



# Accessibility and Use of Authoring Tools to Prepare Effective Audio and Video Course Materials in Secondary Schools in Nigeria

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## Authors' contributions

This work was carried out in collaboration between both authors. Author IOM designed the study, performed the statistical analysis, wrote the research methodology and discussion of findings. Author IAA wrote the first draft of the manuscript and managed literature searches. Both authors read and approved the final manuscript.

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## ABSTRACT

Teaching has moved away from a teacher traveling a far distance before getting necessary materials required to effectively impact relevant and effective learning to students. Nowadays, there are various tools that can be of great assistance to this end. Numerous tools are available for designing interactive tutoring CDs which are embedded with audio and video clips to arouse the interest of learners. The use of authoring tools will make teachers' presentations more timely, interesting and covering large classes at a time without leaving any student in doubt. This paper focuses on the level at which Nigerian teachers access and use of authoring tools for effective teaching and learning. The graphical presentations in this study reveal that despite the free availability of these tools; some teachers do not still have access to them and those having access could not use them expectedly. In order to overcome this concern, using available authoring tools to teach would be essential ingredients for preparing children and youth of this technological age to fulfill their educational objectives and compete with their counterparts anywhere in the world.

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## 1. INTRODUCTION

Authoring system according to Wikipedia is a program that has pre-programmed elements for the development of interactive multimedia software titles. It allows its user to create multimedia applications for manipulation of multimedia objects. Authoring tools are software packages that developers use to create and package content deliverable to end users. Though authoring tools have a range of uses, they are commonly used to create e-learning modules which are generally written to conform to some international standard [1]. Studies ([2,3,4]) noted and observed that multimedia authoring tools provide the important framework one needs for organizing and editing the elements of multimedia like graphics, sound, animation and video clips. In the educational field, authoring tools are used for designing interactivity and the user interface, for presentation of teacher's project or lecture on screen and assembling multimedia elements into a single cohesive project [1]. They typically include the ability to create, edit and import specific types of data; assembles raw data into a playback sequence or cue sheet and provide structured method or language for responding to user input. Educationally, the more variety of resources used in the learning process, the better the ability to enhance the human capability to absorb and retain facts of the learning material [5]. The ability to inject interactivity whereby, end users can dynamically engage in direct interaction with the application and navigate the movements or interaction with the multimedia application has brought a huge impact on the educational and research field in general [5]. In the world beyond, especially in the University learning and teaching environments, authoring tools are easy to access, and their use is proliferating every day. In academic research circles, authoring tools are now being adopted as alternative to conventional forms of scholarly publication and communication [6]. This paper looked into teachers' accessibility and use of authoring tools in secondary schools in Nigeria. It saw reason in the accessing and using of authoring tools for effective teaching and learning in Nigerian Secondary schools. The study found answers to the following research questions:

1. Do secondary school teachers have access to available authoring tools to support their teaching effectiveness?

2. At what level are the secondary school teachers using the available authoring tools in teaching?
3. Which of the authoring tools are used most widely by categories of teachers?
4. What factors seem to affect teacher's use of authoring tools in their teaching?

## 2. RELATED LITERATURE

Authoring tools are software applications used to develop e-learning products. They generally include capability to create, edit, review, test and configure e-learning. These tools support learning, education and training by enabling using distributed e-learning that is cost-efficient to produce and that facilitates incorporating effective learning strategies and delivery technologies into the learning. Authoring is just a speed-up form of programming without the need to know the intricacies of a programming language and understanding of how programs work is necessary [7]. An authoring system is a program which has pre-programmed elements for the development of interactive multimedia software titles. Authoring systems vary widely in orientation, capabilities and learning curve [5]. An authoring tool can be seen as an application development environment for non-programmers.

Despite many years of research and development, authoring tools and other advanced adaptive learning environments have seen relatively little use in schools and training classrooms [4]. Hence, authoring tools can reduce the development time, effort and cost; they can enable reuse and customization of content; they can lower the skill barrier and allow more people to participate in development and customization [1,7].

