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COMPUTERIZED SIGN OUT AND SIGN BACK ONLINE FORM: A STRATEGY FOR EFFECTIVE PREVENTION OF LOSS OF WORKSHOP TOOLS IN TECHNICAL COLLEGES IN RIVERS STATE

Sunny Nwakanma [1], Chiemeke Michael Ayeagbunem [2] & Lilian Izundu[3]

[1] Department of Industrial Technical Education, Ignatius Ajuru University of Education

[2]Department of Technology and Vocational Education, Nnamdi Azikiwe University

3 Department of Science Laboratory Technology, Federal College of Land Resources Technology

sunnynwakama@gmail.com

Abstract

This study on computerized sign out and sign back online form as a strategy for effective prevention of loss of workshop tools in technical colleges in Rivers State was necessitated by the frequent loss of tools in workshops in technical colleges. A research question guided the study and two null hypotheses were tested at 0.05 alpha level. Descriptive survey research design was employed for the study. The population for this study consisted of 120 technical college teachers and workshop attendants (78 Technical Colleges' teachers and 48 workshop attendants) in four technical colleges in Rivers State. The entire population was studied without sampling since the size was not too large and was manageable. The instrument for data collection was a structured questionnaire titled: Computerized Sign Out and Sign Back Online Form as Strategy for Effective Prevention of loss of workshop tools. The instrument was validated by three experts from the Departments of Industrial Technical Education and Educational Foundations in Ignatius Ajuru University of Education, Port Harcourt. Using the Cronbach alpha method to determine the reliability of the instrument, the reliability co-efficient of 0.76 was obtained. The data collected for the study were analyzed using mean and standard deviation to answer the research questions and to determine the closeness of the respondents' mean ratings. The t-test was used to test the null hypotheses at 0.05 alpha level. The findings of study revealed that, the use of computerized sign out and sign back online form will be very effective strategy for prevention of loss tools in workshops in technical colleges. The findings also showed that there was no significant difference in the opinions of teachers and workshop attendants on the use of computerized sign out and sign back online form as effective strategy for prevention of loss tools in workshops in technical colleges. Based on the findings of this study, it was recommended that computerized sign out and sign back online form should be adopted and implement in workshops in technical colleges in Rivers State.

Keywords. Technical colleges, workshop tools, computerized sign-out and sign-back online form, loss of tools.

Introduction

Technical colleges are concerned with production of technicians who are skilled in different fields of human endeavour. The type of technicians produced at technical college level include electronic/electrical technicians, automobile/metalwork technicians, building/woodwork technicians among others. Training of technicians at technical colleges involve imparting both

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theoretical and practical knowledge to students under the guidance of the teacher within the school environment. Students in technical colleges are exposed to different skilled areas, through which one can be trained to be self-reliant. The type of education that take place in technical college level is known as vocational and technical education.

Technical colleges according to Akpan (2015) provide technical and vocational education and training to students for different careers and occupations. Vocational and Technical education is an aspect of education that leads to acquisition of practical skills as well as basic scientific knowledge (Abel, 2019). At technical college, vocational and technical education is provided to impart technical/occupational skills in the areas of metalwork, woodwork, automobile, electrical, radio, television and electronic works. In the context of this study, technical colleges are government established educational institutions that prepare individuals to acquire practical skills, basic and scientific knowledge and attitude required by craftsmen and technicians at sub-professional levels. Teachers and students in those skill areas carryout practical works at designated workshops.

A workshop is a building were practical training on skill acquisition is carried out. Denga (2013) states that workshop is a workplace where machining, automobile, electrical/electronics, woodwork, fabrication, foundry, forging or welding operations, construction, maintenance or repairs are carried out. Technical colleges' workshop is a unique learning situation in which the learners may experiment, test, construct, disassemble, repair, design, create, imagine and study (Ezeji, 2014). This explains the fact that technical education and its related workshop practices is a programme whereby students acquire industrial-technical knowledge and skills through creative and problem-solving learning experience involving activities such as experimenting, planning, designing, constructing, evaluating and using tools, machines, materials and processes. Every vocational and technical trade or craft has its own workshop for teachers and students' practical works. The major components of workshops are tools, machine, materials and consumables. Some of these tools and machines operates or are energized through electric power. In the context of this study, workshop is a place where mechanical, electrical, electronics, automobile and woodwork practical, training, repair and maintenance are carried out in technical colleges. The functionality and usability of these workshops largely depends on availability, adequacy and utilization of workshop tools.

