

Lecturers' perceptions on the use of educational Apps: The Ghanaian context.

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Abstract:

Background: There is nearly a kind of technology for every modern human activity in all the various sectors of an economy. These hardware tools are powered by software applications which allow users to perform tasks in a customized manner. For some time now, in education, teachers, administrators, and students are usually seen using the help of computer/mobile apps to improve their day to day operations. In higher education, the delivery and design of course contents is a great determinant of the successful absorption of course concepts, theories and practicalities by students. Lecturers can leverage educational apps to improve pedagogy, but are they ready?

Materials and Methods: With a qualitative design approach, online and hardcopy versions of the study questionnaire was able to reach 72 lecturers from various departments in four different public universities in Ghana (Cape Coast Technical University, University of Ghana, University of Cape Coast, and Kwame Nkrumah University of Science and Technology). The data gathered was analyzed using manual content analysis and SPSS-version 25.

Results: Responses from the sample showed that all lecturers use educational software apps to improve their pedagogic styles and creation of content. However, majority said they fully depended on these apps to enhance their knowledge and understanding of the course they teach while a minority confirms that they partially depend on educational software.

Conclusion: Educational software is embraced by lecturers and that they recommend its adoption in the transfer of knowledge in tertiary education

Key Word: Educational Apps; Tertiary Education; Lecturers

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I. Introduction

The deployment of educational technologies to tertiary schools may be thought of as providing laptops, personal computers, tablets, etc., meanwhile, the real gain and success emanate from the software as opposed to the mere hardware tools¹. Rather than outfitting learners with more PCs and tablets, investment in educational applications, sites, and other simulation software that learners will have the option to access from their own gadgets is superior.

According to the researcher², it is established that in situations where the number of students in a class overwhelms the resources available to carry on the class activity, and with other distinctive issues, lecturers' teaching quality and value become blemished, also, how students participate and collaborate in the classroom gets flawed. Such an environment with engulfing class size can use the help of mobile/pc application software to improve the situation to some extent. Notwithstanding, for the most part, not enough attention and focus have been giving to electronic-learning and mobile-learning which has rather be more convenient with many³. However, the success of embedding these educational technologies right into tertiary education will certainly decrease the work of educators just as making a favorable domain that meets the desires for both the student and teacher to understand and convey information deferentially. This current research does not only aim at ascertaining whether or not educational apps have been leveraged by lectures in the public tertiary institutions in Ghana but also find out which common software/apps lecturers use in teaching and whether they are institutionally or personally recommended apps.

II. Material And Methods

This descriptive survey was done using lecturers who are in unique departments and scattered in four different public universities in Ghana.

Study Design: A qualitative design approach using open-ended questionnaire to find out the types of apps used by the tertiary instructors

Study Location: Three cities in three regions of Ghana, namely, Accra in the Greater Accra (University of Ghana-UG), Cape Coast in the Central region (Cape Coast Technical University-CCTU, University of Cape Coast-UCC), and Kumasi in the Ashanti region of Ghana (Kwame Nkrumah University of Science and Technology-KNUST).

Study Duration: May 2019 to October 2019.

Sample size: 72

Sample size calculation: This size was drawn using the help of Taro Yamane's formula⁴ for calculation of sample. The lecturers' population of the selected institutions are considered to be 3500. Meanwhile both the offline and online questionnaire were able to reach many but only 72 lecturers who responded to the request.

Subjects & selection method: Various departments were visited from time to time to seek for the support of lecturers and this was based on a simple random selection method. Verbal privacy agreement not to reveal identity of respondents was welcomed and adhered to.

Inclusion criteria:

1. All categories of lecturers from various departments of the selected 4 universities
2. Two Chief Information Technology Officers were interviewed
3. Either sex

Procedure methodology

After being directed to the heads of department to seek for their approval to conduct such a survey, their responses were that every lecturer is independent in this situation so I should therefore to talk to the individual lecturers to seek for their support. The number of lecturers who consented were few therefore the findings of this survey is subjective and may be unique for this particular sample. Hence generalizing the results must be made with care. However, a majority out of the 72 respondents rather opted for an online version with the excuse that they were very busy which may be true therefore the researcher did not hesitate to create an online version of the questionnaire. The questionnaire had 4 questions of which 3 were close-ended and 1 being an open-ended question.

Statistical analysis

The nature of the questionnaire called for the use of both statistical analysis and content analysis. Therefore, SPSS-version 25 was used mainly to generate the frequencies and percentages of the respondents' feedback on the close-ended questions, while a manual content analysis procedure was used to categorize and sort out the various subjective responses from the lecturers. From the categorization, data was entered into SPSS to generate a descriptive analysis with main focus on the percentages and frequencies.