Learning through sustained inquiry activities requires a significant amount of reflection, planning and other meta-cognitive and higher level skills, yet these very skills are lacking in many students [2,8,4]. Thus, it is crucial to support, scaffold, and teach these skills [4]. This support includes providing "Cognitive tools" [3] that relieve some of the cognitive load through reminding organizational aides, visualizations; and providing coaching or direct feedback on the inquiry process. Authoring tools / multimedia authoring tools provide important framework one needs for organizing and editing the elements of multimedia like graphics, sounds, animations and

video clips. Authoring tools are basically used for designing interactivity and the user interface, which generally provide an integrated environment for binding together the presentation of one project on the screen and assembling multimedia elements into a single cohesive project. Authoring software provides an integrated environment for binding together the content and functions of one project. Authoring systems typically include the ability to create, edit and import specific types of data, assemble raw data into a play back sequence or cue sheet and provide structured method or language for responding to user input.

### 3. METHODOLOGY

The study employed survey design using check-list as well as questionnaire for the data collection. The check-list was used by the researcher to indicate any of the highlighted authoring tools that the respondents had ever accessed and used since they have started teaching. There were various kinds of authoring tools but the selected ones were so common, this was the major reason for using them. The questionnaire was structured to seek respondents' view concerning authoring tools accessibility and use and also to establish the cause of their inability to use them. The respondents which comprised teachers in secondary schools across four states: Oyo, Osun, Ogun and Lagos formed the sample for this study. Subjects taught by the teachers were not considered to affect the accessibility and use of authoring tools among the teachers. Randomization of sample was used to select only one hundred and eighty respondents; forty-five respondents were selected from each state, the study involved both male and female teachers. Collection of data was carried out within two months, the data were later collated and analyzed using pictorial analysis via SPSS. The instrument was subjected to both face and content validity as well as reliability of the instrument with 0.88 reliability index indicated high level of consistency (Cronbach alpha).

### 4. RESULTS AND ANALYSIS

The Figs. 1 and 2 answered the first two research questions raised. The result clearly showed that majority of the teachers regardless of their area of specialization were not aware of the presence of authoring tool to aid effective teaching and learning. Also, it was revealed that highest percentage of the respondents that were

aware of the tools could not use them at all (see Fig. 2).

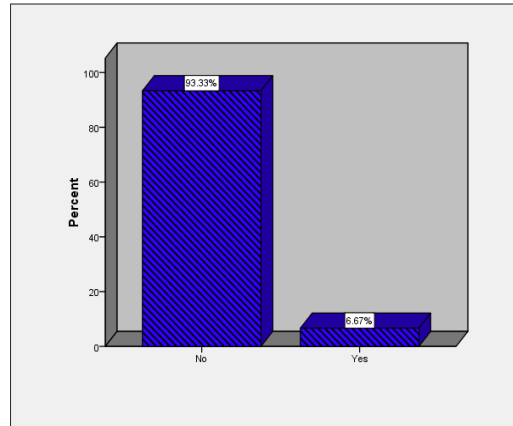


Fig. 1. Having access to authoring tools

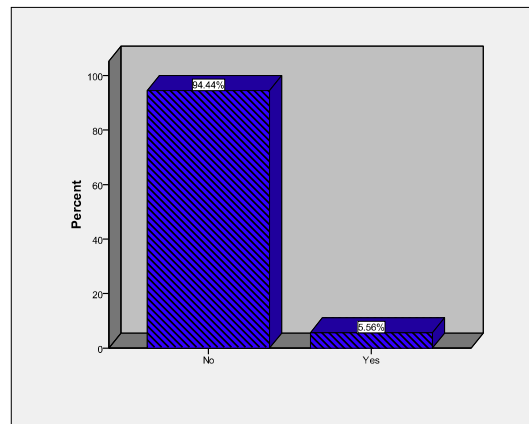


Fig. 2. Ability to use authoring tools

As indicated earlier, the two figures clearly stated that most teachers across the states do not have access to authoring tools and not be able to implement them in teaching. Only 7% of teachers had access to authoring tools and 6% could use them for teaching and learning purposes while 93% and 94% could not access and use the authoring tools respectively.

