TWENTY FIRST CENTURY CLASSROOM SKILL NEEDS OF AGRICULTURAL SCIENCE TEACHERS FOR EFFECTIVE LESSON DELIVERY IN SENIOR SECONDARY SCHOOLS IN ENUGU STATE

BY

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ABSTRACT

The study was designed to ascertain twenty first century classroom skill needs of agricultural science teachers for effective lesson delivery in senior secondary schools in Enugu state. Two specific purposes and two research questions guided the study. The study adopted survey research design and was carried out in Enugu state. The population for the study was 450 senior secondary school teachers. Non-proportionate stratified random sampling technique was used to select 50 agricultural science teachers from each of the zones which equated to a sampling size of 300 (137 males and 163 females). Structured questionnaire was employed as instrument for data collection. The instrument was face validated by three experts. Cronbach Alpha reliability coefficient of 0.82 was obtained for the instrument. Data was collected by the researcher with the help of six research assistants. Data were analyzed using mean and standard deviation for answering the research questions. Based on the data analyzed, the study identified nine 21st century learning skills that were perceived as important as agricultural science teachers, five skills they were competent in and five skills they were not competent in. The study therefore recommended among others that; School administrations should organize teacher educators should provide training/retraining for agricultural science teachers with the opportunity to learn 21st century skills and these teachers should focus on ways they can explicitly integrate these skills into their classrooms; and the curriculum planners of teacher education programmes like the Nigerian Education Research and Development Council (NERDC) should ensure that twenty first century skills are imbedded into the curriculum of teacher training programmes of agricultural science teachers.

Key words: Twenty first century, classroom skills, lesson delivery

INTRODUCTION

Agriculture is an applied science that deals with the production of plants and animals useful to man as well as the processing and marketing of plants and animal products. According to Ndem and Akabue (2016), agriculture is the act of processing, preservation, storage, marketing and distribution of agricultural products until it gets to the final consumers. Agricultural science is important for numerous reasons among which is the provision of food, raw materials, shelter, rural development, employment, foreign exchange to the nation as well as income to the farmers and his family. Due to the great importance of agricultural science, it is one of the subjects taught in senior secondary schools.

Senior secondary school (SSS) is the level of education after completion of Junior Secondary School (JSS). One of the aims of Senior Secondary Schools is self reliance of students after graduation. Self-reliance is the ability of an individual or group to do or decide things on their own rather than depending on other people or group for

help. According to Eschenroeder (2017), self-reliance involves living a life in which an individual makes decisions and has opinions with primary respect to the individual's experience of the world. In ensuring that agricultural science helps to achieve self-reliance of senior secondary school students, the Federal Republic of Nigeria (FRN) (2013) stated that the aims of agricultural science were for self-sustenance of students and sustainability in the environment, enhance students interest to progressively advance in farming, to advance food production through improvement of agricultural production techniques in students, to provide occupational entry level skills in agriculture to interested students, to prepare students adequately for producing and marketing farm commodities efficiently and to acquire basic knowledge and practical skills required for future studies in agriculture. Despite the laudable aims of agricultural science at the senior secondary school, there is still high level of unemployed agricultural science graduates indicating that these aims are not being achieved.

The achievement of the objectives of a curriculum is usually in the hands of the classroom teacher among other factors. According to Aneke (2015), the objectives of the agricultural science curriculum as stipulated by FRN (2013) could be achieved if the students are taught by competent teachers of agriculture. A teacher is an individual who imparts knowledge to students. According to Olaitan, Asogwa and Umeh (2009), a teacher of agriculture is someone who has undergone a teacher preparatory programme in the area of agriculture and is charged with the responsibility of managing the learning behaviour of the students. In the opinion of Aneke (2012), an agricultural science teacher is somebody who teaches especially as a professional in the area of agriculture. Hence, an agricultural science teacher contextually refers to an individual pedagogically and technically trained to impart knowledge, skills and attitudes to students in institutions. Being a teacher is a responsibility, and the teacher of agriculture is a pivotal figure in implementing any agricultural programme at any level of education, more especially at the secondary school level where the students are youths with innovative and zealous interests (Aneke, 2015). According to Owodunni (2010), although the duty of learning to an extent rests with the students, whether the student learns or not depends to a large extent on if teachers have the skills needed in the twenty first century agricultural science classroom.

