



## Evaluation of Instructional Videos for Teaching and Learning Safety Precautions in Kano State Technical Colleges Workshops

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*Strictly as per the compliance and regulations of:*



# Evaluation of Instructional Videos for Teaching and Learning Safety Precautions in Kano State Technical Colleges Workshops

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## I. INTRODUCTION

Teaching and learning are two sides of the same coin. The teacher imparts the knowledge, skills, values, and attitudes to the learners. These impartation takes various forms: some makes the learners active and some makes them passive. It has been noted that learners learn better when they are actively participating in the classroom (Kadzera, 2006). In the same vein, teaching is the act of imparting knowledge or skill from teacher to the student while learning is the process of acquiring new or modifying existing knowledge, behavior, skills, values or preferences. It involves changes in behaviours which are demonstrated by people (Anka, 2016). More so, Van Dantton and Britte (2003) observed teaching is the guidance of pupils through planned activities so that they may acquire the richest learning possibilities from experience and requires the active participation of the child.

Like every other aspect of human endeavour, teaching has had its own share of challenges this has promoted many educational researches. Cecilia Boakiye and Ghartey Ampiah(2017) explored that lack of resources for teaching and learning, time management,

deficiency in content knowledge, students' inability to understand the lessons taught, student indiscipline were among the major challenges faced in teaching and learning situation in addition, Kasim & Abdurajak, (2018) opined that pedagogical incompetence such as inexperience on the application of students centred teaching method among teachers is one of the challenging factor in teaching and learning. Moreover, Amadike Okechuku and Vincent Agwi (2015) revealed that the tools/equipment/devices in technical training institutions are bad/obsolete for sequence of operations in the training workshops. In addition to other challenges, Omwenga (2001) observes that many teachers complain about lack of instructional resources, at the same time they are guilty of not using what is available. The desire to conduct this research is not only because the researchers are technology-based scholars but more importantly because of the role instructional videos plays in the development of teaching and learning Safety Precautions in Technical Colleges Workshops.

One of the means of making learners achieve a better performance and become very active is the use of real form, graph, diagram, video, or improvisation of the real form of the instructional materials (Čubrilo, Crvenković, Obadović, and Segedinac, 2014). This is because the learners engage all the five sense organs. Ajelabi (2006) explained that, computer assisted instruction (which is video in form) is useful for direct learning in a classroom without the presence of the teacher. It is seen as one of today's educational reform movement which attempts to bring successful instructional models into our schools. Video is now recognized by most educators as a powerful communications medium which, in combination with other learning resources and instructional strategies, can perform a vital role in modern education (Denning 1998).Leidner and Jarvenpaa (1995), added that, individuals are assumed to learn better when they discover things by themselves and when they control the pace of learning. This is why Donkor (2010) discussed that, the video-based instructional materials are more effective than the print-based instructional materials in equipping the distance learners with practical skills.

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Generally, instructional videos in teaching and learning plays an important role towards acquisition of knowledge because, of all the emerging areas of technology, video has been one of the most widely used tools for teaching and learning (Zhang, Lundeberg, Koehler, & Eberhardt, 2011). Thorpe (2006), opined that when video appropriately matched with specific instructional goals, video materials helps more students to achieve higher levels and tend to engage many more students in ways that are more compelling than printed resources. However, each instructional videos should be developed in consideration of the level of the students' interests and abilities (Donkor, 2010).

Evaluating instructional videos for teaching and learning workshop safety precaution can be viewed as a process or step by step motion/projected procedures on how best students can use hardware and machine tools and any other practical equipment in an organized manner in such a way that hazard is minimized or totally prevented (Denning, D. 1998). Life of individuals or students should be taken into consideration when working or learning at the workshop. This research therefore, chose to evaluate instructional videos in order to see how it can best facilitate effective and efficient teaching and learning workshop on safety precaution by students at Technical Colleges in Kano State in particular and Nigeria at large.

