TEACHERS AND EXTENSION AGENTS COMPETENCY NEEDS FOR TEACHING OF POULTRY INCUBATION AND HATCHING SKILLS IN SECONDARY SCHOOLS IN CROSS RIVER STATE, NIGERIA.

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Abstract

The study ascertained teachers and extension agents competency needs for teaching of poultry incubation and hatching skills in secondary schools in Cross River State. Three purposes, three research questions and three null hypotheses were formulated to guide the study. Adopted for the study was the descriptive survey design. The targeted population was Agricultural Science teachers and extension agents numbering about 300. A sample of 150 Agricultural Science teachers and 90 extension agents were selected forming a sample of 240 Agricultural Science teachers and extension agents put together using simple random sampling techniques. A researcher made questionnaire titled "Teachers and extension agents competency needs for teaching of poultry production skill questionnaire (TEACNTPPSQ) was used for data collection. Validation of the instrument was by three experts. The reliability coefficient was determined by the use of Pearson Product Moment Correlation (PPMC). Mean and standard deviation were used to answer the research questions while independent t-test was used for testing the hypotheses at 0.5 level of significance from the findings. It was revealed that competency of Agricultural Science teachers and extension agent is necessary and highly needed for the teaching of poultry incubation and hatching skills in secondary schools. It was also proved from the hypothesis tested that there is no significant difference in the mean responses of teachers and extension agents competency needs for the teaching of poultry incubation and hatching skills in secondary schools in Cross River State. This will improve production of poultry products in the study area and Nigeria in general. It was therefore recommended that the government should organize workshops and retraining programs for teachers and extension agents to boost their competency also that field trips should be organized for students to go to poultry farm site to learn practically.

key words: *Agricultural Science Teachers, Competency Needs, Extension Agents, Poultry Incubation and Hatching, and Secondary School Education.*

Introduction

Agriculture generally is the production of crops and the rearing of animals for man's use (Akinsami 2010) Animal production on the other hand is the rearing of different breeds and species of animals for man's use and poultry as a branch of animal production is the keeping of different breeds of birds for the usage of man. They include fowls, ducks, gease, pigeon, guinea fowls etc. (North 2012). The historical development of poultry started as early as when man started settling down in a permanent home, he realized that some of the birds he brought home after hunting their parents were growing bigger after some time. He therefore thoughts of caring for some birds at home. Some of these birds were so wild that they could not accept to settle down with man while those that settled with him became the domestic birds of today (Mark 2019).

Man started devicing different means of keeping birds and improving in the process till the modern scientific days where different automations are used in rearing poultry.

Competency is all about the ability of an individual to perform a task to expectation for the benefit of others (Gupta 2018). He also looked at competencies generally as knowledge, skills, attitude, values, motivation and believes people need in order to be successful in a job. Teachers and extension agent competencies being teaching oriented has been broadened with respect to studies in education, scientific result, and out comes from other Fields.

Kalgran (2018) identify different areas of competencies in teaching every field of endeavor to include the followings: In research competency he pointed out involves the teacher or extension agents quest to get new knowledge that may equip the individual to perform effectively. For curriculum competency he said is the teacher or extension agents ability to arrange the learners content for effective delivery. On life long competency he pointed out is the teacher or extension agent quest for the sustenance of socio-cultural life of the people. Emotional competence on the other hand is the place of the teacher or extension agents state of life, weather stable or not to deliver the knowledge content. Communication competency of the teacher or extension agents informs the need for ability to use a medium of communication like language to transmit learning to the needed audience. All these required competencies when put together and utilized by the teacher or extension agent with results to efficient teaching and learning of skills in all fields including poultry production.

