

**THE SYNERGY BETWEEN INDIGENOUS LEARNING METHODS AND EXTENSION  
METHODS IN AGRICULTURE IN THE FIELMUA TRADITIONAL AREA, UPPER  
WEST REGION OF GHANA.**

**BY**

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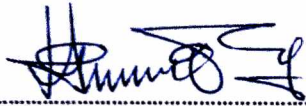


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## DECLARATION

I, Raymond Mwinwan Galyuon, do hereby declare that this thesis, "the synergy between indigenous learning methods and extension methods in agriculture in the Fielmua Traditional Area, Upper West Region of Ghana", is my work and that it has not been submitted for any degree in this university or any other university, and that all assistance and references I have used or quoted have been indicated and duly acknowledged as complete references



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## **DEDICATION**

This thesis is dedicated to my parents, Mr. Debuo Aawieme and Mrs. Naamwinkum Debuo in blessed memory for their vision to send me to school out of many children, and to my children Ethelreda Naamwinwan, Raymond Jnr. Naawminwan and Rosemond Naamwinwan who unduly suffered for this work to be done.

## ABSTRACT

The performance of the agricultural sector in Ghana is likely to be enhanced by rural people using indigenous knowledge and practices. The primary process through which the rural farmer can learn about the reason for change using modern knowledge is extension education. If properly harnessed through extension services, indigenous knowledge could be an effective, efficient and functional tool for agricultural development. For instance, extension teaching methods such as method demonstrations, field trips and field days could help farmers acquire new knowledge and skills through their indigenous learning methods such as observation, imitation and doing trial and error. Farmers could also effectively acquire new skills through listening and practice, questions and answers and oral instructions if extension teaching methods such as group discussions, radio/TV, farm and home visits and agricultural shows are properly incorporated into farmers' natural learning environment. The study was conducted in five communities in the Fielmuo Traditional Area to investigate the level of compatibility between agricultural extension methods and indigenous knowledge learning methods. Questionnaire, interview and key informants interview were used to collect data from hundred (100) farmers and six (6) AEAs. The interview and key informant interview were administered to the farmers. The questionnaire was administered to the AEAs. The study area was purposively selected and the five communities and the farmers randomly sampled. Analysis of the data was done using frequency counts, percentages, means and Chi Square test using SPSS software (version 16.0 for Windows). The results show that rural farmers were passionate about their indigenous knowledge practices which they learn through imitation, observation, listening and practice, oral instructions, questions and answers, trial and error and being born with certain skills. Age and education had no influence on indigenous knowledge acquisition ( $p > 0.05$ ). In principle, farm and home visits, group discussion, demonstration, field trips, field days and agricultural shows were identified as effective agricultural methods of teaching, but in practice only discussions and demonstrations methods of teaching are used for extension education in the area. It was also discovered that the extension methods used in the area were not fully in tune with the indigenous learning methods in the area. In conclusion, indigenous is useful but cannot on its own cope with the level of agricultural productivity required for modern population. The study therefore recommends that indigenous knowledge practices are useful and should be integrated into modern knowledge system through extension services for sustainable food production.

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## **LIST OF ABBREVIATIONS**

|               |                                                                            |
|---------------|----------------------------------------------------------------------------|
| <b>AAGDS</b>  | <b>Accelerated Agricultural Growth and Development Strategy</b>            |
| <b>DMTDP</b>  | <b>District Medium Term Development Plan</b>                               |
| <b>FAO</b>    | <b>Food and Agricultural Organization</b>                                  |
| <b>FASDEP</b> | <b>Food and Agricultural Sector Development Policy</b>                     |
| <b>IK</b>     | <b>Indigenous Knowledge</b>                                                |
| <b>IKS</b>    | <b>Indigenous Knowledge System</b>                                         |
| <b>ILO</b>    | <b>International Labour Organization</b>                                   |
| <b>KAP</b>    | <b>Knowledge, Attitude and Practice</b>                                    |
| <b>MoFA</b>   | <b>Ministry of Food and Agriculture</b>                                    |
| <b>NGO</b>    | <b>Non Governmental Organization</b>                                       |
| <b>PICTA</b>  | <b>Partnership for Information and Communication Technology for Africa</b> |
| <b>PRCA</b>   | <b>Participatory Rural Communication Appraisal</b>                         |
| <b>TEK</b>    | <b>Traditional Environmental Knowledge</b>                                 |
| <b>TF</b>     | <b>Traditional Farming</b>                                                 |
| <b>TK</b>     | <b>Traditional Knowledge</b>                                               |
| <b>TOT</b>    | <b>Transfer of Technology</b>                                              |
| <b>TZ</b>     | <b>Tuozaafi</b>                                                            |
| <b>UN</b>     | <b>United Nations</b>                                                      |

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Background**

The agricultural sector is the backbone of many economies in Africa. In Ghana the agricultural sector holds the key to food security as it engages approximately 60% of the labour force and contributes 37%, the largest, to the Gross Domestic Product (Aggrey-Fynn & Akpabi, 2005).

However, the agricultural sector in Ghana is sustained by aboriginal societies located in the rural parts of the country. Each of these societies has a culture which is preserved and transmitted from generation to generation through education as knowledge. These societies over the years have developed and sustained their own unique cultural or indigenous knowledge learning systems. This indigenous knowledge has become the cornerstone for the cultural identity and source of survival, most especially agriculture, for these indigenous people.

The indigenous core values, beliefs and practices are well preserved either in the minds and activities of people or in a form of artifacts and expressed in a form of stories, songs, folklore, proverbs, dances, myths, cultural values, beliefs, rituals, local languages, agricultural practices, equipment, materials, plant species and animal breeds to upcoming generations to ensure the continuity of their cultures.

According to Ascher & Englash, (2002) indigenous people have their own ways of looking at and relating to the world, the universe and to each other, and that they have a traditional educational system that is well constructed around observation, using natural materials to make tools and implements, and others. Their knowledge systems can help agricultural scientist identify agricultural intervention and at the same time address the plight of farmers to improve soil productivity (Hebarurema & Sleiner, 1997).

The relevance of indigenous knowledge has been underscored by Thrupp (1989) in his submission that it constitutes an important source of innovation and skills which can be used and



developed for improving agricultural production and upgrading poor peoples' livelihood in rural development processes. This is because being a cultural-based knowledge, indigenous knowledge can be effective, efficient and functional in Agricultural knowledge transfer since agriculture constitutes the major occupation of the indigenous people; the reason why agricultural extension, as an organization, has so much influence on the lives of indigenous people.

In addition, indigenous knowledge is the means for cultural continuity, transmitted in the form of social attitudes, beliefs, principles and conventional behavior and practices derived from historical experiences (Warren, 1991). It is the information base for a society, which facilitates communication, learning and decision-making. Observations, trial an error, oral instructions, practice, imitations, and others are the learning procedures through which upcoming generations pick up the knowledge from the older people. Indigenous information systems are dynamic, and are continually influenced by internal creativity and experimentation as well as by contact with external systems (Flavier, 1995, p. 479).

Hence, the introduction and use of modern knowledge into agricultural production in Africa, and for that matter Ghana, with the aim of improving the plight of rural Ghanaians, has made indigenous people in Ghana and elsewhere in the world to suffer from long-term discrimination, inequity and exclusion from the planning and execution of development programmes and projects simply because the distinct culture of indigenous people and their identity, their economic activities, religious beliefs, notions, and traditional ways of managing natural resources are often regarded as backward and superstition (Reijntjes, Haverkort, & Waters-Bayer, 1992).

Extension involves the conscious use of communication of information to help people form sound opinions and make good decisions. So in an attempt to influence indigenous people who are mostly farmers to adopt and use new technologies with the view to improving upon their livelihood, various teaching methods are used. These methods, described as tools, are used by the extension workers/agents to achieve set goals or objectives as teachers. They are special tools needed to appeal to the desire of farmers to change. Extension methods include individual, group



and mass methods (Saville, 1965) cited in (Okunade, 2007). But tools when not properly used will serve no purpose or become destructive.

In view of this, Okunade (2007) advised that extension agents must have adequate knowledge of the characteristics of each of the extension teaching methods as well as know the characteristics of the clientele. These will enable them to use appropriate methods for appropriate group of farmers

### **1.1 Statement of the problem**

Despite the overwhelming potential of IK in agricultural development, it is often not accorded the same recognition as conventional knowledge and consequently traditional farmers are not recognised as formal sources of knowledge in developing countries (Kilongozi, Kengera & Leshongo, 2005), Ghana inclusive. This may be due to the fact that IK is tacit and transmitted through oral tradition and demonstration and stored in the minds of individuals.

Intervention strategies developed to respond to the needs in agricultural development have suffered various setbacks in northern Ghana. Within both government and NGO sector, empowerment of rural communities through dialogue and meaningful communication is still a problem. Hence, the need for a justifiable space to be created for indigenous form of learning to find expression in, particular, the methods that are used by extension in learning situations before sustainability can be contemplated (Millar, 1996).

Scientists and educators often fail to establish a link between new technology and its transfer methods and Indigenous Knowledge Systems. They simply push technology to farmers without addressing their specific needs with the assumption that scientific innovations are better and should be adopted by their intended beneficiaries (Tielens, 2003). The end result is low patronage of innovations by farmers because they are not given the opportunity to apprehend things their own way.

Indigenous knowledge system of rural people comprises learning approaches used to acquire knowledge, skills and change their attitudes. According to Felder & Henriques (1995), learning style is the ways in which an individual characteristically acquires, retains, and retrieves information, and that a mismatch between the learning styles of learners and the teaching style of the instructor, will affect the quality of the learning. Stewart & Felicetti (1992) define appropriate learning styles as those "educational conditions under which a student is most likely to learn." Thus, learning styles are not really concerned with "what" learners learn, but rather "how" they prefer to learn.

Rural people attach importance to the learning of Indigenous knowledge as they view it as a community resource that is proven and timeless. It brings the community together and provides strength to the communities' culture. Therefore, recognizing, utilizing and managing this knowledge has a big impact in achieving development objectives (Bhatnagar, 2000). But development institutions including Agricultural Extension more often down play the efficacy of indigenous knowledge and its learning methods.

The traditional education processes are carefully constructed around observing natural processes, adapting modes of survival, obtaining sustenance from the plant and animal world, and using natural materials to make their tools and implements. All of this was made understandable through demonstration and observation accompanied by thoughtful stories in which the lessons were imbedded (Kawagley 1995; Cajete, 2000 cited in Barnhardt & Kawagley, 2005)

What formally educated people do not seem to notice is that most rural individuals evaluate an innovation, not on the basis of scientific research by experts, but through the subjective evaluations of peers who have adopted the innovation. Hence, the process of transmitting ideas, most especially in rural areas, is essentially social in nature, driven by individuals talking to others and giving meaning to an innovation through a process of social construction.

In the present era of technology push, the tendency to ignore or underestimate indigenous knowledge, practices and indigenous knowledge learning methods by research, extension services organization and development agencies has severely affected farmers' livelihood in the

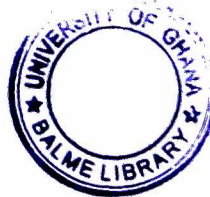
rural communities thus resulting in the gradual disappearance of Indigenous knowledge and indigenous farming practices Upadhyaya, (2004).

Therefore, the issue of how compatible extension teaching methods are with indigenous learning methods in the Fielmua traditional area which forms the basis of this thesis is to bring to the fore the fact that the continuous underestimation of indigenous knowledge and its learning methods, may limit the potentials and achievements of indigenous knowledge in agricultural development especially in the area of poverty reduction within the area. This is because the teaching and learning systems of indigenous people differ significantly from that of the modern knowledge transmission system. This is significant because in the rural areas the key for poverty reduction, livelihood improvement and sustainable development appears to be indigenous knowledge.

## **1.2 Research Question**

1. To what extent do socio-economic factors of rural people influence indigenous knowledge learning methods?
2. Is there any compatibility between extension methods of development agencies and indigenous learning methods?
3. To what extent does the extension system adapt its teaching methods to the indigenous learning methods of rural farmers?

## **1.3 Main Research Objective**



To investigate how extension teaching methods and indigenous knowledge learning methods could be integrated to benefit indigenous people.

### **Specific objectives**

1. To find out how socio-economic factors affect the acquisition of indigenous knowledge
2. To determine the importance of indigenous knowledge to rural people.
3. To determine the indigenous learning methods amongst the Dagaabas.



4. To determine the effectiveness of extension teaching methods within the Fielmua traditional area.
5. To determine the compatibility between extension teaching methods and indigenous learning methods.

#### **1.4 Research Hypothesis**

The study intends to test the hypothesis as follows;

Ho<sub>1</sub>: The social characteristics of rural people have no influence on indigenous knowledge acquisition.

Ho<sub>2</sub>: There is no relationship between sex and indigenous knowledge acquisition style.

Ho<sub>3</sub>: There is no relationship between extension methods and indigenous learning methods.

Ho<sub>4</sub>: The socio-cultural practices of traditional farmers do not influence the acceptance of innovations.

#### **1.5 Significance of the study**

Farming is the mainstay of the people in Fielmuo, the study area. They have over the years maintained the production and supply of good quantities of the traditional food crops consumed in the area as well as in the rest of the country. They also contribute substantial amount of raw materials to some of the agro-based industries such as cotton ginning, textile mills, cigarette manufacturing, grain milling, meat processing, beverages and breweries industries, and leather products manufacturing.

Much agricultural research has been carried out in Ghana on behalf of farmers, and improved agricultural technologies developed with the view to increasing agricultural productivity while simultaneously preserving the natural resource base. Surprisingly however, farmers have taken up few of these while the rest remain on- shelf (un-used). Many questions have been raised as to why the adoption rate of these technologies has been low. Some people think that these technologies may not be relevant to farmers' needs. Whatever the reason, according to Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwozeza (2007), the major issue is that farmers have been left out in technology generation and development process, and that some discussions are

underway as to how to integrate indigenous technologies into research as a way of getting to understand farmers' needs.

The “empty vessel fallacy” syndrome according to Rogers, (1995, p. 240) is responsible for the failure of many agricultural development projects because agricultural extension agents have not started by investigating what the potential adopters know and believe, and have not taken into account the advice that there was the need to move away from the “empty vessel fallacy” syndrome by studying prior practice, knowledge, resources, problems, challenges, and perceived needs of farmers affected by the change.

