

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

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Abstract

Instructional videos play a vital role towards effectiveness and efficiency in teaching and learning. The main objective of the study was to investigate the availability, effectiveness of the devices, teachers' competencies on the uses of these devices and the students' adherence towards safety rules in the schools' workshops. Research questions were formulated based on the objective of the study. The research design adopted descriptive survey. All the teachers and students in the Technical Colleges in Kano State were the population of the study. The sample of the study was made up of 80 teachers and 346 students respectively. A Questionnaire (QEIVTLSP) for collecting the data was developed and validated. A reliability estimate of 0.87 was obtained using test-retest method for ensuring reliability of the instruments. Data was collected and analysed and the results were presented and discussed. Recommendations were made accordingly

Index terms— evaluation, instructional videos, teaching and learning, safety precautions, workshop

1 Introduction

Eaching 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 (?ubrilo, Crvenkovi?,

45 Obadovi?, and Segedinac, 2014). This is because the learners engage all the five sense organs. Ajelabi (2006)
46 explained that, computer assisted instruction (which is video in form) is useful for direct learning in a classroom
47 without the presence of the teacher. It is seen as one of today's educational reform movement which attempts to
48 bring successful instructional models into our schools. Video is now recognized by most educators as a powerful
49 communications medium which, in combination with other learning resources and instructional strategies, can
50 perform a vital role in modern education (Denning 1998). Leidner and Jarvenpaa (1995), added that, individuals
51 are assumed to learn better when they discover things by themselves and when they control the pace of learning.
52 This is why Donkor (2010) discussed that, the video-based instructional materials are more effective than the
53 print-based instructional materials in equipping the distance learners with practical skills.

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

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

68 **2 II.**

69 **3 Statement of the Problem**

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

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

78 **4 a) Objectives of the Study**

79 The study is targeted at achieving the following objectives:

80 **5 Methodology a) Research design**

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

84 **6 b) Population of the study**

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

87 **7 c) Sample and sampling technique**

88 The sample size for the population includes 80 teachers and 346 students which was based on the research advisor
89 (2006). The students were SSII and SSIII from the following technical colleges viz: Government Technical College
90 Kano, Government Technical College Ungogo, Government Technical College Bagauda and Government Technical
91 College Tiga (formerly GTC Wudil).

92 **8 d) Research Instrument**

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

98 safety precautions in Kano State Technical Colleges Workshops through response option of strongly agree (SA),
99 agree (A), disagree (D) and strongly disagree (SD).

100 **9 e) Reliability of the Instrument**

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

103 **10 f) Data Collection Procedure**

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

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

113 **11 g) Results Presentations**

114 The result of the finding expressed the perception of both the students and teachers on evaluation of Instructional
115 Videos for Teaching and Learning in Kano state Technical Colleges' workshops. While analyzing the data 2.50
116 mean average was considered as decision rule, being four-point Likert scale was used to categorized the level of
117 agreement among the teachers and the students. Therefore, any decision less than 2.50 is considered rejected
118 while 2.50 and above accepted.

119 From tables 1 and 2 below, items number one to six attempted to answer research question one and the results
120 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
121 (SD=0.65 and 0.52) except in items number two and three in both the teachers and the students responses with
122 mean score of less than 2.50 (1.46, 2.39 and 1.27, 2.39), respectively.

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

126 In research question three, ranging from items thirteen to eighteen, the means score of all the items were less
127 than 2.50 (1.43 to 2.33) except in items number sixteen (16) each from the teachers and students' responses with
128 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
129 0.68).

130 Items 19 to 24 attempted to answer research question four. The mean score of items 20 to 24 were found to
131 be between 3.14 and 4.44 which were above 2.50 and items 19 each from teachers and students responses was
132 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
133 and 0.68), respectively.

134 **12 Teachers**

135 **13 Discussion of Results**

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

141 From the results, it was also observed that the various instructional videos for teaching safety precautions
142 are up to date/latest, and all the devices such as projectors, generators/batteries, smart boards, mobile phones,
143 electrical wirings, sockets outlets that are directly or indirectly aiding the use of instructional videos were all
144 effective and efficient as well. This is because there was always routine maintenance on all the devices and
145 equipment available in the workshops. However, this finding is contrary with the finding of Amadike Okechuku
146 and Vincent Agwi (2015) where they revealed that the tools/equipment/devices in technical training institutions
147 are bad/obsolete for sequence of operations in the training workshops.

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

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

160 V.

161 **14 Summary of the Major Findings**

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

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

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

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

176 **15 VI.**

177 **16 Conclusion**

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

184 **17 VII.**

185 **18 Recommendations**

186 Based on the findings of this study, the following recommendation were made: Since all the projectors,
187 instructional videos and other devices were available and in good working condition. The Head of Departments,
188 Teachers, Store Keepers and Workshop/Laboratories/Studios attendants should collaborate to ensure good care,
189 proper storage and regular maintenance of all the projectors, instructional videos and other devices for long
190 lasting and effectiveness.

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

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

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

3. 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.

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.

Figure 1:

1

S/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

Figure 2: Table 1 :

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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

Figure 3: Table 1 :

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