## II. STATEMENT OF THE PROBLEM

Safety precautions in workshops has been a major concern for not only the teachers, technicians, and technologists, but also the government as a whole. Safety precautions are normally taught through demonstrating or via the use of pictures in books. However, this has not really helped the students because accidents and incidents do happen regularly, particularly in workshops during practical sessions.

The use of printed media in teaching and learning safety precautions in technical colleges nowadays may be considered out-dated, too acquainted to the students and difficult to teach skills or convey emotions and feeling through print material. In addition, print media cannot be used for large group of students, hold large amount of data as well, it is Prone to get spoil easily and time consuming during preparation

### a) Objectives of the Study

The study is targeted at achieving the following objectives:

1. To investigate the availability of instructional videos in Kano State Technical Colleges.
2. To investigate the effectiveness and efficiency of devices to be used for playing instructional videos in Kano State Technical Colleges.

3. To investigate the teachers' competency in operating the devices used for playing instructional videos in Kano State Technical Colleges.
4. To assess the students' adherence in applying safety habit during practical sessions in Kano State Technical Colleges Workshop.

### b) Research questions

1. Are there available instructional videos in Kano State Technical Colleges?
2. What are the effectiveness and efficiency of devices used for playing instructional videos in Kano State Technical Colleges?
3. What are the levels of teachers' competency in operating the devices used for playing instructional videos in Kano State Technical Colleges?
4. What are the levels of students' adherence in applying safety habit during practical sessions in Kano State Technical Colleges Workshop?

## III. METHODOLOGY

### a) Research design

Descriptive survey design involving the use of observations, focused group discussion with the students and teachers was employed. Also questionnaires was administered to the students to find out their perception on the use of instructional videos to learn safety precautions.

### b) Population of the study

The population of the study consist of all the teachers (122) and students (4318) of Technical Colleges located in Kano State, Nigeria.

### c) Sample and sampling technique

The sample size for the population includes 80 teachers and 346 students which was based on the research advisor (2006). The students were SSII and SSIII from the following technical colleges viz: Government Technical College Kano, Government Technical College Ungogo, Government Technical College Bagauda and Government Technical College Tiga (formerly GTC Wudil).

### d) Research Instrument

Well-constructed and self-developed questionnaires titled "Evaluation of Instructional Videos for Teaching and Learning Safety Precautions in Kano State Technical Colleges Workshops" (QEIVTLSPKSTCW) was used to collect the desired data from the respondents. The questionnaires for both the teachers and the students was divided in to two sections (A and B) each. Section A comprises of demographic information of the respondents while section B consisted of required information on evaluation of instructional videos for teaching and learning safety precautions in Kano State Technical Colleges Workshops through response option of

strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD).

e) *Reliability of the Instrument*

Cronbach Alpha co-efficient reliability of 0.87 and 0.80 index was the value obtained using test-retest method for ensuring reliability of both the teachers and the students' instruments, respectively.

f) *Data Collection Procedure*

The researchers collected the data through the use of questionnaire and its administration in all the four technical colleges. The administration of the questionnaires were carried out by the researchers with the aid of research assistants, a total of 426 copies of questionnaires were distributed and filled by the respondents and retrieved on the spot by the researchers. This is done to avoid wrongly filled or missing.

The data collected from the respondents was analyzed using the descriptive statistic of mean and standard deviation. Descriptive statistics was used with the aid of statistical software package called SPSS Version 20.0 in analyzing the responses on evaluation of instructional videos for teaching and learning safety precautions in Kano State Technical Colleges Workshops while, demographic information of the respondents was not analyzed because it has less or no significant value on the research.

g) *Results Presentations*

The result of the finding expressed the perception of both the students and teachers on evaluation of Instructional Videos for Teaching and Learning in Kano state Technical Colleges' workshops. While analyzing the data 2.50 mean average was

considered as decision rule, being four-point Likert scale was used to categorized the level of agreement among the teachers and the students. Therefore, any decision less than 2.50 is considered rejected while 2.50 and above accepted.