The neglect of farmers’ tacit (implicit) knowledge by extension experts has contributed immensely to the negative impact associated with extension services (Roling, 1992). Extension experts should always be reminded of the fact that farmers’ tacit knowledge is the bedrock in the search for new knowledge for farming. This, according to Boateng (2006), has created a weak linkage between farmers and extension activities. Because indigenous practices are closely interwoven with people’s cultural values and problem solving strategies among the local communities, passed down from generation to generation.

Hence, incorporating indigenous knowledge systems into agricultural and extension education programmes will result in understanding the behavior of local people, bridging the communications gap between outsiders and insiders, recognizing the accomplishments of local farmers, helping outsiders familiarize themselves with local conditions, and increasing the participation of farmers in developmental projects (Rajasekaran, Martin, & Warren, 1993).

This research therefore, is meant to advance the understanding of learning as it occurs amongst the people of Fielmuo by exploring the interface between indigenous and western knowledge systems, drawing on the experiences of indigenous peoples in the area. It is to determine the effectiveness of extension teaching methods and knowledge acquisition in a typical indigenous society. To re-emphasize the importance of indigenous knowledge, contributes to theory building on indigenous knowledge learning methods in the Fielmuo Traditional Area, and to examine the relevance of integrating indigenous learning methods into extension methods system in the study area.

## **1.6 Concept of Operationalization**

Bearing in mind that indigenous people have traditionally acquired their knowledge through direct experience in the natural world, how indigenous knowledge is acquired on the various socio-cultural practices were measured using a five point Likert scale (very low=1, low=2, moderate=3, high=4, very high=5). Also, personal characteristics such as age, sex religion and education and their influence on indigenous knowledge acquisition were determined and measured using frequencies, percentage and Chi Square test. The most frequently used extension methods within the area were also indentified and assessed. A measuring scale of 1 to 5 (strongly agree, agree, undecided, disagree or strongly disagree) was used.

## **1.7 Scope of Study**

This study is focused on the traditional knowledge and learning practices of the people of the Fielmua traditional area and the influence of extension methods on their learning practices. It is limited to the Fielmua traditional area in the Sissala West District in the Upper West Region.

## **1.8 Limitations of the Research**

The dry season in the Upper West Region offers limited opportunities to the people. This is particularly so because a good percentage of the population are farmers and cannot read and write. As such most of them, especially in the Fielmuo Traditional Area, normally moved down south during the dry season to look for menial jobs to earn some income. Most of those who normally moved down south during the dry season are between the ages of 15-50 years (81%). This category of people is the active group in farming and has access to extension services. Hence, conducting a research in the Upper West Region during the dry season can be challenging because the right people may not be available to be interviewed and this may greatly affect the outcome of the research. However, the problem was overcome through continuous random re-sampling of the available population.

Also, being a young district, the Sissala West District is still grappling with a lot problems ranging from infrastructure to human resource. The District office of the Ministry of Agriculture,



for instance, is being housed in a quarters in the District Health Centre. This clearly has an impact on records keeping and management due to limited and inadequate facilities. As such conducting a research in the District posed a huge challenge because accessing information from the right people was not easy. This definitely had an effect on this research.

## **1.9 Conclusion**

This chapter looked at the invaluable role of indigenous knowledge system to rural people with particular reference to the learning methods used in learning indigenous core values and practices. Rural development interventions by an agency such as agriculture extension service should see indigenous knowledge, a “social capital” of the rural poor, as the foundation on which to develop rural people. As a cultural-based knowledge with a unique learning structure, indigenous knowledge is efficient for improving agricultural production, the mainstay of people in the area, and has the capacity for improving their livelihood.

The chapter therefore calls for a mutual relationship between scientific knowledge and indigenous knowledge system, and not for the western knowledge system to downplay the efficacy of indigenous knowledge. The methods used in perpetuating scientific knowledge by the agricultural extension service and the learning methods used by rural people should also operate on a common ground with a mutual relationship.

## **CHAPTER TWO**

### **THE STUDY AREA**

#### **2.0 Introduction**

This chapter presents a background of the study area. It covers issues such as location, relief and drainage, vegetation and climate, demographic profile, Fielmuo and its people, housing and construction, religious and cultural practices in the area, cultural symbols in the area, farming practices, economic activities in the area and learning opportunities in the area.

#### **2.1 Location of Study Area**

The study area is located in the Sissala West District which was created in 2004 out of the then Sissala District in the Upper West Region by a Legislative Instrument, LI 1771. As a district, it has been mandated to prepare, implement and monitor development plans in the entire district to ensure the wellbeing of its citizens by reducing poverty (DMTDP, SWD, 2006).

The District is located in the North Eastern part of Ghana. It lies approximately between Longitude 21°3'W to 2°36'W and Latitude 10°00'N 11°00'N. It shares Boundaries with the Lambussie District to the West, Sissala East District to the East and Burkina Faso to the North and Wa East District to the South. It covers a total Land area of 4,112.89km<sup>2</sup>, which is about 25% of the total Landmass of the Upper West Region. The district sharing border with Burkina Faso facilitates cross border socio-economic activities. However, this has its own implications for health and crime wave (ibid).

#### **2.2 Relief and Drainage**

According to the DMTDP, SWD, (2006) the entire District is in a low lying area, but gently undulating at altitudes ranging between 150m and 300m above sea level. However some parts average 600m above sea level. There are various kinds of soils in the district that support plant growth. The main types of soils in the district include the savanna ochrosols, the tropical brown

earth and the terrace soils. The absence of dense vegetative cover in the area due to annual bush fires, overgrazing and poor farming practices is having serious effect on the overall status of the soil nutrients. This has created the opportunity for modified agriculture in the area. Thus the presence of extension service providers such as MoFA and NGOs created an opportunity for whose aim is to ensure better lives of farmers through increased production. The activities of these organizations are, to some extent, eroding the culture of the people as they are normally presented with a culture that is alien to them.

### **2.3 Vegetation and Climate**

The study area is located in Guinea Savanna vegetation belt. This vegetation consists of grass with scattered drought resistant trees such as the Shea tree (*taatie*), the baobab (*tokura*), dawadawa (*dɛtie*), *Faidherbia* (formerly *Accacia*) *albida* (*gapula*) and neem trees (*sugtie*), *Terminalia indica* (*purtie*). These trees are all of economic importance to the people. The heterogeneous collection of trees provides all domestic requirements for fuel wood and charcoal, construction of houses, cattle kraals and fencing of gardens (especially dry season farming). Again, the shorter shrubs and grass provide fodder for livestock especially during the dry season.

The area experiences two main seasons, the dry and the wet season. The wet season commences in April and ends in October. The dry season, characterized by the cold and hazy harmatan weather, starts early November and ends in the latter part of April. The mean annual rainfall is about 1100mm with its peak in August. Relative humidity is between 70% and 90% in the rainy season but is as low as 20% in the dry season.

### **2.4 Demographic Profile**

The 2000 population and housing census pegs the district population at 44,440 with an average growth rate of 1.7% as against 2.7% for the national. The population of the district and for that matter the study area is entirely rural, because no community in the district fits into the national standard definition of an urban settlement. Only 15 communities in the district, the study area inclusive, have population above 1000. The district has a Population Density of 12 persons per



square kilometer. This figure is much lower than the regional population density of 31.2 persons per square kilometer. Though the district population density may indicate a low pressure on land, the same cannot be said of socio-economic facilities.

**Table 2.1: Population by Area Councils in SWD.**

| Area Council | 2000   | 2004  | 2005  | %    | No. of Communities |
|--------------|--------|-------|-------|------|--------------------|
| Gwollu       | 17968  | 20066 | 20628 | 40.4 | 18                 |
| Fielmuo      | 12876  | 14376 | 14781 | 29   | 13                 |
| Pulima       | 6350   | 7092  | 7288  | 14.3 | 9                  |
| Zini         | 7240   | 8094  | 8318  | 16.3 | 15                 |
| Total        | 44,440 | 49628 | 51015 | 100  | 56                 |

Source: 2000 Population & Housing Census, \*Projected 2005.

The entire district is made up of Sissalas and Dagaaba with the presence of minority tribes such as Mossis, Fualanis and Waalas. However, the study area, Fielmuo, is predominantly made up of Dagaaba thereby making the area fairly homogeneous.

## **2.5 Fielmuo and its People**

Fielmuo, the second largest community in the District, is one of the Area Councils in the Sissala West District dominated by Dagara (also known as Dagaaba). The language spoken in the area is Dagara or Dagaare which belongs to a main dialect called Lobri. The Dagara are mainly sedentary farmers who obtained livelihood from subsistence farming using simple indigenous farm tools notably the hoe and cutlass.

In terms of settlement the Dagara have always settled in villages. The settlements according to Bekye (1991) are usually dispersed with wide stretches of land between dwellings for reasons of farming and pasturing of animals. The compelling reason for this dispersed settlement among the Dagara is the cultural necessity to always have a farm near to the house. Hence, they prefer settling far away from each other to avoid confrontations and to have sufficient compound farms



around the houses. The Dagaaba are not always struggling to own lands around their settlements for the fun it, but because they are gracious, hardworking with a reputation for honesty (McCoy, 1988).

The Dagara also has a marked sense of unity which they usually expressed in their communal attitude of interaction in all their life activities such as farming, socially, in times of difficulties and in many other ways. This has made them to have strong social ties among themselves. It is not uncommon to find Dagara in groups sitting under trees in the afternoon sharing calabashes of pito together. Their farming activities are mostly communal where they usually come together in groups to farm for each others during the farming season ("kotaa"). This communal act of the people ensures the availability of cheap farm labour for them to carry out their farm work easily.

## **2.6 Housing Construction in the Study Area**

Housing structure and made is not much different from what is known within the northern sector though round houses are not common in the area. The houses are mostly made up of mud or bricks with mud or thatch roofs. Construction of houses is done locally by indigenous experts. In most cases the outside wall of the house is not plastered thereby exposing the unique indigenous architectural design to any visitor to the area.

However, with the fast pace at which modernization is gaining roots in the rural areas, some of the recently constructed houses are either made up of block roofed with corrugated iron sheets or bricks houses, plastered with cement and roofed with corrugated iron sheets. The preparation of the mud for the construction of the house, how the house is raised, how it is roofed locally, all offer teaching and learning sessions for the youth and even some of the older people who for some reasons did not learn to construction and build when they were young. The process is explained from time to time by whoever that is doing the building to all the people gathered there to support him. The children mostly observed the process and try their hands on imaginary houses that they built when they are together alone.

Local storey buildings are common in the area, usually made up of only one storey. Only the landlord or elder(s) in the house live(s) in the first floor which is always sizeable enough for the comfort of the man and a wife. But if he has more than one wife the women join him up there one at a time.

The architectural design of the buildings is unique. Windows are provided in a form of sizeable holes either on the wall or on the roof-top or both. The general rooms usually have no doors and nobody goes in there to steal because stealing is frowned upon in the area. Items kept in such open rooms are very safe whether people are in the house or not. The stealing of farm animals is rather at record level because it is a joint effort between the Fulanis and some of the youth in the area and not household items.

## **2.7 Religious Practices in the Area**

According to Gyekye (1996) every human being irrespective of the culture to which he or she belongs, is essentially a religious being. This means that to be born into the African society is to be born into a culture that is intensively and pervasively religious and requires the individual to participate in the religious beliefs and rituals of the community. It therefore implies that the people in the study area have a religion that determines every aspect of their lives including moral behavior.

The dominant religion, therefore, in the area is the traditional religion (69%), followed by the Christian religion (31%) and lastly Islamic religion. The few Muslims in the study area were not captured probably because most of them are traders and pay little attention to farming.

Both the traditional practitioners and the Christians have their religious rights with regards farming. At the beginning of every raining season, the Christians carry their seed to the church for it to be blessed before sowing. But the traditional practitioners used what they called “black” and “white” medicines to mix with their seeds before sowing. These medicines are locally prepared using some selected trees roots, grass and parts of fowls which are sacrificed to ask for the presence of ancestral spirits in the medicine. These items are burnt together through a special process and the burnt product ground into power and put into a gouge container. The process

and the items used for the preparation will determine whether the end product should be called “black” or “white” medicine. It must be noted that the items used and the process of preparation varies from family to family. These medicines are then normally used to mix with whatever seed they want to sow before sending them to the farm for sowing. They do this to evoke the ancestral spirits on the crops so that any person entering the farm with evil intension would not succeed; the traditional form of blessing seeds before sowing. According to Millar, (1996) these protective spirits are normally contracted for only a year.

## **2.8 Cultural Practices of the Dagara**

According to Tayeb (1988, p. 2) cited by Laurikiete (2007) culture is ‘a set of historically evolved learned values, attitudes and meanings shared by the members of a community that influences their material and non-material ways of life. Members of the community learn these shared characteristics through different stages of the socialization processes of their life, such as a family, religion, formal education and society as a whole’.

The Dagara, who dominate the whole of the Fielmuo Traditional Area with few Sissalas and Waalas dotted in some few places, has a culture that identifies them as a group of people. The culture characterizes all their livelihood activities in the area; the type of farm tools they use, the crops cultivated, how they keep their animals, their storage system, their dance, music, artifacts and others. Culturally, the Dagaaba sow their crops on mounds and on flat lands, and store their produce in bans and not in sacks. The culture is also portrayed in the way they dress in traditional smocks for social gatherings and funerals, though the Akan dress code of black or red for funerals has caught up with the women thereby eroding the beauty of the culture in the area. This is the results of the social change brought about by the tran-cultural migration within the area.

The culture is transmitted mostly through cultural activities including festivals such as the *Bagr* festival and the *Kukur Bagr* (the hoe festival). The Bagr festival is celebrated purely by the traditional practitioners where a number of people within a particular clan are selected and taking through some initiation rites. According to Bekye (1991) *bagre* or *bagr* festival is a socio-



religious initiation ceremony meant to initiate people of all ages into a religious association in a form of recitation. The recitation is led by one who plays the role of the principal initiator (*bagsaa*) and is repeated by the initiates (*bagli*) until they memories the unfolding story. The whole celebration normally last for about three months spanning from November to January. Though regarded as a myth by the Christian population it is however cherished very much by the players themselves. A lot of learning occurs throughout the initiation process

For the *Kukur bagr* it was instituted to always give thanks to God and the ancestors at the end of every farming season and to portray the rich culture of the Dagara people. In other words, it offers the people an opportunity to retrace their cultural heritage. Cultural practices such dance, singing of dirges, playing of xylophone, and others are competed for by the various communities and individuals. This offers an opportunity to those involved in the competition and those gathered to watch to learn and remind themselves of their culture. It is celebrated by everybody in the community irrespective of religious affiliations.

