Authoring Tools: Its Awareness and Incorporation into Teaching of Sciences and otherSubjects in Lagos State Secondary Schools, Nigeria

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***Abstract*—In this technological era, teachers as conveyors of knowledge should, in addition to content knowledge, prepare themselves with most current aiding tools that can make knowledge delivery easier, design of teaching application available and relevant to various scientific concepts. Studies reveal that, teachers in teaching sciences are not aware of authoring tools for presentation of concepts, few teachers that aware of the authoring tools could not use the available tools to come up with well-prepared material to teach while remaining teachers were aware and could use it to design but have serious hindrance in implementing it into classroom environment. This paper, through pictorial representation of data, shows that out of 180 teachers in both primary and secondary schools teaching sciences and other subjects sampled, over ninety percent were not aware of authoring tools existence; over five percent could use any of available authoring tools to design. Adapt Learning was the major tool used mostly by those teacher that can use the tools; accessibility and cost of software were counted as factors that can affect the use of authoring tools. It is recommended that workshops should be introduced on the use and proper application of authoring tools with their peculiar benefits and weaknesses; teachers should be trained to design with these tools effectively to solve scientific conceptual problems.**

***Index Terms*—authoring tools, sciences, classroom, courseware, course material**

I. Introduction

It was noted and observed in the educational field, that the more variety of resources used in the learning process, the better the ability to higher or enhance the human capability to absorb and retain facts of the learning material [1]. In the world beyond University learning and teaching environments, authoring tools are easy to access, and their use is proliferation every day. In academic research circles, authoring tools are now being adopted as an alternatives to conventional forms of scholarly publication and communication [2], [3]. This paper focuses on the awareness and implementation of authoring tools in secondary schools in Nigeria. It finds out the level at which teachers are aware of authoring tools and how effective those tools are being used or implemented to support their teaching profession. The study was guided through the below research questions:

1) At what rate are the teachers aware of authoring tools to support their teaching effectiveness?
2) Atwhat level the teachers can use the available authoring tools in circulation?
3) Will the years spent in teaching helpthe awareness of authoring tools?
4) Which of the authoring tools mostly used by categories of teachers?
5) Which of the factors mostly affect the use of authoring tools?

Authoring is just a speed-up form of programming without the need to know the intricacies of a programming language but and understanding of how

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programs work is necessary. 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 [1], [4]. 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 [5]. 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 [6]-[9].

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 [5], [10]. Thus, it is crucial to support, scaffold, and teach these skills [5], [9].

II. Methodology

The study employed survey design and the use of questionnaire as major instrument for the collection of data. The respondents which comprise of teachers in secondary schools within Lagos State were grouped into twenty-two based on their subjects areas: Agricultural science, Biology, Business studies, Chemistry, Civic education, Computer studies, English Language, Home economics, Food and nutrition, French language, Integrated science, Geography, Government, Introductory technology, Igbo language, Islamic studies, Literature in English, Mathematics, Physical education, Physics, Social studies and Yoruba language. Randomly, one hundred and eighty respondents were selected for the study, the study involved both male and female respondents. Collection of data was carried out within a month, which was collated and analyzed using pictorial analysis as well as parametric statistics 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 (Crombach Alpha).

III. Results and Analysis

The Fig. 1 and Fig. 2 answered the first two research questions raised. The result (Fig. 1) clearly showed that majority of the teachers regardless of their area of specialization were not aware the presence of authoring tool to aid effective teaching and learning. Also, Fig. 2 revealed that highest percentage of the respondents were aware of the tools but could not use them at all.