From tables 1 and 2 below, items number one to six attempted to answer research question one and the results were found to be of mean score which is greater than 2.50 (3.27 to 3.98) with grand mean score of 3.16 and 3.00 (SD=0.65 and 0.52) except in items number two and three in both the teachers and the students responses with mean score of less than 2.50 (1.46, 2.39 and 1.27, 2.39), respectively.

Regarding the result of research question two, that is items number seven to twelve, it was found that the mean score of all the items in both the teachers and the students' responses were between 2.64 and 3.93 with grand mean score of 3.68 and 3.32 (SD=0.58 and 0.72).

In research question three, ranging from items thirteen to eighteen, the means score of all the items were less than 2.50 (1.43 to 2.33) except in items number sixteen (16) each from the teachers and students' responses with mean score of 3.98 and 3.98. The grand mean score of all the items were found to be 2.21 and 2.14 (SD=0.68 and 0.68).

Items 19 to 24 attempted to answer research question four. The mean score of items 20 to 24 were found to be between 3.14 and 4.44 which were above 2.50 and items 19 each from teachers and students responses was have the mean score of 1.31 and 1.82, and the entire grand mean of all the items was 3.32 and 3.31 (SD=1.31 and 0.68), respectively.

TEACHERS

Table 1: Mean Scores of the Respondents on evaluation of instructional videos for teaching safety precautions in Kano State Technical Colleges' workshops (N = 80)

| S/N | STATEMENTS  | X    | SD   | Remarks   |
|-----|---|------|------|-----------|
| 1   | The school have video projectors for teaching safety precautions  | 3.98 | 0.22 | Agreed    |
| 2   | Teachers used instructional videos for teaching safety precautions at the beginning of the term.                            | 1.46 | 0.81 | Disagreed |
| 3   | Teacher usually used safety precautions videos for each type of program   | 2.39 | 0.96 | Disagreed |
| 4   | There are available sources of power (e.g. Generator or batteries) for playing instructional videos for safety precautions. | 3.68 | 0.63 | Agreed    |
| 5   | The studio/workshop/laboratory for displaying instructional videos for safety precautions are conducive for learning        | 3.75 | 0.67 | Agreed    |
| 6   | The projectors for displaying instructional safety precautions are in good condition  | 3.68 | 0.63 | Agreed    |
|     | Grand Mean/SD   | 3.16 | 0.65 | Agreed    |
| 7   | The various instructional videos for teaching safety precautions are up to date/latest                                      | 3.39 | 0.74 | Agreed    |
| 8   | The school projectors are in good working conditions  | 3.88 | 0.46 | Agreed    |

|    |   |      |      |           |
|----|---|------|------|-----------|
| 9  | The school smart boards are in good working conditions.   | 3.84 | 0.51 | Agreed    |
| 10 | The teachers' mobile phones used for displaying online/offline videos are in good working conditions                                | 3.76 | 0.48 | Agreed    |
| 11 | The supplementary devices such as generators, electrical wiring and socket outlets are in good condition                            | 3.74 | 0.47 | Agreed    |
| 12 | There is routine maintenance on all the devices and equipment we used in the workshop   | 3.46 | 0.83 | Agreed    |
|    | Grand Mean/SD   | 3.68 | 0.58 | Agreed    |
| 13 | Teachers used their mobile phones to display safety precautions videos to their students  | 2.03 | 0.76 | Disagreed |
| 14 | Teachers provide various website links for the students to access instructional videos for safety precautions.                      | 2.33 | 0.84 | Disagreed |
| 15 | Teachers show competency in operating the projectors for displaying instructional videos for teaching safety precautions.           | 2.04 | 0.80 | Disagreed |
| 16 | Government supply electronics devices to the teachers for teaching in workshop  | 3.98 | 0.22 | Agreed    |
| 17 | Teachers used various method in presenting the instructional videos for better understanding  | 1.43 | 0.78 | Disagreed |
| 18 | Teachers permit student-teacher interaction during and after displaying the instructional videos                                    | 1.46 | 0.70 | Disagreed |
|    | Grand Mean/SD   | 2.21 | 0.68 | Disagreed |
| 19 | Teachers permit students-teacher interactions after displaying the instructional videos   | 1.31 | 0.72 | Disagreed |
| 20 | Teachers encourage the students to use Personal Protective Equipment (PPE) during practical sessions                                | 3.46 | 0.83 | Agreed    |
| 21 | Teachers encourages their students to observe safety rules during practical sessions.   | 3.83 | 0.57 | Agreed    |
| 22 | Teachers strictly observes students' adherence to safety habits while conducting practical exercise in the workshops.               | 3.39 | 0.74 | Agreed    |
| 23 | The students usually conduct accident free practical with the help of the safety videos guide.                                      | 3.51 | 0.68 | Agreed    |
| 24 | Teachers usually encourages the students to advice each other when trying to violate safety rules that were observed in the videos. | 4.44 | 4.37 | Agreed    |
|    | Grand mean/SD   | 3.32 | 1.31 | Agreed    |