Most common authoring tools were selected for the respondents to choose the one peculiar to the one they had ever accessed or used since they have started teaching. Fig. 3 showed responses regarding the kind of authoring tools that were mostly accessed and used by the teachers across all specialized areas under study. Out of thirteen authoring tools, study showed that only Adobe Captive tool was mostly

used once, next to it was Adapt Learning while others were not that used.

Some factors were observed to impede the proper access and use of authoring tools among the teachers across states sampled. Fig. 4 revealed the hindrance factors that could result to inability of a teacher not to use any authoring tool. It was also illustrated that techno-phobia did not in any way affect the use of authoring tools towards effective teaching and learning while respondents agreed that cost of the software was a major factor that impede their use. One could infer that power supply was one of those factors affecting the use of tools generally but the responses as depicted (Fig. 4) showed that power supply was not the major fact.

### 5. DISCUSSION OF FINDINGS

From the findings, results revealed that many teachers could not access and use of authoring tools to support their teaching for effectiveness. The rate at which teachers under this study accessed and used of authoring tools was very low (7% and 6%) respectively. The first step in applying the authoring tools in teaching and learning is accessibility and use, this is in agreement with [4] that said “despite many years of research and development, authoring tools and other advanced adaptive learning environment have seen relatively little use in

schools and training classroom”. Similarly, teachers that could use these tools were not many (6%) compared to those that could not use them (94%). The views answered the first and second research questions that say “Are secondary school teachers have access to available authoring tools to support their teaching effectiveness? And At what level are the secondary school teachers can use the available authoring tools in teaching?”.

Also, the research question three that says “Which of the authoring tools mostly used by categories of teachers?” was answered via the results showed that Adapt learning tool was mostly used by the teachers under study while other twelve similar tools were not that used. The reason for this may be counted as most common authoring tool in our environment was Adapt learning, also it could also be that other tools were not easy to get as a result of cost implication. Sometimes, it could be that the teachers did not have access to those tools.

Conclusively, the finding made it crystal clear that power supply as well as techno-phobia were not counted to affect effective use of authoring tools; yet cost of the software could cause great hindrance to the use of the tools which answered the last research question that says “Is there any factor(s) mostly affect their access and use of authoring tools?”.