Workshop tool is any instrument of operation for performing and assisting the work or facilitating mechanical operations in the workshop (Golden, 2022). According to Yash-Shah (2012), tools play important role everywhere and affect almost every person, in any part of the world. Today tools are utilized for numerous purposes. They help to mechanize various manual tasks and also make the related process simple. It enables one to complete the particular work faster and reduce the manual efforts and thereby increase productivity. Nowadays, various types of workshop tools are manufactured in many countries across the globe. These tool room are commonly used for different purposes in a wide range of industrial segments such as woodworking, automobile, electrical, construction among others. Good quality workshop tools are very important in obtaining high quality output with better accuracy.

Tools are particularly important in workshop practice. They are primarily used to put things together as in the case of hammers and nail guns; or to take things apart as in the case of jackhammers and saws. Tools are often classified as hand tools and power tools. Hand tools include all non-powered tools, such as hammers and pliers. Power tools are divided into classes, depending on the power source: electrical tools (powered by electricity), pneumatic tools

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(powered by compressed air), liquid-fuel tools (usually powered by gasoline), powder-actuated tools (usually powered by an explosive and operated like a gun) and hydraulic tools (powered by pressure from a liquid).

Availability of workshop tools is the key to get job done; which is essential for successful acquisition of skills. The availability and adequacy of workshop tools also increases efficiency. When teachers and students do not have the tools they need, it forces them to get creative and use what they have to the best of their ability. This can greatly hurt productivity among students and teachers and institution's bottom line. On the other hand, when the workshops are equipped with tools, teachers and students alike are focused on getting the job done as efficiently as possible rather than on how to get the job done with improvised or wrong tool. These tools appear in various shapes and sizes.

One can classify workshop tools according to Adams (2021) based on their basic functions. They are classified as follows:

1. Cutting and edge tools: this type of tools include knife, sickle, scythe, hatchet, axe, gouges and drill bits.
2. Moving tools: these tools move large and tiny items. Many are levers which give the user a mechanical advantage. Examples of force-concentrating tools include the hammer which moves a nail or the maul which moves a stake. These operate by applying physical compression to a surface. In the case of the screwdriver, the force is rotational and called torque. By contrast, an anvil concentrates force on an object being hammered by preventing it from moving away when struck. Writing implements deliver a fluid to a surface via compression to activate the ink cartridge. Grabbing and twisting nuts and bolts with pliers, a glove, a wrench, etc. likewise move items by applying torque (rotational force).
3. Tools that enact chemical changes, including temperature and ignition, such as lighters and blowtorches.
4. Guiding, measuring and perception tools include the ruler, glasses, square, sensors, straightedge, theodolite, microscope, monitor, clock, phon e, printer
5. Shaping tools, such as molds, jigs, trowels.
6. Fastening tools, such as welders, soldering irons, rivet guns, nail guns, or glue guns.
7. Personal protective equipment such as gloves, safety glasses, ear defenders and biohazard suits.
8. hand tools such as wrenches, pliers, cutters, files, striking tools, struck or hammered tools, screwdrivers, vises, clamps, snips, hacksaws, drills, and knives.

In the context of this study, workshops tools are all hand and power tools that required in technical college workshops for teaching, learning and skill acquisition. The availability of those workshop tool according Dan (2015) posses real challenge in most technical colleges due to loses. Consequently, effective strategies need to be developed and implemented to forestall in occurrence. This impresses on the need for the prevention of loss of workshop tools through effective preventive strategies. One of such strategies is the of computerized sign out and sign back online form.

A computerized sign out and sign back form is soft copy document that ensures that tool collected for use in the workplace or workshop is registered and documented in the name and identity of the person collecting it. The information needed during the registration and documentation (sign out) process include time of collection, day, year, type and description of tool, finger print and instant photograph of the collector. The same procedure is repeated during the sign back; which is during the returning or retrieving of the tool. Thereafter the document is saved online for future reference.

