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IMPACT OF CLOUD COMPUTING ON TEACHING EFFECTIVENESS OF BUSINESS EDUCATION LECTURERS IN COLLEGES OF EDUCATION IN ANAMBRA STATE

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Abstract

Cloud computing is a technology that enables educational resources to be delivered over the internet, making them more accessible and cost-effective for students and teachers. This survey research design study aimed to investigate Impact of cloud computing on teaching effectiveness of business education lecturers in colleges of education in Anambra state, Nigeria. The population comprised of all the 83 Business Educators in the two colleges of Education in Anambra state. They were not sampled. A 19-item structured questionnaire titled "Impact of Cloud Computing on Teaching Effectiveness Questionnaire (ICCTEQ) was used to collect data from the respondents. Data were analyzed using mean. The findings indicated that cloud computing impacted on the pedagogical content knowledge, quality of instruction and classroom management of business education lecturers for teaching effectiveness in colleges of education in Anambra state. Based on the findings, it was recommended that government and other responsible agencies should strive to organize periodic seminars and workshops where trainings will be done to boost business education lecturers skills in cloud computing for teaching effectiveness in colleges of education in Anambra state, among others.

***Keywords**: Impact, Cloud computing, Teaching, Teaching effectiveness, Business Education.*

Introduction

Business Education is one of the programmes in the general education programme. Business education is a programme designed to equip learners with both academic and vocational skills needed for both salaried jobs and self employment as entrepreneurs (Odike & Nnaekwe, 2019). It is education that enriches basic education for teaching career, entrepreneurship, business understanding, office understanding, office environment and vocational practices (Anyaeneh & Nzegwu in Nwokike, Ezeabi & Jim, 2018). It can develop the learners' intellectual, moral, emotional and physical power to enable them contribute in social reforms (Odike & Nnaekwe, 2019). It therefore follows that this all important course must be taught effectively.

Teaching effectiveness means when teaching leads to improved students achievement using outcomes that matter to their future success (Coe et al, 2015). Coe et al further explained that there are six core elements of effective teaching and they are: Pedagogical content knowledge, Quality of Instruction, Classroom climate, Classroom management, Teacher belief, and Professional behaviour. According to Radha and Halder (2018), teaching effectiveness entails using the right pedagogies in delivering classroom instructions to ensure the actualization of educational objectives. A teacher is effective only if learners achieved the predetermined learning outcomes (Emeya & Udukeke, 2018). Emeya and Udukeke submitted that teaching effectiveness can be enhanced through the use of cloud computing. This means that cloud computing improves the content knowledge, quality of instruction, classroom management, among others and they assure teaching effectiveness.

Cloud computing means storing and accessing of data over the internet without storing data on the hard disk of a personal laptop or computer (Syed & Komal, 2021). It simply means using computing resources on the internet instead of computers for the purpose of facilitating teaching effectiveness. It refers to a setup of computing resources that can be shared anywhere, irrespective of location of the users. Educational institutions need not buy, own and maintain their own servers and data centers. Instead they leverage cloud computing to avail compute power, database, storage and other services when they need them. Again, data are secured on the cloud. Companies like Google offer both free and paid versions of cloud services. With the cloud computing technology, users use a variety of devices like smart phones, personal computers (PCs), laptops and personal digital assistants (PDA)'s to access storage, programs and application-development platforms over the internet through services offered by cloud computing providers. Some cloud computing providers are Microsoft Live@edu for education (example Office Live WorkSpace, Microsoft Outlook Live and so on), Google Apps for education (example Google Talk, Google Docs, and so on), Amazon web services, among others. Smutny (2022) gave the benefits of cloud computing as cost savings, remote working, teaching efficiency, flexibility, future proofing, morale boost and resilience without redundancy. Use of cloud computing technologies in teaching boosts teaching effectiveness (Ekong & Tayor, 2022). For teaching to be effective, there must be effective classroom management, quality instruction and a rich content knowledge of the subject matter.