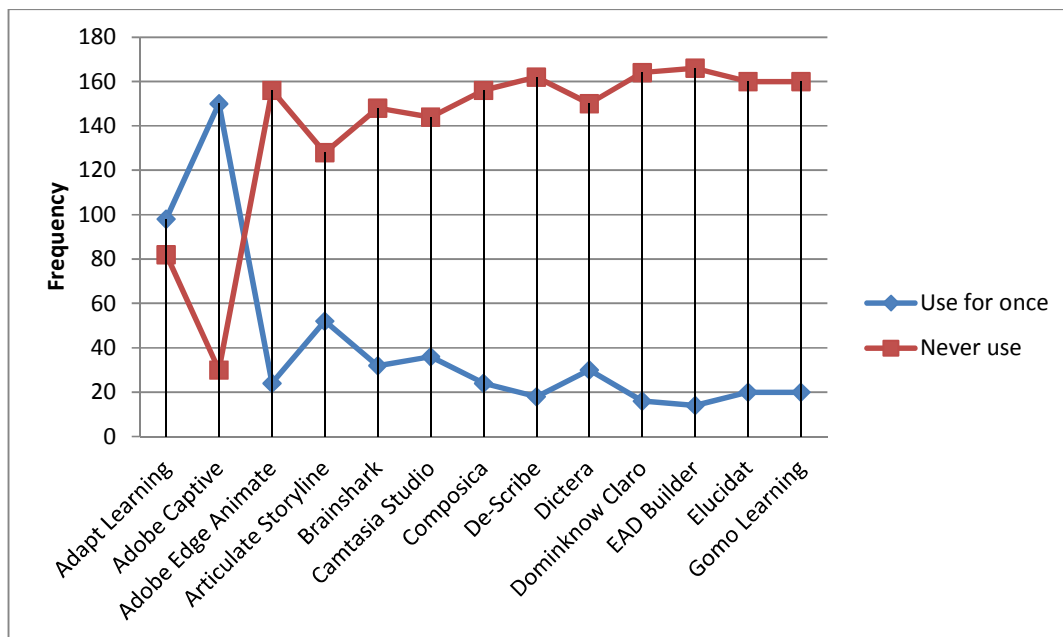


Fig. 3. Authoring tools under study

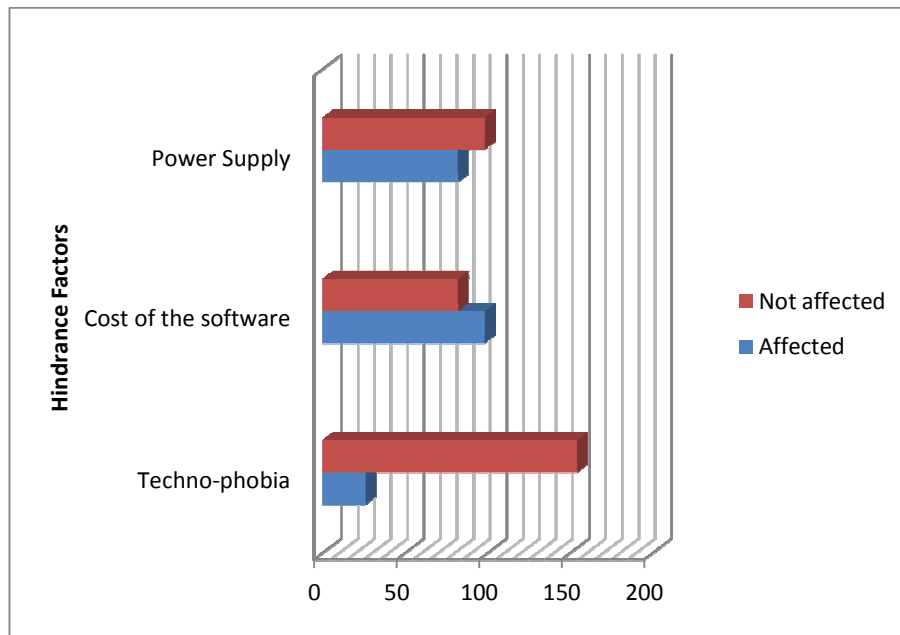


Fig. 4. Hindrance factors to access and use of authoring tools

## 6. CONCLUSION

The study critically looked into reasons and conditions that may affect effective use of numerous available authoring tools in some selected schools in Nigeria, focusing on four states Oyo, Osun, Ogun and Lagos respectively. The study summarily put that majority of the respondents were aware the existence of those tools but due to financial constraints they could not have access to them while those having access could not use them as expected. The situation in Nigeria might not be applicable to advanced nation like US, UK, London and others because use of authoring tools originated and properly used in those areas. It was also revealed that inability to use the tools might be attributed to cost of purchasing the tools, fear or sometimes the power failure. Among others, cost of these authoring tools was considered the most hindrance out of other factors that affected its accessibility and use. In developing nations like Nigeria, where power failure is a major challenge the cost of goods and services do raise to unbearable level that might lead to inability of teachers under study to agree that cost of authoring tools was a great factor impeding effective accessibility and use of authoring tools. Government should address these issues critically to have proper blueprint for effective and efficient teaching and learning process in Nigeria.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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