III. Result

Question 1)

Have you depended on any computer/mobile software/ application to improve your understanding and teaching of a particular subject/course?

Option 1 – Partially

Option 2 – Fully

Option 3 – No

Table 1

Table 1: Responses to the first question

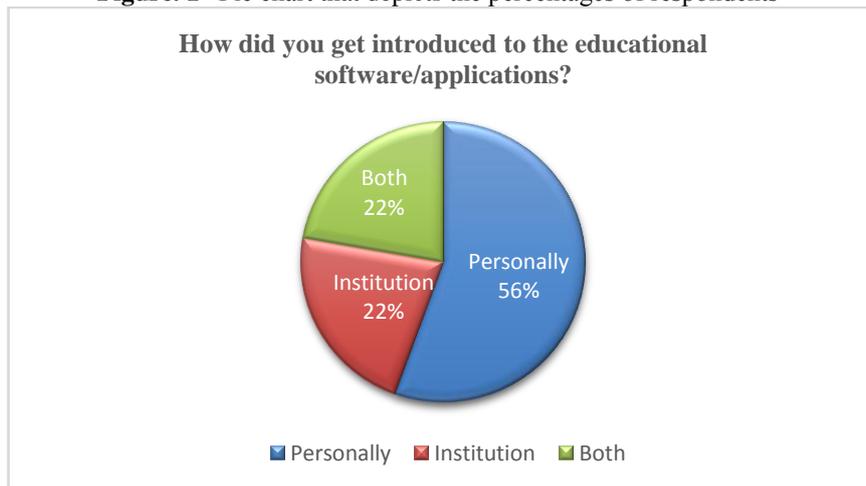
Options	Frequency
Partially	22
Fully	50
No	0

In table 1, it is seen that all the lecturers somehow take advantage of educational software to achieve best results in their daily operations, although 50 (61 % out of 72) lecturers responded that they fully used educational apps to improve their knowledge and the teaching styles with which the created course content is delivered to the learners, while 22 lecturers partially depended on the use of apps to improve their academic activities.

Question 2)

How did you get introduced to the educational software/applications?

Figure. 1 “Pie chart that depicts the percentages of respondents”

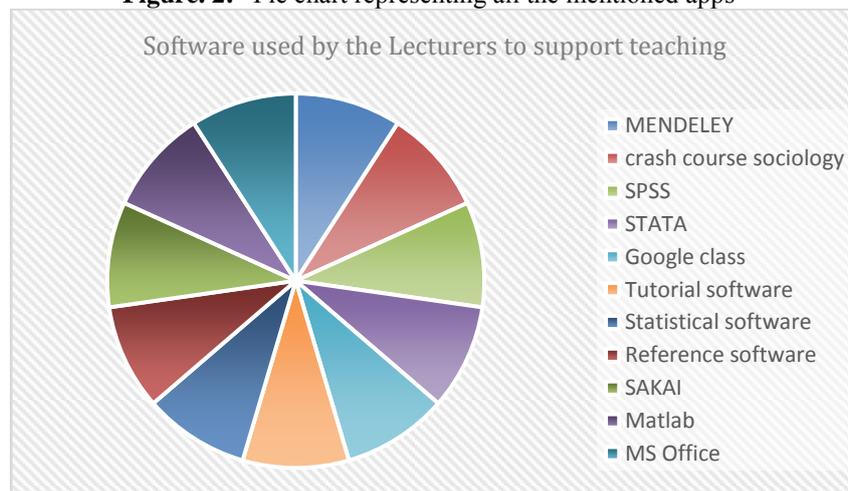


As seen in Figure 1, the 22 % of 72 lecturers who chose “Both”, got to know about the apps or software they use to support teaching via the institution and other personal means. For lecturers (56%) who selected “Personally” it means that the apps they use to improve teaching of a course was gotten through their personal means and not that of the institution. A proportion (22%) also select institutionally which means that the school itself has educational software in place and encourages their teaching staff to use.

Question 3)

Mention the educational Computer/Mobile Application(s) or Software that you are familiar with.