Poultry incubation particularly refers to a process of reproduction by eggs (oviparous) (Galibad 2010) it has scientifically been modified from the natural process where the hens sit on the egg for 21 days and hatch. For a modern way of the use of an automation called the incubator as opined by Fatuga (2010) is a modern practice started many years in China aiming at producing a large number of eggs through creating an artificial temperature in a device known as incubator. This has adjustable temperatures that will encourage embryo development in fertile eggs. Ford et al (2018) described the process as first setting the eggs in the incubator, turning about 5 times in 24 hours period after the fourth day of incubation. This is adjusted based on the species of bird since the larger the eggs the higher the temperature. An average incubation period of some species of birds is identified by Harrison (2012) as follows: fowl-21 days, Ducks 28 days, Quil 23 days, Goose 32 days, Turkey 28 days, pheasant fowl-23 days, Guinea fowl-27 days, Ostrich 42 days, pigeon-18 days.

Temperature is extremely important during incubation. Spencer (2014) Observed that direction of more than one degree from the optimum will adversely affect the number of eggs that will be hatched successfully. He further opined that in home type incubator, the temperature will vary considerably between the top and bottom of the eggs basically which he affirmed is always applied as 101° c for first week, 102° c for second week and 103° c for the third week till hatching gives the best results for the eggs of the birds used.

Steinfeld (2011) identify the following as advantages of artificial incubation:

1. They guarantee a higher hatching rate: This is based on the fact that many eggs are put into the incubator at the same time for hatching.
2. They limit the breaking or falling of eggs: Hence all eggs have their position in the incubator, there is no easy possibility of their falling off the incubator.
3. They maintain all adjusted temperature this is true on the basis that any temperature regulated will circulate through the whole incubator and causing changes for embryo development at the same time.

Odessa, (2020) identify the followings as disadvantages of using artificial incubation:

Disadvantages of incubator usage

1. Incubator cannot work without a source of power. In this vain, electric current must be set into the incubator before it works or operate the incubator.
2. It is too delicate in usage. This is based on the fact that any high or excess temperature may damage a whole lot of eggs in the incubator and vice versa a lowest temperature.
3. It's encourages eggs breaking especially during egg turning. Since there will be motion during turning of the eggs, a high application sometimes lead to eggs breakage.

Ekentak (2011) identified the following skills in incubator sanitation. This involves the thorough cleansing of the incubator with a rag to remove all dirt before the eggs are set and sometimes this can be followed by disinfection. Bard, (2017) identify the following as skills in the setting of eggs in the incubator. As the eggs are fitted into their positions with the broad end facing up and the narrow end facing down. But elenza etal, (2011) identify the following as the temperature adjustment skills. The buttons for pressure control are displayed on the incubator to be used in circulating temperature levels. The hatchery attendance only need to press these button based on temperature requirements to release the required temperature that can warm up the eggs to hatch. (Howell etal 2017) identified the followings as skills in evacuating hatched eggs and chickens. When temperature circulation is at the required limit, the shell crack as the chicks begin to struggle for a way out. In the process, it emerge most at times with its beak proping out. The cracking continues until the chick finally emerge from the shell enough to be picked and will then be picked by the managing attendance who will place them in chick boxes for onward movement to where needed or to be kept for management.

Statement of problem

There is need for a knowledge or skill in every endeavor, so applicable to poultry farming and intubation/hatching in particular. The teachers of these skills in schools are Agricultural Science teachers and extension agents who are supposed to teach these skills from the secondary level such that when the students graduates, they have a scale at times to be self-reliance as they benefit from practicing.

The government over the years have been employing teachers of Agricultural Science and extension agent despite this effort of the government not much has come out as benefits from their teaching role especially in poultry production, leading to a decline in the supply of poultry products to the populace and shortening the societal protein supply. This is as a result of lack of competency to teach the poultry farming skills by teachers and extension agents. Incubation as a skill in poultry production is the route to multiplying the birds through experty in incubation and hatching. This experty has not been there because the competency in teaching them is not there.

There has been problems of deploying non Agricultural Science teacher to teach Agricultural Science due to shortage of manpower. This has increases incompetency in teaching Agricultural Science and poultry production in particular and skills in incubation and hatching at the same time lowering the chicks supply level in particular and other poultry products in general.

In the field, the cost of securing incubators to carry out the incubation and hatching skills is very high, making it impossible for supposed farmers and secondary graduans to go into commercial hatcheries. This study at hand seeks to ascertain the teachers and extension agents competency needs for teaching poultry incubation and hatching skills in secondary schools in Cross River State in order to profer recommendations to improve poultry incubation in particular and poultry production general.

