Applicability of E-Learning as an Innovative Way of Teaching Agricultural Education in Secondary and Tertiary Institutions in Nigeria

Adeosun, Taofeek Adesoji; & Augustina Ndu U.
Agricultural Education Department, Federal College of Education (T.) Bichi, Kano State.

Abstract
E-learning refers to the technologies used for collecting, storing, editing and passing information in various forms especially with the aid of information and communication technologies (ICT). It is against this background that this paper tried to discuss the relevance of employing e-learning as a method of teaching Agricultural Education in Nigeria educational system. It started by giving the comprehensive meaning of Agricultural education, explaining e-learning as a concept and shedding light on how inadequate lecture method is in teaching Agricultural education vis-à-vis the applicability of e-learning in teaching the course. Benefits and problems of using e-learning as a method of teaching Agricultural education were also not left out. Among other recommendations were that all institutions of learning where Agricultural education is offered as a course should train their staff to become computer literate that will be able to use ICT for teaching and learning process, and as well make provision for regular power supply in their campuses a constant.

Keywords: E-Learning, Teaching Methods, Agricultural Education, Educational System, Innovative Way.

Introduction
Agricultural education is that type of education that is expected to improve agricultural production in any country. The reason being that, it equips learners with modern ways of practising agriculture with positive
influence on agricultural production. If that is the case, it is expected that developing countries, Nigeria inclusive, should always be on the same page with the way the profession, Agriculture, is practiced in advanced countries of the world. It is no more news that advanced countries have technologically developed all the sectors of their economy, agricultural production inclusive. This technological development has positioned them well to feed their citizens and still export in a great measure to other countries of the world leading to revenue generation. This definitely means that, Nigeria as a developing country needs to follow suit by technologically improving the agricultural production, which can be easily achieved if the way the agricultural education is taught in our different schools, most especially at secondary and tertiary levels, is technologically inclined. Different researchers (Diise et al., 2018; Auwal, 2013) have opined that the use of lecture method which is the most common method of teaching agriculture in many of our schools presently does not lead to the required production level that the nation deserves due to so many problems ascribed to the use of the method. It is against this background that this paper tries to explain how the application of e-learning can improve the teaching and learning of agricultural education in both secondary and tertiary institutions in Nigeria.

Meaning of Agricultural Education
Agricultural education is a type of vocational training involving the equipping of the learners with the knowledge and skills involved in productive agriculture. It involves the training of both the head and the hands of the learners (Olusoga 2014). According to Amadi and Lazarus (2017), the teaching of agricultural education in tertiary institutions is aimed at producing citizens with skills, competencies and reasoned judgment to successfully live and add meaningfully to the economic growth of Nigeria. Agricultural Science is taught in the secondary school as a vocational subject. Vocational agriculture is an aspect of vocational education which emphasizes skills, knowledge and attitude required in all areas of agriculture for proficiency in agricultural production. One of the principles of vocational agriculture is learning by doing. Teaching of agriculture in secondary schools aims at ensuring that the learner is exposed to and taught the basic principles that are important to agricultural production in the country and exposing and involving learners in various practical and projects that will
help them develop the necessary skills and abilities required in agricultural production (Olajide et al., 2015).

E-Learning as a Concept
While some use e-learning to refer to pieces of content packaged using technical infrastructures, others consider it an on-line self-study, and yet others see it as encompassing on-going learning and joint effort (Eze et al., 2018). E-learning or computer-based learning is a learning process that involves the connection of digitally conveyed content, system-based administrations and mentoring bolster (Zhang et al., 2010). E-learning refers to the technologies used in collecting, storing, editing and passing information in various forms. This comprises the use of computers, radio, satellites, online-self learning packages, tele presence systems, interactive white boards, data projectors, video conference, digital cameras, electronic e-mail, video cassette, recorder, internet optical fibre technologies and all types of information technologies (IT) hardware and software (Adebayo, 2002). The emergence of information and communication technologies (ICTs) and the ubiquitous connectivity of internet and networks improve man’s ingenuity and opportunities given that societies consciously depend on real-time information to be proactive and to discount the effects of environmental changes (Al-Gahtani, 2016; Eze and Chinedu-Eze, 2018). Higher education institutions (HEIs) have embarked on rigorous programs that promote the use of ICTs for effective contact and online teaching and learning and for developing cognate skills needed to make socio-economic contributions in the knowledge world (Eze et al., 2018). E-learning is one of the most significant educational innovations driven by expanding array of technology enabled platforms that offer potential learners an alternative and innovative learning environment compared with traditional learning and, thus, represents IT-based innovation in education (Bates and Jenkins, 2007).