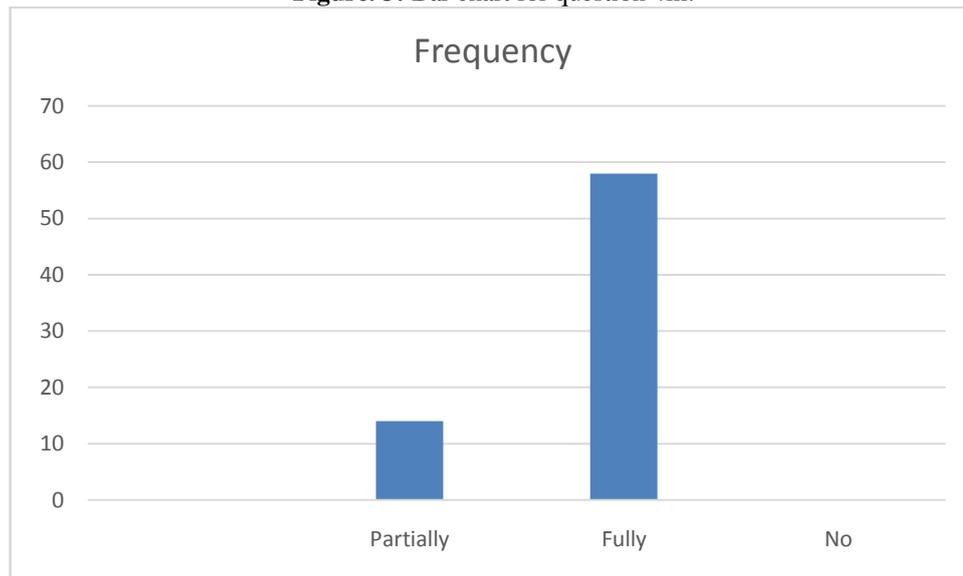
Figure. 2: “Pie chart representing all the mentioned apps”



Showing in Figure 2, based on the open-end question asked, respondents mention: Mendeley, Crash course sociology, “SPSS”, “STATA”, Google class, Tutorial software, Statistical software, Reference software, “SAKAI”, “MATLAB”, “MS Office suite”. These are apps that the selected sample used for the study are familiar with and use to boost their comprehension of the subject they teach.

Question 4

Will you recommend the usage of Computer/Mobile Applications to enhance teaching and learning?

Figure. 3: Bar chart for question 4iii.

According to Figure. 3, when lecturers were asked whether they recommend Educational apps in teaching, 58 lecturers, making 81% of the total respondents said “Fully” while 14 representing 19% of the 72 responded “Partially”. None of the instructors thought apps should not be used in teaching, rather, they recommend its adoption.

IV. Discussion

It is difficult to believe that in spite of this modern era of information and communications systems (ICS) and ubiquitous computing, a teacher will not make use of ICT in teaching. Educational apps as suggested by the researchers^{5,6} may be used to complement or even replace the tradition methods of teaching. This can't be speculated unless with a supporting data. Therefore, the research found out from the respondents that educational application software is blended in pedagogy and also adapted in the development of the contents of the course. A lot of research is ongoing to ascertain the best ways of integrating these educational technologies (EdTech). Majumdar⁷, confirms how technology has been applied in pedagogy and goes on to mention the kinds of complete shift from manual and traditional ways of transferring knowledge for instance he talks about inquiry-based learning, action based, analogue to digital resources, delivery of knowledge to exchange of knowledge, single media for the transfer of information to a multimedia channel for knowledge dissemination.

Meanwhile, Barakabitze and Mathevula^{8,9} believes that Africa is still in the very beginner stage of integrating and fully reaping the benefits of ICT in education. Hence researchers claim^{10,11} that all appropriate ways of encouraging others to help improve the introduction of ICT in education is highly recommended. This current study further goes on to find out how lectures come across the software they use in learning. This may be very necessary to determine if the various educational institutions are somehow supporting the EdTech course. From the study it can be said that though institutions are helping there is more room for improvement. Because it becomes much easier to be adopted by all teachers and learners if these apps are institutionally backed^{12,13}. Notwithstanding teachers need to find out for themselves apps that can ease the delivery of their mandate to help achieve their teaching goals as well as increase students' participation. Especially where the number of students to a teacher ratio is not favourable. Extending this, “Organization for Economic Co-operation and Development”¹⁴, confirms that governments are also trying to invest into the blending of ICT in teaching and learning. But as mentioned earlier on, the usual focus is on mostly equipping the schools with the hardware aspects and giving less attention to the software aspect, meanwhile the power of technology is achieved with the balance of both the soft and hardware parts of the computer system.

