Reintegration of School Farms as a Panacea for Food Insecurity: Perspectives of Primary School Students in Edo State, Nigeria

Gbenga F. Koledoye

Department of Agricultural Extension and Rural Development, Adekunle Ajasin University, Nigeria
E-mail: festus.koledoye@aaua.edu.ng

Abstract **- This study investigated the attitudes of primary school students towards the establishment of school farms, utilizing a sample of 86 students from three public primary schools in Uhunmwode Local Government Area (LGA). Data were collected through questionnaires and interviews. The findings indicate that primary school children in Edo State generally support the idea of implementing school farms. Key factors contributing to this positive response include the availability of land and the potential to obtain additional land from local communities for agricultural purposes. Critical elements identified for the successful establishment of school farms encompassed the interest of both students and teachers, the presence of agricultural science instructors, and access to suitable farming land.**

Keywords: **School Farm, Children, Students, Food Insecurity**

I. INTRODUCTION

Adequate nutrition is crucial for every individual, providing a balanced diet that supports biological, psychological, mental, and social growth, especially in children. Insufficient nutrition, in terms of both quantity and quality, can adversely affect health, leading to diseases and even death, particularly in children (WHO, 2021). Malnutrition manifests in various forms, including undernutrition, hunger, overweight, and obesity, often due to a lack of essential nutrients necessary for growth, bone health, fluid balance, and other bodily functions. A significant global issue is hunger, with approximately 10,000 children dying daily from it (Chinyoka, 2014). World Bank statistics (2021) indicate that one in five people were hungry in 2020, an increase of around 46 million from 2019, highlighting a concerning rise in hunger rates. This trend places immense pressure on governments and international bodies to address malnutrition and hunger and to provide alternative healthy food sources. The situation is particularly dire in Nigeria, where Sasu (2022) and Akinyettun and Ambrose (2021) noted an increase in the hunger rate from 6.6% in 2016 to 21.4% in 2020, exacerbating the country's long-standing food insecurity issues [3],[7].

One of the most challenging problems in the world today is how to provide sufficient food for the populace and in Africa, particular in Nigeria, government at all level is overwhelmed with the problem of food insecurity. Food and Agriculture Organization report (2021) stated that between 2018 and 2020, about 21.4% of population in Nigeria

experienced chronic hunger; these are people that could go for entire days without food [4]. This situation keeps increasing at alarming rate as the demand for food is rising together with a very fast-growing population. Currently, according to statistics from the Intelligence Unit of the Economist, Nigeria is ranked at 38 out of 100 countries based on its food security. This is an indication that the country is faced with food security.

For effective solution to the problem of food insecurity in Nigeria, there is need to look inward to the genesis of the problem and find a lasting solution that is sustainable. Historically and in the past, agriculture was an integral part of every family in Nigeria, and it was also introduced into the schools. Thus, the art of farming was learnt through socialization process where children followed their parents to farms on daily basis during the week days and in weekends, they were fully engaged in the management of assigned portions of farmland within their parents' farms.

Also, during this period, there were functional school farms in schools across Nigeria where students and students practiced farming and there were dedicated days within the week used for this purpose. Interestingly, during this period, food insecurity was rarely mentioned in literature. Therefore, effort to re-integrate farms into the school system where the art and business of farming are learnt would be a viable panacea to mitigate the problem of food insecurity in Nigeria. This serves as the basis for this study.

Current in Nigeria the number of people living in extreme poverty is extremely high and the Global Food Security Index (GFSI) ranked Nigeria 94th among 113 countries in 2019 (Ayinde, Otekunrin, Akinbode and Otekunrin, 2020) [1]. Nwozor, Olanrewaju and Ake (2019) stated that a vast majority of over 200 million population in Nigeria is food insecure despite the favorable agro-ecological endowments and the national priority to tackle the problem of food insecurity over the last three decades, the figures of food insecurity has been on the increase [6].

Food and Agriculture Organization (2019) established that between 2004 and 2006, the total number of undernourished Nigerians was about 9.1 million. This number increased to 25.6 million; representing about 281.32% between 2016 and

2018. This is expected to have been increased with the current insecurity that has worsened the food security challenge in the country.