Content knowledge entails having knowledge of the subject as well as its organizing structures. Knowledge of a subject one wants to teach involves more than knowing the facts, concepts and so on in that subject. There is need to also understand the organizing structures and principles as well as rules for stating what is valid to do or say in that field of knowledge. Teaching effectiveness requires knowing and understanding the subject matter and seeing the interconnections between different aspects of the subject matter. Walshaw (2012) warned that when teachers do not have sound content knowledge of an aspect of the subject matter, their students will struggle to understand such concepts, fact and so on while they are being taught. Teachers need sound content knowledge to be able to access students' conceptual understandings and to decide where those understandings might be heading. Cloud computing technology aids teacher in developing a sound content knowledge of the subject they want to teach. Cloud computing allows the development of new knowledge about a subject matter and replacing existing ones. It enables teachers and students to accumulate new knowledge about concepts, facts and so on and also update existing knowledge about them. It provides efficient knowledge

management support by allowing teachers and students to update files and documents flexibly, timely and routinely. Cloud computing aids the storage of knowledge as it is a useful tool for storing and retrieving information, documents, and files, among others. It enables knowledge to be spread electronically for a wide range of innovative, informative and educational purposes in order to bring global world into the classroom (Emeya & Udukeke, 2018). With this, teacher can have a bank of knowledge that they can access to boost their content knowledge of a subject matter and this improves the quality of instruction.

Quality of instruction means the quality of curricula, teaching practices and learning environments.. Syed and Komal (2021) posited that cloud computing is an innovative tool for institutions to practice and implement information technology to advance teaching and learning. This means that cloud computing can boost the quality of instructions happening in the classroom, whether physically or virtual. It impacts on the quality of instruction by allowing teachers use tools like online courses to deliver content that students can access anytime and anywhere. Again, through cloud-based resources, students can easily access learning resources. It eliminates the barrier of time and place as teachers can deliver content anytime and students can access them from various devices, this allows them to learn on the go without always being stuck at a desk. Teachers can interact and teach students from anywhere and students can submit written work, take exams and even do virtual experiments from anywhere. Teachers can record and track students progress automatically. They can check students progress in real-time. Students can also collaborate and work together with other students from anywhere. Also, through cloud computing platforms, a teacher can play short videos and simulate abstract and difficult concepts to students to ensure clarity. All these increase the quality of instruction. To ensure quality of instruction, the teacher must adopt some classroom management practices.

Classroom management is the control, organization and utilization of the activities and resources in the classroom (physical or visual) for the attainment of the objectives of teaching and learning (Ogbonnaya in Nzegwu, 2020). It entails planning, coordinating, organizing, controlling and supervising the activities of learners in the teaching-learning process. It is the job of the teacher to manage the classroom whether physical or virtual. Virtual classroom or smart classroom is largely technologically enhanced setting that are believed to have the capacity to increase learners' opportunities to actively engage and participate in teaching and learning process through the use of technological tools and devices (Adebayo, Oluwaseun, Gboye & Babalola, 2021). Cloud computing technology boosts classroom management by allowing the use of innovative instructional strategies by teachers during instructions, effective communication, engaging students in activities constantly, use of reinforcement and reward, use of behavior contracts, use of effective questioning techniques during instruction, stimulating classroom environment, teachers acting as models and being vigilant and monitoring (Li, Kim & Palker, 2022). All of these ensure teaching effectiveness.

However, situational analysis seems to suggest that business educators probably do not maximally integrate cloud computing technologies in teaching for effective teaching. They seem not to often store, retrieve or access information from the cloud. One wonders if this has impact on their teaching outcomes. It therefore necessitates the study on impact of cloud computing on teaching effectiveness among business educators in colleges of education in Anambra state.

Statement of the Problem

Use of technology in education is redefining how we teach and learn. Emerging technologies like cloud computing contributes to more innovative classrooms since teachers are not limited by time, space and so on. This gives teachers and students more opportunities to experiment, create and explore. Sadly, observation seems to suggest that the adoption of cloud computing technologies in teaching and learning of business education is still low. They seem to scarcely edit, share, discuss and communicate using cloud computing tools. Teachers appear not to submit class tutorials, assignments and assessments on the cloud servers. Consequently, both teachers and students may miss out on the numerous benefits of using cloud computing technologies in teaching and learning. It becomes critical to x-ray the impact of cloud computing on teaching effectiveness among business educators in colleges of education in Anambra state.