Inadequacy of the most widely used Lecture Method and Applicability of e-learning in teaching Agricultural Education
Methodology is very vital in any teaching-learning situation. The method adopted by the teacher may promote or hinder learning. It may sharpen mental activities which are the bases of social power or may discourage initiatives and curiosity thus making self-reliance and survival difficult. There are different types of methods for efficient and effective teaching. These methods include:
lecture, demonstration, laboratory, field trip, assignment, peer-teaching method, etc. (Ameh and Dantani, 2012). Lecture method remains the most popular method for transmitting information and ideas by teachers, trainers and speakers in many Nigerian educational institutions (Auwal, 2013). In a similar vein, Diise et al. (2018) observed that lecture method was most deployed by teachers of Agriculture in teaching the subject in Ghana. Lectures can be informative, boring and overwhelming depending on the compelling nature of the message and the presenter’s style and clarity of message. The lecture method usually is one-way communication that allows for little or no audience participation. The result is audience mis-understanding, loss of information and poor retention (Auwal, 2013). Evidences from a number of disciplines suggest that oral presentation to a large group of passive students contributes very little to real learning (Veselinovska, 2011). Researchers believe that in the lecture method, theory is taught as an absolute knowledge; hence pupil-centered activities for developing scientific reasoning skills and processes are lacking. The lecture method is also known to cause lack of interest and poor performance in science subjects (Njoku, 2007). Aghadinano (1987) contended that science teaching limited exclusively to telling, reciting and testing of information is sterile as it does not convey either the meaning or intent of science. Akpan (1999) specifically stated that this is the method dominating science teaching in Nigerian Secondary Schools. Teaching methods must be changed to reflect the modern society mandating the need for functioning, thinking-oriented, decision-making students. Therefore the selection of an appropriate teaching method is important to the success of the teaching and learning process. According to Ajayi (2008), teaching and learning has gone beyond the teacher standing in front of the learners to disseminate information to them without the learners actively participating. And this is the more reason why e-learning is far better applicable to teaching and learning of Agricultural Education in secondary schools and higher institutions today. According to Olusoga (2014), areas like crop production, horticulture, poultry keeping, ruminant and non-ruminant livestock production, fish farming, bee keeping, grasscutter farming and feed formulation are some of the job opportunities that students of Agricultural Education in higher institutions should be able to key into after graduation. There are many skills in each area that students lack due to improper teaching methods that teachers of Agricultural Education use while teaching. Many of these skills are better learnt by doing and by observing how they are
done than by just explanation. The use of e-learning as a teaching method easily solves this problem. This is because the students will not only be able to see how the skill should be carried out, but also see the best way it is done through the use of ICT, for example, you tube. A very good example here is the best practices of carrying out artificial insemination in poultry industry. Through the use of several internet facilities, students can be made to know how best it is done vis-a-vis the factors affecting its success. E-learning helps students to recall easily the skills and be able to apply it appropriately. Also, the problem of lack of land for Practical Agriculture in many private institutions (secondary and higher institutions) in Nigeria today can as well be solved to a reasonable extent by the use of e-learning system. Digital cameras technology can be used to record information from a field trip or excursion and report back to other students.

**Benefits of E-Learning in Teaching Agricultural Education**

E-learning should ensure effective pedagogy and curriculum implementation in the computer age. According to Fredrick (2015), curriculum implementation is the planning and execution of the contents of curriculum in order to bring about certain changes in the behaviour of the learners and the assessment of the extent to which the changes take place. The primary purpose of implementation is to achieve the objectives of instruction, and achieve retention and transfer of knowledge. Eze et al. (2018) observed that, there is a great link between the curriculum and ICT and that there are three major areas that technology can influence learning, they are as follow:

- presentation, exhibition and the execution of information utilizing efficiency devices;
- use of educational modules – particular applications, for example, instructive games, drills and practice, simulations, instructional exercises, virtual laboratory perceptions and illustrations, representations of unique ideas, musical piece and master frameworks; and
- use of information and assets on CD-Rom, online reference book, intuitive maps and chart books, electronic diaries and different references.

Also, in the work of Fredrick (2015), the author pointed out the advantages of e-learning when compared to the classroom education as follows:
➢ Students have the chance to decide how long they want to be educated. E-learning enables the individual to plan and direct his/her own learning process, so each student takes the responsibility of his/her own learning.

➢ Students do not have to pay expenses for transportation or accommodation because the fora created within the e-learning system provide students with a discussion environment where problems are solved cooperatively in chat rooms.

➢ An effective e-learning system enables a student to determine and process his/her learning style, content, aim, current knowledge and individual skills.

➢ Empower Learners:- E-learning engages learners with more active learning process, people in group or individual irrespective of their age could take responsibility for what and how they learn, achieving their personal goals as self-directed lifelong learners.

➢ Creative and Innovative teaching and learning: - With E-learning, teaching and learning of curriculum content could be more creative and innovative in preparation for the 21st century global knowledge society.

➢ E-learning offer flexibility: - A more responsive education system would adapt to the needs of all learners, wherever and however they need to learn. Wide range of curriculum content deployment to learner that will make the philosophical framework of Nigeria education to be ascertained on the level of equity, and with E-learning, the goal can be achieved.

➢ E-learning achieves better value: - Educational leaders and evaluators, including classroom lecturers and teachers could develop innovative ways of deploying their resources, exploiting e-learning alongside with other teaching methods to improve quality and economies of scale.

