively in colleges of education.

It was also found from the study that one pedagogical skill was not possessed by metalwork teachers.

Conclusion

Based on the findings of the study it can be concluded that metalwork teachers are deficient in some skills in the use of interactive whiteboard.

Recommendations

Based on the findings of the study, the following recommendations were made:

- Metalwork teachers should be retrained on those skills that they do not possess in the use of interactive whiteboard.
- Skills that were not possessed by metalwork teachers in the use of interactive whiteboard should be integrated into the curriculum of metalwork teacher preparation institutions such as colleges of education and universities.

- Metalwork teachers that are well experienced in using interactive whiteboard should be employed by government to teach in technical colleges.
- Government and administrators of technical colleges should organize seminar and workshop for metalwork teachers on skills in the use of interactive whiteboard.

References

Adebayo, S.A. (2007). Assessment of the extent of pedagogical application by technical teachers in teaching motor vehicle mechanics work in technical colleges in Lagos State. Unpublished M.Ed Thesis Department of Vocational Teacher Education University of Nigeria, Nsukka.

Bartell, C.A. (1990). Action research: Cases of effective teaching practices. *Teacher Education Quarterly, 17(1), 79 – 91.*

BECTA (2003). What the research says about interactive whiteboards. Retrieved on 15th June, 2003 from http://www.becta.org.uk/research.

Beeland, W.D. Jr. (2002). Student engagement, visual learning and technology: can interactive whiteboard help? Annual conference of the association of information technology for teaching education, Trinity College, Dublin.

Bell, M.A. (2002). Why use an interactive whiteboard? A banker's dozen reasons. Retrieved on 20th July, 2012 from http://teachers.net/gazette/JANO2.

Clark, C.M. & Star, J.S. (1986). *Secondary and middle school teaching methods.* New York: Macmillan.

Cohen, D. (1986). *Assessing the quality of teacher education.* East Lansing, MI: National Centre for Research on Teacher Education.

Cuthell, J.P. (2005). The impact of interactive white boards on teaching, learning and attainment. Retrieved on 12th July, 2012 from http://virtuallearning.org.UK/wp-content-uploads-2010/10/impact-of-IWB.pdf.

Damcott, D.; Landato, J.; Marsh, C. & Rainey, W. (2000). Report on the use of the smart board interactive whiteboard in physical science. Retrieved on 20th June, 2003 from http://www.smarterkids.org/research/paper3.asp.

Doka, S. (2007). Knowledge and skill needs of technical college graduates for self-employment in metalwork trades. Unpublished M.Ed Thesis, Department of Vocational Teacher Education University of Nigeria Nsukka.

Dawodu, R.A. (2013). Effect of computer assisted instruction on technical college students academic achievement, interest and retention in metalwork technology in Lagos State Nigeria. Unpublished Ph.D Thesis, Department of Vocational Teacher Education University of Nigeria Nsukka.

Edwards, J.A.; Hartmell, M. & Martin, R. (2002). Interactive whiteboards: some lessons from the classroom. *Micro-maths 18, 30 – 33.*

Ekhaml, L. (2002). The power of interactive whiteboard. *School Library Media Activities Monthly XVIII, 35-37.*

Ezeh, P.C. (2010). Assessment of the level of ICT skills possessed by office technology and management teachers for effective service delivery in the polytechnics. *Nigerian Vocational Association Journal, 15, 184 – 192.*.

Federal Republic of Nigeria (1998). *National policy on education.* Lagos: NERDC.

Federal Republic of Nigeria (2013). *National policy on education.* Lagos: NERDC.

Gemma, M.; Carey, J.; Ros, L.; Armstrong, V.; Cardini, A. & Castte, F. (2007). *The interactive white boards, pedagogy and pupil performance evaluation: An evaluation of the schools white board expansion (SWE) project.* London: Challenge. Retrieved on 9th July, 2012 from http://www.cedtech.net/articles/32/323.pdfiwbpedagogy.

Glodrick, L. (2002). *Improving teacher evaluation to improve teaching quality.* New York: NGA Centre for Best Practices.

Heather, I.S.; Higgins, S.; Wall, K. & Miller, J. (2005). Interactive white boards: Boon or bandwagon? A critical review of the literature. Blackwell Publishing Ltd. *Journal of computer Assisted Learning 21, 91-101.* Retrieved on 12th July, 2012 from http://edtech2.boisestate.edu/spechtp/551/IWB_Boon_Bandwagon.pdf.

Kitta, S. (2004). Enhancing mathematics teachers pedagogical content knowledge and skills in Tanzania. Retrieved 29/6/12 from http://doc.utwente.nl/41421/1/thesis_kitta.pdf.

Miller, D. & Glover, D. (2002). The interactive whiteboard as a force for pedagogic change: the experience of five elementary schools in an English authority. *Information Technology in Childhood Education Annual 2003, 15-19.*

National Board for Technical Education (2001). *Revised* n*ational technical certificate and revised advance national technical certificate programmers for motor vehicle mechanics work trade curriculum and course specification.* Kaduna: NBTE.

National Board for Technical Education (2004). *National technical certificate examination (craft level) syllabus for engineering trades based on the NBTE curriculum (Ed.),* Kaduna: NBTE.

Okorie, J.U. & Ezeji (1988). *Elements guidance, vocational and career education.* Onitsha: Summary Education Publishers (Nig.) Limited.

Okorie, J.U. (2001). *Vocational industrial education.* Bauchi: League of Publishers.