Research objectives

The general objectives of this study is to ascertain the teachers and extension agent competency needs for teaching of poultry incubation skills in secondary schools in Cross River State. Specifically to determine:

1. Teachers and extension agent competency needs for the teaching of incubation cleaning or sanitation skills in secondary schools in Cross River State.
2. Teachers and extension agents competency needs for teaching of incubation eggs setting skills in secondary schools in Cross River State.
3. Teachers and extension agents competency needs for teaching of chicks evacuation after hatching skills in secondary schools in Cross River State.

Research questions

1. What are the Agricultural Science teachers and extension agent competency needs for the teaching of incubation cleaning or sanitation in secondary schools in Cross River State?
2. What are the Agricultural Science teachers and extensions agent competency needs for teaching of incubator's egg setting skills in secondary schools in Cross River State.
3. What are the Agricultural Science teachers and extension agent competency needs for the teaching of chicks evacuation skills in secondary schools in Cross River State.

Statement of hypotheses

1. There is no significant difference in the mean responses of teachers and extension agent competency needs for the teaching of incubation cleaning or sanitation skills in secondary schools in Cross River State.
2. There is no significant difference in the teachers and extension agent competency needs for the teaching of incubator egg setting skills in secondary school in Cross River State.
3. There is no significance difference in the teachers and extension agent competency needs for the teaching of chicks evacuation skills in secondary schools in Cross River State.

Research methods

The adopted design for this study is the descriptive survey design. The area of study was Cross River State. The population of the study was made up of 300 agricultural science teachers and extension agent where a sample of 240 agricultural science teachers and extension agents were selected using simple random sampling techniques which gives a sample of 240 agricultural science teachers and extension agents put together. The collection of data was by the use of an instrument teachers and extension agent competency needs for teaching of poultry production questionnaire (TECTPIQ). This was structured under a four-point scale of highly needed (HN), moderately needed (MN), lowly needed (LN) and not needed (NN). This was validated by three experts two from the Department of Agricultural Education and one from the Department of Animal Science, Faculty of Agriculture, University of Uyo. This team analyzed the instrument to make sure it had the due content of the variables in the main study. The reliability coefficient of 85% was realized through the process of test retest and PPMC analysis. Research questions were used to answered with the use of mean and standard deviation and on the other hand, independent t-tesst was applied in testing the null hypothesis at 0.05 level of significance. All items with a mean response of 2.50 or above was considered to be highly needed while those below 2.50 were referred to as not needed. The null hypothesis was considered retained where the calculated value of t was equal or less than the critical t value at 0.05 level of significance and where the critical

value was equal or less the calculated value, the null was rejected.

Results

Research question one

What are the Agricultural Science teachers and extension agents competency needs for the teaching of incubation cleaning skills in secondary schools in Cross River State.

Table 1: Mean responses of Agricultural Science teachers and extension agent competency needs for the teaching of poultry intubation cleaning skills in Cross River State.

S/N	Items on incubation cleaning skill	Mean	SD	Decision
1.	Skill in sorting for clean water to wash the incubator	2.22	1.05	HN
2.	Skills in washing with soap or detergent	3.40	.97	HN
3.	Skills in drying up the incubator with a clean cloth	3.05	.99	HN
4.	Skills in covering the incubator with a polythene sheet	2.97	.95	HN
5.	Skills in keeping the incubator in a dry place	3.11	.92	HN

N=300, cut off point = 250 source field data 2025

As presented in table one the results indicated that the main value of all the item tested were within the range of 2.50-3.49 with the cluster mean of 2.98. This showed that teachers and extension agents competency are highly needed in the teaching of poultry incubation and hatching skills in secondary schools in Cross River State. At the same time it means more competent and qualified agricultural science teacher should always be used in teaching this skill especially as it is delicate.

Research question two

What are the Agricultural Science teachers and extension agent competency needs for the teaching of incubators egg setting skills in secondary schools in Cross River State.

