Assessment of Senior Secondary Schools on the Status of Field Practical in Animal Agriculture in Osun State, Nigeria

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Target Audience: Agricultural Science tutors, Curriculum planners, Examiners, Agropreneurs, Animal Scientists

Abstract

The impact of inclusion of Animal husbandry (ANH) as an Applied science and a Vocational study in the Senior Secondary school curriculum was assessed. The assessment was carried out for four years (2014 to 2017) in the state of Osun, Nigeria. The following criteria were set as the standard of assessment: housing/facility availability, feeds and feeding regime, farm sanitation, health status, record keeping and responses of candidates to field practical questions in Animal agriculture. The study used survey methodology through structured scoring manuals and face to face interviews. Data collated were analysed using descriptive statistics and F-test to determine levels of significance among the means at P<0.05. The results showed that only 49 % of the schools had adequate farm houses, 12 % used self-formulated feeds only, over 90 % of the schools scored above 70 % in farm sanitation, 31.5 % kept appropriate records while the scores in the responses of candidates to field practical questions in all the criteria set showed that candidates demonstrated high aptitude to acquire and excel in practical vocational training as evident in their extremely good performance (>75 %). The study suggests urgency for investment in vocational and entrepreneurship subjects which reserve the capacity to make students self-reliant economically and also supply requisite skills for industries through today's stereotypical educational system.

Keyword: Animal husbandry, Applied Science, Curriculum, Field practical, Vocational subject.

Description of Problem

One of the economic empowerment programmes of the Federal Government of Nigeria is to train and equip its citizens with practical and entrepreneurial skills in Applied science and Vocational studies (1). Animal husbandry (ANH) curriculum was designed and incorporated into Secondary school curriculum to train students in practical animal agriculture (2). ANH is an Applied science and a Vocational subject with emphasis on the acquisition of knowledge and skills associated with the rearing of animals in line with the approved curriculum to meet the key targets of the National Economic Empowerment and Development Strategy (NEEDS) (1,3,). Schools offering ANH must keep a school farm with different animal species that will be reared (ruminants and non-ruminants) depending on their choice (4). It is expected that students are taught basic knowledge and skills on how to rear animals and keep

adequate records. Candidates are expected to raise and manage farm animals of their choice either in groups or individually. It also involves assessing secondary schools' capacity to train students in practical Animal agriculture by assessing housing and available facilities for farm animals, feeds and feeding regime adopted, level of farm sanitation (i.e hygiene of both animal and farm house), record keeping, the health status of the animals and general response to field practical questions by the enrolled candidates (6). The assessment was carried out on a yearly-basis in all secondary schools that enrolled their students for Animal husbandry in Senior School Certificate Examination (SSCE) in Osun State, Nigeria. The objectives of ANH were to stimulate and sustain students' interest in practical ANH, enable students to acquire knowledge in ANH, to prepare secondary school students for further studies and occupation in ANH (4,7,). It also trains students on how to generate income on their own from the training and skills acquired. The progressive assessment study was done for four years in Osun State, Nigeria in partnership with the National Examinations Council (NECO), which has its Headquarters in Minna, Niger State, Nigeria. This report was aimed at assessing the infrastructural and intellectual capacities of the Senior Secondary schools and students respectively to put into use practical knowledge and skills in ANH as a subject for economic empowerment and national development (8). This study reports the skill and knowledge gaps identified through these assessment processes in the Senior Secondary School curriculum in the state of Osun, Nigeria.

Materials and Methods
Description of the study area
The study area was Osun State in the southwestern part of Nigeria. Osun State was carved out of Oyo State on August 27, 1991.

Osun State has its capital in Osogbo. The State is located on the geographical coordinates of 7°30′N and 4°30′E. Osun State is landlocked and occupies 9,251 square kilometers. Osun has three senatorial districts which are Osun West, Osun Central and Osun East as shown in Figure 1. Osun State has monthly internally generated revenue of US$5 million and gross domestic product of US$7,280,000(10,11,5). Osun State shares borders with Kwara State in the North, Oyo State in the West, Ogun State in the South and Ondo and Ekiti States in the East. The State has thirty local government areas and a total population of 3,423,535 dwellers (12). Agriculture is predominantly practised both in commercial and subsistence scales (having about 260,000 farming families), which attract many buyers of agricultural produce from outside Osun as it is popularly called (11).