Over the last few decades, demands in employment, business, and the growing global economy have changed. These changes have required workers to be educated, flexible, and have excellent communication skills. Industry has also recognized the need for today's workforce to develop the skill set known as 21st century skills (National Research Council, 2012; Rotherham & Willingham, 2010). In order to adapt to the growing global economy and prepare students to have the necessary technical skills and 21st century skills to be successful in today's workforce, the education system must adapt (Jacobson-Lunddeberg, 2016; Rotherham & Willingham, 2010). Educators, business leaders, and policy makers have determined the 21st century skills to be essential to succeed in our dynamic, growing global economy (Rotherham & Willingham, 2010). These changes require the workforce to be educated, flexible, and have excellent communication skills and agricultural science students deserve an education that prides itself in 21st century learning for college and career readiness (Vockley, 2010).

Similar career ready standards have been in place for many years and recent studies have identified the importance of exploring 21st century skills in the classroom (Girlando, 2013; Rotherham & Willingham, 2010; Scott, 2017; Yoest & Kane 2015). Agricultural science should prepare students for global society by utilizing experiential learning and intentional engagement of students in 21st century skill development (Scott, 2017). While there are few studies that have included the application of 21st century skills in the agricultural science classroom, this study sought to identify the skill needs of agricultural science teachers for effective lesson delivery in senior secondary schools in Enugu state.

Today, many graduates of agricultural science in Enugu State are still unemployed because they lack twenty first century skill sets. Industry seeks to employ graduates with a wide-ranging collection of knowledge and skills–not just particular content knowledge, but skills that transfer, such as critical thinking, problem-solving, and effective communication (Lumina, 2018). The Association of Career and Technical Education (2010) identifies 21st century skills as well as academic and technical skills as crucial in preparing students to become career ready. Agricultural science at the senior secondary school level as a whole must strive to create a pool of qualified candidates that have a developed set of skills qualifying them for jobs in the industry. Twenty-first century skills have become increasingly important for students to possess due to the growing demand of a qualified candidate pool with a broad skill set – especially in technical professions because of the rising global competition and search for innovations related to profit and productivity (Bancino & Zevalkink, 2007). Hence, agricultural science teachers should ensure instructional delivery is tailored towards preparing students to enter the workforce (Schneider, 2016). It however remains to be ascertained if agricultural science teachers possess these skill sets required in the twenty first century. It is against this back drop that the current study seeks to ascertain twenty first century classroom skill needs of agricultural science teachers for effective lesson delivery in senior secondary schools in Enugu state.

PURPOSE OF THE STUDY

The general purpose of the study was to ascertain twenty first century classroom skill needs of agricultural science teachers for effective lesson delivery in senior secondary schools in Enugu state. Specifically, the study sought to ascertain;

1. Agricultural science teachers' perceived level of importance of 21st century learning skills
2. Agricultural science teachers' perceived competency in teaching using 21st century learning skills

RESEARCH QUESTIONS

The following research questions guided the study;

1. What is the level of perceived importance agricultural science teachers attach to 21st century learning skills
2. What level of perceived competency do agricultural science teachers have in teaching using 21st century learning skills

METHODOLOGY

The study adopted a survey research design and was carried out in Enugu State. Choice of Enugu state was because many graduates of agricultural science at the senior secondary school level are currently unemployable. The population for the study was 450 senior secondary school agricultural science teachers in the state. The sample for the study was 300 made of 137 males and 163 females. Non-proportionate stratified random sampling technique was used to select 50 agricultural science teachers from each of the zones which equated to a sampling size of 300.

The instrument for data collection was a structured questionnaire developed by the researcher from literature. The questionnaire was divided into two sections. Section A sought information on the agricultural science teachers' perceived level of importance of 21st century learning skills while Section B sought information on Agricultural science teachers' perceived competency in teaching using 21st century learning skills. The scale for the questionnaire for Section A was Highly Important (HI) - 4, Moderately Important (MI) - 3, Slightly Important (SI) - 2 and Not Important (NI) – 1 while for section B was Very Competent (VC), Moderately Competent (MC), Slightly Competent (SC) and Not Competent. Three experts validated the questionnaire while the internal consistency of the instrument was determined using Cronbach Alpha reliability coefficient. A reliability coefficient index of 0.82 was obtained.

The instrument was administered on the respondents by the researcher with the help of six assistants picked from each zone. Out of 300 copies of questionnaire that were distributed, 281 were properly filled and retrieved which translates to a return rate of 93.7%. The data collected was analyzed using mean to answer the research questions. Mean cut off points was applied in data analysis thus; any item with mean of 2.50 or above was regarded as Important (I) for Section A and Competent (C) for Section B while items that had mean values less than 2.50 were regarded as Not Important (NI) for Section A and Not Competent (NC) for Section B.

RESULTS

Research Question 1: What is the level of perceived importance agricultural science teachers attach to 21st century learning skills?

