

Slow Growth Adoption: Panacea for Effective Instruction Delivery in Class Room

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Article History	Abstract
Original Research Article	<p><i>In recent times, Parent as well as students complain of poor instruction delivery of their instructor, this challenge occur in classroom in their quest to acquire knowledge; complains come in form of lack of instructional material, inadequate skilled lecturers, infrastructure decay and unavailability of books etc. this is basically as a result of the method of delivery, not necessarily the instructor’s lack of knowledge of the subject matter or experience in his chosen field, all these factors can be resolved using cloud computing for instructional delivery. Cloud computing is a technology that is transforming the learning sphere. Currently it is an emerging trend that helps the schools and classroom to get effective utilization of Hardware and Software resources and enabling service-oriented, on-demand network access to rapidly scalable resources with promises to cut operational and capital cost. It was recommended that cloud technology should be fully deployed in classrooms to reduce infrastructural resources deficiency, increase student class participation and ensure that information is readily available 24hours and 7days a week.</i></p> <p>Keywords: cloud, cloud computing, classroom, instruction, delivery, information</p>
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Introduction

Every institution has a meeting point for all student/instructor called the classroom. Classroom serves as a center for knowledge acquisition, exchange and dissemination. The 21st century classroom according to Achuonye (2014, 2017^b) is not limited to a four-walled building- a face-to-face mode; it has broken free, gone virtual (online), covering massive geographical areas, driving educational institutions to move from single mode to dual mode. The essence of the meeting point is basically to expose students to instruction, which is a subset of teaching; instruction is a human activity whose purpose is to help people learn. It is a set of events which affect learners in such a way that learning is facilitated. Instruction must be planned or organized if it is to be effective. Effective instruction according to Achuonye (2019) is the successful accomplishment of all the tasks of teaching. Teachers’ task in teaching/learning process includes: motivating students through effective instruction, assessing learner’s entry level to ensure that the prior knowledge is connected to new knowledge, managing the

classroom, ensuring that every behaviour both positive and negative behaviour is attended to appropriately, communicating ideas aptly and building relationships that are sociable enough to promote learning, assessing learning outcomes and reviewing the instructional process to ensure that challenges are surmounted for teaching/learning objectives to be accomplished. The effectiveness of instruction is determined by the delivery method. The choice of instruction delivery is sacrosanct to achieving lesson objective. The instruction delivery method could be traditional or modern in nature. Traditional method include: the use of paper, classroom lecture, chart, journals, periodical etc. while the modern method include the use of information and communication technology (ICT) tool of which the cloud is one of it. Srinivas, et al (2012) defines cloud computing as a versatile technology that can support a broad-spectrum of applications. Hence, cloud computing can be used as a modern tool for achieving lesson objectives. Cloud is a reservoir of information that is accessible any place and any time of the day. Cloud

provides greater access to online resources and delivery of information on the go thereby making teaching and learning process worthwhile.

What is cloud?

Cloud, as a metaphor for wide area networks, specifically the internet or any large-scale node dispersed network environment. It derives from the cloud-shaped icon used in network diagrams to symbolise complex infrastructures that consumers do not have to concern themselves with. This covers all layers of a network stack, including the underlying hardware-like cables, routers, servers and data centres as well as other devices that provide physical storage processing and communication making it seamless for the users to manage the physical components required.

The Concept of Cloud Computing

Cloud computing (CC) is characterized as on-demand access to a common pool of configurable processing resources (e.g., networks, servers, storage, applications, and services) that can be quickly provisioned and released with minimal management effort or service supplier interaction (Mell & Grance 2011; cited in Kiswani et al. 2021). This definition does a good job in encompassing cloud computing with its requirement of accessibility, scale and efficiency. Moreover, you also learnt that the cloud computing model is based on five key characteristics, three service models and four deployment models that together form its architecture and implementation.

Mell & Grance (2011) In Kiswani, et al (2021) further stated that cloud computing (CC) is a computing style where elastic and scalable IT-driven capabilities are made possible via internet technologies.

Cloud computing (CC) being a versatile technology can be integrated into different spheres of life, especially in the field of education. It enables cloud delivery of applications and services to teachers and students that support formal as well as informal learning, Cloud computing not only provides the components that can be used for teaching and learning but also delivers seamless experiences in effective utilization of these components making optimal use of computing resources available. It also facilitates users towards collaboration, communication and sharing of resources (Askari et al., 2018; Kayali et al., 2016; Willcocks et al.

Cloud computing offers a lot of benefits to people and businesses . The reasons why cloud computing is popular range from cost savings to enhanced productivity to speed and efficiency as well as performance and security .

Clouds can be restricted to a single company (enterprise clouds) or offered to several organisations (public cloud).

