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## **IMPACT ASSESSMENT TO A TRAINING PROGRAM ON FAMILY POULTRY PRODUCTION TO PRIMARY SCHOOL CHILDREN IN MOROGORO, TANZANIA**

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## Abstract

The knowledge and practical skills on family poultry to school children and the impact of Poultry Health World Development (PHWD) project to poultry keepers of Mzumbe ward in Morogoro Tanzania were assessed. This was done in order to analyse if it is worthy for the program to be adopted in other parts of Tanzania. PHWD is a project that operates in selected primary schools in Mzumbe ward, aiming at introducing local chicken production training to school pupils. Four schools (Masanze, Lubungo, Mafuru and Mwenge primary schools) were selected for the study, two schools having PHWD project and the other two schools not having the project. It was found in this study that knowledge in parents of trained pupils was higher as compared to the parents of the untrained pupils. In this case, 62% of parents of the trained children could understand the idea of chicken vaccination against Newcastle disease as compared to 38% of parents of the untrained children. In addition to the training to pupils, the PHWD project also facilitated poultry management training to villagers, where 14 villagers (8 women and 6 men) received the training from two of the involved schools in the year 2010-2011. This study assessed the knowledge adoption to the children in relation to gender, where it was found that boys were more involved to poultry keeping than girls. The study establishes that community oriented training projects can have significant impact in boosting productivity in village poultry keeping.

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## **Abbreviations**

FAO – Food Agriculture Organization

PHWD project - Poultry Health World Development project

APA – Associate Poultry Advisor

## INTRODUCTION

Traditional chicken keeping involving local and uncharacterized chicken ecotypes constitutes a greater percentage of all chickens kept in developing countries, especially in Africa and Asia. These chickens are synonymously referred as indigenous local chickens, free-range chickens, village chickens or rural chickens as compared to commercial chickens involving exotic layer and broiler breeds. In the current study, the term free-range chicken will be used for such birds. They constitute up to 80 percent of the total poultry population in Africa (Guèye, 1998; Mlozi *et al.*, 2003) and are characterized by small body size, slow growth rate, low egg production and late maturity. The Food and Agriculture Organization of the United Nations (FAO) has classified poultry production systems in four categories (sectors 1, 2, 3 & 4) based on the level of integration of operations, the marketing system and the level of biosecurity. In a large number of low-income countries, backyard/household production (Sector 4) is the largest system of poultry production and a critical source of income and nutrition for poor households (Ahuja and Sen, 2007).

In various studies diseases has been identified as the major constraint to the poultry industry (Minga *et al.*, 1989; Awan *et al.*, 1994; Dinka *et al.*, 2010). It has also been shown that a high prevalence of other factors like helminthoses, ectoparasites, low nutritional status and predation contributes to mortalities (Permin *et al.*, 1997; Mwalusanya, 1998; Magwisha *et al.*, 2002).

Over the last three years, the UC Davis school of Veterinary Medicine through the PHWD project has implemented a regional program, partnering with Sokoine University of Agriculture and other academic research institutions, to implement a university-based model of training and field research projects to prevent avian flu, to improve local chicken production in some selected villages in Morogoro Tanzania. Usually women and children are involved on taking care of poultry (Muchadeyi *et al.*, 2004). There have been some efforts from governmental and non-governmental initiatives to train adults, but mostly targeting men who practically are not directly involved with poultry production. Although training activities have appeared to promote poultry production in Africa (Knueppel *et al.*, 2009), especially of free range chickens, little effort has, however, been directed to train school children and young adults, who actually are the ones involved in day to day care of household poultry. It was on this insight that PHWD project proposed to establish its program of delivering knowledge to school children with the goal of improving biosecurity and productivity on these small farms, and offering greater protection to the flocks as well as the families that raise them. In addition to the other activities as pointed before, the project prepared a program to train primary school children on basic knowledge in chicken production to be implemented from May 2010 to August 2011. Four primary schools were selected from which respective teachers were trained on chicken production matters by animal production scientists and veterinarians. The chicken production subject was then incorporated to a subject known as vocational studies. It was therefore from this point that pupils took the subject as a routine in their timetable, involving both theoretical teaching and practical aspects of chicken keeping. Imparting knowledge of keeping chicken to school children is considered to be an important step in improving productivity for livelihood improvement.