Purpose of the Study

The main purpose of the study is to determine impact of cloud computing on teaching effectiveness among business educators in colleges of education in Anambra state. Specifically, the study sought to determine:

1. Impact of cloud computing on content knowledge among business educators in colleges of education in Anambra state
2. Impact of cloud computing on quality of instruction among business educators in colleges of education in Anambra state
3. Impact of cloud computing on classroom management practices among business educators in colleges of education in Anambra state

Research Questions

The following research questions guided the study:

4. What are the impacts of cloud computing on content knowledge among business educators in colleges of education in Anambra state?
5. In what was does cloud computing impact on quality of instruction among business educators in colleges of education in Anambra state?
6. Impact of cloud computing on classroom management practices among business educators in colleges of education in Anambra state?

Method

A descriptive survey design was adopted for the study. This was done by seeking the opinions of Business Educators on the problem of the study. The study was carried out in the two Colleges of Education in Anambra state- Nwafor Orizu College of Education, Nsugbe (NOCEN) and Federal College of Education (Tech), Umunze (FCETU). The population is made up of 83 Business Educators, consisting of 66 Business Educators in FCETU and 17 Business Educators in NOCEN. The whole population was used because the size was manageable, hence, no sampling and sampling technique.

The instrument for data collection was a questionnaire titled "Impact of Cloud Computing on Teaching Effectiveness Questionnaire (ICCTEQ)" constructed by the researchers based on the research questions. The questionnaire was made up of 19 items and was divided into three parts 1, 2 and 3. Part 1 with 6 items to elicit information on how cloud computing impacts on content knowledge; part 2 has 7 items which covered how cloud computing impacts on quality of instructions and part 3 has 6 items which covered ways cloud computing impacts on classroom management practices. The instrument was validated by three experts from the Faculty of Education, Nnamdi Azikiwe University, Awka. The instrument was pilot tested to ensure its reliability and the data collected was analyzed using Cronbachs' Alpha. This gave a coefficient reliability of 0.75 which was considered to be high. The questionnaire was administered by the researchers using direct administration method. Out of the 83 copies of the questionnaire administered only 72 copies were used for analysis representing about 86.74 percent which was considered adequate for the study. The other 11 copies were either not duly filled or not retrieved.

The data obtained were analyzed using mean based on the 4-point scale ranging from strongly agree of 4 points to strongly disagree of 1 point. Any item with a mean response of 2.50 and above was considered 'agreed' while anyone with a mean response below 2.50 was considered 'disagreed'.

Results

The results from research questions are presented in the tables below

Research Question 1 What are the impacts of cloud computing on content knowledge among business educators in colleges of education in Anambra state?

Table 1

Mean Ratings of Respondents on Impacts of Cloud Computing on Content Knowledge among Business Educators in Colleges of Education in Anambra State

S/N	ITEMS	X	SD	REMARK
1	Permitting the creation of new knowledge	2.83	.59	Agreed
2	Showing interconnections between different aspects of the subject matter	3.05	.59	Agreed
3	Providing access to stored data on a subject matter	2.93	.72	Agreed
4	Collaborating with others to learn a subject matter	2.73	.67	Agreed
5	Accessing updated facts about a subject matter	3.05	.59	Agreed
6	Access to visual resources to understand abstract concepts better	2.92	.70	Agreed

In table 1, all the 6 items have mean ratings greater than or equal to 2.50, showing that cloud computing impacts on content knowledge among Business Educators in colleges of education in Anambra state.

Research Question 2 In what ways does cloud computing impact on quality of instruction among business educators in colleges of education in Anambra state?