## **2.9 Farming as Practice in the Fielmuo Traditional Area**

Fielmuo and its catchment areas are purely rural settlements; as such farming is the major activity that engaged the people in the area. According to MoFA, SWD (2006) about 90% of the people in the district, including Fielmuo, are engaged in farming. The Dagaaba perceive farming as an ancestral property (*saakum bom*), and for that matter the youth are taught and encouraged to embrace farming.

Farming which is purely rain-fed is done at a subsistence level in the area. Farm size depends on the size of the family and the availability of labour. The immediate labour is always from the man, his wife and children. Another source of cheap farm labour is the communal manner in which farming is done in the area. It is a system where a group of people come together to help each other on their farms by farming for each others in turns. Also, people who daughters are married are entitled to labour from their sons-in-law. The son-in-law is expected to provide labour for the father-in-law depending on the terms of the marriage and the cordiality that exist



between them. So depending on how easy one can access labour will determine the size of his farm.

The land tenure system which also influences farming in the area is by inheritance; once you are born into the family you have a share in the family plot. The plot can either be quitted to you after the death of your father or portion of it given to you during your graduation from the many years of tutelage from your father. According to Millar (1996) the graduation happens normally between the ages of twenty and twenty-five years when some factors of production (hoe) and consumption are given to the graduating pupil to signal his individualization within the community. As part of his graduation award, the graduate also receives a plot of land to indicate that he has not only graduated but that he is offered employment on the farm. The farms are of four types.

## **2.10 Types of farms in the Study Area**

Four types of farms (*puo*) are used in the study area. The type depends on its proximity to the house or where it is located. They are: *wie*, *pole*, *tampuor* and *the river side farm (Baa)*.

### **2.10.1 “Tampuor”**

“Tampuor” literally means a place for dumping rubbish. So the “tampuor” is usually the farm that immediately surrounds the house. All the household rubbish is usually poured on this farm all year round. As a result, the soil is always very fertile and maize is the only main crop that is sown on it during the raining season. But the women will normally take advantage of the closeness of the farm to the house to cultivate vegetables such as pumpkin and okra. The maize sown on this farm is always the first to be harvested before all other major crops are harvested because they are always among the first crops to be sown at the onset of the rains. This farm is usually very small in size but important to every man who is on his own.





### **2.10.2 “Pole”**

This type of farm shares boundaries with the “tampuor”. It is also very close to the house but bigger than the “tampuor” but not up to the “wie”. It is mostly between 1 to 4 acres depending on the size of the family. Major crops such as millet, sorghum, groundnuts and maize are grown on it as sole crops though sometimes some vegetables are sown there too by the women

There is a belief that a man is not supposed to wake up in the morning and pick a “dry hoe” (a hoe that is not used to cut into the wet soil) to the main farm (“wie”) more especially to someone else’s farm without first using the hoe to weed a bit on your farm. So the *pole* is the place where every farmer waking up in the morning, sometime as early as 5.00am, will first go to weed up to 6.00am before going to the main farm or to somebody’s farm. In fact, it is a farm on which the man starts the day and ends the day because in the evening the man must weed there before closing for the day.

It also serves as a practicing ground for the young boys who are beginning to learn how to farm. They are usually seen in the morning and sometimes in the evening exhibiting their skills there. The man would usually find time to go and encourage them by farming beside them and giving them some few instructions. So every young boy starts his farming experience on the “tampuor” or the “pole”.

However, this farm tells a lot about the individual whether he attaches seriousness to the farming activities or not. When this farm is left unattended to and it is taken over by weeds then everybody in the community will conclude that the owner is a lazy person and should not be taken seriously. The person is mocked at by colleagues at every available opportunity as a lazy man.

### **2.10.3 “Wie” (Bush farm)**

This farm is usually the largest and the farthest. It is the size of this farm that determines how many wives to marriage among the non Christians (pagans). It is usually between 5 to 15 acres depending on the labour available. All types of crops are sown on this farm. The whole farm is

normally demarcated into portions according the number of crops to be sown that farming season. Mostly, millet, sorghum, groundnuts, black beans and bambara groundnuts are the main crops grown in rotation every year. The black beans are usually combined with either the millet or sorghum and sown together in one area on mounds. The bambara groundnuts are also combined with the groundnuts and sown together

#### ***2.10.4 The River-side-Farm ("Baa")***

This is where crops such as yam, rice and vegetables of various kinds are mainly cultivated. Sometimes maize is planted here as a mixed crop with the yam or vegetables. All these crops with the exception of the maize require constant moisture in order to do well. And since the rainfall pattern in the area is so poor, these crops are planted by the river side to guarantee continuous supply of moisture for them.

Most crops grown in the study area have for many years planted on mounds until recently when western science is encouraging farmers to change the practice. But the mounds that are made on this farm ("baa") are usually very big. The indigenous science behind this idea is that the size of the mound prevents the crop from being flooded because these farms easily gets flood every year when the rainfall is at its peak. Maize in particular does not need much moisture so when they are planted on these big mounds the roots of the crop are suspended above the area of the water. It is on this farm that uncontrolled mixed cropping is practiced, sometimes with about four to five different crops on one mound.

On the whole farming in the study area is still characterized by locally produced simple farm tools such as hoes and cutlasses. The storage system still relies on traditional structures such as the bans, and processing done largely at a domestic level. Bullock farming is practiced in the area by less than 10% of the farmers. The soil in the area now can hardly support crops growth because of the complete absence of nutrients; due to the many years of continues cropping. But the farmers noted that the rampant stealing of the farm animals has further worsen the situation because people are afraid to keep animals in large quantities from which they can get enough manure to fertilize their farms.



### **2.11 The Farming System**

Sole cropping is rarely done in the area. The common practice is mixed cropping and mixed farming. Various crops such as millet, sorghum, maize, groundnuts, bambara groundnuts, black beans, rice, sweet potatoes, yams and vegetables are usually cultivated by every individual on one farm but not mixed together. In addition to the crop cultivation, rearing of farm animals is also done. Farm animals such as goats, sheep, cattle, pigs and birds (fowls, guinea fowls, ducks and pigeons) are kept to supplement the family income.

Millar (1996) citing Millar and ten Haaf (1988:5) indicated that the farming system as practiced by the Dagara has the following features:

- It is purely subsistence with low cash income
- It is mostly mixed farming (with livestock)
- It involves mixed cropping
- Land holdings are small and fragmented not always exceeding 5 hectares
- The farming system depends on simple hand equipment
- It involves low level of use of external farm inputs
- Yields and net returns to resources employed are relatively low on the average

The main reasons why farmers practice mixed cropping is to ensure maximum yield per unit land area, though it is disadvantageous because it does not yield to modern farming technology.

### **2.12 Economic Activities of the People**

Farming is predominantly the main economic activity in the area. The small peasant farmer cultivates crops as well as keeps farm animals. Both the crops and animals are consumed as food and also sold for income to solve financial needs of the family.

Apart from the farm produce been consumed, they also serve social, economic and cultural purposes. For social purposes the produce are used for foods such as cakes, pito and meat during social functions. Cultural activities such as marriages, funerals and sacrifices cannot be done without farm produce. Animals such as cattle, fowls and guinea fowls are used as dowries for



customary consummation of marriages in the area. Also, all kinds of crops produce are used to literally see off the dead and to enable the departed person continue with farming wherever he or she is going to. The foodstuff are usually kept by the dead as the mourning is going on to indicate that he/she was a farmer while alive hence should not be allowed to go to the ancestors with empty hands. Since rural people are religious, always looking for ways and means to appease the spirit world (the earth god), the ancestors and also the Supreme Being, sacrifices are made every now and then using both crops and animals.

Besides the farming, some people are also into the processing and manufacturing activities. Local blacksmith workshops always located in the houses can be found in many houses in the area. Hoe blades are designed and produced by these local blacksmiths. They also produced traditional rings which are given to children to wear for some special reasons. They maintain bicycles by joining broken parts. All these are done for economic rewards. Those who are skillful in carving produce pestles, mortars, hoe sticks, stirring sticks and others for money. Other sources of economic activities include trading, bicycle repairs and grinding mills operations. Trading in animals and household provisions is a common thing in the area.

Also, some few individuals practice traditional healing. They prepare various herbal medicines which are used for the treatment of various diseases. Though in return, the herbalists charged a token or collect fowls or cowries for the medicines or treatments offered to people.

In addition to providing substantial labour on the farm, the women are also into the brewing of the traditional beer (pito), processing of dawadawa for home consumption and for the market, weaving of baskets, pottery, making of cakes and Shea butter processing. Pito is a common drink in the area and well patronized as well. As such some women have taken up pito brewing as a full time business. Only few women who have the skills are involved in the pottery with the rest getting involved in the other economic activities. By this they contribute reasonable amounts to the family budget.

Children are not left out in these economic activities as they contribute a lot of labour to support their parents. They help on the farm and take care of the animals at home by driving them out

and in every day. The girls will support their mothers in the brewing of the *pito* by fetching water, help in the Shea butter processing by helping to crack the nuts and the rest. They also help in the sale of the products by carrying them to the market to be sold.

### **2.13 Learning Opportunities**

The work of Vygotsky in 1978 on socio-cultural theory established that learning is a form of enculturation in which the individual is socialised through gradual participation in task, assisted by adults until full competence is attained. In another dimension Lave & Wenger, (1991) in their interpretation of constructivism also noted that learning is best achieved when it is encountered, used and applied in real world contexts. In other words, it is done in a form of participation in social environments.

In the study area there are many situations that offer themselves for participation leading to learning (enculturation) within the socio-cultural set up. The construction of houses, farming activities, economic activities and cultural activities such as festivals, dance, music, marriage ceremonies, food preparation, blacksmithing, carving, preparation of “black” and “white” medicines and many others are areas where knowledge is generated and handed down to the younger generation.

As indicated by Millar (1996) initial “wulu” and “bangfu” starts at the age of four with the opening, feeding and driving in of the chickens every day. As the child advances in age, he/she is confronted with more difficult and complex task. For instance, a child at six may be introduced to weeding on the farm, and later (after some years) introduce to mounds making under close supervision. There are different types of mounds and one needs a lot of experience to be able to make the different types to suit the crops to be grown on them. Crops such as yam, vegetables and millet/sorghum are sown on mounds which are of different sizes and shape. It is only people who are at their advance stage of learning (16-19 years) that can make the different types of mounds properly. Learning here is more of the vertical type than horizontal because the aim is to get the young ones to master skills on a wide spectrum of agricultural practices (Millar, 1996).

In the same vein, children are always involved in the construction of rooms where they are made to prepare the mortar and make it available for the building to be raised. Later in life they learn how to roof a room and finally how to construct a room and roof. Here a lot of observation is needed.

Also, economic activities such as blacksmithing , carving, pito brewing, making of cakes, Shea butter processing, and others are other areas where a lot of teaching and learning occur. For instance, as a child is made to pick items for the mother who is brewing pito observes the processes involved and sometimes certain issues are explained to the child. The child later becomes part of the task as she grows up and left alone one day to brew the pito, though with inputs from the mother.

In addition, there are many cultural activities that are performed in the area through which people learn a lot. A case in point is that the Dagara are noted for using cowries to dowry their wives. The amount of cowries involved ranges from 12,000 to 25,000. To count all these cowries within a short period without getting confuse requires a skill which one must learn. So the youth are normally called to observe how it is counted, offered the opportunity to try their hands on it with the guidance of the elders on a number of occasions till they pick up the skill.

In sum, the varied livelihood activities that are carried out in the area present themselves for teaching and learning to ensure continuity of the culture in the area. In most cases the learning is done through observation, listening and practice, imitation, oral instructions and in some cases the apprentices also learn through trial and error.

## **2.14 Conclusion**

In conclusion, the profile of the area shows that it is a rural area, sparsely populated and lack major government intervention in terms of development. The people being peasant farmers and heavily dependent on local farm implements points to the fact that farmers in the area still rely more on indigenous knowledge than modern knowledge. Their bit to fight poverty is faced with obstacles such as low soil fertility because of the long continues use of their lands, absence of



modern farm implements and others. Their plight is further worsened with the rampant stealing of the farm animals in the area denying them of their livelihood and manure for their farms. However, their diversification into other economic activities such as blacksmithing, carving, trading, pito brewing, Shea butter and dawadawa processing, pottery, basket weaving and others serve to compliment what they produced from the farm. But the inter-cultural migration, Christianity, and education are fast eroding the culture in the area.



## **CHAPTER THREE**

### **CONCEPTUAL FRAMEWORK AND RELATED LITERATURE**

#### **3.0 Introduction**

This chapter gives an insight into concepts and theories relevant to the subject matter. Arguments are made on key concepts and theories that provide the framework for this write up as understood and used differently by different scholars. Hence, major concepts, theories and policies in relation to Agricultural Extension teaching methods, Indigenous knowledge and learning methods are reviewed. Depending on the situation both general and specific meanings of concepts are given. A framework is included to show the relationship between Agricultural extension methods, Indigenous knowledge and indigenous knowledge learning methods and how they can influence one another for sustainable food production and consequently poverty reduction.

A framework is simply a structure of the idea or concept and how it is put together to explain the relationship among these concepts. In this view, Smyth (2004) noted that conceptual framework provides reference points back to the literature; helps make meaning out of data and provides a structured approach to communicating findings. It is the core of the thesis because it assists the researcher to develop awareness and understanding of the situation under scrutiny and to communicate it.