To tackle the challenges of food insecurity in Nigeria, successful government have instituted many programmes such as River Basin Development Authority in 1973, Operation Feed the Nation (OFN) in 1979, Agricultural Transformation Agenda in 2015, Anchored Borrowers' Scheme in 2015 among others but the challenges still remain unsolved because the source of the problem has not been identified. Nwozor *et al*. (2019) identified the source of food insecurity in Nigeria as the general neglect of agriculture to oil sector in the 1970s [6]. The neglect impacted negatively on the culture of Nigerians at home and in schools where farming was unconsciously incorporated as part of the systems to address the problem of food shortage in the society. Therefore, any effort that would not recognize the roles of school children at homes and schools in tackling the challenges associated with food insecurity may fail to yield the expected results like the previous government interventions.

Thus, this research was conducted to ascertain the interest of school children in the establishment of school farms and their perception so as to know how roles school children could play in the fight against food insecurity in Edo State, Nigeria. The choice of Edo is based on the fact that the state has so many agricultural opportunities being in the rain forest zone of the country where agriculture thrives. Therefore, making agriculture as an integral part of the school system may provide a sustainable solution to the challenges of food security in Nigeria starting from Edo State, Nigeria. This study is designed to provide answers to the following research questions.

II. RESEARCH QUESTIONS

1. What are the socio-economic backgrounds of the school children in Edo State?
2. Are the schools children favourably dispose to the establishment of school farms in the public primary school?
3. What are the potentials of establishing the school farms in schools in the study area? and
4. What are the likely constraints to the establishment of school farms in the study area?

III. OBJECTIVES OF THE RESEARCH

The main objective of this research is to examine the potentials of establishing school farms in the public primary schools in the study area. Specifically, the objectives are to

1. Describe the socio-economic characteristics of school children in the study area;
2. Examine the perception of the school children in the establishment of school farm;

3. Analyse the potentials of establishing the school farms in public schools; and
4. Identify the possible constraints that may hinder the establishment of school farm.

IV. THEORETICAL FRAMEWORK

Innovation diffusion theory was adopted for this study. The theory was propounded by Everett Rogers in 1962. The theory looks at how people respond to new ideas and proposed five main elements that influence the spread of a new idea as the innovation itself, adopters, communication channels, time and a social system. The projects will rely on these five main components to address the problem of food insecurity in Nigeria. First, by bringing a new approach to fight food insecurity, second by using the school children, third by using experts to communicate proven technologies within a time frame using the educational systems. This will make the innovation to have wide acceptability and spread if proper dissemination pathway is adopted.

V. RESEARCH METHODOLOGY

The study was carried out in Edo State. The state is known for its agricultural activities based on the agro-climatic conditions of the State, being in the rain forest region of Nigeria and for the fact that majority of the population are farmers. The state has 18 Local Government areas and each of the LGA has some peculiarity with respect to agricultural production. Uhunmwode LGA was selected based on its agricultural potentials and its proximity to the state capital as results of this study is expected to influence government decisions with respect to the curriculum development of primary school system in agricultural science.

The Local Government area is divided into zones based on the number of primary school for easy administration and management purposes. The zones are: Ehor, Ugonoba, Isi and Umagbae zones. About 75% of zones were used for this study, thus, Ugonoba, Isi and Umagbae zones were selected purposively based on their proximity to the state capital. Students of primary 4, 5 and 6 were purposively used because of their experience and maturity while one primary school each was selected from each of the zones. The selected primary schools were: Iguomon in Ugonoba, Oba Eware in Umagbae and Alaghodaro, Izekihi in Isi zones, respectively.

For the purpose of data collection, ten (10) students from each of the selected classes (4, 5 and 6) were selected from each of the selected schools to for 30 students in each of the schools. In all, 90 students were used for this study. However, 86 copies of the questionnaire used for data collection were found properly filled, hence, 86 respondents were used for the study. Data were collected with the use of validated questionnaire reliably tested with Alpha Cronbach and 0.79 coefficient was obtained.