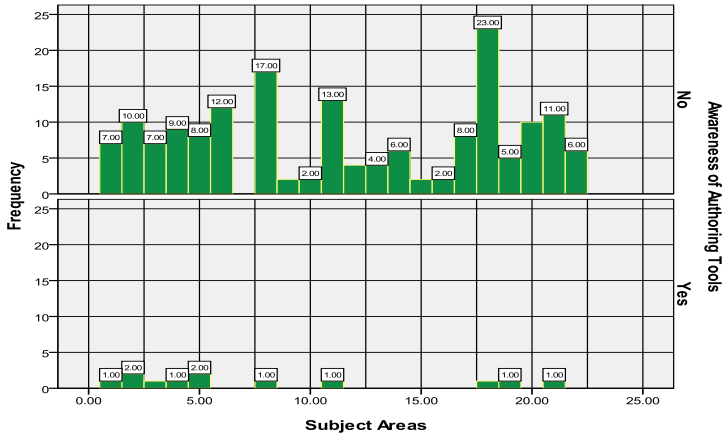

Figure1. Awareness of authoring tools

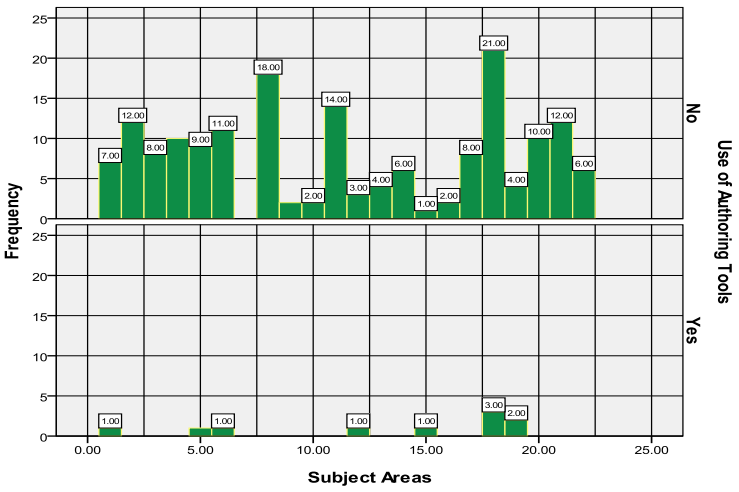

Figure 2. Use of authoring tools

Table I and TableII found the significant implication of years spent by a teacher with his/her possibility to be aware of authoring tools for the purpose of his efficient and effective teaching. Table 1 gives descriptive analysis of the relationship between the two variables: Years in teaching vs. awareness of authoring tools while Table IIshowed t-test statistical result effect of years spent by a teacher on his/her coming across the available authoring tools. The result from the two tables showed that number of years in teaching does not determine a teacher awareness of the existing authoring tools.

TABLE I. DESCRIPTIVE ANALYSIS BETWEEN YEARS IN TEACHING AND AWARENESS OF AUTHORING TOOLS

	Awareness of Authoring Tools	N	Mean	Std. Deviation
Years in Teaching	No	168	5.5952	3.39996
	Yes	12	9.6667	3.72542

TABLE II. INDEPENDENT SAMPLES T-TEST

	t-value	Df	Sig. (2-tailed)
Years in Teaching	-3.983	178	.000

An independent-samples t-test was also conducted to compare years in teaching and Awareness of Authoring Tools by such teacher. The years spent in teaching by the teacher does not help or determine his/her awareness of authoring tools. Teachers with No option (M=5.59, SD=3.39) and teacher with Yes option [M=9.67, SD=3.73; t (178) =-3.983, P=.000].