### 3.1 The Conceptual Framework for this study presented in Figure 3.1

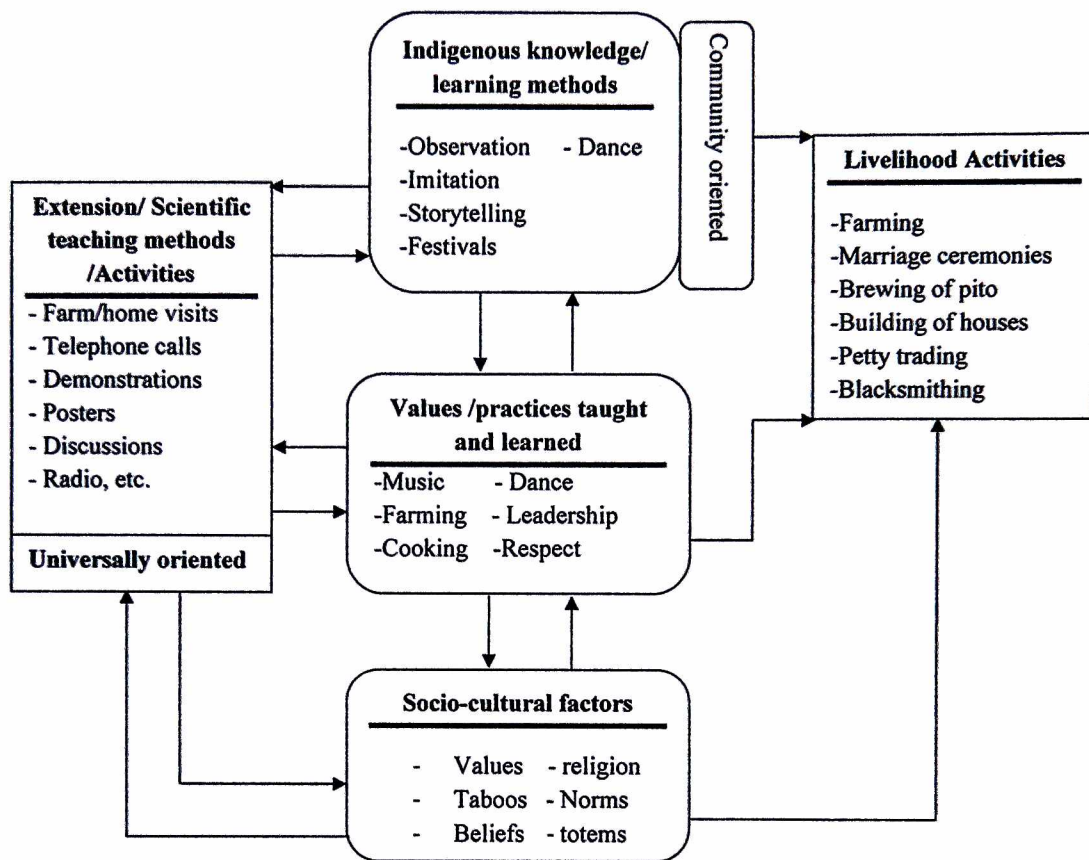


Figure 3.1: Conceptual Framework of the study

Source: This Research, 2010

In this study, the conceptual framework identifies indigenous knowledge as knowledge which is native to traditional farmers. This knowledge system is however not exclusive but can be modified with time. Modern knowledge, on the other, refers to concepts, ideas, values, beliefs which are imparted into the minds of indigenous farmers by extension workers. To a large extent, these improved scientific agricultural practices are improvements on already existing techniques of indigenous farmers which they derived from their daily interactions with the

environment, observations, experiments, festivals, storytelling and many other ways. The knowledge, skills and practices so generated are passed down to generations through the cultural learning processes such as imitation, observation, trial and error, dancing, practice, storytelling and others.

### **3.2 Socio-cultural factors**

The socio-cultural factors include taboos, religion, norms, beliefs, totems and the value system of every society. Then the cultural values of indigenous people include folklore, music and dance, traditional ceremonies or practices (e.g. widowhood rites, farming practices, etc), type and style of dressing, the type of food they eat, leadership styles, respect for elders, etc. These values impact directly on the knowledge generated and learnt and the socio-cultural factors of the people. The socio-cultural factors and the knowledge generated also influence directly the value system of the people.

For instance, land ownership and access is sometimes a limiting factor to agricultural production due to cultural practices such as land inheritance (by lineage, gender and/or other culturally determined characteristics) in rural communities (Villarreal, 2000). This can lead to small land holdings in large families, as such farmers try to maximize land use by applying farming practices such as mixed cropping and the like which more often conflict with scientific practices such as sole cropping, planting in rows and others. Cultural preference for certain foods is also central to the type of crop cultivated and consumed in a particular area as against high yielding and high nutritional crops normally introduced to farmers by Agricultural extension. For instance, the Dagara belief that the food prepared from guinea corn is medicinal for children suffering from measles.

Religion which is the awareness of the existence of some ultimate, Supreme Being who is the origin and sustainer of this universe and the establishment of constant ties with this being, influences, in a comprehensive way, the thoughts and actions of the African people. Once an individual is born into the African society he or she is born into a culture that is intensely and pervasively religious and that means, and requires, participation in the religious beliefs and rituals of the community (Gyekye, 2002).





On the other hand, taboos are seen as "thought police" that governs not just our behavior but also our thoughts and discourages the individual from considering certain type of actions. They are an important part of any social identity as they are considered as strong social norms that are also supported by severe socially imposed punishment. The way we behave, dress, eat, drive and our sex life are all governed by the norms and taboos of the societies we belong to (Fershtman, Gneezy & Hoffman, 2008 & 2009).

Totems are also revered animals, plants or any other natural object believed to be ancestrally related to a tribe, clan, or family group as a tutelary spirit. Totemism has been used basically to preserve humanity, in that it has in more ways than one culminated in the conservation of other life forms bequeathed to man on which he is dependent (Smith-Asante, 2002).

On the whole, the knowledge generated, the learning methods used, value system and the socio-cultural factors have direct influence on any externally introduced knowledge into the community (Extension education) and the livelihood activities of the people such as farming, marriages, health management strategies, building of houses, and poverty reduction strategies.

### **3.3 Personal characteristics of farmers**

Some of the personal characteristics of farmers which are likely to affect the acquisition of indigenous knowledge and the acceptance of modern technologies include age, sex, religion and education.

#### **3.3.1 Age**

The acquisition of indigenous knowledge starts at a very early age because, perhaps, it is passed on orally, usually by word of mouth and cultural rituals. According to Ruddle (1993) two to five year old children begins to acquire indigenous knowledge on the names and characteristics of common biota. By the age of 14, they are competent in household tasks, cultivation (plant identification, harvesting), seed selection, weeding, animal husbandry, fishing, and hunting.



According to Battiste, (2002) indigenous knowledge learning is a life-long process that people assume to understand the world around them by observing, listening and participating with minimum intervention or instructions. Among the Dagara “Bangfu” (learning) starts at the age of four concurrently with “wulu” (tutelage) when the apprentice is taught how to open, feed and drive in the chickens, or in the case of the girls taught how to wash bowls and calabashes (Millar, 1996). The use of indigenous knowledge in farming, especially in rice cultivation, cuts across all ages. The older ones are there to impart expertise, which comes with experience, on the younger farmers (Kuponiya & Bamigboye, 2009).

Age of farmers also influence adoption of innovations. According to Motamed and Singh (2003) aged persons are less prone and reluctant to adopt new technologies. Kumar and Wasnik (1989) also revealed that age of target users of technology is significantly related to its adoption in progressive farming communities.

### **3.3.2 Gender**

The gendered nature of IK is often overlooked, marginalized or neglected. As a result of this gender differentiation and specialization, the indigenous knowledge and skills held by women often differ from those held by men, affecting patterns of access, use, and control of local resources (Pidatala, K. & Khan, A. R., 2003).

In farming, men usually take responsibility for land preparation, ploughing and harvesting, while the women undertake the collection of fodder and feeding of livestock, gardening, collection of organic fertilizer and manure and fertilizing of crops. Women are also involved in farm maintenance, seed-bed preparation, sowing and weeding, seed selection, threshing, food processing and water collection (Archarya and Bennett, 1983).

### **3.3.3 Education**

Education whether formal, non formal or informal is the means through which social values are transmitted to the younger generation with the intension of preserving those values. However,

Van Camp (2007) reported that formal often regards the distinct culture of indigenous people and their identity, economic activities, religious beliefs, notions, and traditional ways of managing natural resources as backward and superstitious. This thus encourages the younger generation to shy away from their culture and indigenous practices.

It has also been noted that education has a strong influence on the decision of a person to adopt innovation. Schultz, (1964) revealed the education enhances one's ability to receive, decode and understand information which according to John, Ramatu and Luke (2005) is likely to have a positive influence on the decision of the household's head to adopt innovations.

#### **3.3.4 Religion**

Religious beliefs have a strong influence on the culture of rural communities. We use these beliefs to help explain reasons for human existence and to guide personal relationships and behavior. Religious beliefs are central to culture and provide the moral codes by which people live. According to Gyekye (2002) once an individual is born into the African society he or she is born into a culture that is intensely and pervasively religious and requires participation in the religious beliefs and rituals of the community. Therefore religion has a deep influence on rural farmers with regards to the type of crops they cultivate, how they crop it, how they process and store the crops, the kind of farm tools used, the type of animals they keep, how they cook their foods, how they contract their marriages, carry out their festivals, their dance, music, dressing and many others.

On the whole, all members of the community have indigenous knowledge: elders, women, men and children. However, the quantity and quality of indigenous knowledge that individuals possess vary. Age, education, gender and social and economic status are some of the factors that influence the quantity and quality of indigenous knowledge an individual can possess.

### **3.4 Extension Methods**

Teaching is the art of presenting knowledge, ideas or facts in a manner that is possible for the learner to comprehend what is being taught without much difficulty. According to Davis (2001) Teaching is the interaction of a student and a teacher over a subject. In other words, it is undertaking certain activities the intention of which is to induce learning. The purpose of teaching lies in getting students to truly understand the concepts being taught. Teaching when properly done gives the learner the opportunity to change his/her attitude and improves upon his/her experience. To achieve this, teachers, extension agents in this case, must adapt their methods to the indigenous learning style of learners – indigenous farmers.

Indigenous people over the years have depended on their own ideas and beliefs to sustain their livelihood, but external influences mostly in a form of extension education services have also become inevitable. In Ghana, Agricultural extension has been the main organization, complemented by NGOs and Religious bodies, rendering services to farmers who are mostly based in the rural areas.

Extension education is the primary process through which the farmers can learn the reason for change, the value of change, and the results that can be achieved through change. Extension is a type of education that is functional rather than formal and its main task is to convey meaningful information to the farmers. It is the major source to make farmers aware of alternatives from where they can choose the most desirable as well as how the different methods that exist for carrying out their farming and other operations (William, 1984 cited in Okunade, 2007).

Extension therefore assists the farmers to acquire the necessary knowledge, skills and attitudes to enable them utilize the information or technology given to them effectively with the ultimate aim of raising their efficiency and achieving higher level of living. To achieve this, extension agents use a variety of teaching methods in training rural people.

Extension is therefore an educational process meant to bring about maximum desirable changes in behavior among the farmers, which involves both learning, and teaching using the extension-



teaching methods. The extension-teaching methods are the tools and techniques used to create situations in which communication can take place between the rural people and the extension workers. They are the methods of extending new knowledge and skills to the rural people by drawing their attention towards them, arousing their interest and helping them to have a successful experience of the new practice. ([http://www.krishniworld.com/html/agri\\_extension\\_edu1.html](http://www.krishniworld.com/html/agri_extension_edu1.html)).

As cited in Okunade, (2007), William, (1984) identified many factors that affect the choice of extension methods to be used. They include the nature of subject matter, amount of time the extension worker intends to devote to the method and the time the farmers can devote, reinforcement, steps in extension teaching, materials and possible teaching situation available, preference and ability of the extension worker to perform successfully the various methods and evaluate them. William (1984) however, fell short of the fact that the learning style of the learner must also be considered in deciding on the choice of teaching method.

Also, no mention is made of the social and cultural backgrounds of the farmer as some of the factors that affect the choice of extension teaching methods. For an extension method to be suitable to a group of farmers it must be situated within the social and cultural context of the farmers because behavioral change of people is dependent upon many factors, including culture.

Ogunwale (1991) cited by Okunade (2007) stressed that effective extension workers must not only have at their finger tip a variety of tools and methods to do their job, they must also know where to use them. An effective extension communication system is also a necessity for extension service to achieve its broad set goals of farmers acquiring knowledge, skill and attitude in order to better their economic strength and hence their level of living.

Garforth (1993) indicated that among the three broad classes of extension teaching methods such as (a) Individual methods (b) Group methods and (c) Mass methods, the individual contact methods usually are superior for conviction, enhances interaction and action because of face-to-face relationship of teacher and learner. For example, farm and home visits, office calls, telephone calls and result demonstration. He said group contact methods are usually well suited



to bringing specific information about practices, helping to move the individual through the desire for conviction and sometimes to taking action. Examples are method demonstration, result demonstration, general meeting, lectures, group discussion and excursions. Mass media methods attract attention and stimulate the interest and desire for further information. They are the methods used to reach many people at the same time at different locations. Examples are bulletins, circulars, letters, leaflets, radio, television and cinema. His notion is that the effectiveness of these methods is measured by their ability to change a static situation into a dynamic one.

### **3.5 Indigenous Teaching among the Dagaaba**

The family constitutes the environment where indigenous teaching and learning begin and take place. Hence, among the Dagaaba tutelage (“Wulu”) begins from the family. “Wulu” (tutelage) in agriculture is a protracted period of apprenticeship. “Wulu” covers all ages and therefore covers an unlimited period. “Wulu” is more pronounced with vertical learning when the young are learning from the elderly. It is pronounced here because the end of a “wulu” cycle is marked by certain social practices, and particularly the beginning of individualization as expressed in the allocation of productive resources (Millar, 1996).

“Wulu” can either be organized or less organised. The organised form of “wulu” include conscious educational process that the young go through at the hands of the elderly by following the footprints of the elders. The child is given instructions and closely observed to carry out the task; sometimes the elders carrying out the task together with the apprentices giving him/her the opportunity to observe and learn. It involves giving a set of instructions and a body of information, and demanding an output in the form of fulfilling a task (Millar, 1996).

In some cases, the task is demonstrated by the elderly and the apprentice asked to repeat what has been done. For instance, during the harvesting of crops (e.g. sorghum) a man will instruct the son on how to select seeds and fasten them together in a skillful manner to be preserved for the next farming season. The son is then asked to select the seeds all alone the next season (Millar, 1996).