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According to James (2017), computerized sign out and back online form provide and secures information concerning the movement of tools on daily basis. It helps tools attendants or workshop attendants to ascertain the true position and whereabouts of tools under their custody.

In the opinion of Dan (2015), computerized sign out and sign back online form assist tools and workshop attendants to know the person or persons in possession of tools at any given time and day. The form has a menu where all tools that have returned and the ones that have been returned at the end the day's job will be displayed against the collector's name(s) and photograph. The provision makes it easier to trace missing, lost or stolen tools. The computerized sign out and sign back online form as opined by Okoro (2016) is an online registration of tools on the point of collection and retrieval. It is an online record indicating when someone take something away, usually by signing his or her name.

Computerized Sign out and sign back forms are online web pages or electronic documents designed to capture, validate, and submit data in forms processing. It provide a series of fields where data is collected, often using a Web browser. They take the place of paper forms and are designed to capture, validate, and submit data to a recipient for forms processing in a more efficient manner. E-forms allow data to be captured electronically which can speed back-end processing of form-based information. Data can also be exchanged with back-end systems.

The functions of Sign out and sign back online form according to Natah (2017) include the following:

1. Typically, with web-based forms, users are directed to a URL from an email or a portal hyperlink. They navigate through the form, complete the necessary information fields, and submit the form for processing.
2. The form submission process then transfers all the data associated with that submission to the form server including all completed form field values, file attachments, and identifier information on who completed the form.
3. Once received, the form server initiates downstream processing. This may include any number of actions, for instance review and approval processes that are dynamically calculated based on data contained on the form or data about the form submitter like their manager or geographic region. Other actions can be triggered as well, such as scheduling an appointment for a customer, or processing a sales order.
4. After an approval process, it is not uncommon for form data to be written to an additional system such as a CRM system (for vendor or customer information changes), or maybe the HR system (if an employee changed a job position). In addition, a printable PDF version of the form can be saved as a transaction receipt.
5. The entire transaction, receipt, plus any submitted form attachments may be considered "Records". The type of form and the data populated on the form can lead to an electronic record policy being applied to start the record policy actions.
6. Finally, all of the information captured through the form can be leveraged by business intelligence reports to provide management feedback on the effectiveness of the form, along with capturing metrics from the data submitted to understand overall trends of the data collected.

With document management software and e-Forms technology, one can automate form processing for all forms and eliminate the hassles of manually processing, routing, and filing forms. The usefulness of computerized sign out and sign back online form according to Evans (2016) can be seen in the following fields of endeavours:

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- Accounting: Use for Purchase Orders, Expense Reports, Capital Expenditure Requests, Mileage Reimbursement.
- Human Resources: Use for Position Changes, Vacation Requests, Time Sheets, Employee Reviews.
- Engineering: Use for Defect Tracking, Engineering Change Orders, Product Enhancement, Tools and Equipment management and Requests.
- Manufacturing: Use for Employee Training Certification, Safety Inspections, Document Change Requests, Quality Assurance Variances.
- Customer Service: Use for Survey forms, Customer Warranty Requests, Requests for customer service, incident reports.

The advantages of computerized sign out and sign back online form on tools management are as follows:

- It provides security to tools
- It promotes efficient tools inventory
- It prevents the stealing of tools
- It helps in tracing the whereabouts of missing tools
- It makes the job of workshop attendants easy
- It places a heavy responsibility on any person in possession of tools.

In the context of this study, computerized sign out and sign back online form is a document that provide useful information about the whereabouts of workshop tools. The inability of technical colleges in Nigeria and Rivers State in particular to implement and utilize computerized sign out and sign back online form may account for the increase in the loss of workshop tools.

Statement of the Problem

The beauty and functionality of vocational and technical education under the auspices of technical college is the availability, adequacy, and utilization of workshop tools. The existence of such tools not only promote the acquisition of practical skills among students but also facilitate teaching and learning. Unfortunately, it has been clearly observed that loss of workshop tools through misplacement, displacement, and theft is on the increase in technical colleges especially in Rivers State. According to Adams (2021), twenty percent (20%) of workshop tools are lost yearly in technical colleges in Rivers State, thereby affecting the quality of teaching and learning and acquisition of practical skills.