➢ E-learning will help in managing knowledge transfer and contribute to practitioner’s knowledge in all its forms.

Problems facing the use of E-learning in teaching Agricultural Education

Despite the immense roles that e-learning as a method of teaching has on Agricultural Education as a subject, the system is still faced with myriads of problems. According to Leary and Berge (2006), the major challenges identified by researchers inhibiting the expansion of e-learning in agricultural education are very similar to the barriers that keep other fields from developing strong e-learning programs:
• Gaps between Trainers and Designers
• Challenges Faced by Trainers/Instructors
• Challenges Faced by Students/Farmers

➢ **Gaps between Trainers and Designers**

Major problems lie in educators’ inability to bridge the technical divide. Not only must they identify the knowledge and skills needed by the students and farmers, but they must figure out how to present the material in an appropriate, user friendly design so that e-learners can translate that information into applicable solutions on the farm. According to Raulerson *et al.* (2004), they observed that many extension agents and faculties lack the instructional design competencies to develop courses and programs using distance education delivery strategies. Teachers and trainers are forced to learn on the job how to present their material using e-learning. They need ongoing support, as well as training, administrative support, and incentives, with few of these currently available to the average agricultural trainer or extension agent.

➢ **Challenges Faced by Trainers/Instructors**

Instructors in Agricultural Education are faced with similar challenges as those experienced by persons working in other fields. These issues include:

- lack of time and skills needed in adopting new technologies
- lack of both formalized reward system and technical support
- a concern about the loss of the teacher student relationship
- marketing for programs
- financial rewards
- maximizing returns on their investment in time and money
- major increases in administrative work

Researchers (Murphy & Terry, 1998) vocalized these problems during the 1990’s and yet these same problems persist to the present day despite the drop in costs and the gradual improvement of connectivity and design facilities. Agricultural educators should understand that e-learning is a major investment in their ability to maximize teaching efficiency and effectiveness in the future.

Research has clearly shown that electronic communication, information, and imaging technologies offer delivery methods much more convenient than traditional teaching methods once they surpass the initial load of administrative and skills training in the pioneer phase. Converting previously written documents and lectures into an online teaching is not terribly difficult. The problem is the time and precision that must be applied toward creating an online course while taking
advantage of the many benefits offered by electronic resources (Edwards and Eggers, 2004).

➢ **Challenges Faced by Students/Farmers**

Because it is an effective, very flexible delivery method and it brings the added benefit of being able to have experts and specialists from different regions and states in the same class without transportation and lodging costs, many types of students are receptive to using the internet and e-learning (Lippert and Plank, 1999). This is particularly pertinent to agricultural training because of the tendency for farmers and experts to be separated by long distances. Yet it is the nature of the material that presents the greatest difficulty from the point of view of the students, who in this case, may be extension agents, farmers, trainers, or agricultural teachers (Leary and Berge, 2006).

Fredrick (2015) also summarized the problems facing the use of e-learning in Nigerian universities thus: high cost of hardware such as bigger bandwidth and other internal gadgets like smart boards, less price competition and high import tariffs, transmission cost is also high, dearth in skilled manpower for implementation and management, inadequate training of staff in institutions especially related to educational technology, poor condition of telecommunication infrastructure, low literacy level in computer technology among personnel, cost of acquiring and installation of the gadgets required for e-learning, ceaseless interruption of power supply all over, deficit in having well furnish/equipped e-learning centers, cybercrime, faithlessness and trustworthiness.

**Conclusion**

Nigeria as a country cannot afford to continuously hold on to traditional classroom method of teaching Agricultural education, when the advanced countries of the world have gone a step further by incorporating e-learning as a way of teaching in their different educational institutions. Technological advancement by the use of ICT in every sector of their national development has positioned them well to be able to produce enough food for consumption and still be able to export in large quantity to other developing countries. With the world becoming a global village, access to knowledge on how to do things in a better way is now very easier. Hence, some of the problems encountered by schools and teachers in teaching Agricultural education like inadequate land for Practical Agriculture and cost implications of establishing practical farms for students’ learning without generating profits from such facilities can be solved to a greater extent if e-learning can be imbied as a method of teaching the course in our various schools and Agricultural training centres.
**Recommendations**

Having understood that the impact of e-learning as an integral part of teaching techniques most especially Agricultural education as a course cannot be overemphasized, it is therefore necessary that educational institutions in Nigeria should improve on the following:

- Provision of regular power supply
- All the staff in educational institutions offering Agricultural education as a course should be trained not only to become computer literate, but also be able to use ICT for teaching and learning process
- Cost of computer should be subsidized within every institution for students affordability
- Provision of skilled manpower for implementation and management of ICT gadgets
- Creation of digital media and content for both students and teachers use in and out of the classroom

**To Government:**
- Government should subsidize the cost of computer and ICT gadgets for every institution of learning in Nigeria
- Reducing the import tariff on ICT gadgets

**References**