Study coverage area
An assessment study was carried out in all the Senior Secondary Schools that enrolled students for Senior Secondary Certificate Examination (SSCE, June/July of every year) in ANH in the State. Osun State has about 800 approved public and private secondary schools scattered across the State. In 2014, progressive assessment study was initiated by the National Examinations Council (NECO) and a group of examiners selected from tertiary institutions in Nigeria to appraise both the school facilities and candidates' field practical skills in Animal agriculture. Only enrolled public and private secondary schools in both cities and villages in Osun State were assessed.

Training of the examiners
The training/coordination meeting was held once in a year for four years in preparation for the assessment study. The meeting was for the training of examiners who administered structured scoring manuals to all the schools and candidates who were enrolled

in the SSCE. Examiners were trained on how to score schools based on the criteria of assessment set in the scoring manual. Each scoring manual booklet carried the name of the school to be appraised, type of animal that was raised while the names of the students were written on the summary mark and attendance sheets in the last three pages of the scoring sheets (14).

Sample size and sampling method

Structured scoring manuals (4) were designed and apportioned to all the examiners trained to undertake the study following the guidelines (15, 14, 9). The criteria of assessment and scoring were based on: farm housing facility availability and suitability, type of feeds and feeding regime adopted, level of farm sanitation (hygiene), types of records kept, availability and appropriateness of records kept, health status of the livestock reared and response to questions from enrolled candidates. Each scoring manual carried the name of the school and the species of animals that were raised. The assessment was done on the field, i.e. inside the school farm, in all the enrolled schools in the state. The study was carried out in all the enrolled secondary schools in the state in the first four years of the commencement of the assessment. School farm facilities were assessed by scoring as designed in structured scoring manuals while response to field practical questions was done by face to face interview of individual candidates. Table 1 summarises the number of schools and candidates enrolled in Animal Husbandry in the first four years of commencement. Plates (a.) to (f.) show the photographs taken during the field practical assessment examination in ANH in some selected Senior Secondary schools in the state.

Scoring as stated in the structured scoring manual

(a.) Housing/Facilities: The availability of a farm house was scored 3, suitability in terms of proper and appropriate design was scored 4, and adequacy; in terms of space, size and other accessories that make up animal house, was scored 3. The total obtainable score under housing/facilities was 10.

(b.) Feeds and Feeding regime: availability of feed was scored 2, availability of water: 2, source of feed: commercial: 4, self-formulated: 7, combined: 5 and the suitability of feed: 4. The total obtainable score was 15.

(c.) Farm Sanitation: Cleanliness of the house was scored 3, cleanliness of the facility: 3, cleanliness of the housing environment: 2, cleanliness of feed and water supplied: 2. The total obtainable score was 10.

(d.) Health status: Healthy animals were scored between 6 and 10 while unhealthy animals were scored between 5 and 0 making a total of 10 marks in this section. Health status assessment was based on visual inspection of the physical appearance of farm animals and their feacal samples.

(e.) Recordkeeping: availability of records was scored 4, appropriateness, in terms of types of records that should be kept and sufficient information that a record should carry, was scored 5, number of records kept was scored 5 (three and above) and number of entries was scored 6, making a total of 20 marks.

(f.) Response to questions: All candidates were questioned and examined based on the first five sections listed above (a-e) by face to face individual oral interview. The total score obtainable was 15 marks. The maximum obtainable score in the whole assessment of an individual candidate was 80 marks.

Data analysis

Data collated were imported into Microsoft excel (Microsoft Office, 2010) and later analysed using descriptive statistics and F-test to determine level of significance among the means at $P<0.05$. The analysis was based on the current status and accumulated increase of the number of schools enrolled in the first four years of the commencement of the assessment.