This study was done to assess whether the implemented pupils training project had a positive impact of knowledge transfer to pupils and to their society in large.

## **METHODOLOGY**

### **Selection of schools and participants**

The study was conducted at Mzumbe ward in Morogoro region in Tanzania (8°00'S 37°00'E / 8°S 37°E). There are ten primary schools in the ward. Four schools out of ten are conducting the training program on local chicken keeping as have been implemented by the PHWD project. From the four schools with the program two schools were selected randomly by writing a school name on a piece of paper then hiding the names and allowing uninformed person to pick out two pieces of paper. Two schools not having the project were selected by considering geographic closeness to the schools with the program.

It was decided that all pupils in standard six classes will participate in the evaluation process. The pupils were assessed by having to answer specific questions prepared in question scripts. The questions asked were aimed at testing pupils on general knowledge on poultry, husbandry activities including housing, feeding, diseases control and biosecurity (Appendix 1). Consultation was done with the school teachers in moderating the questions in order to ensure they are directly related to the knowledge provided in the training. 100 student answer scripts were randomly selected (25 from each school) but taking care of gender balance as shown in Table 1 below

Table 1. Summary of schools and pupils involved in the evaluation

Name of school	Number of pupils involved		Status	Number of scripts chose		Date of the evaluation
	Boys	Girls		Boys	Girls	
Masanze	22	25	All trained	12	13	04 <sup>th</sup> / 10 /2011
Lubungo	18	16	All trained	13	12	11 <sup>th</sup> / 10 /2011
Mafuru	18	20	Not trained	12	13	18 <sup>th</sup> / 10 /2011
Mwenge	21	19	Not trained	13	12	25 <sup>th</sup> / 10 /2011

Forty parents were randomly selected for interview by choosing 10 names of their children from each of the four schools to be interviewed.

### **Meeting with project stakeholders**

Stakeholders of the PHWD project include Project leaders, the Ward Executive Officer, the Village leaders and Teachers in the schools involved.

## **Project leaders**

Before commencing the study, a meeting was conducted with the PHWD project leaders. In this meeting, the project coordinator in Tanzania who is also the chief project researcher, and an Assistant project researcher were involved. The meeting also invited the ward executive officer who is the main participant to represent the government to the project. The meeting was done after being granted the permission to carry out the study in order to have a brief overview of the activities of the project, goals achieved and challenges encountered.

## **School Teachers**

Head teachers and respective study subject teachers from all schools selected for the study were called for their overview discussion on the PHWD-project activities in schools. The methodology and impact of the training program to the pupils and parents were discussed. Teachers were also asked for their supervision support during the study procedure and their inputs on the translation and moderation of the interview questions to be used to pupils were entertained.

## **Interview of parents**

In each school the selected parents were invited to the school compound to have brief explanation on the planned evaluation and scheduling the time of visiting their households for field assessment. 40 parents were randomly selected from the parents of the pupils involved in the assessment study. 20 parents had their children in schools with training program and the other 20 were having children in schools with no training program. The questions (Appendix 2) aimed at assessing whether the knowledge provided to children is assimilated to their parents. Questionnaires were filled during the household visits and on average two respondents were interviewed during every visiting day.

## **Knowledge assessment of the school children**

All standard six class pupils (159 in total from four schools as in Table 1 above) were provided with scripts of questions and were asked to answer independently. The questions were based on general knowledge on chicken, chicken management, health, welfare and biosecurity issues. The questions were made and moderated and were presented in Kiswahili language. Pupils were required to answer the questions (Appendix 1) in 30 minutes.