Source: Field survey, 2019

## STUDENTS

Table 1: Mean Scores of the Respondents on evaluation of instructional videos for teaching and learning safety precautions in Kano State Technical Colleges' workshops(N = 346)

| S/N | STATEMENTS   | X    | SD   | Remarks   |
|-----|--|------|------|-----------|
| 1   | Our school have video projectors for teaching safety precautions   | 3.98 | 0.17 | Agreed    |
| 2   | Our teachers use instructional videos for teaching safety precautions at the beginning of the term                       | 1.27 | 0.52 | Disagreed |
| 3   | Our teacher usually used safety precautions videos for each type of programme  | 1.46 | 0.70 | Disagreed |
| 4   | We have available sources of power (e.g. Generator or batteries) for playing instructional videos for safety precautions | 3.91 | 0.35 | Agreed    |
| 5   | The studio/workshop/laboratory for displaying instructional videos for safety precautions are conducive for learning     | 3.63 | 0.75 | Agreed    |
| 6   | The projectors for displaying instructional safety precautions are in good condition                                     | 3.73 | 0.65 | Agreed    |
|     | Grand Mean/SD  | 3.00 | 0.52 | Agreed    |
| 7   | The various instructional videos for teaching safety precautions are up to date/latest                                   | 2.75 | 0.96 | Agreed    |
| 8   | The school projectors are in good working conditions   | 3.93 | 0.34 | Agreed    |

|    |   |      |      |           |
|----|---|------|------|-----------|
| 9  | The school smart boards are in good working conditions  | 3.59 | 0.86 | Agreed    |
| 10 | The teachers' mobile phones used for displaying online/offline videos are in good working conditions                          | 3.52 | 0.56 | Agreed    |
| 11 | The supplementary devices such as generators, electrical wiring and socket outlets are in good condition                      | 3.46 | 0.55 | Agreed    |
| 12 | There is routine maintenance on all the devices and equipment we used in the workshop   | 2.64 | 1.03 | Agreed    |
|    | Grand Mean/SD   | 3.32 | 0.72 | Agreed    |
| 13 | Our teachers use their mobile phones to display safety precautions videos to us   | 1.55 | 0.73 | Disagreed |
| 14 | Our teachers provide many website links for us to access instructional videos for safety precautions                          | 1.98 | 0.76 | Disagreed |
| 15 | Our teachers show competency in operating the projectors for displaying instructional videos for teaching safety precautions. | 2.01 | 0.79 | Disagreed |
| 16 | Government supply electronics devices to the teachers for teaching in workshop.   | 3.98 | 0.17 | Agreed    |
| 17 | Our teachers use various method in presenting the instructional videos for better understanding                               | 1.81 | 0.77 | Disagreed |
| 18 | Our teachers permit student-teacher interaction during and after displaying the instructional videos.                         | 1.50 | 0.86 | Disagreed |
|    | Grand Mean/SD   | 2.14 | 0.68 | Disagreed |
| 19 | Our teachers permit students-teacher interactions after displaying the instructional videos                                   | 1.82 | 0.74 | Disagreed |
| 20 | We use Personal Protective Equipment (PPE) during practical sessions.   | 3.83 | 0.54 | Agreed    |
| 21 | We usually observe safety rules during practical sessions   | 3.85 | 0.51 | Agreed    |
| 22 | Teachers strictly observed our adherence to safety habits while conducting practical exercise in the workshops.               | 3.14 | 0.92 | Agreed    |
| 23 | We mostly conduct accident free practical with the help of the safety videos guide.   | 3.32 | 0.93 | Agreed    |
| 24 | We do advice each other when trying to violate safety rules that were observed in the videos                                  | 3.90 | 0.44 | Agreed    |
|    | Grand mean/SD   | 3.31 | 0.68 | Agreed    |