Questionnaire were asked on the students' parent characteristics, perception of school farm, and possible constraints to the establishment of school farm while personal observation and interactions with teachers and head teachers were conducted to identify the potentials of establishing school farms in the selected schools. Data collected were appropriately measured with the use of standard measurement scales and notations.

For example, students' perception was measured with the use of ordinal scales such as the Likert rating scale of strongly agree, agree, undecided, disagree and strongly disagree with 5, 4, 3, 2 and 1 notations. The grand mean was calculated like 5+4+3+2+1 = 15 and this was divided by the number of item, which was 5 to obtain 3.0. therefore, any response that has a mean of equal or greater than 3.0 was regarded as positive disposition while those with less or equal to 3.0 were regarded as negative disposition.

Data collected were described with descriptive statistics such as frequency counts, percentages, mean while binary logistic regression modeled as follows was used to make deductions and inferences on the likely effect of school farms in the fight against food insecurity. Observation and interviews were transcribed as observed and conducted to support the findings from the quantitative data.

Under the Binary Logistic response model, if there are N categories, the probability that a unit of analysis (primary school) is in a particular category j

$$Pij = \frac{exp\,(ijXi)}{\Sigma\,^3_{j=1}\,(exp(ijXi)}$$

Where $j=0$ if the potential of establishing a school farm is low, and 1 if the potential is high based on the categories derived from the potentials scores from the use of the mean value approach model.

X_i represents a vector of explanatory variables for a primary school i^{th} with j status of potentials, and β the coefficient of the parameters.

Where z denotes the linear regression function for the variable of primary school under consideration

$$(i.e\ \beta_0 + \beta_1\,X_1 + \beta_2\,X_2 \text{-------}+ \beta_n\,X_n)$$

$$P_i\,(Y = 1/X_i)\ \frac{p_i}{1-p_i} = e^{\,(\beta_0+\beta_1 X_1+\beta_n\,X_n\,+u)} \ldots\ldots (1)$$

The explicit function is given as

$$P_i\,(Y = 1/X_i)\ \frac{p_i}{1-p_i} = e^{\,(\beta_0\,+\,\beta_1 X_1+\beta_2 X_2+\,\beta_3 X_3+\,\beta_4 X_4+\,\beta_5 X_5+\beta_6 X_6+}$$
$$^{\beta_7 X_7+\,\beta_8 X_8\,+u)} \ldots\ldots\ldots (2)$$

Where,
α= Constant/intercept
β= Slope (Regression coefficient)
Y = Dependent variable for the study (potential of establishing a school farm categorized into low (0), and high (1); and
X_1 = Size of land (in acres)
X_2 = Students interest (interested=1, otherwise = 0)
X_3 = Teachers' interest (Interested= 1, Otherwise = 0)
X_4 = Presence of agric teachers (Yes= 1, otherwise =0)

VI. RESULTS AND DISCUSSION

A. Socio-Economic Characteristics of School Children

Evidence in Table I shows that the average age of the students in the public primary schools in the state was approximately 14.5 years and about 43.02% and 56.98% of the students were males and females, respectively. The findings indicate that students of lower ages are now found in the public schools in Edo State, and it could also infer that on average, students in public schools in Nigeria are now found at a very active age of about 14 years. This is the age when young children can easily be socialized into farming by their parents in those days as opined by Gandasari *et al.,* (2020) [5].

The stage is so important in that learning is believed to be faster and easier for the learning according to the psychological theories of learning. Furthermore, more female students were found in public primary schools in the state compared to their male counterparts. This shows that female may likely show more commitment to educational pursuit than the males. The findings support the earlier findings of Akinbi and Akinbi (2015) that submitted that there was a gender disparity in the enrolment of male and female in basic formal education in Nigeria in favour of the female [2].

On the educational status of the parents might be a factor that determines their perspectives of school farms, revealed that about 41.86% of the students' parents had secondary education with about 20.93% having tertiary education and only 10.47% indicated that they never had any formal education. The findings indicate that most of the students' parents had basic education. This may influence students' perspectives of the school farms.

