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# Online learning versus classroom instruction

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### Abstract
A growing number of students are now opting for online classes. They find the traditional classroom modality restrictive, inflexible, and impractical. In this age of technological advancement, schools can now provide effective classroom teaching via the Web. Compares the learning outcomes of an Internet-delivered course to the educational outcomes of the same course delivered in the classroom. The higher level of cognitive learning achieved by the online group was attributed primarily to the self-selected nature of the online students. Also associated with the higher learning outcomes were the instructional design of the online course that applied adult motivation and learning theories. (AEF) The COVID-19 pandemic temporarily shifted the teaching and learning mode in most tertiary institutions in Ghana from the classroom to online. Accordingly, this present study aimed to compare classroom learning effectiveness during the coronavirus pandemic to the effectiveness before the coronavirus pandemic at the University of Cape Coast. The performance of students in both teaching and learning modes was also compared. This study was a case study research, and both primary and secondary data were employed. The effectiveness was measured using course content, pedagogical approaches, interactivity and assessment, feedback and evaluation.

### Introduction
The COVID-19 made everything from world economies to social rituals devastated, as most countries had to institute a lockdown to contain the virus's spread. In Ghana, the first coronavirus case was recorded on March 10, 2020 The government subsequently instituted a partial lockdown in some cities, the Greater Accra Metropolitan Area and the Greater Kumasi Area, on March 30 to prevent the virus's spread. Even before the partial lockdown imposition, all educational institutions, including the various universities across the country, were temporally shut down in mid-March. This was because. To maintain social distancing is of paramount importance. Subsequently, some tertiary institutions in the country adopted the online learning or e-learning approach.

Thus, the coronavirus pandemic compelled schools to adopt digital academic experience as a new normal in the teaching and learning process. The International Labor Organization (ILO) estimated about 195 million job losses in 2020. Even before that, projected that about 264 million children and adolescents were not in school, and the pandemic has made the situation worst. Posited that the COVID-19 spread had forced various educational institutions to shift their teaching mode and learn from the traditional classroom to online. Technology has revolutionized the teaching and learning process in recent times. While teachers couldn't deliver instruction via the internet some years ago, the case is very different in recent years. The internet, computers, mobile phones, and other electronic gadgets have made the practice common. Online learning emerged as a safe and viable option for education continuity as the COVID-19 pandemic emerged, and a lot of institutions and economies had to shut down temporally.

Even before the coronavirus pandemic, reported that online learning has emerged as a preferred method to access higher education, especially with the introduction of new technologies such as Web 2.0 and social media platforms. In Ghana, even before the pandemic, some tertiary institutions, including the University of Cape Coast employed online teaching and learning in some of the courses that the student reads. There have been several arguments on e-learning. Some of them are accessibility, affordability, pedagogy, assessment and evaluation, and institutional support.

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The University of Cape Coast shifted part of their mode of teaching mode in the second semester of the 2019/2020 academic year from traditional classroom learning to online, following the closure of all schools by the Ghana government due to the spike in coronavirus infection. The University of Cape Coast is one of the top-class universities in Ghana and Africa. The University was established in 1962 to train teachers for Ghana's education sector. However, the university has expanded its facilities to run diversified programs. The remainder of the research is as follows. The next section presents a literature review on classroom learning and online learning in addition to the research hypothesis. This is followed by the research methods and then continued with the data analysis. We then present the discussion of findings, and the contributions of the study are then presented. The study ends by presenting the limitations and future outlook.

## Literature Review
### Online Learning and Classroom Learning
Online learning has become one of the talking points in the 21st century. Online learning is the delivery of instruction via digital resources. This kind of learning is delivered through the use of electronic devices. Distance education, computerized electronic learning, and internet learning are other names used to describe online learning. The introduction of online learning means the students can now access their learning materials online and anytime. Emergence of technology has provided the avenue for education to be readily accessible at all levels over the past two decades.

According to, the early stage of distance or online education required usage of access to print materials that were emailed or sent to students and/or teachers. However, reported that the development of e-learning management systems and web resources, as a result of technological advancement, transformed online education by boosting the pace at which information can be disseminated and digested. In recent online learning trends, videos and live broadcasting plays an important role. This is in line with, who posited that video is a more preferred means to online learning than documents, making learning more interactive and engaging.

As such, there is always a teacher who communicates or interacts with students in online learning, grades their participation in class activities, and also their assignments and tests. Anticipates that more visual technologies such as virtual reality (VR) and augmented reality (AR) are likely to find their way into the e-learning industry in the future. Over the past years, many researchers and institutions worldwide have researched the effectiveness of online learning.

Classroom learning is also known as traditional or offline learning. Learning is acquiring new knowledge, skills, behaviors, and preferences. It is an active process of engaging and manipulating experiences to build mental models of the world. Learners learn as they explore, observe and interact with the world around them. Consequently, it involves building on prior knowledge. According to, learning is a social activity that involves people who interact with the learning environment.

Initially, formal education requires students and teachers to meet at a physical place, usually referred to as a classroom. This is because the technologies that existed at the dawn of civilization or formal education could not make it possible for lessons to be conducted online. Consequently, most of the educational books written before the 21st century addressed classroom learning. Although online learning has gained some popularity in recent times, it is essential to know that classroom learning remains predominant, even in advanced countries like UK, China, the US, and others.

Classroom learning takes place in school, and there is a calendar or timetable and rules and regulations that stipulate how teaching and learning should be done. Classroom learning requires students to be active in learning environment. Students and teachers need to be physically present in the classroom for the teaching and learning to take place. Thus, the class teacher regulates and moderates information and knowledge flow. Classroom learning provides the platform for open exchange of ideas and face-to-face interaction between the students and the teachers which promotes socialization among the teachers and the students.