Practical skills was assessed by asking the children to demonstrate procedures to prepare nests, feeders and drinkers using locally available materials and draw pictures that could represent what they explained. Pupils demonstrated the procedures for cleaning chicken premises according to the way they learn and practised in school. They were asked to name different structures in the chicken houses and their uses. The questions were asked verbally by me and their teachers, and pupils answered by speaking the answers loudly to the whole group.

## Feedback meeting to project stakeholders

Final meetings were carried out with all project stakeholders for receiving and discussing the findings of the study and to assess the project impact and progress to the community it belongs. These were done at the end after data collection analysis.

## RESULTS AND DISCUSSION

### Progress review from the project stakeholders

It was revealed during evaluation of the project that the training to pupils was done as a method of knowledge transfer to the chicken keeping society. Report from the project revealed that the program has stimulated some villagers to search for a training course, whereby in a year 2010 to 2011, eight women and six men received training from these primary school training centres in addition to more than 150 pupils in all schools involved. Table 2 below shows the total number of students trained in the two schools used for evaluation (standard five and six). Exact number of pupils in the other two schools involved was not available at once.

**Table 2 Participants trained on local chicken keeping from two schools with the project selected for evaluation in a year 2010-2011.**

<b>Trainees</b>	<b>Girls</b>	<b>Boys</b>	<b>Women</b>	<b>Men</b>
Masanze primary school.	49	44	7	4
Lubungo primary school.	32	28	1	2

### Assessment of parents on the general knowledge on poultry management and health

It was observed that a majority of the parents are keeping local chickens at their home. Only 4 household were not keeping any kind of poultry and the others are keeping local chickens and few have other poultry species like *Muscovy* ducks and pigeons. Local chicken are kept mainly for family needs, including selling to buy children school requirements and for home consumption.

During evaluation, participants were required to mention major threats to their activities of keeping chicken. Diseases were mentioned by all (100%) respondents while predation was mentioned by 68% of the responses and theft appeared in the 32% of the responses. Level of exposure to vaccination of the major diseases in the area varied between the parents and to some extent depended on the fact of having child/children in a school with training program. Among the 40 parents, 29 and 9 of them had at least heard about Newcastle and Fowl pox vaccinations, respectively. In the group of parents who have heard about Newcastle vaccination, 18 (62%) were having children in the schools with the training program. In addition of just having an idea about the ND vaccination, only 6 parents were found to have knowledge on the proper regime

of the vaccination. No one among the 9 parents who had heard about fowl pox vaccination could explain the regime of the vaccination.

### **Feedback from parents on the impact of family poultry through school project**

It was found that 13 out of 20 pupils from schools with the training whose parents were interviewed have shared the knowledge with their parents from school through discussion. Parents were also asked to comment whether their children participate in activities concerning chicken management and it was found that majority of them were participating. However, among the children reported to work in chicken management activities, 60% were boys and the rest 40% were girls. This finding concede with the findings of another study done in Zimbabwe by Muchadeyi *et al.*, (2004), that showed boys had more participation on chicken keeping activities than girls. Boys were mentioned to carry almost all the activities including making chicken shelters while girls participate more in cleaning and feeding activities.