At the same time, findings show that about 54.65% of the parents were involved in non-agricultural related occupation while a little below average (45.35%) engaged in agricultural related occupation. Students whose parents are involved in agricultural related enterprises may be better positioned to favorable dispose to the establishment of schools farms. The establishment of school farms may be very helpful in the government efforts to tackle the incessant problem of food insecurity in Nigeria.

TABLE I DEMOGRAPHIC PROFILE OF STUDENTS

Variable	Frequency	Percentage	Mean
Age (years)			13.5
Sex			
Male	37	43.02	
Female	49	56.98	
Parents' Education Status			
Non-formal	9	10.47	
Primary	23	26.74	
Secondary	36	41.86	
Tertiary	18	20.93	
Parents' Occupation			
Agriculture related	39	45.35	
Non-Agriculture related	47	54.65	
Do your parent operates a farm?	27	31.40	

Source: Computed from Field Survey, 2022

B. Perception of Students on the School Farms

Results in Table II show students perception of the establishment of school farms. It was found that students had positive perception or disposition towards all the variables used for the measurements of perception such as the idea of establishing school farm is a good one, I will be glad to work on the school farm and we can manage school farm very well. these are testimonies to show that students would be ready to participate in school farms of established as this will aid learning of agriculture and promote the eradication of food insecurity that has be a major problem in Nigeria for many decades. It was believed that the scenario of food insecurity came in lamplight at the abolition of school farms by the various schools in Nigeria and changing of curriculum where agriculture as a subject was made a non-compulsory subject for both students and students in the schools. With the positive disposition of students towards the establishment of school farm in the state, it is believed that students could learn the art and business of agriculture right from the primary schools and this could be a starting point to producing commercially conscious farmers in Nigeria.

TABLE II PERCEPTION OF STUDENTS ON THE ESTABLISHMENT OF SCHOOL FARMS

Perception of Students	Mean	Std. Dev
School farm idea is a good one	3.81*	0.12
I will be glad to work on the farm	3.22*	0.18
I like growing crops and rearing animals	3.65*	0.05
I will be encouraged when I see that I am among the producers of crops	3.16*	0.09
I will like to see the practice of farming	4.21*	0.11
Farming techniques will be easily practiced on the farm	3.33*	0.32
We can manage farm very well	4.18*	0.12
School farm will serve like an exercise	4.36*	0.09
Active participation of students will be high	4.92*	0.05

*Mean ≥ 3.0 = Positive perception/disposition
Source: Computed from Field Survey, 2022

C. Potentials of Establishment of School Farm

A tour round the study area to assess the possibility and feasibility of establishing school farms in the schools show that about 60% of the public schools in the study area had viable agricultural land, though the size of the land may not be big enough for commercial farms but for demonstration type of farms where students could be taught the basis of agriculture. Interactions with few community members show that many communities are willing to release farmland to schools for the purpose of establishing demonstration farms where students could be socialized into farming. Excerpt from an interview conducted at Iguomon community indicated that community leaders will allocate land close to the school premise for school to operate school farms as presented thus:

… iguomon primary school has enough land to establish demonstration farm. The problem we have in Nigeria is lack of commitment toward agriculture. Agriculture has been relegated at all levels. With the land within the school premise, a good demonstration farm could be established and we in the community will be happy to see our children participating in agriculture as we used to do during our days. Government has brought in ideas that are not compatible with the nature of Nigeria and this has gradually destroyed the system. Students and students in schools no longer know how yam is produced. Some believe that yam is a fruit while others believe that cassava is like a corn. All these need to stop if we really want to move forward. If the school needs more land for this purpose, we are ready to allocate for them but let them utilize the one within the school compound first... Excerpt from one of the community leaders in Iguomon community, Benin City.