Results

Total number of schools and candidates assessed in the first four years

Table 1 summarises schools and candidates' enrolment in Animal Husbandry in the first four years. An increase of four thousand, eight hundred and ninety-eight enrolled candidates was recorded in the year 2017 over that of the first year 2014. In 2017, 252 schools were assessed: 95 were public schools, while 157 were private schools.

Types of animals reared

Out of 252 schools that were enrolled for ANH SSCE, poultry farming accounted for 132 of the schools, followed by goat rearing in 77 schools, 39 schools reared rabbits, 3 schools ventured into cattle rearing, 17 schools reared snails, 16 schools were involved in rearing of pigs etc. Figure 2 shows the number of schools and the species of animals reared.

Results on housing /facilities

The results on housing revealed that only 51.8% of the schools kept 100% suitable farm houses, 17.8% of schools were 50% suitable while about 0.4% were not suitable at all (Figure 3). Only 49% of 252 schools assessed had fully adequate farm houses and about 46% of the schools had farm houses that were two-third adequate for farm animals (Figure 4). Figure 5 presents the overall mean scores obtained in housing/facilities.

Feeds and feeding regime

Fifty-three percent of the schools used commercial feeds for their animals, 12% used self-formulated feeds while 35% used a combination of commercial feeds and supplement of kitchen wastes (Figure 6).

Sanitation and health status

Over 90% of the assessed schools scored above 70 % in sanitation and 3.9% of the schools reported cases of unhealthy animals identified in the field by scoring below 5 in the category of unhealthy animals. Over 95% of the schools scored 6 and above in the category of healthy animals. The diseases identified were those common to chickens at the brooding stage in the case of poultry farming while no case of ill- health was reported for other animals species raised.

Record keeping

The results on record keeping showed that only 24.8% of the assessed schools kept three and above types of records. Thirty-one percent of the schools kept appropriate records. Thirty-four percent of the schools scored 60% in keeping appropriate records. Twenty percent of the schools kept no record at all (Figure 7). Figure 8 enumerates total performance on record keeping by 252 assessed schools .

Response to Questions

Figure 9 presents the total performance of schools in response to field practical oral questions in ANH. Candidates obtained the highest score in housing/facilities and the lowest score in health status. The scores in all the criteria of assessment were not significantly different (p>0.05). Candidates scored above 75% in each criterion of assessment.

Discussion

The results of assessment implied that ANH as a subject has established itself as a prerequisite trade subject that must be registered by candidates preparing for Senior Secondary School examination. An increase of four thousand eight hundred and ninety-eight (4,898) enrolled candidates was reported in the year 2017 over that of the first year (2014). This revealed the intentions of our younger generation to develop marketable and entrepreneurial skills that could be uesd to alleviate poverty and boost their financial status. The result on housing/facilities reflected a need for more training and education, especially on how to design suitable and adequate farm houses for farm animals. The knowledge on spacing required for a particular livestock is lacking. Tutors and their students must be equipped with relevant up-to-date information on proper animal housing design and spacing (16,23). Dilapidated buildings of farm houses were also noticed in most public schools (13,17). This was a reflection of the past effort and investment in school farms which now requires our collaborative inputs in meeting current needs of technical and vocational capacity to produce supplementary animal proteins foods for our teeming population (18,19). Over 60% of schools did not keep appropriate records. The instructors in Secondary schools must be taught how to offer Agricultural education that requires keeping adequate records for profitable ventures in Animal agriculture (20). Government should organize workshop on these identified areas to enlighten instructors of our Senior Secondary schools, especially on types of records to keep and how to keep appropriate and adequate records that will facilitate productive and efficient entrepreneurship performance (21). Only 12% of the schools did formulate their feeds, showing that there was no generally technical know-how on how to formulate feeds to reduce cost of production incurred through purchasing of commercial feeds. Pertinent training and study are required on how to identify feed resources available within the state to formulate standard and balanced diets for livestock feeding. Candidates were able to respond excellently to field practical oral questions in ANH. They demonstrated high aptitude to acquire and retain knowledge from practical vocational studies which involved seeing, hearing and practising with their hands (22). It is evident that entrepreneurship studies can train students to be team players and also develop self confidence in people because of their required cooperative and collaborative efforts (23).