The less organised form of “wulu” according to Millar (1996) involves the use of tools such as symbols, rituals and ceremonies, proverbs, riddles, stories and songs. Imagery and symbols constitute active learning tools that are utilised by rural communities to teach the young ones. Advanced form of indigenous tutelage includes the use of proverbs. Proverbs and wise sayings are the prerogative of the elders which express the wisdom of old age. It is a value laden way of teaching the young.

### **3.6 Indigenous Knowledge**

The term ‘Indigenous Knowledge’ suggests a type generational knowledge that has evolved within a community, especially a rural setting, over a reasonable period of time. Indigenous as used here means something originating from a specific place or culture. As such, indigenous knowledge or people in this write up refer to knowledge or people originating from a particular place or culture.

In the view of Haviland (1990), the behavior of a group of people is often seen as the expression of their Culture. He described culture as consisting of abstract values, belief and perceptions of the world that lie behind people’s behavior and that their behavior reflects. These are shared by the members of a society, and when acted upon, they produce behavior considered acceptable within that society

According to Tayeb (1988, p. 2) cited by Laurikiete (2007), culture is ‘a set of historically evolved learned values, attitudes and meanings shared by the members of a community that influences their material and non-material ways of life. Members of the community learn these shared characteristics through different stages of the socialisation processes of their life, such as a family, religion, formal education and society as a whole’.

In a broader perspective, Harris as quoted by the Global Learning Communities 2000 in a document titled Two-way aboriginal schooling: Education and cultural survival, accessed from <http://www.google.com.gh/#hl=en&source=hp&q=culture+as+%22everything+a+people+does+and+believes%2C+by+harris%2C+2000&btnG=Google+Search&aq=f&aqi=&aql=&oq=culture>

+as+%22everything+a+people+does+and+believes%2C+by+harris%2C+2000&gs\_rfai=&fp=fa189d0643b72098 defines culture as "everything a people does and believes, and the ways in which these are done. It is a conventional design for group living which is system-centered, rather than individual centered. It includes the content and process of the way of life of a group, and is passed on by learning. Culture is never static, but evolving; and in this process it remains recognizably distinctive."

By implication therefore, the generation and use of indigenous knowledge is influenced by culture. But both in the literature and in practice indigenous knowledge has been viewed from various angles by various authors. Indigenous knowledge has often been used synonymously with local knowledge probably due to the fact that the users of the knowledge are basically found in the local or rural communities. While some authors limit the term to the knowledge of indigenous people, others apply it in a broader context to mean peoples' knowledge.

Many anthropologists (Warren, 1987, 1991 and 2001; Warren & Rajasekaran, 1993; Norem, Yoder, & Martin, 1988; Grenier, 1998) have all described indigenous knowledge as unique local knowledge made up of ideas, beliefs, values, norms, and rituals, which are native and embedded in the minds of people. The basis for local-level decision making in agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in rural communities. It is also seen as the skills and experience gained through oral tradition and practiced and used to solve daily problems.

Obomsawin (2002) believes Indigenous knowledge represents the accumulated experience, wisdom and know-how unique to a given culture, society, and/or community. It stands apart as a distinctive body of knowledge, which has evolved over many generations in a particular ecosystem.

For the World Bank (1998, p. i) it is an immensely valuable resource from the past, and relevant to the present and future of societies, for "it is the basis for local decision-making (and communication) in agriculture, health, natural-resource management, education, and other activities". It grows within a social group, incorporating learning from own experience over



generations but also knowledge gained from other sources and fully internalized within local ways of thinking and doing. (World Bank, 2005).

Trevor (1998, p. 260) cited in Summer (2006) provides a very broad definition when he describes indigenous knowledge as “the body of historically constituted (emic) knowledge instrumental in the long-term adaptation of human groups to the biophysical environment.” Adult educator Julia Preece (2005, p. 53) is equally broad when she defines indigenous knowledge as “knowledge that people have developed over time, which has to do with their context and immediate environment and which continues to develop.” To Haverkort and de Zeeuw (1992), IK is the actual knowledge of a given population that reflects their experiences based on traditions and includes more recent experiences with modern technologies.

On the whole, indigenous knowledge can thus be said to include knowledge, practices, and beliefs that are more or less integrated with one another. It is dynamic and evolves as people build on their experiences and observations, experiment, learn from others, and adapt to changing environmental conditions over time. Indigenous knowledge is place-based and geographically specific.

The common agreement among many anthropologists, however, is that traditional knowledge (TK), indigenous knowledge (IK), traditional environmental knowledge (TEK), local knowledge, ‘Community knowledge’, Rural people’s knowledge’, aboriginal tradition, ‘Indigenous Technical Knowledge’, and ‘Farmers Knowledge’ means the same, though some distinctions can be made, and is knowledge belonging to the rural populace and indicates matured long-standing traditions and practices of certain regional, indigenous, or local communities (Sicat, 2003; Reijntjes, Haverkort, & Waters-Bayer, 1992; Howes & Chambers, 1979).

However, for the purpose of this research the concept of indigenous knowledge is adapted and used, in place of all other related terms, to mean any experience or skills gained and evolved over the years through observation and practice within a particular culture and passed down to the younger generation through a unique learning process. Also, indigenous knowledge systems will be used interchangeably with indigenous knowledge to encompass all the above-mentioned



terms. The preference for the concept Indigenous knowledge stemmed from the fact that it applies to a group of peoples or culture regarded as coming from a given place.

Ellen and Harris, (1996) indentified some special features of indigenous knowledge, which distinguish it broadly from modern knowledge to include:

- ❖ It is **local**, in that it is rooted in a particular community and situated within broader cultural traditions; it is a set of experiences generated by people living in those communities.
- ❖ It is **tacit** knowledge and, therefore, cannot easily be codified.
- ❖ It is **transmitted orally**, or through imitation and demonstration. Codifying it may lead to the loss of some of its properties.
- ❖ It is **experiential rather than theoretical knowledge**. Experience and trial and error, tested in the rigorous laboratory of survival of local communities constantly reinforce IK.
- ❖ It is **learned through repetition**, which is a defining characteristic of tradition even when new knowledge is added. Repetition aids in the retention and reinforcement of IK.
- ❖ It is **constantly changing**, being produced as well as reproduced, discovered as well as lost; though it is often perceived by external observers as being somewhat static.

The main sources of Indigenous Knowledge include interactions with the elderly, parents, grandparents, relatives and friends. Other common sources are through visits where one finds a technology being applied and picks interest in it. However, migration of people from other parts of the country with different ethnicity, radio programs and extension workers and own discoveries are noted as supplementary sources of IK (Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, 2007). IK is stored in people's memories and activities, and expressed in stories, songs, folklore, proverbs, dances, myths, cultural values, beliefs, rituals, community laws, local languages and agricultural practices, equipment, materials, plant species and animal breeds (Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, 2007).

Since IK is locally owned and managed resource, rural development institutions can ensure efficiency of development programs if they use indigenous institutions and indigenous appropriate technology. Building on IK can particularly be effective in helping to reach the poor since IK is often the only asset they control, and certainly one with which they are very familiar.



Utilizing IK helps to increase the sustainability of development efforts because the IK integration process provides for mutual learning and adaptation, which in turn contributes to the empowerment of local communities. Since efficiency, effectiveness, and sustainability are key determinants of the quality of development work, harnessing indigenous knowledge has a clear development business case (Gorjestani, 2000).

It has been emphasized that there was an urgent need to learn, preserve, and exchange indigenous knowledge. In his recent call for a new inclusive approach to development, the President of the World Bank (James D. Wolfensohn) stressed the need for a framework that deals *inter alia* with indigenous people and their knowledge. He said ***"Indigenous knowledge is an integral part of the culture and history of a local community. We need to learn from local communities to enrich the development process"*** (Gorjestani, 2000, p.1). In the context of the Partnership for Information and Communication Technology for Africa (PICTA), the World Bank has agreed to lead a campaign on Indigenous Knowledge for Development Initiative to help stimulate recognition, utilisation, and exchange of indigenous knowledge in the development process (World Bank report, 1998).

Indeed, traditional farming (TF), as part of traditional knowledge, relies upon the indigenous information base of farming in a given area, and for many decades it has helped local communities in Sudan to thrive and cope with their harsh environments and significantly supported their livelihood. Traditional farmers know how to produce and select high-potential seeds by observation and single plant selection, and how to conserve and store them. They plant local sorghum and millet varieties for their stable food. Indigenous weeding practices protect the land from pollution or accumulation of toxic pesticides in soils and plants (Sharland, 1989). The use of the traditional plough for weeding is environmentally friendly since it pollutes neither the soil nor the crops.

The problem with indigenous knowledge is that it is not written down but oral. It is held in people's heads, passed down from one generation to the next by word of mouth though this has let the loss of a lot of indigenous knowledge through the death of elderly people. Most indigenous people use traditional songs, stories, legends, dreams methods, and practices as



means of transmitting specific elements of indigenous knowledge. Sometimes it is preserved in the form of memories, ritual, initiation rites, ceremonies, or dance (Emery, 1997).

Today, many indigenous knowledge systems are at risk of becoming extinct because of rapidly changing natural environments and fast pacing economic, political, and cultural changes on a global scale. The disappearance of indigenous knowledge is most serious to those who have developed it and make a living through it.

### **3.7 Relevance of Indigenous Knowledge**

Indigenous knowledge is an integral part of the development process of local communities in Ghana. According to the 1998/99 World Development Report, knowledge, not capital, is the key to sustainable social and economic development. Building on local knowledge, the basic component of any country's knowledge system, is the first step to mobilize such capital. Therefore, sharing knowledge with the poor is most effective when we also solicit knowledge from them about their needs and circumstances. Therefore, development activities, especially those that aim to benefit the poor directly, need to consider IK in the design and implementation stages of the process (World Bank Report, 1998).

A World Bank client feed-back survey indicated that a better understanding of the local conditions, including indigenous knowledge systems and practices could, therefore, help to better integrate global technologies to solve the problems facing local communities in the developing countries. This would in turn help to improve the impact of development assistance as well as client satisfaction with the services of the Bank and its partners (World Bank Report, 1998).

Indigenous knowledge (IK) is an important part of the lives of the poor. It is an integral part of the local ecosystem. IK is a key element of the "social capital" of the poor; their main asset to invest in the struggle for survival, to produce food, to provide for shelter or to achieve control of their own lives. Indigenous knowledge is also a valuable resource for decision making, policy planning, agriculture, poverty alleviation, health care, food preparation, education, and a host of other activities in communities (Tripathi & Bhattarya, 2004).



In 1993, the International Year for the World's Indigenous People was proclaimed by the General Assembly of the United Nations (UN) in Resolution 45/164 of 18 December 1990 to underscore the importance of indigenous people and their knowledge. For instance, Atawodi (2001), a survey that has been done in Kaduna State of Nigeria indicated that before the discovery of synthetic drugs, local herdsmen were controlling trypanosomiasis through different ethnoveterinary practices. He said perhaps, knowledge of these indigenous practices might have provided the chemical lead for the discovery of a new generation of trypanocides that are more potent and less toxic. Some of the common herbs used by the herdsmen included *Psidium guajava* (Guava), *Capsicum* spp. (Pepper), *Khaya senegalensis* (Mahogany). This further testifies how well grounded indigenous knowledge has been.

In 2001, the First South African National Report to the Convention on Biological Diversity to address the issue of the role traditional knowledge could play acknowledged that Government recognizes the irreplaceable and unique value of the traditional knowledge, practices and cultures of South Africa's peoples, and is acutely concerned about the rapid loss of such systems. The need to formally recognize and protect traditional knowledge is considered to be an issue that needs urgent attention. The adoption of measures to enable equitable benefit and sharing is a crucial part of the approach to conserving biological diversity (Knudsen, 2007). Again, this has demonstrated that indigenous knowledge is relevant in all spheres of life all over Africa more especially in South Africa.

Also, in the view of Schneider and Yaku (1996) many aspects of Indigenous Knowledge are rational and effective tools in crops management and the use of genetic variability. They added that local communities need continuous access to genetic diversity for future use and development of their sweet potato genetic resources. Different types of approaches may be envisaged to achieve this "dynamic conservation", one of them being community-based conservation.

In brief, the relevance of indigenous knowledge according to the World Development Report, 1998/99 includes:

- IK is a key element of the “social capital” of the poor; their main asset to invest in the struggle for survival, to produce food, to provide for shelter or to achieve control of their own lives.
- In West Africa transfer of knowledge is done through elders, rituals, initiation, and story tellers.
- It is used in animal husbandry and ethnic veterinary medicine
- It is used in the management of natural resources
- It is also for community development

Besides what has been outlined in the World Bank Report, other authorities in indigenous knowledge also noted the invaluable role indigenous knowledge plays in the life of rural people to include the following:

- Cultures (IK) serve as the means through which people deal with problems or matters that concern them and affects their survival (Haviland, 1990),
- It is used for poverty alleviation (Tripathi & Bhattarya, 2004).
- It creates social harmony and cohesion (Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, 2007).
- It is easy to grasp the concepts and practices because knowledge can be passed on orally using the local language (Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, 2007).
- The use of indigenous knowledge has no side effects (Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, 2007).

Therefore, it follows from these considerations that the preservation of Indigenous knowledge is important for social and cultural reasons. For both indigenous societies and the world at large, indigenous knowledge is a tangible aspect of a way of life and a valuable tool for development.

### **3.8 Indigenous Knowledge in Agriculture**

In the Upper West Region, the peasant small-scale farmers are the producers of food for the larger population in the region and the whole country at large. However, interestingly enough, these small-scale farmers, up till date, still depend on their indigenous technical knowledge of local farm tools and implements such as hoes, baskets, and cutlasses for the production of arable food crops on a subsistence basis. In the light of this, one is tempted to agree with Upton (1997)

who posited that local farmers do not change easily the attitudes developed and the knowledge acquired over time, which are so special and unique to them. This is particularly visible in a homophilous society where the people are from similar backgrounds and hold on strongly to their social system and norms.

The traditional roles of agriculture in Ghana include provision of food security, supply of raw materials for industry, creation of employment and generation of foreign exchange earnings. Beyond these, agriculture is also recognised to have a greater impact on poverty reduction than other sectors. It also plays roles such as social stabilisation, buffer during economic shocks, support to environmental sustainability, and cultural values associated with farming. Agriculture acts as a buffer because many people turn to farming during economic shocks (MoFA, 2007).