Table 2: Mean responses of Agricultural Science teachers and extension agent competency needs for teaching of incubators egg settings skills in secondary schools in Cross River State.

S/N	Items on incubation egg setting skill	Mean	SD	Decision
1.	Skills in fixing eggs crate into the incubator	2.22	1.05	HN
2.	Skills in washing and cleaning of egg crates before setting	3.40	.97	HN
3.	Skills in actual arrangement of the eggs in the incubator	3.05	.99	HN
4.	Skills in putting off the temperature device before setting eggs	2.97	.95	HN
5.	Skills in adjusting the temperature to suite the eggs – for embryo development.	3.11	.92	HN

N = 300, Cut off points 2.50 Source field data 2025

Agricultural science teachers and extension agent competencies are highly needed in the effective teaching of incubator egg settings skills in secondary schools in Cross River State which implies that the skills of fixing egg crates into the incubator, washing and

cleaning egg crates before setting in the incubator, putting off the temperature device before setting the eggs and adjusting the temperature to suite the egg in the incubator will help to provide safe and successful hatching.

Research question three

What are the agricultural science teachers and extension agent competency needs for the teaching of chicks evacuation skills in secondary schools in Cross River State.

Table 3: Mean responses of Agricultural Science teachers and extension agent competency needs for the teaching of chicks evacuation skills in secondary schools in Cross River State.

S/N	Items on chicks evacuation skill	Mean	SD	Decision
1.	Skills in observing the percentage hatching before evacuation	3.07	.88	HN
2.	Skills in careful removal of the eggs crates from the incubator	3.01	.98	HN
3.	Skills in selecting out hatched chicks from the crates into the brooder box	3.16	.87	HN
4.	Skills in placing the brooder boxes into the brooder house for further care and feeding	3.16	.86	HN
5.	Skills in re-washing the incubator before storage	2.22	1.05	HN

The result in table 3 showed that the items one is within the range of 2.50 to 3.40 which means teachers and extension agents competencies are needed in teaching of chicks evacuation skills in secondary schools in Cross River State. Meaning also that skills in observing the cheeks percentage hatching, before evacuation, careful removal of egg crate from the incubator, selecting hatched chicks into the brooder boxes, skills in placing the brooder boxes in the brooder rooms and skills in rewashing the incubator before storage are pointer to effective incubation and hatching.

Hypothesis testing

Research hypothesis one

There is no significant difference in the mean responses of Agricultural Science teachers and extension agents competency needs in teaching of poultry hatching and intubation skills in secondary schools in Cross River State.

Table 4: Independent t-test analysis of the responses of Agricultural science teachers and extention agents competency needs for the teaching of incubation cleaning skills in secondary schools in Cross River State.

Category	N	$\overline{X}$	S.D	t-cal	decision
Agricultural Science teachers	300	.88	2.91		
				1.5	HN
Extention agents	38	21.85	2.45		

Table 4 indicated that the t calculated value of 1.5 is less than the critical value of 1.960 at 234 degree of freedom of 0.05 level of significance from the result, the null was Agricultural Science teachers and extension agents do not differ in their responses on the competency needs for the teaching of poultry incubation and hatching skills in secondary schools in Cross River State.

Research hypothesis two

There is no significant differences in the mean responses of Agricultural Science teachers and extension agent competency needs for the teaching of incubator eggs setting in secondary schools in Cross River State.

Table 5: Independent t-test of Agricultural Science teachers and extension agent competency needs for the teaching of poultry incubator egg setting in secondary schools in Cross River State.

Category	N	$\overline{X}$	S.D	Df	t-cal	decision
Agricultural Science teachers	300	21.00	2.44	2.34		
					1.185	HN
Extention agents	38	21.5	2.95			

Crit. Value = 1.960

Table 5 showed that the calculated t value of 1.185 is less than the critical value of 1.960 at 234 degree of freedom and .05 level of significance which makes the null to be retained meaning that Agricultural Science teachers and extension agents needs competencies in teaching incubator egg settings skills to achieve successful hatching.