Table 1: Mean and Standard Deviations of Respondents on the Perceived Importance Agricultural Science Teachers Attach to 21st Century Learning Skills

N = 281

S/N	ITEMS	$\overline{X}$	SD	REMARKS
1	Communication	2.61	0.65	I
2	Social Skills	2.72	0.65	I
3	Initiative	2.54	0.84	I
4	Productivity	2.62	0.95	I
5	Critical Thinking	3.52	0.56	I
6	Information Literacy	2.92	0.93	I
7	Technology Literacy	3.20	0.79	I
8	Media Literacy	2.52	0.92	I

9	Collaborating	1.90	0.73	NI
10	Flexibility	2.53	0.88	I

Key: N= Population, $\overline{X}$ = Mean, SD = Standard Deviation, I= Important, NI= Not Important

Findings from Table 1 revealed that nine out of the ten items had mean values ranged 2.52 – 3.52. These were all above 2.50 which indicate that the items were the twenty first century skills that agricultural science teachers perceived as important. The remaining item had mean value of 1.90 which was below 2.50 indicating that agricultural science teachers do not perceive the item as a twenty first century skill that is important

Research Question 2: What level of perceived competency do agricultural science teachers have in teaching using 21st century learning skills?

Table 2: Mean and Standard Deviations of Respondents on the Perceived Competency Agricultural Science Teachers Have in Teaching Using 21st Century Learning Skills

N = 281

S/N	ITEMS	$\overline{X}$	SD	REMARKS
1	Communication	2.61	0.65	C
2	Social Skills	2.72	0.65	C
3	Initiative	2.54	0.84	C
4	Productivity	2.32	0.95	NC
5	Critical Thinking	2.40	0.56	NC
6	Information Literacy	1.92	0.93	NC
7	Technology Literacy	2.20	0.79	NC
8	Media Literacy	1.52	0.92	NC
9	Collaborating	2.90	0.73	C
10	Flexibility	2.53	0.88	C

Key: N= Population, $\overline{X}$ = Mean, SD = Standard Deviation, C= Competent, NC= Not Competent

Findings from Table 1 revealed that five out of the ten items had mean values ranged 2.54 – 2.90. These were all above 2.50 which indicate that the items were the twenty first century skills that agricultural science teachers felt they were competent in. The remaining five items had mean values ranged 1.52 – 2.40. These items had mean values less than 2.50 indicating agricultural science teachers do not perceive the item as a twenty first century skills that they are competent in.

DISCUSSION OF THE FINDINGS

The findings of the study revealed that agricultural science teachers perceived the following twenty first century skills as important; communication, social skills, initiative, productivity, critical thinking, information literacy, media literacy and flexibility. The findings are in line with Scott (2017) who found that teachers perceived 21st century learning skills as important yet lack the knowledge and ability needed to teach specific skills and is apparent that these teachers have not mastered implementing the 21st century skills into their classroom. The findings are also in agreement with Yoest and Kane (2015) who found that teachers require critical thinking skills just as much as the course content so as to be able to teach their students critical thinking skills which is absolutely necessary for employment in the twenty first century.

The findings of the study on the level of perceived competency agricultural science teachers have in teaching using 21st century learning skills revealed that agricultural science teachers believe they are competent in; communication, social skills, initiative, collaborating and flexibility. On the other hand, the agricultural science teachers are not competent in; productivity, critical thinking, information literacy, technology literacy and media literacy. The findings are in line with Jacobson-Lundeberg (2016) who found that many teachers are not competent in twenty first century skills such as technology literacy. The findings are also in agreement with Schneider (2016) who found that critical thinking skills is lacked by many students because they had teachers that were not competent in it.

CONCLUSION

Getting employed in the twenty first century requires skills beyond the course content of agricultural science in senior secondary schools. Hence, students require twenty first century skills to be able to compete in today's job market. However, for them to acquire these skills, agricultural science teachers need to be competent in

these skills. Agricultural science teachers majorly agreed that twenty first century skills such as communication, social skills, initiative, productivity, critical thinking, information literacy, media literacy and flexibility are important. However, they agreed that they are not competent in skills such as productivity, critical thinking, information literacy, technology literacy and media literacy. This means that students would not be able to acquire such skills since agricultural science teachers can only transfer the skills they have. If this situation is not remedied, agricultural science graduates would continue to be unemployable in today's job market. To prevent this, the following recommendations are made.

RECOMMENDATIONS

1. School administrations should organize teacher educators should provide training/retraining for agricultural science teachers with the opportunity to learn 21st century skills and these teachers should focus on ways they can explicitly integrate these skills into their classrooms.
2. The curriculum planners of teacher education programmes like the Nigerian Education Research and Development Council (NERDC) should ensure that twenty first century skills are imbedded into the curriculum of teacher training programmes of agricultural science teachers.

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