But knowledge is among the most important factors determining a nation's standard of living. There is a growing recognition that the continuous innovation of farmers and indigenous knowledge of people could play a major role in contributing to improved agricultural production. The system enables the farmer to sustain production with a minimum of external inputs. To combat frequent crop failures, people should be encouraged to cultivate and use crops that are appropriate for the climatic conditions prevailing in their areas, especially the traditional ones (Mwende, 2005). This attests to the fact that practices within a particular traditional environment should be preserved.

Despite the introduction of agro-chemicals and other improved methods of farming, many farmers continued to rely on indigenous farming practices, either on their own or in combination with modern technologies. Since indigenous knowledge is generated from the local wisdom and culture, it fits to the local situation natively and it is inexpensive.

Farmers' preference for indigenous knowledge is partly because modern technologies require training to apply and maintain it. Therefore, many disadvantaged farmers will still continue to use indigenous knowledge and practices. Current development trends have so far demonstrated that improved technologies are un-affordable for many poor farmers and they continually fall back on indigenous knowledge and practices. It is therefore paramount that research finds ways



of identifying, collecting and validating indigenous knowledge practices (Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwozeza, 2007).

Development is always seen as a modernizing force or process, one that acts to transform traditional practices. This remains the conventional thinking that rational science and external technology through hierarchical, technically-oriented, extension services is the driven power of the development of the rural areas, while farmers are seen as either "adopters" or "rejecters" of technologies, but not as originators of either technical knowledge or improved practice (Chambers & Ghildyal, 1985; Sachs, 1992).

Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwozeza (2007) citing Louise (1998) said for centuries, farmers have planned agricultural production and conserved natural resources with the instruments of indigenous knowledge (IK). The development of IK systems, including management of natural environment, has been a matter of survival to the people who generated these systems. Such systems are cumulative, representing generations of experience, careful observations and trial and error experiments. This means that rural farmers have well tested knowledge regarding farming though contemporary knowledge sees it as incapable of meeting current challenges.

However, since the late 1970s, some failed practices all-over the world of Transfer of Technology (TOT) has caught great attention of researchers. The indigenous knowledge and participation of the local people were advocated based on a perspective which regards development as an active and equitable partnership between rural people, researchers and extensionists (Farrington and Martin, 1988; Reijntjes, Haverkort, B., & Waters-Bayer, 1992).

In addition, if extension services want to achieve more effective and lasting results then local knowledge and capacities must be granted legitimacy within the scientific and development communities, and greater attention paid to the priorities, needs, and capacities of rural people. (Thomas-Slater, Kabuth & Ford, 1991). This is because the sharing, spreading, and transformation of indigenous knowledge is of importance to extension practice.

FAO's field experiences in the last decade have pointed to the need for extension programmes to be more strategically planned, needs-based, participatory, and problem-solving oriented. Extension planning, field implementation and management processes need to be more systematic, interactive, and holistic. Based on the FAO experiences, a study was done on Strategic Extension Campaign: A Participatory-Oriented Method of Agricultural Extension which emphasized the importance of farmer's participation in strategic planning, systematic management, and field implementation of agricultural extension and training programmes. It advocated an approach which should start with farmers' Knowledge, Attitude and Practices (Adhikarya, 1994).

The study also indicated that farmers should not be assumed as ignorant and requires all the information there is to know. Rather, efforts should always be made to understand and assess farmers' indigenous knowledge, values and belief systems on farming practices which may be good, need to be improved, or perhaps need to be discouraged (Adhikarya, 1994).

For most agricultural technologies to be adopted and practiced properly by farmers, training for them on the applications or utilization of such technologies, especially through practical field-based instruction, hands-on demonstrations, etc., is needed. However, many studies and field experiences have shown that often farmers are not motivated and/or interested in attending or actively participating in training courses organized for them. Many reasons have been given for such poor attendance or participation in farmers training programmes, among others, lack of time, perceived irrelevance of a training course, unaware of the importance of the training topic, and others. However, one of the most important underlying causes for such a problem is the non consideration of "felt-need" and cultural and social background of farmers in a given training programme (Adhikarya, 1994).

According to Adedipe, Okuneye & Ayinde, (2004) small-scale, resource-poor farmers have good reasons for sticking to their local knowledge and farming practices attendant thereto, and that modern technologies can only be successful and sustainable if there is interplay of local knowledge of cultural, social and ecological systems.

### **3.9 Challenges Confronting Indigenous Knowledge System**

In the view of Van Camp (2007), in spite of its valuable nature indigenous knowledge is still confronted with some challenges which are inducing the marginalization, under utilization, inequity and exclusion from the planning and execution of development programmes and projects. Some of his views expressed are highlighted here.

First, indigenous peoples constitute the largest vulnerable segments in contemporary society, and they and their knowledge systems have been marginalized mainly because of the craze for modernity and globalization. The distinct culture of indigenous people and their identity, economic activities, religious beliefs, notions, and traditional ways of managing natural resources are often regarded as backward and superstition. They are considered to be absolutely incompatible with modern society and development.

Secondly, the oral and rural nature of IKS in Africa has made them largely invisible to the development community and global science. Indigenous knowledge has often been dismissed as unsystematic and incapable of meeting the rapid economic growth needs of the modern world. Modern societies have regarded indigenous people and traditions as less progressive, and as a result many groups of indigenous peoples, especially their younger generations, are influenced to devalue their native cultures and to adopt new lifestyles and technologies.

Also, Indigenous Knowledge System have not been captured and stored in a systematic way and are therefore endangered with extinction there by, eroding it over the decades in many communities in Africa and the other regions of the world.

Besides these ideas expressed by Van Camp (2007), other challenges include the fact that African elites are very knowledgeable about accepted values, models and theories of western societies, but their knowledge about the cultural and traditional values of their own societies is very limited. The African elites are not equipped enough to understand the obligations imposed on them by the western cultures in which they have been acculturated and the traditional society



in which they were born and raised. This makes their ability to contribute something original to their societal development limited (Iquisi, 2007).

### **3.10 Communication of modern knowledge**

Agricultural extension services are normally rendered to farmers through education where the relevant information is conveyed to them by means of communication aimed at developing their knowledge, skills and attitudes. In the same vein, indigenous knowledge is also created and shared through communication.

In the view of Okunade (2007), effective extension communication system is a necessity for extension service to achieve its broad set goal of farmers acquiring knowledge, skill and attitude and in the overall, better their economic strength and hence their level of living.

According to Rogers (1995) communication is a process by which participants create and share information with one another in order to reach mutual understanding. Communication is also said to be the sharing of information between an individual and another individual or between an individual and a group. Communication places emphasis on exchange of information between two people which leads to the generation of knowledge. Communication should, therefore, facilitate dialogue and feedback which will, in turn, promote clarity of ideas and concepts (Ansu-kyeremeh, 1997).

Communication in most rural communities in Africa is oral, and still remains vital today simple because most Africans are still largely illiterates, and live in traditional and culturally and linguistically homogeneous village settings which foster oral culture. Oral communication plays an important structural role in African societies; it is the glue that bonds people and communities (Ansu-kyeremeh, 1997).

As such, communication for development is the systematic design and use of participatory activities, communication approaches, methods and media to share information and knowledge among all stakeholders in a rural development process in order to ensure mutual understanding

and consensus leading to action. The aim is to facilitate people's participation at all levels of the development effort, to identify and implement appropriate policies, programmes and technologies to prevent and reduce poverty in order to improve people's livelihood in a sustainable way (Anyaegbunam, Mefalopulos & Moetsabi, 2004).

After all, development is meant to improve the live situation of an individual or a community. And what rural people need is their ability to identify, transform and utilize resources available to them to improve upon their living condition. Hence, any communication strategy, action or amenities should be package in a manner that will meet the needs of the people. .

In fact, perceptions play a key role in communication. Thus the difficulty 'unearthing' rural people's perceptions and local knowledge lies in the fact that many communities have developed ways of hiding their true feelings and information from outsiders, especially when outsiders cannot interact within rural people's frame of reference. Ascroft (1978) cited in Van der Stichele (1998) calls this ability of rural people to treat outsiders nicely without revealing themselves *the conspiracy of courtesy*. To overcome this, Participatory Rural Communication Appraisal which uses visual methods and community facilitation techniques for generating, analyzing and presenting information, thus breaking through the conspiracy and removing the need for literacy is needed.

Participatory Rural Communication Appraisal (PRCA) according to Van der Stichele, (1998) is a participatory communication methodology used to involve rural people in the identification of the essential elements for the design of effective communication strategies and programmes for development. It utilizes field-based visualization techniques, interviews and group work to generate information for the design of communication strategies, materials, media and messages to ensure relevance and ownership by the people involved. PRCA is used for creating dialogue with groups in rural communities in order to identify and analyze their problems and needs; their existing knowledge and practices; their feelings and attitudes; as well as their perceptions of the development issues under investigation. It is also used to ascertain the characteristics of the different groups in a community and to map their existing patterns and networks of communication.



### **3.11 Indigenous Knowledge Communication**

As African advances towards the 21<sup>st</sup> century, there is evidence of lack of interest in indigenous media and modes of communication. As a result endogenous models of communication have little been developed (Ansu-Kyeremeh, 1997). It has been realised in India that folk media have the potential for use as channels of communication, hence it was concluded that there was little or no doubt that folk media can be effectively utilized to convey relevant messages (Malik, 1982 as in Ansu-Kyeremeh, 1997).

Castello & Braun, (2006) said achieving sustainable agricultural development is less based on material inputs (e.g., seeds and fertilizer) than on the people involved in their use. This focuses on human resources which call for increased knowledge and information sharing about agricultural production, as well as on appropriate communication methodologies, channels and tools. In many countries low agricultural production has been attributed, among other factors, to poor linkages between Research-Extension Service-Farmers and to ineffective technology delivery systems, including poor information packaging, inadequate communication systems and poor methodologies. However, this integration among people and institutions, particularly in the research-extension-farmer relationship, has not been successful in many parts of the developing world.

Indigenous forms of communication are important to local level decision making processes and for the preservation and spread of Indigenous Knowledge (Louise, 1998 cited by Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, 2007). This body of knowledge has developed over generations through the process of man-environmental interaction and its continuity depends on its transmission and the ability of the young generation to acquire and practice it (Atteh, 1980 cited in Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, 2007). Indigenous knowledge systems in traditional Africa have been used by communities, through communication, to protect natural resources from unsustainable exploitation thereby averting disasters that may have occurred from such exploitation.

Huge sums of monies are invested in developing countries with the view of arresting underdevelopment in developing countries, by a criterion of the development planners. But



matters are getting worse instead of better. This is largely because Western Scientific knowledge is used in communicating to the neglect of the Indigenous knowledge. Anthropologies have long been among those who have questioned whether such scientific knowledge is as all-encompassing and efficacious as its proponent claims. What is significantly absent in most public discussion of development are the ways in which the knowledge of the people being developed (local people) are ignored or treated as mere obstacles to rational progress. In order to have development and to have people understand how development is to be applied to their particular case developers need to communicate with developpees in the language that is theirs (Hobart, 1993).

Oral communication is the most effective means by which indigenous knowledge is learned. In the view of Ansu-Akyeremeh (1992) indigenous communication patterns within village communities are often characterized by spoken words and interpersonal face-to-face interaction. They often involve an audience of two or more and do encourage feedback.

In the view of Mundy and Compton (1991), indigenous communication is important for many reasons which include:

1. **Indigenous communication has value in its own right.** It is an important aspect of culture and it is the means by which a culture is preserved, handed down and adapted, though it is being eroded by exogenous systems - the mass media, schools, agricultural extension, endangering its survival.
2. **Exogenous channels have limited range.** Television and newspapers are largely confined to urban areas in the Third World. Even the most widespread exogenous channels, extension personnel and radio, fail to reach many rural people. Indigenous channels, by contrast, are ever-present in the communities to convey messages to people out of the reach of exogenous channels.
3. **Indigenous channels have high credibility.** Because they are familiar and are controlled locally, indigenous channels are highly credible. Local audiences are often skeptical of the externally controlled communication channels.

4. **Indigenous channels are important means of change.** That is, informal, interpersonal contacts in persuading people to adopt, or reject, innovations is much more effective. Such contacts are often made through indigenous channels.
5. **Indigenous communication offer opportunities for participation by local people in development efforts.** This is due to the fact that it allows local people to communicate among themselves effectively and with development professionals and decision makers. They can retain control over local media more easily than over technology-intensive media.

In addition, Mundy and Compton (1991) outlined six forms of Indigenous communication. These include:

1. **Folk media** – they are the indigenous equivalents of modern mass media. They are used primarily for entertainment, but also promote values and ensures cultural continuity. They include festivals, plays and puppet shows, dance, song, storytelling, poetry, and carnivals. In the Fielmuo traditional area festivals, dance, songs and storytelling are commonly used.
2. **Indigenous organizations/social gatherings** - These include religious groups, village meetings, mothers' clubs, youth groups, Village development committees and loan associations. Apart from the formal communication they permit, such organizations provide many opportunities for informal interaction.
3. **Deliberate instruction** - Parents teach children, craftspeople instruct apprentices, elders guide young people, adolescents undergo initiation rites. Many societies also have traditional, ways of impacting knowledge through deliberate instruction. For instance, in the Fielmua traditional area children are given instructions on how to build a wall, make mounds for cropping, how to weed, how to cook, and many others.
4. **Records** - Many societies keep formal records such as written, carved, or memorized stories which are told on land ownership, marriage rites, family history, cultural taboos and others. Such records are not written down.

5. **Unstructured channels** - Indigenous communication also take place at home, at the well, on the farm, on the road, funeral grounds or when resting under trees, at the market, and wherever else people meet and talk. This communication is not organized or orchestrated but spontaneous and informal.
6. **Direct observation** - Communication doesn't have to be intentional. A farmer may see a neighbor's bumper crops and conclude that the variety or technique used is good.

### 3.12 Information Transfer

Communication involves the transfer of information in a form of knowledge. Information plays an important role in almost every human activity. Development is impeded when information is not properly used or absent. Hawkins, (1987) confirmed that information has become a commodity.