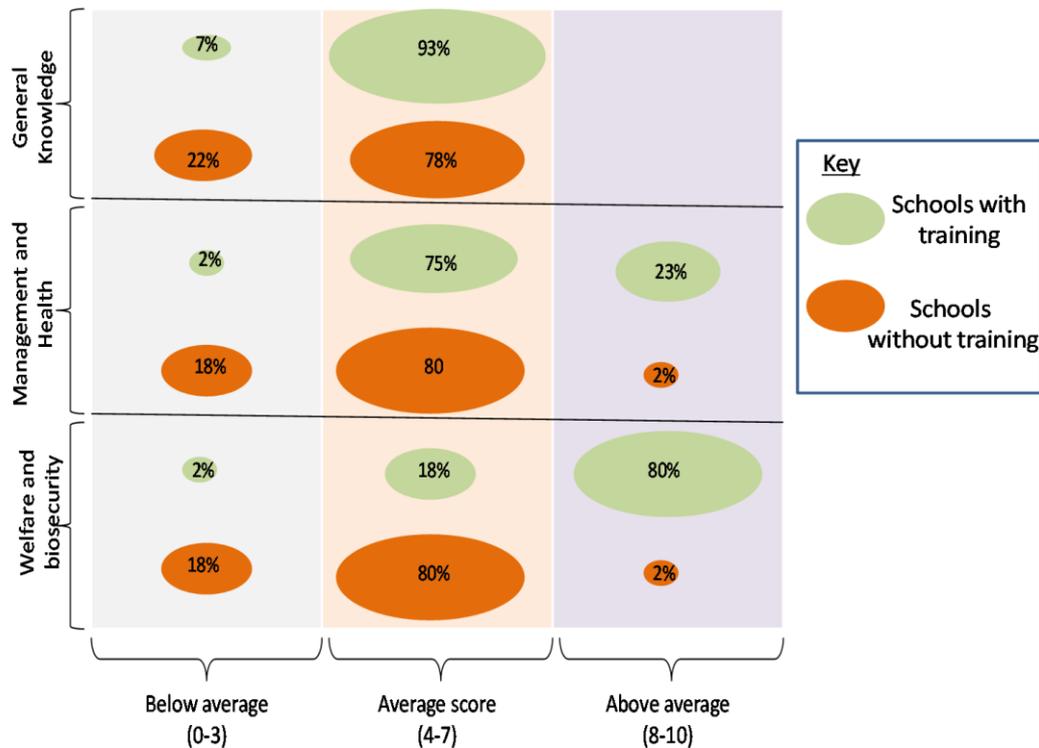
### **Assessment of pupils' knowledge concerning chickens**

Scripts from the pupils were marked and scores were given depending on how correct one answered the given questions. The questionnaire was divided into three parts and for each part marks were distributed between 0 to 10, with 0 mark to ones who could not answer any question correctly, and 10 to ones who answered all questions correctly. Part I of the questionnaire was about general knowledge on poultry, part II was about management and part III was about animal welfare and biosecurity issues. In order to facilitate analysis the range of scores was divided into three categories, where from 4-7 marks; it was considered to be average score and above which or below which was considered above average and below average respectively.

In general view, it was observed that pupils in the schools with training performed better than the ones from schools with no training. Supported by the data obtained, as can be seen in Figure 1 below, the overall proportion of pupils falling under the average and above average performance is higher in schools with training as compared to schools without training, especially in the categories of "management and health", and "welfare and biosecurity". In the category of general knowledge of poultry, 7% and 93% of the pupils in schools with training fell under below average and average scores respectively, as compared to the respective 22% and 78% for the pupils in the schools without training. This can approximately mean that the ratio of below average to average performance in schools with training is 1:13 as compared to 1:4 in schools without training.

Variation was also observed on the category of poultry health and management where 18% of pupils from schools without project performed under average score, which is nine times the 2% of the same performance in the pupils from schools with training. The percentages of pupils with average scores in this category for schools with and without training (75% and 80% respectively) were almost equal. However, 23% of pupils with above average score which is more than eleven times the 2% of pupils from schools without training with the same performance was observed.

Again performance in the category of animal welfare and biosecurity issues observed better results from pupils from schools with training (80% falling under above average score) as compared to schools with no training where majority (80%) had average score. In this category it was also observed a nine times number of pupils with below average score (18% versus 2%) from schools without training as compared to pupils from schools with training.