Conclusions and Applications

This study has expatiated that candidates were able to perform well in two criteria of assessment, namely sanitation and response to questions while they scored poorly in practical oriented aspects like feed formulation, record keeping and housing/facility design. The study recommends that:

1. Government should give more priority to field practical training than theoretical training alone.
2. Government needs to commit huge capital to practical field work, especially school farming including Animal agriculture, in which students are always available to provide labour on feeding, management and can also be taught how to be self-reliant economically.
3. Loans should be made available to as many public schools and proprietors of private schools to establish school farms. This will facilitate government's capacity to meet its obligations to ensure food security, food safety and quality nutrition (24).

Attention should be given to this aspect of education for production of quality animal protein, foods, economic empowerment and

capacity development for the livestock industry.

Acknowledgement

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Figure 1: The Map of Osun State, Nigeria.

Table 1: Schools and Candidates' enrollment in Animal Husbandry in the first four years.

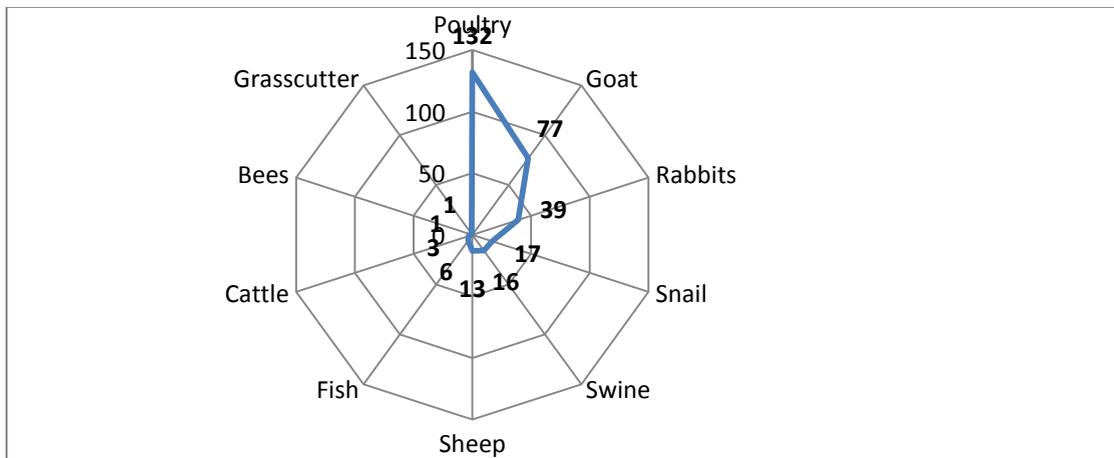| Year	No. of Schools enrolled	Total no. of Candidates
2014	130	4325
2015	200	6342
2016	220	7473
2017	252	9223