Sturges & Neill, (1998) and Van Rooyen, (1995) both cited in Meyer, (2005) viewed information as one of the most important resources needed for rural development. For instance, farmers in rural societies will need information on good farming practices, input resources (seed, fertilizer), farming implements (tractors, ploughs), credit, markets, infrastructure, and natural resources (soil, water, climatic conditions).the transfer of the information from one person to the other is also important.

The elderly, including farmers, local artisans, and cattle keepers are the custodians of IK. They are knowledgeable about their own situations, their resources, what works and what doesn't work, and how one change impacts other parts of their system (Akullo Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, 2007). They are regarded as the libraries of the communities. Besides their store of knowledge, which they share in a form of information, they have their own unique ways or methods of transmitting this knowledge through generations.

In 1997, Ansu-Kyeremeh identified various means by which information can be communicated or passed on to people in a community. They include:



- Common meeting grounds - At the community level information is passed through structured or unstructured conversation among people who are present either at the chief palace court, a popular drinking spot, at the blacksmith place, weddings, and so on.
- Organized Meetings - Villagers in large groups (sometimes involving the entire adult population of a village) are sometime summoned to a meeting on the chief's authority for a message to be given or to have a discussion concerning the welfare of the village. These are also part of the village communication structures and processes.
- Cultural performances such as drumming and dancing including songs and drama are also fertile grounds for communication and information sharing. Within the Fielmua traditional area, for instance, a cultural dance known as *bewaa* is mostly performed under the bright moonlight in the night by the youth which usually attract a lot of people including the adults. A lot of information are shared at such gatherings either formally or informally.
- Also, at funerals dirges which contain a lot of information meant for the bereaved family members are sang. In the case of the Dagaabas, the songs played on the xylophone are all forms of communication to the people gathered around and understand the language.
- Speeches, storytelling and proverbs are also other useful forms of communication at the village level. Proverbs for instance, carry deeper meanings and are usually taken seriously when used in a message to a group of people. Winnie Siqwana-Ndulo (1989:22) in Ansu-Kyeremeh (1997) stated that proverbs validates and augments a trend of argumentation, affirming to the discourse participants that the speaker's viewpoint has the blessing of an unquestionable truism.

Information transfer should be based on trust building, honesty and communicated at a level the people understand and are used to. That is, the medium of communication they are familiar with; oral tradition and not written or digital format in the case of rural communities (Meyer, 2005).

The effectiveness of information transfer, in a rural community, depends on the culture and the social system of the people involved. This is because information (knowledge) transfer requires

the willingness of a group or individual to work with others and share information to their mutual benefit. This implies that information transfer will not occur in a community unless its members display a high level of co-operative behaviours. This means there should be high level of trust among members more so because indigenous knowledge is said to be tacit and not explicit. And tacit knowledge is best transferred through more interpersonal means and using processes that are less structured such as face-to-face conversations or personal reflections on experiences and lessons learned (Goh, 2002).

### **3.13 Indigenous Knowledge Diffusion**

Diffusion is the process by which an innovation or an idea is communicated through certain channels, over time, among the members of a social system (Rogers, 1997). It is a special type of communication concerned with the spread of messages that are perceived as new ideas and which will necessarily be received with some degree of uncertainty, more especially when the message is exogenous. Diffusion is a special type of communication concerned with the spread of messages that are perceived as new ideas.

A number of factors interact to influence the diffusion of an innovation. The four major factors that influence the diffusion process are the **innovation** itself, how information about the innovation is communicated, **time**, and the nature of the **social system** into which the innovation is being introduced (Rogers, 1995).

**The Innovation** - An innovation is an idea, practice, or object that is perceived as new. The characteristics of an innovation, as perceived by members of a social system, determine its rate of adoption. Some innovations diffuse relatively slowly, while other innovations diffuse rapidly.

**Communication Channels** - The second main element in the diffusion of new ideas is the communication channel. Communication is the process by which participants create and share information with one another to reach a mutual understanding. A communication channel is the means by which messages get from one individual to another. Mass media channels are more effective in creating knowledge of innovations, whereas interpersonal channels are more

effective in forming and changing attitudes toward a new idea, and thus in influencing the decision to adopt or reject a new idea.

**Time** – This involves the time the innovation or idea is communication to the people and the time it has taken them to either adopt or reject it. Thus, the classifications of the members of a social system on the basis of their innovativeness as (1) innovators, (2) early adopters, (3) early majority, (4) late majority, and (5) laggards.

**The Social System** - A social system is a set of interrelated units that are engaged in joint problem solving to accomplish common goals. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems. The social system constitutes a boundary within which an innovation diffuses. Diffusion is affected by norms, which are the established behavior patterns for the members of a social system, and by opinion leadership, which is the degree to which an individual is able to influence the attitudes or overt behavior of other individuals (<http://www.answers.com/topic/diffusion-anthropology>).

Diffusion could either be intra-cultural diffusion or Inter-cultural diffusion. Intra-cultural diffusion happens when an innovation or idea is generated and diffused or spread within the culture in which it was generated. The diffusion could be done based on person-to-person contact within a given population (Contagious diffusion) or while spreading outward from its source to other areas (Expansion diffusion).

On the other hand, inter-cultural diffusion can happen in many ways. Migrating populations will carry their culture with them. Ideas can be carried by trans-cultural visitors, such as merchants, explorers, soldiers, diplomats, slaves, and hired artisans. Technology diffusion has often occurred by one society luring skilled scientists or workers by payments or other inducement. Trans-cultural marriages between two neighboring or interspersed cultures have also contributed. Among literate societies, diffusion can happen through letters or books (and, in modern times, through other media as well).

Ong (1982) cited in Ansu-Kyeremeh (1997), stated that people in cultures learn by apprenticeship, by listening, by repeating what they hear, by mastering proverbs and ways of



combining and recombining them and by assimilating other formulary materials. In most third World cultures, oral tradition and cultural performances are the primary ways of educating the young and of promoting and reaffirming beliefs and values among adults.

Within the traditional system (taking the study area as a case in point) varied cultural values are diffused daily which include drumming and dancing, farming, leadership roles, knowledge of family tree, playing of the xylophone, making of farm tools, baskets and pots, respect for elders, and many others.

According to Fishman, "The road to societal death is paved by language activity that is not focused on intergenerational continuity" (1991, p. 91). This means that the transmission of indigenous knowledge is very vital if aboriginal societies are to continue to survive.

### **3.14 Learning**

Learning is the knowledge, experiences or skills acquired through instructions or by interaction with the environment. Learning starts from birth and continuous throughout the life of the individual. It is based on this that the constructivism theory of learning concludes that all knowledge is constructed upon previous learning experiences, observations, interpretations and already held personal or community knowledge (Dyke, 2006).

### **3.15 Indigenous learning Methods**

Indigenous learning is the acquisition of knowledge and skills in a way that is part of the culture (Kater, 1988). Therefore, indigenous learning amongst the Dagaaba begins from the family which Millar (1996) refers to as the "knowing environment". Primary learning (self-generated learning) occurs in the family, and also secondary learning (externally induced learning) is refined within the family. Most socio-cultural and religious values are acquired in the family. The elders within the family become the teachers who teach the younger generation family secrets.

Among the Dagara the tutelage ("wulu") and learning are concurrent where the learner is allowed to go through some sort of experiential learning ("bangfu"). That is, the learner is called

upon to establish a proof of the knowledge and skills he/she has acquired, by being challenged to confront new situations. This more or less is the indigenous form of examining the learner. At the “bangfu” stage, live situations, more often, are used and not prototype as done with “wulu”. As such close supervision is given here to reduce risks. For instance, when the young boy or girl is taught how to weed on the farm or how to prepare tuozaafi (TZ), in the case of the girls, the apprentice is not left alone to prepare the TZ, but closely supervised so that he/she does not mess up (Millar, 1996).

“Bangfu” starts at the age of four concurrently with “wulu” when the apprentice is taught how to open, feed and drive in the chickens, or in the case of the girls taught how to wash bowls and calabashes. The last phase of “bangfu” occurs between ages sixteen and nineteen years. Here the apprentice is called upon to demonstrate his/her prowess to the full. This is done by giving him a couple of apprentices to supervise on very specific assignments. Thereafter the learner is allowed to graduate. That is, the individual is ‘weaned’ to be on his own. This happens normally between the ages of twenty and twenty-five years. Some factors of production (hoe) and consumption are given to the graduating pupil to signal his individualization within the community Millar (1996).

According to Millar (1996) another learning environment is mimicry through which children learn a lot. He said mimicry is like role playing but combines with imitations that are a blend of humour and learning. Children sometimes meet to live out the roles of a typical farm family. Some play the role of parents, others as children and some even act as farm animals. In some cases, they choose a personality (mostly one of their parents) and imitate the person. This in the view of Millar is an exhibition of what the children has internalized because they could look at what was being imitated and say who it was and how well it was done; a practical demonstration of observational learning (Millar, 1996).

Also, in the view of Ayoola, (2001), most indigenous people use traditional songs, storytelling, oral instructions, imitation, demonstrations, experiences, beliefs, taboos, questions and answers, etc methods and practices as means of transmitting and learning specific human elements of indigenous (traditional) knowledge. Sometimes the knowledge is preserved and passed on in a form of artifacts from father to son or mother to daughter. Knowledge taught and learned, traditionally, does not only include traditional values but also skills on agricultural practices. For

example, among the Igala ethnic group in Nigeria farmers acquire their knowledge through story-telling, plays, proverbs, festivals, dance, and other folk media. The stories are told at night in the moonlight. Others acquired their farming knowledge by word of mouth. With the children farming practices are often explained to them at home, along the farm path and on the farm site through deliberate instructions.

Battiste, (2002) describes indigenous learning as a life-long process that people assume to understand the world around them. In his view, Traditions, ceremonies and daily observation are all integral parts of the learning process. Indigenous pedagogy values a person's ability to learn independently by observing, listening and participating with minimum intervention or instructions.

### **3.16 Adults Learning**

Adult learner (mature student) refers to any person socially accepted as an adult who is in a learning process, whether formal education or informal learning. They have special needs and requirements as learners hence their learning is geared towards meeting those needs. An educator such as Knowles (1990) used the term andragogy to mean adult teaching and learning and pedagogy to mean pre-adult education.

Knowles (1980), in explaining the advantages of knowing the learner, believes that learner behavior is influenced by a combination of the learner's needs plus the learner's situation and personal characteristics. Knowing these personal characteristics is an important aspect of planning the learning courseware and strategies.

According to Brookfield (1986), cited in Jones and Hendry (2001) the principles of adult learning shows that adults do learn throughout their lives that experiential learning is crucial to enhance further learning, and that adults learn best when there is interconnection and meaning. The season or stages of a person's life also have a great influence on learning.

In the view of Branch, (1997) and Bork, (1990), Culture pervades learning, and in designing instructional environments there needs to be serious consideration about issues concerning the



social and cultural dimensions of task design, communication channels and structuring of information if the needs of culturally diverse learners are to be met.

Danis and Tremblay (1985), as in Jones and Hendry (2001) added that adults do not learn in any kind of cyclical way, and that meaningful adult learning occurs when it is based on problem solving and connected to a person's general life events and activities. In other words, unforeseen and random events in the problem-solving process create new learning experiences which add to the total learning value of the activities. Knowles (1980) also argued that adults prefer self-directed learning, learn most effectively through experience, and by means of actual day-to-day jobs and routine, rather than from formal and structured training program.

A study by Burge (1990) and Kwapong (2007) citing Plummer (2000) have shown that the different learning styles for men and women determines the teaching learning approaches to be adopted. Being adult learners who appreciate participatory approaches to learning and come to the teaching learning situation with some level of experience, special teaching-learning approaches should be utilized in the process.

### **3.17 Learning strategies/styles**

Students' reasons for learning as well as their perceptions of the learning environment underlie the approach they use to learn. Weinstein & MacDonald (1986) described learning strategies as any cognitive, affective, or behavioral activity that may assist in the processes of encoding, storing, retrieving, or using knowledge. Categories of learning strategies have been proposed as including rehearsal, organization, elaboration, and comprehension monitoring (Weinstein & Mayer, 1983).

It has been suggested that cultural factors influence the strategies that a learner uses to learn (Ninnes, 1996). Hatano & Miyake (1991) proposed that culture holds implications for learning, both institutionally and informally. For example knowledge may hold a different status and may be used and transferred differently in different cultures (Pinxten, 1991) which may either impede or expedite learning. Ninnes (1996) further maintains that cultural factors could



influence learning in formal situations as people from different cultures may exhibit different learning behaviors or use different learning strategies. Further to that, each culture has its own informal learning system, comprising strategies, contexts and content and students bring this to the formal learning environment.

It must also be noted that adults in rural communities, due to their cultural background, carry out their learning informally mostly through observation, imitation, participation, and trial and error. Strategies either than this and if not properly used may impede the learning process of adults.

### **3.18 Learning Theories**

There are many different theories of how people learn some of which are presented and discussed here, including:

- Cognitive learning Theory
- Social Learning Theory
- Constructivist Theory
- Social Cognitive Development Theory
- Experiential learning Personality theory
- Personality theory
- Information processing theory

#### **3.18.1 Cognitive learning Theory**

Cognitive learning is defined as the acquisition of knowledge and skill by mental or cognitive processes such as thinking, concept formation, reasoning, and problem solving; the procedures we have for manipulating information 'in our heads'. Cognitive learning enables us to create and transmit a complex culture that includes symbols, values, beliefs and norms. It deals with how information is received, organised, stored, and retrieved by the mind. Learning is concerned not so much with what learners do, but with what they know and how they came to acquire that knowledge (Jonassen, 1991).

### 3.18.2 Social Learning Theory

Social learning theory focuses on the learning that occurs within a social context. It considers that people learn from one another, including such concepts as observational learning, imitation, and modeling. Social Learning Theory suggests that most human behavior is learned observationally from others. One of the key principles of social learning theory is that individuals will be more likely to adopt modeled behavior if it is activity they value and if the model holds admired status. Children who mimic various behaviors of their parents are engaged in social learning. People learn new information by watching other people and this is described as observational learning or modeling (Bandura, 1994). In the light of this, Bandura (1997, p. 22) states that:

"Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action."