Source: Field survey, 2019

#### IV. DISCUSSION OF RESULTS

From the results above, it was identified that from the teachers and the students perceptions there are availability of instructional videos for teaching and learning safety precautions in Kano state technical colleges workshops as well, the generators, batteries and projectors are all in good working conditions. Although there was no compliance in the use of instructional videos for teaching and learning safety precautions at the beginning of the term and using videos for teaching safety precautions for each type of program.

From the results, it was also observed that the various instructional videos for teaching safety precautions are up to date/latest, and all the devices such as projectors, generators/batteries, smart boards, mobile phones, electrical wirings, sockets outlets that are directly or indirectly aiding the use of instructional videos were all effectives and efficient as well. This is because there was always routine maintenance on all

the devices and equipment available in the workshops. However, this finding is contrary with the finding of Amadike Okechuku and Vincent Agwi (2015) where they revealed that the tools/equipment/devices in technical training institutions are bad/obsolete for sequence of operations in the training workshops.

The results also shows that teachers' competency in operating the devices used for playing instructional videos such as using mobile phones to display safety precautions videos, provision of various website links for the students to access instructional videos for safety precautions, ability in operating the available projectors in the schools, were all poor although, all the necessary electronics devices needed for displaying the instructional videos were all supplied by Government. This is because the teachers were not trained and have no experience on how to operate these devices. Therefore, this finding is in agreement with the Omwenga (2001) who observes that while many teachers complain about lack of instructional resources, they are guilty of not using what is available.

Moreover, the results indicated that that levels of students' adherence in applying safety habit during practical sessions was quite commendable. This is because there was encouragement and supports from teachers with regards to the use of Personal Protective Equipment (PPE) during practical sessions, observing safety rules during practical sessions and as well encouraging the students to advice each other when trying to violate safety rules.

## V. SUMMARY OF THE MAJOR FINDINGS

From the discussions above, it was found that the video projectors and the sources or alternate sources of power such as generators and batteries were available and in good working condition moreover, the studios, workshops and laboratories for displaying the instructional videos for teaching safety precautions were all conducive for teaching and learning.

In addition, the instructional videos, the projectors, the smart boards and the teachers' mobile phones were latest, up to date and in good working condition meanwhile, all other supplementary devices and components such as electrical wirings and socket outlet are all effective and in good working condition.

On the other hand, the teachers are not competent in operating the devices because using their mobile phones, provision of web sites links for safety precautions and even presentation or displaying the instructional videos to the students are all not common practices among them.

It was observed that the students adhere in applying safety precaution during practical session in their school workshops being they usually conduct accident-free practical and this is because of the courage and advice to use personal safety equipment, advice among students when trying to violate safety rule during practical and strictness by their teachers in observing the safety regulations.

## VI. CONCLUSION

The benefit and influence of instructional videos in teaching and learning safety precautions is undeniable because, the virtual and auditory nature of the instructional videos appeals to the extensive number of students and allow them to process information in a way that is natural and convenient for them. It is believed that the use of instructional videos in teaching and learning allow for more efficient processing and memory recall. Thus, the use of instructional videos in teaching and learning safety precautions in technical colleges serves not only benefits to the students but similarly, the teachers and the technical colleges at large.