D. Constraints to the Establishment of School Farm

Results in Table 3 show that 94.19% and 70.93% of the students indicated that poor government supports, and land of farmland were the significant constraints to the establishment of school farms in the study area while 65.12% and 59.30% show that lack of agricultural science teachers in schools and the use of crude implement such as cutlass and hoes were the identified constraints that militate against the establishment of school farms. The findings show that constraints that influence the establishment of school farms range from technicality like lack of technical staff to policy such as lack of government support. Therefore, holistic approach that will involve both the government and the educational stakeholders such as the communities would be needed to solve the identified constraints.

TABLE III CONSTRAINTS

Constraints	Frequency	Percentage
Lack of agric. teachers	56	65.12
Lack of farmland	61	70.93
Poor information	47	54.65
Lack of infrastructures	41	47.67
Poor government supports	81	94.19
Use of crude implements	51	59.30

Source: Computed from Field Survey, 2022

E. Determinants of Possibility of Establishing School Farms

Results of binary logistic regression show that all the tested variables for this study were significant determinants of the possibility of establishing school farms in schools for the purpose of teaching students the art and practice of farming. For instance, with the odd ration of 1.55 for the size of farmland available will increase the likelihood of establishing a school farm by about 2 times while teachers' interest with a odd ratio of 11.36 will likely increase the odd of establishing a school farm by 11 times. Likewise,

presence of agricultural science teachers will increase the odds of having a school farm by about 5 times. The findings show that the above identified variables are critically significant to having school farms in the study area.

TABLE IV DETERMINANTS OF POTENTIAL OF ESTABLISHING SCHOOL FARMS

Variables	Coeff	t-ratio	Odd ratio
Size of land available (in acres)	0.47	2.89*	1.55
Students interest (interested=1, otherwise = 0)	0.81	2.41*	2.25
Teachers' interest (Interested= 1, Otherwise = 0)	2.43	3.16*	11.36
Presence of agric teachers (Yes= 1, otherwise =0)	1.55	2.83*	4.71

-2log-likelihood ratio = 222.718, R^2 = 0.86
Prediction = 0.6961
Source: Computed from Field Survey, 2022

VII. CONCLUSION

Engaging children in activities that contribute to the nation's economy serves as a form of socialization, fostering their understanding of how to address such challenges and develop solutions from an early age. This study explored the perspectives of school children on addressing Nigeria's food insecurity issue through the implementation of school farms. The findings revealed that primary school children in Edo State displayed positive attitudes towards establishing school farms. Favorable conditions, such as the availability of land and the potential for acquiring additional land from local communities, were identified in the study area. Critical factors identified for the successful establishment of school farms included the interest of both students and teachers, the presence of agricultural science instructors, and access to farmland.

REFERENCES

[1] I. Ayinde, O. A. Otekunrin, S. O. Akinbode, and O. A. Otekunrin, "Food Security in Nigeria: Impetus for Growth and Development," *Journal of Agricultural Economics and Rural Development*, vol. 6, no. 2, pp. 808-820, 2020.

[2] J. O. Akinbi and Y. A. Akinbi, "Gender disparity in enrolment into basic formal education in Nigeria: Implications for national development," *African Research Reviews*, vol. 9, no. 3, pp. 11-20, 2015.

[3] T. S. Akinyetun and O. I. Ambrose, "Poverty and hunger in Nigeria," *Global Encyclopedia of Public Administration, Public Policy, and Governance*, vol. 32, no. 2, pp. 22-29, 2021.

[4] Food and Agriculture Organization, "Agriculture in Nigeria: Prevalence of severe food insecurity in Nigeria (2014-2020)," pp. 1-5, 2021.

[5] D. Gandasari, L. Djuara, and D. Dwidienawati, "Socialization on agricultural work from farmer parents to their children: A case study," *International Journal of Psychosocial Rehabilitation*, vol. 24, no. 2, pp. 2022-2027, 2020.

[6] A. Nwozor, J. S. Olanrewaju, and M. B. Ake, "National Insecurity and the Challenges of Food Security in Nigeria," *Academic Journal of Interdisciplinary Studies*, vol. 8, no. 4, pp. 8-19, 2019.

[7] D. D. Sasu, "Prevalence of severe food insecurity in Nigeria between 2014-2020," Food and Agriculture Organization Working Paper 05, pp. 21, 2022.