The third question of the questionnaire brings out some of the apps that are used by some lecturers. The data gathered showed that Microsoft office suite, Google services and research management tools and other apps mentioned earlier are utilized by the instructors. It is important to know that the modern student is someone who already has some form of a smart technology therefore, in as much as lecturers adopt application software for their teaching, they should encourage learners to use the mobile version of such PC applications to serve as complementary learning aid. This may help students understand in a much better way the course concepts and theories through the personalization of learning where each student can learn at their own pace and at their own knowledge level anywhere anytime. For instance, advancement in 3d simulation by using smartphone and tablets

has made it more realistic to engage student with abstract objects; Augmented, mixed and virtual realities are breaking the boundaries of a confine learning to that of an exploratory and expedition type of learning (Hughes et al., 2005). Whiteboards and interactive surfaces apps are making collaboration and coordination a reality in classroom learning. This makes students to feel like they are even a part of the teaching process which results in pushing them even more to gain insight on their own before a classroom session begins since they know their contribution are most welcomed.

All the respondents' feedback as to whether they would recommend academic apps to their colleagues were positive. This shows that teachers are willing and ready to promote the usage of these academic applications. Though it can be said that it is not enough due to other challenges some teachers may be facing in the adoption or implementation of ICT in teaching; these barriers may include lack of adequate training to use these apps, unavailability of these application software, unstable internet connectivity, inadequate technical support.

V. Conclusion

This study confirms that teachers are willing to embed educational applications into the conventional ways of teaching but also acknowledges that other challenges that can impede on the success of these apps must be addressed in order to realize the full benefits which they carry. Further research into other areas that can lead to improving software integration in the classroom must be conducted and supported by the educational stakeholders. Institutions must motivate students and instructors in all appropriate ways to help leverage EdTech.

References

- [1]. Bulman, George, and Robert W. Fairlie. "Technology and education: Computers, software, and the internet." Handbook of the Economics of Education. Vol. 5. Elsevier, 2016. 239-280.
- [2]. Kajander*, Ann, and Miroslav Lovric. "Transition from secondary to tertiary mathematics: McMaster University experience." International Journal of Mathematical Education in Science and Technology 36.2-3 (2005): 149-160.
- [3]. Lennon, Marylou, et al. "Feasibility Study for the PISA ICT Literacy Assessment: Report to Network A." Educational Testing Service (2003).
- [4]. Yamane, Taro. Statistics an Introductory Analysis. 2nd Edition, New York, Harper and Row.(1973)
- [5]. Haffey, Faye, Richard RW Brady, and Simon Maxwell. "Smartphone apps to support hospital prescribing and pharmacology education: a review of current provision." British journal of clinical pharmacology 77.1 (2014): 31-38.
- [6]. Olney, Ian, Jan Herrington, and Irina Verenikina. "iPods in early childhood: mobile technologies and story telling." (2008): 696.Colhoun HM, Betteridge DJ, Durrington PN, et al. Primary prevention of cardiovascular disease with atorvastatin in type 2 diabetes in the collaborative atorvastatin diabetes study (CARDS): multi centre trial. The Lancet. 2004; 724(9435) :685–696.
- [7]. Majumdar, Shyamal. "Emerging trends in ICT for education & training." Gen. Asia Pacific Reg. IVETA (2015).American Diabetes Association.Standards of medical care in diabetes. Diabetes Care. 2009;32(supplement 1):S13–S61.
- [8]. Barakabitze, Alcaro Alex, et al. "Transforming African Education Systems in Science, Technology, Engineering, and Mathematics (STEM) Using ICTs: Challenges and Opportunities." Education Research International 2019 (2019).
- [9]. Mathevula, Mlunglisi D., and Dominique E. Uwizeyimana. "The challenges facing the integration of ICT in teaching and learning activities in South African rural secondary schools." Mediterranean Journal of Social Sciences 5.20 (2014): 1087-1087.
- [10]. Kozma, Robert B. "Comparative analysis of policies for ICT in education." International handbook of information technology in primary and secondary education. Springer, Boston, MA, 2008. 1083-1096.
- [11]. Fox, Robert, and James Henri. "Understanding teacher mindsets: IT and change in Hong Kong schools." Journal of Educational Technology & Society 8.2 (2005): 161-169.
- [12]. Bingimlas, Khalid Abdullah. "Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature." Eurasia journal of mathematics, science & technology education 5.3 (2009).
- [13]. Dinc, E. (2019). Prospective Teachers' Perceptions of Barriers to Technology Integration in Education. Contemporary Educational Technology, 10(4), 381-398.Pharmaceutical Management Agency. Prescription for pharmaco-economic analysis: methods for cost-utility analysis.
- [14]. OECD. Innovating Education and Educating. (2016)
- [15]. Hughes, Charles E., et al. "Mixed reality in education, entertainment, and training." IEEE computer graphics and applications 25.6 (2005): 24-30.

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