Research hypothesis three

There is no significant difference in the mean responses of Agricultural Science teachers and extension agent competency needs for the teaching of hatched chicks evacuations skills in secondary schools in Cross River State.

Table 6: Independent t test analysis of the responses of Agricultural Science teachers and extension agents competency needs for the teaching of hatched chicks evacuations skills in secondary schools in Cross River State

Category	N	$\overline{X}$	S.D(df)	t-cal	decision
Agricultural Science teachers	300	21.53	2.89		
				1.120	HN
Extention agents	3.8	21.00	3.09		

Crit. Value = 1.960

Table 6 indicated that the calculated t value of 1.120 is less than the critical value of 1.960 at 234 degree of freedom at 0.05 level of significance. Based on this results, the null hypothesis is retained, meaning that Agricultural Science teachers and extension agents need competencies in the teaching of incubator chicks evacuation skills after hatching.

Discussion of findings

Table one result showed that teachers and extension agents competencies are needed for the teaching of incubation and hatching skills in secondary schools in Cross River State. The hypothesis on this note also revealed that there is no significant difference in the mean responses of Agricultural Science teachers and extension agents in the teaching of poultry incubation and hatching skills in secondary schools in Cross River State. It therefore means that practices like, use of clean water to wash the incubator, skills in washing with water and soap, drying up the incubator with a clean clothes, covering the incubator with a clean clothes before storing are poultry incubator cleaning practices that students need to know. These may not have been possible in the study area due to lack of qualified extension agents and Agricultural Science teachers. This is in consonance with Akinsami (2010) who affirmed that the incubators must be kept clean to perform their role effectively.

Result outcome from question two revealed that teachers competencies are highly needed in the teaching of egg setting in intubation as it agreed with the outcomes that major skills to be taught and learned in this variable include skills in fixing egg crates into the incubator, washing and cleaning of egg crates, actual arrangement of eggs in the incubator, putting off temperature devices before setting eggs into the incubator and skills in adjusting the temperature to suite the

eggs. All these are needed for a successful egg incubation and hatching. The hypothesis tested on this note revealed that there is no significant difference in the mean responses of Agricultural Science teachers and extension agent in the teaching of poultry incubation egg setting skills in secondary schools in Cross River State. This is in consonance with North (2012) who affirmed that eggs must be properly set in an incubator before temperature can easily circulate.

As revealed from research question three, the mean responses of Agricultural Science teachers and extension agents agreed that there is high need in the competency for effective teaching of chicks evacuations skill in secondary schools in Cross River State. The skills to be carried out here include skills in observing the percentage hatching before evacuation, careful removal of the egg crates from the incubator, selecting hatch chicks from the incubator and skills in placing the chicks in the brooder box (Mark 2011). The tested hypothesis also revealed that there is no significant difference in the mean responses of Agricultural Science teachers and extension agents competency needs for the teaching of hatched chicks evacuation in secondary schools in Cross River State. This according to Gupta (2013), hatched chicks must be timely evacuated before they get suffocated or die of hunger. Therefore competent teachers and extension agents are needed to teach these skills effectively from the early secondary school level.

Conclusion

On the conclusion drawn from the study, it is revealed and accepted that poultry incubation and hatching is very necessary and highly needed in poultry production holistically. Competently teaching the skill of poultry and hatching right from the secondary school level will create perfection as the students graduate with the skill and ready for implementation which will boost poultry production, while if not done this way the perfection and production level will be low. Applying all the skills identified in the study like incubator egg setting, incubator cleaning, temperature adjustment, chicks evacuation will boost production and availability of poultry products in the study area Cross River State.

Recommendation

1. To perfect teaching and learning of poultry production generally, the government should organize workshops and seminars to educate the teachers and students on special skills like poultry incubation and hatching.
2. Teachers should take Agricultural Science students to poultry farms on a field trip to see things practically for themselves and learn more.
3. The government should subsidize poultry equipment like incubator to be bought and kept in school demonstration farm for practical demonstration.
4. Extension agents deployed to communities should occasionally visit schools to give talks on poultry incubation and hatching or poultry farming in general.

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