### E-Learning at the University during COVID-19 Cases
Towards the beginning of the second week of March 2020, as alerts sounded on the increasing number of coronavirus infection in Ghana, there were calls by various healthcare experts, educational experts, and the general public for the government to temporarily close down all schools to help curb the spread of the virus infection. Subsequently, the government announced an indefinite closure of all schools on March. Following the government order on all schools in the country to suspend their academic activities, the University of Cape Coast, among other educational institutions, was closed. Globally, more schools were shut down to help contain the virus's spread. Report revealed that over 1.2 billion children from 186 countries were out of the classroom due to the pandemic. Considering the alternative of no schooling, online learning became a necessity.

In Ghana, the University of Cape Coast, on April 1, 2020, announced the implementation of online learning following schools' closure on their official Facebook page. Accordingly, the lecturers were instructed to upload their teaching and learning resources for the second semester of the 2019/2020 academic year to the university online learning portal to facilitate online learning. Additionally, the school adopted third-party e-learning platforms or video conferencing platforms such as Zoom, one of the world's most highly valued edtech companies, offered their platform, Byju's learning app, for free.

Some authors have questioned the effectiveness of online learning in the COVID-19 period. Separated online learning into two according to the initiated period. Thus, online learning before the global coronavirus pandemic and online learning in the global coronavirus pandemic. They see online learning in the period of COVID-19 pandemic as an emergency remote teaching because it contrasts with effective online learning. Effective online education is built on several research works, prototypes, theories, ethics, and assessment to concentrate on quality online course design, teaching, and learning. Online learning in the COVID-19 period lacks. In support of this, asserted that online learning before the coronavirus pandemic is a by product of a well-planned design of instruction with an application of organized model for designing and developing teaching. Hence, the absence of these well-structured designs and development in online learning in the COVID-19 period makes it an emergency remote teaching. Nevertheless,

online learning has been the efficient and the best way for teaching and learning. It is important to note that even though the University of Cape Coast implemented online education in the semester of 2019/2020 academic year, no form of online assessments was conducted within the period.

## Classroom and Online Learning
Online and classroom learning effectiveness was assessed using the course content, pedagogical approaches, lesson interactivity and assessment, feedback, and evaluation. The variables mentioned above were used to measure the effectiveness of classroom learning because Directorate of Academic Planning and Quality Assurance (DAPQA) University of Cape Coast uses these variables for students' appraisal of courses every semester.

## Course Content
Generally, content refers to facts, concepts, generalization, principles, and theories which students are expected to learn in school. It can be in the form of text or audio-visual and has the potential to educate, enlightens, or entertain people who go through it. The course content is an essential element of every school curriculum that needs much attention. The first category of knowledge-based for teaching is content knowledge, which has to do with being knowledgeable about the subject matter. The teacher in a classroom is expected to have a broad and current understanding of the subject matter's major content areas.
For students to fully understand a lesson, such a lesson's content should be presented clearly to facilitate students' understanding of the content. Also, the lesson should involve a series of activities to involve the students in the lesson through class participation. Activity-oriented lessons can enhance students' understanding of content through practice.

## Pedagogical Approaches
Pedagogical approaches are the various strategies and skills teachers in the classroom used to translate the content of a lesson into a learnable bit for students' easy assimilation. There are different approaches teachers used in teaching a subjects in Ghana. Identified 1) "transmission of knowledge" "student-centered teaching" question and answer approach" as three approaches used in teaching. Brainstorming method, individualized method, project method, and problem-solving method are also used by some teachers in the teaching and learning process.
A study by also revealed that role-play, demonstration, and educational field experiences are also employed by teachers in teaching. Again, the study further indicated that expository teaching process, drills, teacher-led discussion, and case studies are other pedagogies employed in the teaching and learning environment. Notwithstanding the array of pedagogies available to teachers in the classroom, the dominant pedagogical stance remains one where students are largely regarded as "empty vessels," with little knowledge or experience

## Assessment, Feedback
Assessment is an integral part of the teaching and learning process that challenges teachers to consider the variety of the assessment techniques that will meet the subject's learning needs. Quality of student learning should not only

be measured in terms of student learning achievement or success but also instruction's effectiveness in the classroom. Student assessments track students' performance and ascertain whether the learning goals have been achieved. Noted that formative assessment enables teachers in making important daily instruction decisions. Through this kind of assessment, a teacher can monitor and interpret students' progress and give a constructive feedback to help improve the students' learning and the teaching methods. The purpose of formative assessment in the classroom is to improve instruction. Thus, teachers and students use assessment information generated formatively to inform subsequent teaching and learning.

## Student Performance
However, this research focuses on student's academic performance in an online learning context and classroom learning. The student's performance in both modes of learning plays a vital role in determining whether a lesson though or a course or a program that the students read was successful. Many researchers have found the difference in students' performance in online learning and classroom learning.
A report from the on the comparison of online learning with offline learning.

## Conclusion
Online learning modalities in teaching an environmental science course additionally evaluating factors of gender and class rank. These data demonstrate the ability to similarly translate environmental science concepts for non-STEM majors in both traditional and online platforms irrespective of gender or class rank. The social implications of this finding are important for advancing access to and learning of scientific concepts by the general population, as many institutions of higher education allow an online course to be taken without enrolling in a degree program.
This present study is a case study research, and both primary data and secondary data were employed. Specifically, the effectiveness of teaching and learning was measured using a questionnaire was assessed using their assessment. To answer the research questions posed for the study, we employed paired-sample t-test embedded in SPSS software to analyze both the primary and secondary data. The results show that the teaching and learning were more effective before the coronavirus than during the coronavirus. Similarly, the student's average performance before the coronavirus was found to be higher than their average score during the coronavirus. The study contributions and limitations were all presented.

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