Generally, there are three cloud computing characteristics common to all cloud-computing vendors:

1. The back-end of the application (especially hardware) is completely managed by a cloud vendor.
2. A user only pays for services used (memory, processing time and bandwidth, etc.).
3. Services are scalable

Most cloud computing progress comes thusly of virtualization technology, which allows providers to share and refrain physical resources with hundreds or thousands of users on a network or, cloth a substantial sum at the farthest tip object whenever fully utilized. This would enable you to support call features of cloud computing such as pay-as-you-use and burst capability, offering you the flexibility to use resources only when necessary with little up-front investment while also enabling rapid scaling. Sulisty and Agustina (2013)

Based on the foregoing, I can deduce that cloud computing is: a computing phenomenon with simulated network accessible through remote servers allowing data access, retrieval, storage; providing on the go usage of computational services with features like scalability, flexibility and mobility.

What is instruction?

Instruction is a human activity designed to facilitate learning for people (Achuonye, 2019). It is a subset of teaching. It is a set of events that influence learners so that learning is facilitated. Effective instruction must be planned or organised. Effective instruction according to Achuonye (2019) is the successful accomplishment of all the tasks of teaching. Teachers' task in teaching/learning process includes: motivating students through effective instruction, assessing learner's entry level to ensure that the prior knowledge is connected to new knowledge, managing the classroom, ensuring that every behaviour both positive and negative behaviour is attended to appropriately, communicating ideas aptly and building relationships that are sociable enough to promote learning, assessing learning outcomes and reviewing the instructional process to ensure that challenges are surmounted for teaching/learning objectives to be accomplished. The effectiveness of instruction is determined by the delivery method.

Instruction delivery

Instructional delivery examines the medium that instruction uses to travel. Achuonye (2019) mentions some importance of instructional delivery to attainment of classroom goals:

- **Attainment of instructional objectives:** The essence of instructional delivery is the attainment of predetermined instructional objectives.
- **Assessment of classroom package:** Instructional delivery creates room for evaluation.
- **Opportunity to practice:** implementation process is the actual teaching process which is the classroom interaction between the teacher, learner(s), and other essential elements of the classroom environment. And lastly, it gives room for:
- **Research grounds:** Every profession thrives on continuous research. Instructional delivery process affords educators, undergraduate and Post Graduate students and other research fellows the opportunity to continuously try-out and investigate the various processes, strategies, techniques, materials, principles and theories of education for constant innovations, creativity, and development in the field of human learning.
- **Student learn at their pace:** Cloud computing affords opportunities for student to learn at their pace. Instruction in conventional classroom may be too fast for slow learners; students can access instruction, review the information and go back to it after classroom activities.
- **Minimal expenses when compared with Conventional classroom:** Cloud-based services allow educational institutions to cut costs to be more competitive while providing ways to adopt modern technologies that support tomorrow's education needs. These services allow students to access key programs—like office apps—with no need to buy, install, or consistently update software on their personal devices. Moreover, cloud platforms provide a pay-as-you-use model that allows institutions and users to only pay for the services used, ensuring site-wide accessibility.
- **Readily available:** cloud services are readily available 24hours and 7days a week accessed from anywhere and one can login and access the information.
- **Student centered learning:** In cloud classroom the teacher introduces the instruction for the day and allow the students to explore the topic.
- **Expands the frontier of learning:** This is most suitable where teacher is not available, students can still learn on their own. It exposes student to new frontier of instruction and ensure that knowledge gap can be resolved quickly when discovered.
- **No Extra Infrastructure:** Cloud computing enables colleges and governments to redirect their focus toward core educational objectives, such as enhancing research opportunities and creating globally connected learning environments. By reducing the need to invest heavily in physical infrastructure, maintenance, and administrative logistics, institutions can allocate more resources to academic development, innovation, and student support. This shift allows for improved access to knowledge, collaboration across borders, and a more efficient and modern educational system.
- **Higher quality of education delivered anytime, anywhere:** Courses with updated content can be delivered consistently across all locations.
- **Regularization of course content:** Courses delivered over cloud through a central location will lead to a standard content delivery to multiple remote virtual classrooms.
- **Increase interactivity:** Cloud environment is more interactive than the conventional classroom as everyone is fully engaged and busy.
- **Resolve administrative bottleneck of schools and universities:** It affords Administrators and Teachers the avenue to focus on their core functions rather than

Cloud computing in classroom

Role of Teacher in cloud delivery

In classroom environment and during instruction delivery. The teacher serves a guide on what instruction the student should be accessing, how long and how to properly utilize the information gotten. The information accessed in the cloud is formally used to achieve the set lesson objective. As a guide, the teacher ensures the following:

- a) Students are not distracted.
- b) Students keep to time: This is very important because classes are time bound, lasting between 30min to 1hour. Effective time management is also required from teachers to enable them deliver instruction as at when due.
- c) Students are organized into session to achieve set lesson objective.
- d) Learn one thing at a time: The teacher introduces from simple to complex. The cloud is full of information without which if not properly guided will lead to information overload.
- e) Ensures all the students are connected to the cloud, resolve password and infrastructural lapses when they arise.