Table 2

Mean Ratings of Respondents on Ways Cloud Computing Impact on Quality of Instruction among Business Educators in Colleges of Education in Anambra State

S/N	**ITEMS**	**X**	**SD**	**REMARK**
1	Ensuring teaching with each students' needs in mind	2.92	.70	Agreed
2	Allowing the use of data to make lessons easily understandable	3.32	.63	Agreed
3	Giving students opportunities to work in different contexts	3.24	.60	Agreed
4	Allowing guidance from the teacher during practice time	3.24	.60	Agreed
5	Allowing the monitoring of each students' progress towards a goal	2.96	.68	Agreed
6	Engaging students actively while delivering content	3.06	.79	Agreed
7	Ensuring prompt feedbacks	2.92	.70	Agreed

Table 2 above shows that all the 7 items are above 2.50 which is the cut-off point. This means that they are the ways cloud computing impacts on quality instruction among business educators in colleges of education in Anambra state.

Research Question 3: Impact of cloud computing on classroom management practices among business educators in colleges of education in Anambra state?

Table 3

Mean ratings of respondents on Ways Cloud Computing Impacts on Classroom Management Practices among Business Educators in Colleges of Education in Anambra State.

S/N	ITEMS	X	SD	REMARK
1	By allowing the use of innovative instructional strategies by teachers during instructions	3.35	.69	
2	By ensuring effective communication during instruction		3.29	.68
3	By engaging students in activities constantly		3.01	.67

4	By allowing the use of effective questioning techniques during instruction	3.09	.64
5	By stimulating classroom environment	3.07	.62
6	By allowing teachers add virtual clues to lesson to retain attention	3.35	.69

From table 3, it is seen that all the items have means above 2.50. It is therefore evidenced that cloud computing impacts on classroom management practices among business educators in colleges of education in Anambra state.

Discussion

The result in table 1 shows that cloud computing impacts on content knowledge among Business Educators in colleges of education in Anambra state. This means that by using cloud computing technologies teachers acquire knowledge of a subject they want to teach and the organizing structures and principles. This finding supports Vu, Hartley and Kankanhalli (2020) that cloud computing provides efficient knowledge management support by allowing users to update files and documents flexibly, timely and routinely. Also, it agrees with Smutny (2022) that cloud computing allows the development of new knowledge and replacing of existing ones. That is to say that w2ith the use of cloud computing tools, teachers can build new knowledge of a subject matter to teach effectively.

Research question two also revealed that cloud computing impacts on the quality of instruction among Business Educators in colleges of education in Anambra state. This means that use of cloud computing technologies affects the quality of instruction that takes place both in the physical and virtual classrooms. This finding is in line with Syed and Komal (2021) who posited that cloud computing is the most effective education tool that enhances teaching effectiveness and efficiency. Teaching is effective when quality instruction happens. The finding also collaborates the submission of Smutny (2022) that cloud computing improves teachers ability to impact curriculum instructions, support research, encourage collaborative learning and keep students' interest. Similarly, Almufarreh and Arshad (2023) noted that cloud computing improves pedagogical practices in terms of quick feedback, teamwork and engagement between teachers and students.

Finding in research question three also revealed that cloud computing impacts on classroom management practices among business educators in colleges of education in Anambra state. This is to say cloud computing technologies impacts on the practices of business educators as regards classroom management. This finding aligns with Almufarreh and Arshad (2023) who submitted that cloud computing has the potential of helping teachers organize their class instructions in a way that helps students knows what to expect when moving from one unit of the study to the other which makes virtual classroom management easier.

Conclusion

Based on the research objectives, data were collected, analyzed and interpreted. The findings revealed that cloud computing can impact on teaching effectiveness by impacting on content knowledge, quality of instruction and classroom management practices among business educators in colleges of education in Anambra state.

Recommendations

Based on the findings, the following are recommended:

4. Business educators should strive to use cloud computing technologies since it impacts on content knowledge for teaching effectiveness.
5. Since cloud computing impacts on quality of instruction, business educators should integrate cloud computing technologies in planning their instructions.
6. Business educators in managing their classes should employ cloud computing technologies to ensure teaching effectiveness.

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