**Figure 1 Assessment results of pupil’s knowledge on chicken keeping**

The overall better performance of the pupils in the schools with training clearly indicates a positive impact of the project to the children. With one year of training, this assessment finds a change in the level of knowledge of pupils about poultry management. Practically it was also observed a positive difference between trained pupils and the one not trained on poultry. Although the methodology could not favour recording performance as scores, it was however observed a better demonstration from trained pupils in terms of eggs inspection and storage, identification of poultry house structures and units, poultry house cleaning, among different areas they were required to demonstrate.

Positive impacts of the projected were also expressed upon visits done to the households of the pupils. Majority of households kept poultry especially chicken. However, there were some observable differences in the frequency of application of better management tools in the households of trained children as compared to the ones not trained. Eggs storage, selection of eggs for incubation, preparation of incubation sites, feeding, housing, cleanliness, were observed to be done more carefully in households of trained children as compared to the households of the ones not trained.

In the course of observation and assessment, this study found a more active participation of boys as compared to girls. This was mentioned by parents, observed during practical assessment sessions but was also reflected by a better performance of boys in the questionnaires. It is however different when

compared to the adults, where you find that women are more actively involved with poultry management and caring as compared to men (Okitoi *et al.*, 2007). This implies that one should not underestimate the value of educating girls just because they are less active in poultry management in their young age, instead is a way of knowledge dissemination to the society and preparation for future skilled women.

## **CONCLUSION AND RECOMMENDATIONS**

### **Conclusion**

This assessment study found that training school pupils has a positive impact on upgrading their knowledge on poultry management. The study exhibits that imparting knowledge to the young children can act as a media of transferring skills to the society. The study also indicates there is an opportunity still of penetrating additional vocational skill to the primary school curriculum, in addition to what is currently regular. From the findings of the study it is worthy to predict improvement in the productivity of local chicken in the individuals and communities under coverage of the program.

### **Recommendations**

The findings of this study convince that it is worthy for training program to be expanded to other schools so as to have a wider and more clear picture on the importance of involving children in community capacity building. In spite of covering few schools the findings of this study are adequately informative to worth publication in order to insure institutes, organizations, government and other stakeholders easily see the value of the these trainings. On top of publishing these findings, extra efforts should be employed to coordinate the findings to the government, being the major role player in facilitating expanded program for magnified outcomes. Funding institutes and other organisations including FAO who are stakeholders of human development from root or household level should facilitate by organising and/or funding more impact assessment studies to the other community based developmental researches and programs.

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## PICTURES

Two classes (standard five and six) of a single school before standard six children to be examined.



During the children examination.



After the children being examined were given some biscuits and juice.



Practical examination of children in the chicken shelter. Their teacher asking them some shelter cleaning procedures.



One of the parents showing us what her son impressed when he built his own chicken shelter.



This boy also convinced his parents to keep chicken, he told them that before they get money for building chicken shelter, chicken will be sleeping in the kitchen. Behind him is their kitchen house.



Inside the kitchen house, the boy prepared the chicken sleeping place.



These are some other boys (The twins, the one with red and grey t-shirts) who convinced their parents to built the chicken shelter.



This is another chicken shelter made by parents once they get the idea from their daughter, they went to school and receive some lesson and build their chicken premise.



Here are some few parents of children with interest of keeping local chicken, they asked me to have at least a short discussion concerning with chicken management and disease control.



Parents questionnaire filling.



I invited parents and explained to them the meaning of taking questionnaire from them, so that they can give their cooperation.



## Pupils assessing questions

**ID. Number.....**

BASIC KNOWLEDGE ON POULTRY PRODUCTION (MANAGEMENT, HEALTH BIOSECURITY AND WELFARE)

Name of the school.....

Name of the candidate .....Gender .....

### **Introduction.**

**Write true or false for the correct answer on the following statements**

1. Hawk belong to domesticated birds .....
2. Chicken belong to domesticated birds .....
3. Crow belong to wild birds .....
4. We keep chicken at home in order to get money, meat, eggs and manure .....
5. is not wise to supplement feed, drinking water and providing shelter to local chicken.....