In cloud classroom students have some basic function to carry out, some of which include:

- a) Adhering to the instruction of the teacher.
- b) Avoid time wasting activities on cloud.
- c) Focus on one activity at a time.

Benefits of Cloud Computing in classroom

The following are the benefits that can be derived when cloud is implemented in classroom environment:

- **Student learn at their pace:** Cloud computing affords opportunities for student to learn at their pace. Instruction in conventional classroom may be too fast for slow learners; students can access instruction, review the information and go back to it after classroom activities.
- **Minimal expenses when compared with Conventional classroom:** Cloud-based services allow educational institutions to cut costs to be more competitive while providing ways to adopt modern technologies that support tomorrow's education needs. These services allow students to access key programs—like office apps—with no need to buy, install, or consistently update software on their personal devices. Moreover, cloud platforms provide a pay-as-you-use model that allows institutions and users to only pay for the services used, ensuring site-wide accessibility.
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- **Higher quality of education delivered anytime, anywhere:** Courses with updated content can be delivered consistently across all locations.
- **Regularization of course content:** Courses delivered over cloud through a central location will lead to a standard content delivery to multiple remote virtual classrooms.
- **Increase interactivity:** Cloud environment is more interactive than the conventional classroom as everyone is fully engaged and busy.
- **Resolve administrative bottleneck of schools and universities:** It affords Administrators and Teachers the avenue to focus on their core functions rather than

burning themselves over information technology infrastructures and application framework.

- **Scalability:** Scalable systems on classroom cloud provides platform for expansion and growing demands of students.
- **Environmental friendliness:** Using cloud in classroom will reduce paper waste and help ozone layer against burning.

Challenges of Cloud Computing in classroom

Challenges

1. Security and Privacy- Security/Privacy — Security and privacy is one of the biggest concerns when it comes to the adoption of cloud computing in educational institutes. The storage of sensitive institutional data beyond organizational borders creates risks such as data breaches, unauthorized access and attacks. When it comes to cloud infrastructures they are shared environments, and a breach on one client can compromise many. Despite these longer-term concerns being mitigating factors by encryption, use of secure file systems, data loss prevention tools and advanced security monitoring systems deploying these risks are still present but are a very real concern for larger schools considering adoption of such services.

For a long time, scalability had been an issue due to security, cost management and service reliability. Institutions have said it was hard to estimate and budget expenses as cloud services are often delivered in an on-demand fashion compared to clear pricing benchmarks that had historically come with campus-based resources. In addition, SLAs (Service-Level Agreements) may not guarantee that the service will always be available or able to meet demands of all users in terms of speed and capacity. Because of this, many institutions will likely be unwilling to go entirely to the cloud unless they are highly assured of service quality, reliability and security.

2. Interoperability and Portability: Educational institutions should have full freedom to move their data and services into or out of cloud environments, or change service provider when needed, without being obliged by a vendor lock-in clause. It is essential that deans have the flexibility to preserve institutional autonomy, operational continuity and cost efficiency. In addition, cloud computing platforms will need to be built such that they are seamlessly interoperable with existing on-premise information technology (IT) infrastructure allowing for integration of new resources, continuity of service delivery and reducing burden of institutional resource management.

3. Reliability and Availability- 24/7 service is not yet provided by cloud providers. This causes regular outages. It's crucial to monitor the service you are providing, with

internal or third-party technologies. Plans for the supervision of usage, service level agreements (SLAs), performance, robustness and business dependency of these services are essential.

4. Performance and Bandwidth Cost- Schools might save on the cost of hardware but will pay more for bandwidth. This might be a reasonable cost for smaller applications, but can be very pricey for the data dense applications. Intensive data and complicated data are transmitted via the network for which enough bandwidth is needed. This is why many firms are waiting for a lower price before moving to the cloud.

Conclusion

Cloud computing is technology that is transforming the learning sphere. Currently it is an emerging trend that helps the schools and classroom to get effective utilization of Hardware and Software resources and enabling service-oriented, on-demand network access to rapidly scalable resources with promises to cut operational and capital cost. It has opened a wider aspect of computing application and provides a global platform for people. It is helpful for every sector from enterprise usage to educational purpose. Conventional classroom (Four walled) will be less used in the future. Students will enjoy more productivity and achieve academic goals in short time. Schools and classrooms that are financially down can have high computing facilities within low cost.

Recommendation

Based on the fact presented in this paper so far, I therefore recommend that cloud technology should be fully deployed in classrooms to reduce infrastructural resources deficiency, increase student class participation and ensure that information is readily available 24hours and 7days a week.

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