Undoubtedly, this situation could have been avoided if strategies for effective prevention of loss of workshop tools such as computerized sign out and sign back online form were used. The present researcher is worried about this ugly condition and sought to investigate the use of computerized out and sign back online form as a strategy for effective prevention of loss of workshop tools in technical colleges in Rivers State.

Purpose of the Study

The purpose of this study was to examine the use of computerized sign out and sign back form as a strategy for effective prevention of loss of workshop tools in technical colleges.

Research Question

How effective will the use of computerized sign out and sign back form prevent loss of workshop tools in technical colleges.

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Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance.

1. Teachers and workshop attendants did not differ in their mean ratings on the effectiveness of the use of computerized sign out and sign back form as a strategy for prevention of loss of workshop tools in technical colleges.
2. Workshop attendants did not differ in their mean ratings on the effectiveness of the use of computerized sign out and sign back form as a strategy for prevention of loss of workshop tools in technical colleges based on years of employment (0 – 10 years and 11 years – above).

Methods

The study adopted a descriptive survey research design. The population for this study comprised 120 technical college teachers and workshop attendants (72 teachers and 48 workshop attendants) in four technical colleges in Rivers State namely; Technical College Port Harcourt, Government Technical College Ahoada, Government Technical College Tombia and Government Technical College Ele-Ogu. The entire population was used as a sample size since the population is not too large and is manageable. The instrument for data collection was a structured questionnaire developed by the researcher with the title: *Computerized Sign out and Sign Back Online Form As a Strategy for Effective Prevention of Loss of Workshop Tools.* It contains 10 items on a four-point rating scales of Very Effective (VE), Effective (E), Ineffective (I) and Very Ineffective (VI). Two experts in the department of technical education, Ignatius Ajuru University of Education, Rivers State validated the instrument. The reliability of the instrument was established using a pilot test involving 10 teachers and 10 workshop attendants of technical colleges in Bayelsa State. Data collected for the pilot study were analyzed with Cronbach alpha which yielded reliability coefficient of 0.76. The researcher through the help of research assistants distributed 120 questionnaire and also retrieved the same after two weeks; which was used for analysis. The data collected for the study were analyzed using the arithmetic mean and standard deviation to answer the research questions and determine the closeness of the responses to the means respectively. The z-test was used to test the null hypotheses at 0.05 level of significance. A null hypothesis was rejected where the p-value was less than the 0.05 level of significance; it meant that there was a significant difference between mean rating scores. Conversely, where the p-value was equal or greater than the level of significance (0.05), it meant that there was no significant difference and the hypothesis was accepted.

Results

Answers to the research question and hypotheses were presented in tables 1 to 3.

***Research Question 1*:** How effective will the use of computerized sign out and sign back online form prevent loss of workshop tools in technical colleges?

Table 1

Mean ratings on the effectiveness of computerized sign out and sign back online form for prevention of loss of workshop tools.

S/N	Aspect of computerized sign out and back online form	Mean	SD	Remarks

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1	Ability to indicate tools that were signed out	3.50	0.47	VE
2	Ability to indicate time of collection of tools	3.54	0.52	VE
3	Ability to indicate the date of collection	3.62	0.56	VE
4	Ability to indicate and identify the finger print and image of the collector	3.51	0.58	VE
5	Ability to indicate tools that were not returned at end the day's work	3.51	0.72	VE
6	Ability to indicate tools that were returned at the end of the day's work	3.53	0.53	VE
7	Ability to display the names and identity of those that did not return the tools they signed out	3.61	0.53	VE
8	Ability to store the above information online	3.54	0.58	VE
9	Ability to retrieve the above information online	3.51	0.51	VE
10	Ability to print hard copy of the above information	3.63	0.61	VE
	Cluster Mean	3.55	0.56	VE

Table 1 shows that all the items have a cluster mean of 3.55. This mean that teachers and workshop attendants in technical colleges are of the opinion that the use of computerized sign out and sign back online form will be very effective for prevention of loss of workshop tools in technical colleges in Rivers State. The standard deviation of 0.56 shows that the respondents are homogenous in their opinion.

Hypothesis 1: Teachers and workshop attendants did not differ in their mean ratings on the effectiveness of the use of computerized sign out and sign back form as a strategy for prevention of loss of workshop tools in technical colleges.