Figure 2: Number of schools and the species of animals reared.
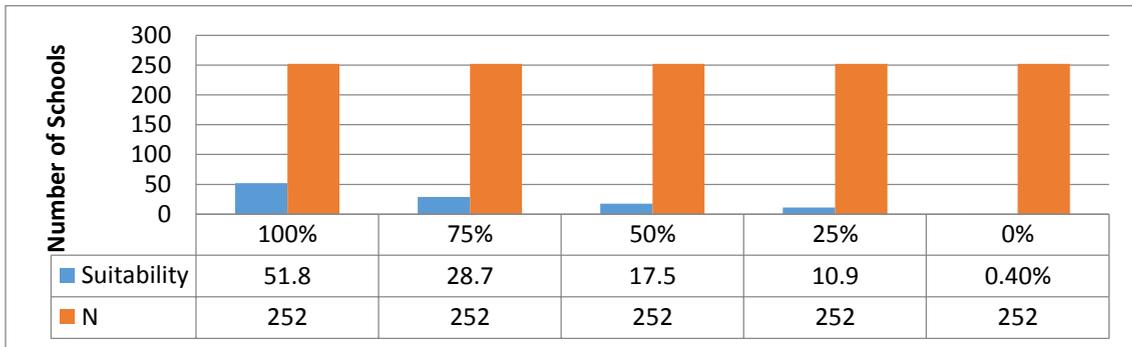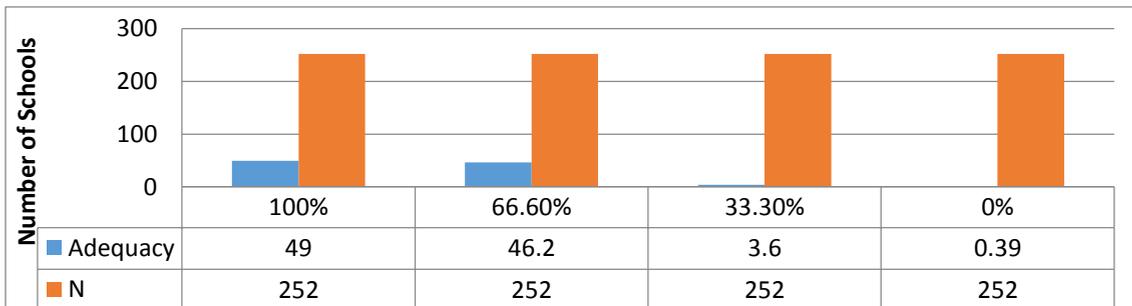
Figure 3: The suitability of the farm houses.

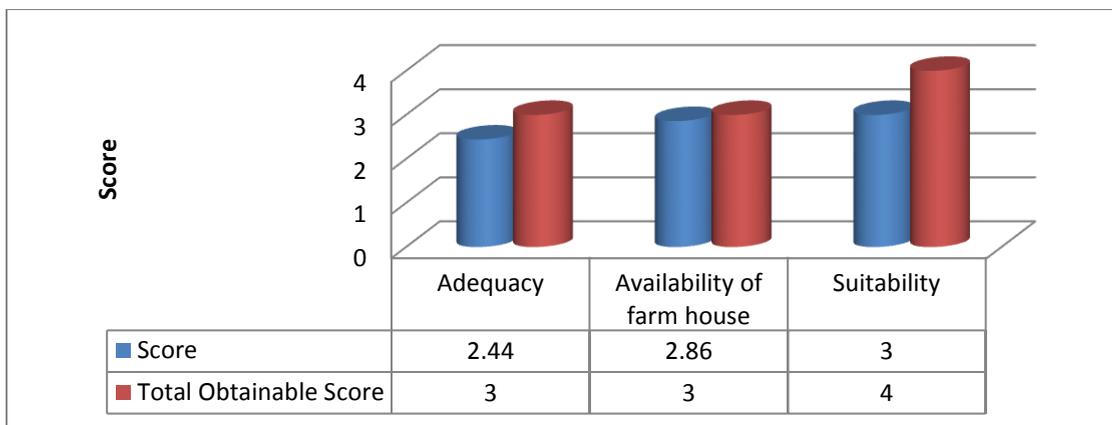Figure 4: The adequacy of the farm houses.