### **Poultry management and health**

**Choose one answer.**

6. Chicken laying eggs are;

- (a) Hens ( )  
(b) Cocks ( )

7. The necessary thing to consider when chicken start laying eggs is

- (a) To prepare a nest at a good place ( )  
(b) To prepare the chicken roosting place ( )

8. Proper storage of eggs is to put them

- (a) In a bucket and lid at the top( )  
(b) On a tray in a cool place ( )

9. What do the chicks find easy to feed on?

- (a) Whole maize grains ( )  
(b) Fine particles of cereal grains ( )

10. Two important vaccine of chicken are;

- (a) Malaria and diarrhoea vaccine ( )  
(b) Newcastle and fowl pox vaccine ( )

11. If we don't clean chicken premises, chicken will

- (a) Get fleas, lice and diseases ( )  
(b) Lay many eggs ( )

**Fill in the blanks with a single word answer.**

12. The type of food important for the chicks to grow and chicken to gain body weight is -----

13. Type of food important for energy chicken is -----

14. Green leaves and vegetables provide chicken with -----  
important for-----

**Animal welfare and prevention from zoonotic diseases.**

***Matching items table.***

<b>Question</b>	<b>Answer</b>
(A). Is not a proper way of carrying chicken	(a). We should slaughter the dead chicken, cook and eat
(B). If home chicken die suddenly	(b). We should ask our parents to call for the veterinary investigator for inspection
(C). Chicks can be protected against predator birds by	(c). To rescue them from worms effect on their health and production.
(D). Chicken need to be dewormed so that	(d). They get vitamin from the drug.
	(e). Upside down
	(f). Upright with the wings and legs well positioned
	(g). Making the chicks rearing basket, wire mesh house or planting some bush trees in which they can hide.
	(h) Leaving them with their mothers to move around at every place.

From the above table, match the correct pair for proper meaning.

Question	Answer
E	j
A	
B	
C	
D	

## Parents questionnaire

Name of the household.....No.....  
Gender.....  
Profession.....  
Relationship with the child .....  
School name of a child .....

### IMPORTANT INFORMATION ON POULTRY KEEPING

#### Chicken management and health

1. Do you keep chicken at your household?  
Yes ( )  
No ( )
2. Why do you keep chicken / Why don't you keep chicken?
3. Have you ever experience any difficult on chicken keeping example, chicken death or loss?  
Yes ( )  
No ( )
4. What do you think could be the major cause of chicken death / loss?  
Diseases ( ) Which disease.....  
Predation ( ) Which predator .....  
Theft ( )  
No proper reason ( )
5. Do you have any idea about chicken vaccination?  
Yes ( )  
No ( )
6. Which common diseases of chicken are prevented through vaccination?  
.....  
.....
7. When was the last time to vaccinate your chicken, against which disease?  
.....  
.....
8. At which interval do you think is proper for the mentioned vaccine to be carried out?  
.....  
.....
9. Does your child speak to you anything related to chicken management?  
Yes ( ) Like .....  
No ( )

#### Child participation on family poultry activities

10. Which of the family poultry activity does your child interested on during participation?
  - (i) Cleaning the shelter
  - (ii) Feeding
  - (iii) Selling chicken or chicken products

- (iv) Making or repairing chicken shelter
- (v) Others. Specify.....
- (vi) None.

11. Is there any observable changes to your child participation on family poultry activities (currently compared to last year?)

- Yes ( ) What are those changes?
- No ( )

12. Do you know anything about record keeping on local chicken management?

- Yes ( )
- No ( )
- I will give some explanation to prepare him/ her for next question.

13. Have you ever practised on any record keeping based on chicken activities?

- Yes ( ) Which records do you keep?
- No ( ) Why?

**Recommendation on chicken keeping program at schools**

14. Do you think is necessary to teach children on village chicken management at school?

- Yes ( ) Why.....
- No ( ) Why.....

15. Any opinion based on poultry sector.