Table 2

The t-test on the effectiveness of computerized sign out and sign online form for prevention of loss of workshop tools by teachers and attendants

Status of Respondents	N	$\overline{X}$	SD	df	t-cal.	p-val.	Decision
0 – 10 years	72	3.55	.40	118	0.42	0.63	Not significant
11 years & above	48	3.51	.43				

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Data in Table 2 show that the respondents do not differ significantly in their mean ratings on the use of computerized sign out and sign back online form as an effective strategy for prevention of loss of workshop tools in technical colleges in Rivers State, with mean scores of 3.53 and 3. 51 while the corresponding standard deviations are .40 and .43. The Table indicated a t-value of 0.42, at degree of freedom of 118 and a p-value of .063. Testing at alpha level of 0.05, the p-value is not significant since the p-value is greater than the alpha value (0.05). Therefore, the null hypothesis is not rejected.

***Hypothesis 2*:** Workshop attendants did not differ in their mean ratings on the effectiveness of the use of computerized sign out and sign back form as a strategy for prevention of loss of workshop tools in technical colleges based on years of employment (0 – 10 years, and 11 years – above).

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Table 3
The t-test on the effectiveness of computerized sign out and sign back online form for prevention of loss of workshop tools based on gender of workshop attendants

Years of Experience	N	$\overline{X}$	SD	df	t-cal.	p-val.	Decision
0 – 10 years	20	3.51	.17	46	0.42	0.62	Not significant
11 years & above	28	3.53	.15				

Data in Table 3 show that the respondents do not differ significantly in their mean ratings on the use of computerized sign out and sign back online form as an effective strategy for prevention of loss of workshop tools in technical colleges in Rivers State on the basis of years of experience, with mean scores of 3.51 and 3.53 while the corresponding standard deviation is .17 and .15. The table indicated a z-value of 0.42, at degree of freedom of 46 and a p-value of .062. Testing at alpha level of 0.05, the p-value is not significant since the p-value is greater than the alpha value (0.05). Therefore, the null hypothesis is not rejected.

Discussion

The findings of this study revealed that computerized sign out and sing back online form will be a strategy for effective prevention of loss of workshop tools in technical colleges in Rivers State. The study shows that computerized sign out and sing back online form can be used to indicate tools that were sign out, time of collection, date of collection, identify the finger print and image of the collector, indicate tools that were returned and the ones that were not returned, display names and identity of those that those that did not sign back tools, store the information online, retrieve such information online among others.

The finding of this study is in agreement with that of James (2017) who noted that computerized sign out and sing back online form are useful in signing out and retrieving of tools. The form provides essential information on the whereabouts of tools in workshop and factory. The findings of the study is also in agreement with of Dan (2015) who stated that computerized sign out and sing back online form used to ascertain the numbers of tools that returned at the end of the day's job in the workshop. The form provides detailed information about the individual that collected a particular tool and the time of collection; thereby making it easy to trace the whereabouts of missing workshop tools. The findings of this study is in consonant with Okoro (2016) who observed that computerized sign out and sing back online form is important in identifying the individual responsible for the misplacement or loss of a particular tools. It helps to limit generalization of a group of persons when tools are lost or misplaced in the workshop. The findings of the study also agrees with that of Natah (2017) who opined that computerized sign out and sing back online form makes the job of workshop attendants very easy in terms issuing and retrieving tools from teachers and students during and after workshop practice. The computerized sign out and sing back online form is used to log in and log out tools.

The findings of this study are in consonant with that of Evans (2016) who stated that computerized sign out and sing back online form incorporates finger print and image capture of any individual assigned tool in the factory. Those features places heavy responsibility on individuals assigned tools in the workshop. The analysis of the hypothesis indicates that there is no significant difference in the mean ratings of respondents on the use of computerized sign out and back online

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form as a strategy for effective for the prevention of loss of workshop tools in technical colleges in Rivers State.

Conclusion

On the basis of the findings of the study, it was concluded that the use of computerized sign out and sign back online form will be a strategy for effective prevention of loss of workshop tools in technical colleges in Rivers State.

Recommendations

On the basis of the findings of the study and the conclusion reached, it was recommended that computerized sign out and sign back online form should be used by workshop attendants in order to prevent loss of tools in workshops.

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