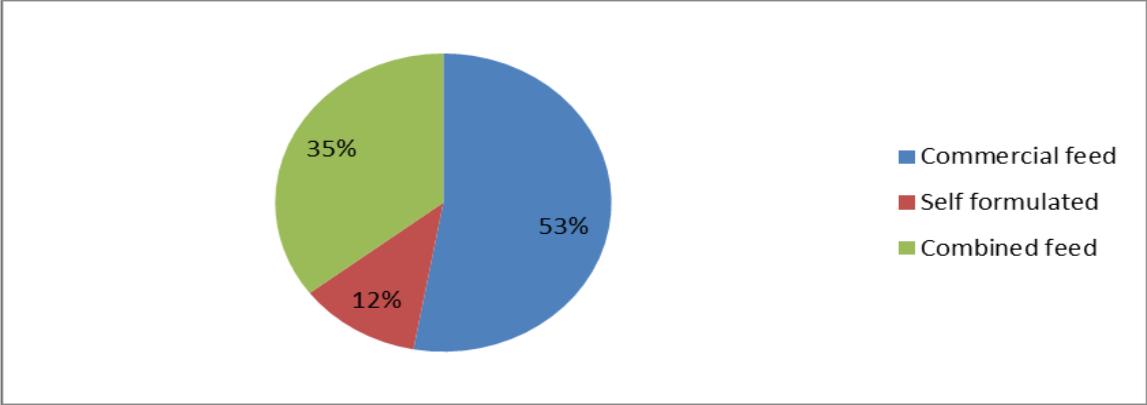Figure 5: Overall performance of schools in housing/facilities.
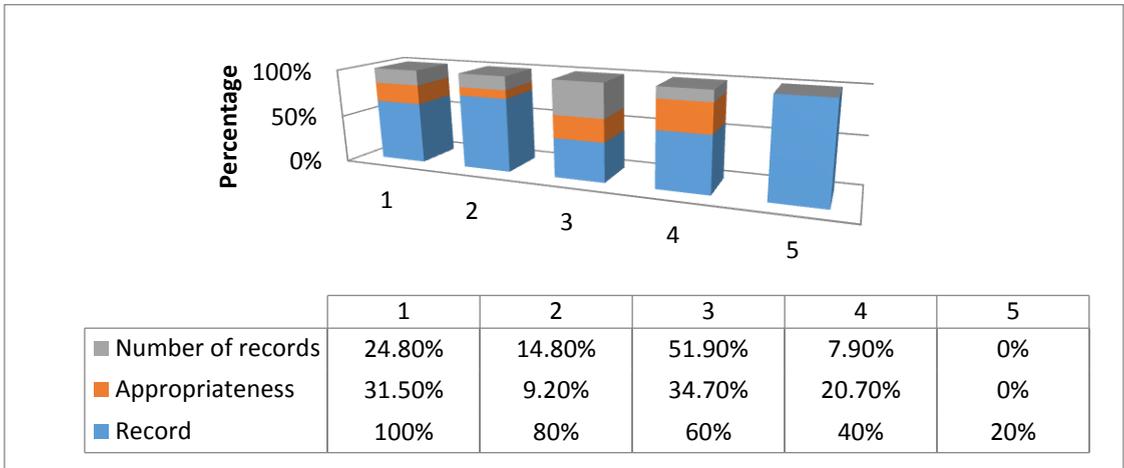
Figure 6: Sources of feed for the school farms.

	1	2	3	4	5
■ Number of records	24.80%	14.80%	51.90%	7.90%	0%
■ Appropriateness	31.50%	9.20%	34.70%	20.70%	0%
■ Record	100%	80%	60%	40%	20%

Figure 7: Results on the number and appropriateness of records kept
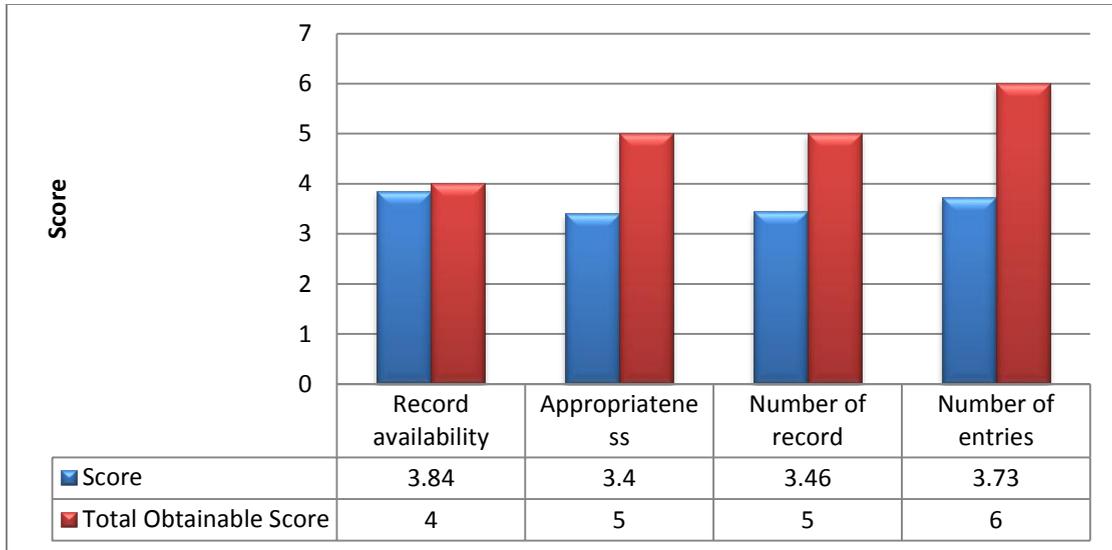
Figure 8: Overall performance of schools in record keeping.