## VII. RECOMMENDATIONS

Based on the findings of this study, the following recommendation were made:

Since all the projectors, instructional videos and other devices were available and in good working condition. The Head of Departments, Teachers, Store Keepers and Workshop/Laboratories/Studios attendants should collaborate to ensure good care, proper storage and regular maintenance of all the projectors, instructional videos and other devices for long lasting and effectiveness.

Being all the instructional videos, the projectors, the smart boards and the teachers' mobile phones were latest, up to date and in good working condition. The school Principals, Teachers/Supervisors/Workshop attendants should collaborate in ensuring maximum utilization of all these devices for effective teaching and learning safety precautions in their Technical Colleges.

Since the teachers are not competent in operating the projectors/instructional videos therefore, the school authority in collaboration with the Science and Technical Schools Board should encourage regular attendance of teachers of a seminars or workshops on utilization of instructional videos for teaching and learning for them to be equipped with the required knowledge and skills for operating the projectors.

Although there was adherence to safety rules and regulation in the schools workshops by the students, there is need for students-teacher interaction before and after the practical session to ensure maximum adherence to the safety rules and regulation in the schools workshops.

## REFERENCES RÉFÉRENCES REFERENCIAS

1. Ajelabi, P.A. (2006). Production and utilization of educational media. Lagos, Raytel publication Ltd.
2. Amadike O. and Vincent I.A.A. (2015). Status of workshops facilities in Technical Colleges in Rivers state *Journal of Resourcefulness and Distinction*, Vol. 11(1) 1-13.
3. Anka, A.B. (2016). Educational resources centre and teacher's competence, a case study of
4. Katsina State. In Ohamado S.F and Olaboda O.F (Ed) *teacher education for sustainable Development in Nigeria. Katsina, school of education FCE 4 (1) 29-41.*
6. Cecilia, B. and Joseph, G.A.(2017). Challenges and Solutions: the experiences of newly qualified science teachers. *Journal of Science and Mathematics education*. 6, 59-80.Retrieved from <http://journals.sagepub.com/doi/full/10.1177/2158244017706710>
7. Čubrilo, D. R.,Crvenković, Z. L., Obadović, D., Segedinac, M. (2014). The Application of Multimedia and its Effectson Teaching Physics in Secondary School. Vol. 46 (pp339–363). Serbia.
8. Denning, D. (1998). Video in Theory and Practice: Issues for Classroom Use and Teacher Video Evaluation. A constructivist view. Educational

- Communications and Technology Journal, 32(4), 195-205.
9. Donkor, F. (2010). The comparative instructional effectiveness of print-based and video-based instructional materials for teaching practical skills at a distance. University of education, Winneba, Ghana.
  10. Kadzera, C. M. (2006). Use of instructional technologies in teacher training college Malawi. Blacksburg, Virginia.
  11. Kasim, T.S.A.T, & Abdurajak, F.S. (2018). Issues and Challenges in Teaching and Learning: An Analysis of Islamic Education Novice Teachers' Practices. International Journal of Education, Psychology and Counselling, 3(12), 99-109.
  12. Leidner, D.E. Jarvenpaa, S. (1995). The use of information technology to enhance management school education: a theoretical view, MIS Quarterly 19(3), pp. 265–291.
  13. Omwenga, N.M. (2001). Use of Media resources during teaching practice (A study of Kamagambo and St. Paul). Kenyatta University, Unpublished, Med Thesis.
  14. Van Danttan and Britte (2003). "Direction of Professional Development for Classroom.
  15. Teachers in Effective Science, Technology and Mathematics Teaching: Matters Arising. Lagos.
  16. Thorpe, R. (2006). Digital Technology In Classroom: Video in Teaching and learning. Retrieved on September 15, 2008 from [http://www.nhk.or.jp/bunken/English\\_](http://www.nhk.or.jp/bunken/English_)
  17. Zhang, M., Lundeberg, M. A., Koehler, M. J., & Eberhardt, J. (2011). Understanding affordances and challenges of three types of video for teacher professional development. Teaching and Teacher Education, 27(2), 454-462.