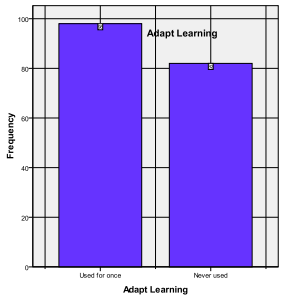

Figure 3. Adapt Learning

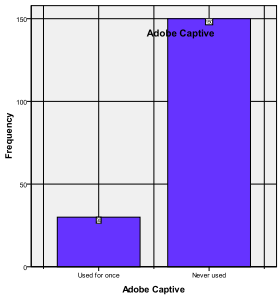

Figure 4. Adobe Captive

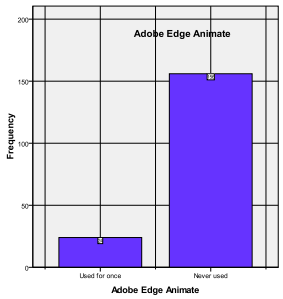

Figure 5. Adobe Edge Animate

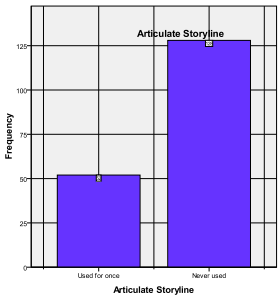

Figure 6. ArticulateStoryline

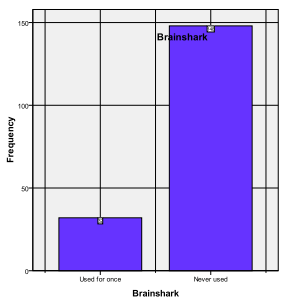

Figure 7. Brainshark

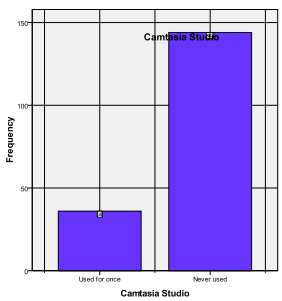

Figure 8. Camtasia Studio

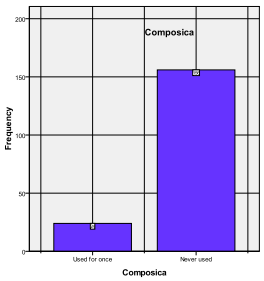

Figure 9. Composica

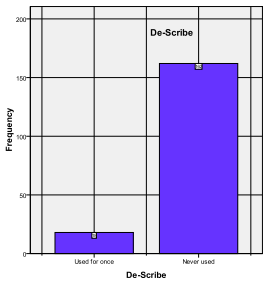

Figure 10. De-Scribe

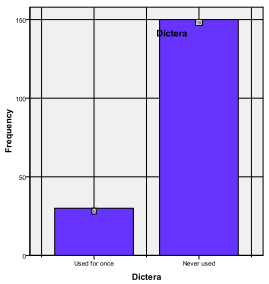

Figure 11. Dictera

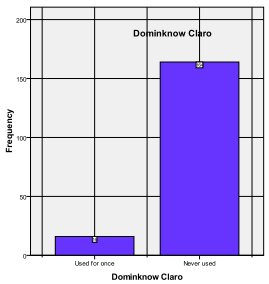

Figure 12. Dominknow Claro

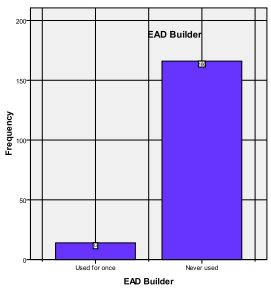

Figure 13. EAD Builder

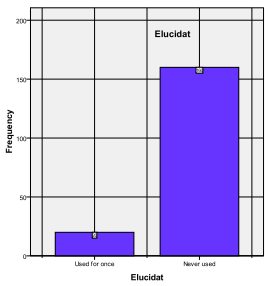

Figure 14. Elucidat

Fig. 3 to Fig.15 showed responses regarding the kind of authoring tool that were mostly used by the teachers across all specialized areas under study. Out of thirteen authoring tools, study showed that only Adapt learning tool is mostly used while others were not used.

Fig. 16 to Fig. 19 revealed hindrance factors that can result to inability of a teacher not to use any authoring tool. Fig. 16 and Fig. 17 showed that respondents agreed that accessibility and cost of the software are major

factors that impede their use. Looking at Fig. 18, one could infer that power supply is one of the factors affecting the use of tools generally but the responses as depicted by Fig. 18 showed that power supply is not the major factor to the use of the tools. Finally, Fig. 19 illustrates that techno-phobia is not in any way affect the use of authoring tools towards effective teaching and learning.

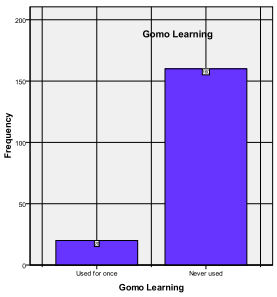

Figure 15. Gomo learning

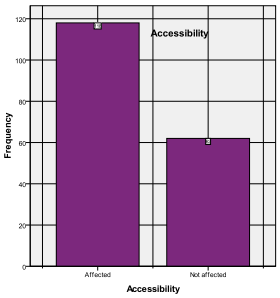

Figure16. Accessibility

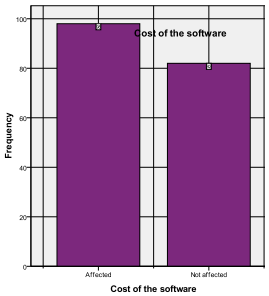

Figure 17. Cost of thesoftware

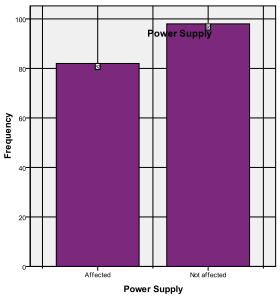

Figure18. Power Supply

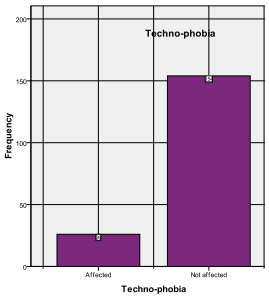

Figure 19. Techno- phobia

IV. Discussion of Findings

From the findings, results revealed that many teachers were not aware the presence of authoring tools to support their teaching effectiveness. The rate at which teachers under this study response to the awareness of the availability of authoring tools was very low (6.7%). And the first step in applying the authoring tools is awareness of its availability in teaching profession, this is in agreement with [5] that 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 can use these tools were at low level (5.6%) compared to those that cannot use them.

The results also reported that number of years spent in teaching by the teachers do not really determine their awareness and use of authoring tool(s). This supported earlier finding of [6], that year's spending in classroom is not a factor to predict teachers' efficiency in the use of authoring tools despite the usefulness of the tools such as reduction of the development time, reduction of effort and cost, reusability and customization of content, lowering the skill barrier and allowing more people to participate in the development and customization. Also, the results showed that Adapt learning tool was mostly used by the teachers under study while other twelve similar tools were not used.

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 accessibility and cost of the software could cause great hindrance to the use of the tools.

V. Conclusion

The effectiveness of the awareness and incorporation of multimedia-authoring tool in producing lesson materials and related tutorials to supplement the classroom instruction is considered an important tool to assist teacher. The features incorporated into the tool support this fact. The authoring tool focuses on its usability, multiple teaching strategies, courseware reuse, and the concept of specialized authoring. The usability factor provides a strategy for target users to utilize the tool without much expertise or training since programming and scripts are not a part of the tool. The tool is designed to be a non-technical and uses a familiar interface that increases usability. Yet many teachers were not aware of the authoring tools while those teachers with little knowledge of the tools could not use them resulting in incapability of some teachers to embrace new emerging tools available. Conclusively, the tool provides assistance to teachers and students in putting together simple courseware or materials.

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