	Record availability	Appropriateness	Number of record	Number of entries
Score	3.84	3.4	3.46	3.73
Total Obtainable Score	4	5	5	6

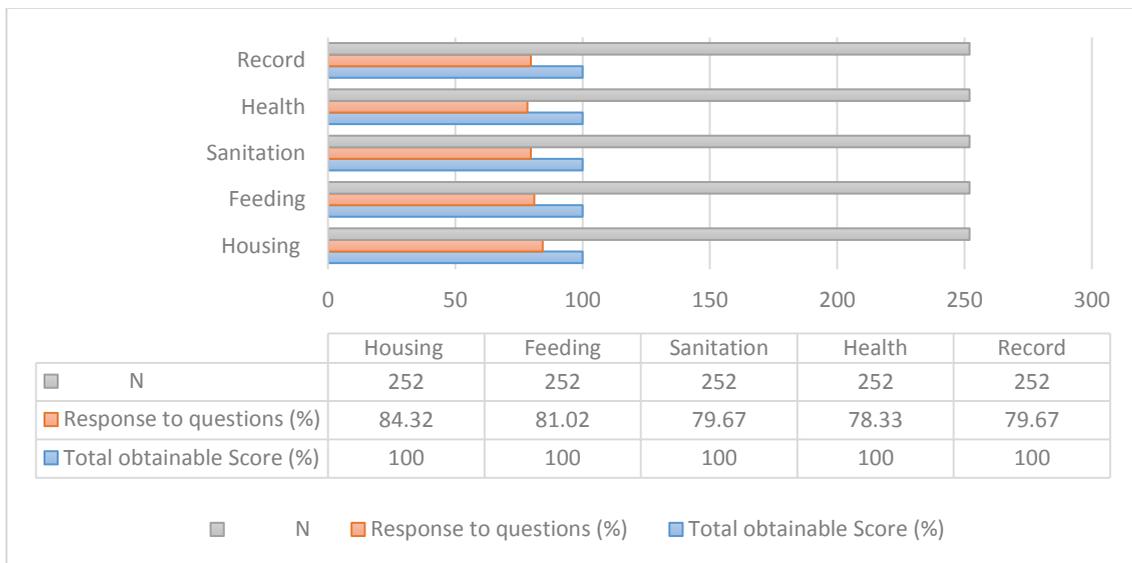|	Housing	Feeding	Sanitation	Health	Record
N	252	252	252	252	252
Response to questions (%)	84.32	81.02	79.67	78.33	79.67
Total obtainable Score (%)	100	100	100	100	100

Figure 9: Total Performance of Schools in response to field practical oral questions.

(a.)

(d.)

(b.)

(e.)

(c.)

(f.)

Plates (a.) to (f.) : a.) Broilers at different brooding stages at Jeks International, Gbongan; b.) Laying birds in battery cages at Kunike International School, Osogbo; c.) ANH SSCE Candidates inside poultry house preparing for oral interview during field practical assessment examination at Redeemers' International School, Ifewara; d.) Mature broilers at Kunike International School, Osogbo; e.) Front view of a Poultry building at Redeemers' International School, Ifewara; f.) Feed formulated by ANH Students at Redeemers' International School, Ifewara; all in Osun state, Nigeria.