Bandura has identified some social learning concepts which include, a) the environment within which an individual finds him/herself reinforces modeling, b) reinforcement and punishment influence the extent to which an individual exhibits a behavior that has been learned, c) Self efficacy- people will engage in certain behaviors when they believe they are capable of executing those behaviors successfully, d) people also learn through observation and e) Intrinsic Reinforcement which is an internal reward, such as pride, satisfaction, and a sense of accomplishment (Bandura, 1997).

A good number of farmers are rural-based with their activities defined by the culture they belong. They also find themselves in a social system because of the daily interactions they have with one another. Hence they depend on each other for their daily needs as well as knowledge. For this reason, any exogenous knowledge that is sent to them should take into consideration the fact that farmers are within an environment of their own and bonded by a type of culture. Therefore, their learning styles are influenced by their social and cultural background.



### **3.17.3 Constructivist Theory**

The main idea in this theory is that "learning is an active process in which learners construct new ideas or concepts based upon their current or past knowledge". Cognitive structures are used to provide meaning and organization to experiences and allow the individual to go beyond the information given. The instructor should try and encourage students to construct hypotheses, makes decisions, and discover principles by themselves. The instructor's task is to "translate information to be learned into a format appropriate to the learner's current state of understanding" and organize it in a spiral manner "so that the student continually builds upon what they have already learned" (Kearsely 1994b).

Constructivism, on the other hand, is characterized by a set of principles relating to how knowledge is created and how individuals develop understanding. The work of Vygotsky (1978) on Socio-cultural theory, for example, emphasizes that learning is a form of enculturation in which the individual is socialized through gradual participation in tasks, scaffolded or assisted by adults until full competence is attained. Another interpretation of constructivism is situated cognition, where learning is best achieved when it is encountered, used and applied in real world contexts (Lave & Wenger, 1991).

### **3.18.4 Social Cognitive Development Theory**

This theory which was developed by Vygotsky is complementary to Bandura's social learning theory. Its major thematic thrust is that "social interaction plays a fundamental role in the development of cognition" (Kearsley 1994e). Another notable aspect of the theory is "that instruction is most efficient when students engage in activities within a supportive learning environment and when they receive appropriate guidance that is mediated by tools" (Vygotsky 1978, as cited in Gillani & Relan 1997, p. 231). These instructional tools can be defined as "cognitive strategies, a mentor, peers, computers, printed materials, or any instrument that organizes and provides information for the learner."

### **3.18.5 Experiential learning**

The basic premise of this theory is that learning will occur with the educator acting as a facilitator, that is by establishing an atmosphere in which learners feel comfortable to consider new ideas and are not threatened by external factors (Dunn, 2002 citing Laird, 1985).

Experiences are acquired through the years of interacting with the environment. Recent studies have been emphasizing that "experiential knowledge" in form of past memories, is an important additional source of knowledge which contributes to learning. The use of experiential knowledge can prevent the repetition of past failures and guide the solution of presently occurred problems. A decrease number of problems and their efficient solution will result in cost and time savings (Gresse, 1998).

The expression 'hands-on' is commonly used to describe types of learning and teaching which are to a lesser or greater extent forms of experiential learning. Experiential learning is also regarded as growing a person from the inside. Experiential learning is determined and controlled by the individual for the purpose of achieving personal development and growth (Chapman, 2008).

Kolb proposed a four-stage learning process with a model that is often referred to as experiential learning (McGill & Beaty, 1995). The process can begin at any of the stages and is continuous, that is, there is no limit to the number of cycles you can make in a learning situation. Kolb (1986) found that people learn in four ways with the likelihood of developing one mode of learning more than another. According to the 'experiential learning cycle' model, learning is:

- through concrete experience
- through observation and reflection
- through abstract conceptualization
- through active experimentation (Kolb, 1986)

### **3.18.6 Personality theory**

The manner in which every individual acquires and integrates information differs from person to person. Some learners see the problem as a whole which they then break down into parts for easy assimilation. These are the field-independent learners. Others need the understanding of the bits or pieces of information before they can integrate it into a whole. Such learners are the field-dependent learners. Consequently, field-independent learners respond quickly to instructions than are field-dependent do. Thus, these variables go a long way to influence individual behaviors in the learning situation (Acharya, 2002).

### **3.18.7 Information processing theory**

Learners' ability to assimilate information differs from learner to learner. In the cognitive learning style, learners usually perceive, think, remember, and solve problems depending on their mental processes (Schmek, 1983). Under the constructivist learning style, learning is learner centered. So it is the learner who determines the learning process. The learner sets goals, organizes resources, takes decisions, and evaluates his/her learning outcomes (Fosnot, 1996).

## **3.19 Factors Affecting Learning**

According to (<http://tecfa.unige.ch/tecfa/publicat/peraya-papers/ocde/ocde14.htm>) many factors affect learning some of which are listed and discussed below.

**Developmental considerations** - Knowledge of intellectual, psychosocial, and physiological age is necessary before you select age-appropriate teaching methods. Delayed development in any of these areas should be considered. Children have limited past experiences. Adults learn more quickly than children because they are able to build upon previous knowledge.

**Educational level** - You will effectively promote learning if you are aware of the learner's intellectual ability and avoid "talking down" to him or her or using an inappropriate teaching strategy.



**Past learning experiences** - Attitudes toward future learning are influenced by learning experiences in the past. Encourage the learner to express how he views education so that you can deal with his feelings before teaching is attempted.

**Physical environment** - The environment within which learning takes place can either make learners comfortable enough to pay attention to the information being given or not.

**Sensory abilities** - Any deficit in learners' sight, hearing, and touch can affect learning if the learning methods are planned appropriately.

**Individual motivation** - The success of the learning process ultimately depends on the learner himself or herself. People will learn if they are encouraged to see themselves as responsible for their own development or the vice versa.

**Corporate context** - Corporate culture plays a vital role in learning. Learning is much effective when done in groups than when done by individuals.

**Learning context** - Learning takes place more readily when the client/learner is confronted with a specific problem or need. Without this necessity, it is very difficult for individuals to find time to learn. The language used in delivering the lesson could also be a barrier or motivation to learning. Adults will learn depending on their felt needs and the language used in giving the instructions. They will lose interest if the language is alien to them.

### **3.20 Social Networks**

Communication produces social systems. It increases the likelihood of similarities among people; increases the chances that people can work together in groups to accomplish a goal. That is, communication increases the chances of social development and interaction as a unit. These units which can be described as groups influence the behavior of their members. Every individual belongs to a group of a kind either by choice such as family and friends, or by circumstance such as belonging to a workplace or neighborhood. Each of these networks influences our thinking, opinions and choices. The stronger the ties among members the greater the influence would be.

Mitchell (1969) cited in Atengdem (1997), defines social networks as “a specific set of linkages among a defined set of persons with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behaviour of the persons involved” (p. 255). These linkages leads interactions among persons and relations building and that was why Barnes (1969), Kloudhal (1989) and Mitchell (1969) regarded social networks as the contacts or links with other individuals in the social system and the ensuing interacting relationship.

As such, social network is an array of relationships that join individuals together and consequently determines their behavior. Social networks are classified depending on the purpose of the classification. Smutylo and Koala (1993) classified social networks based on the direction of flow of information as vertical and horizontal networks. Starky (1993) did the classification according to the relationship involved in the network into kinship, informal work groups and personal friendship networks. The content of relations such as communication, exchange and normative were the angel from which Walmsley & Lewis (1984) classified social networks.

Social cohesion has been the key to survival for many indigenous cultures. Food gathering and hunting depend on mutual support and cooperation, and disharmony within a part of the groups is dangerous to the whole. In many cultures men and women have developed complementary, if not equal, roles; and other social arrangements that benefit the entire community have often been incorporated into indigenous cultural traditions (Burger, 1990).

Social network analysis deals with the level of interaction and relationships that exists and flows between people, groups, organizations and others. This offers the opportunity for mapping out the complex reality of the interpersonal worlds surrounding specific individuals. In the application of the technique a distinction is usually drawn between primary relationships (such as those involving kinsfolk and friends) and the more purposive secondary relationships including those within voluntary associations (expressive interaction), and those associated with trade unions, political parties and pressure groups (instrumental interaction) Walmsley & Lewis (1984).

### **3.21 The Social Systems among the Dagaaba**

The social institutions of the Dagaaba are not mutually exclusive but are surrounded and influenced by alien cultures especially Christianity. They are organised on the basis of clans. These clans are traced patrilineally (*yiilo* or *doglu*) and matrilineally (*belu*); the *belu* system (the birth 'seed' which refers to the maternal decent; and the *yiilo* system (which refers to the paternal decent of every member in the community from one generation to the other). According to Bekye (1991) the two terms, *yiilo* and *belu* (familiness) are the Dagaare equivalent of "clan", and express the relationship that exists between clan members. It shows that they are of a common decent (*doglu*) and belong to one family (*yir-been dem*). It implies that two individual (e.g. boy and a girl) belonging to one *yiilo* or *doglu* system are considered as members of the same family and therefore not allowed to marry one another in some circumstances.

Dagaaba all over the world identify themselves by their clans ("yiilo") and use that to associate and support one another. Social problems such as funerals are handled purely on clan basis with regards to critical decision making. Clan praises are also used as a cultural identity tool through which people belonging to the same family lineage identify themselves.

Marriage among the Dagaaba is clearly an establishment of social union between two families and not necessarily between the husband and wife. Training of children is the social responsibility of kinsmen/kinsfolk of both the child's patrilineal and matrilineal decent. Children are trained to have a high degree of respect for elders, though there is a joking relationship that exists between grandchildren and grandparents.

### **3.22 Application of Social Networks in Extension work**

In the rural communities indigenous people belong to various social networks by virtue of the fact that they belong to clans, welfare groups, women groups, youth associations, religious groups such Christian mothers and others. Though it is difficult to measure the benefits, these networks as people often point to the individuals as the beneficiary; extension can profitably utilize them to its advantage. For instance, information transfer is quite effective within these



social networks; hence extension can capitalize on this to remove factors that impede information flow among farmers through groups' formation.

Networks can be utilized for information transmission and the privileges and obligations of network members can directly affect decisions. Network analyses have a number of advantages which include:

1. The social structure can be over-layed on the communication flows in order to improve the scientific understanding of both the structure and message flows.
2. It is not confined to any level of analysis
3. It measures the connectedness, centrality, proximity and range of social interaction, Walmsley & Lewis, (1984).

### **3.23 Conclusion**

These theories underscored the significant role of indigenous knowledge system and its learning methods within the rural areas, as well as indicating the methods employed by extension services in transferring new technologies to rural farmers. The theories also looked at the methods employed by both the extension services and indigenous knowledge system in transferring technologies and knowledge thereby exposing the critical need for a common ground to be found for both extension teaching methods and indigenous knowledge system to harmonize for sustainable agricultural production since both have influencing effects on each others.



## **CHAPTER FOUR**

### **RESEARCH METHODOLOGY**

#### **4.0 Introduction**

Research methodology is an important component of any study and provides the framework upon which the whole process is suspended (Brown, 1996). Hence, it is vital that the methodology is sound and conducted thoroughly to produce accurate and precise data in order to achieve the research goals and objectives. This section therefore, provides the framework upon which the research goals and objectives would be achieved. An in-depth explanation of the research approach and process, the population of study, sampling size and methods, methods of data collection, the instrument used in data collection, data coding and entry, data analysis and challenges during the research are given.

#### **4.1 The Research Design**

The research design represents a structure that guides the execution of a research method and the analysis of the subsequent data (Bryman 2004, p. 27). Therefore, the selection of an appropriate research design is crucial in every research because it enables you to arrive at valid findings. A descriptive survey research was employed to collect the data because the intention of the study was to look at the general characteristics of the people, including their behavior and perceptions. According to Brown (1996) some advantages of using this research design are that the collection of large amount of data is quick and cheap and generalization of data to the population is possible.

The research method used was a cross-sectional survey because it was deemed suitable as it enabled the required information to be collected on several pre-determined variables of a single point in time and from a cross- section of fairly uniform group. According to Bailey (1987) the significance of cross-sectional study is that data can be collected from large number of people and these data are comparable since they are not affected by change over time.

In survey, the researcher selects a sample of respondents from a population and administers either oral or written questions (Sarantakos, 1993). As such both written and oral questions were used to solicit information from respondents in this research. The oral questions (interview) were found suitable for the farmers because most of them could not read and write. But the written questions (questionnaire) were administered to the Agricultural Extension Officers because they could read and write.

## **4.2 Research Approach**

This study combined both qualitative and quantitative approaches in the data collection and analysis. Most methodological commentaries (Strauss & Corbin, 1990; Brannen, 1992; Brown 1996; Twumasi 2001) cited in (Bonye, 2007) seem to agree that, so far, two distinct approaches (qualitative and quantitative) can be said to exist but the most important difference is the way in which each tradition treat data. Also, the central issue that faces social science research is the choice of the appropriate research approach and method to investigate the specific problem (Bacho, 2001). This goes to support the view that social issues are varied phenomenon and difficult to capture for investigation.

The question that can be asked therefore is whether there are ideal or pure situation of exclusively “qualitative” and “quantitative” data. This is because one might use qualitative data to illustrate or clarify quantitatively derived findings; or, one could quantify demographic findings or, use some form of quantitative data to partially validate one’s qualitative analysis (Strauss & Corbin, 1990) cited in (Bonye, 2007).

Therefore, in the light of the above, perhaps, it is safer to argue for research situation that could combine the two approaches without ignoring completely the other. Hence, this study has combined both the qualitative and the quantitative approaches in the data collection and analysis for fair representation of the study results from the different background of respondents.



### **4.3 Population of study**

According to Nsowah-Nuamah (2005) Population is the complete set of data being investigated. In other words, it is a set of all possible items one can consider in an experiment or study. Hence, the population of study of this research included all natives who are farmers and resident within the Fielmua Traditional Area and all extension agents in the Sissala West District.

### **4.4 Sample Population**

The population of study included all native farmers resident within the Fielmuo Traditional Area and belongs to farmers groups. Respondents were drawn from this population. Also, all the AEAs in the District were taken as respondents because of their limited number.

### **4.5 Sampling method**

Sampling is the process of choosing the research units of the target population, which are to be included in the study (Sarantakos, 1993). According to Yin (1993) the rationale for sampling is to make generalization or to draw inferences based on samples about the parameters of population from which the samples are taken. Sarantakos (1993) citing Becker (1989) argued that sampling is advantageous because of the following reasons:

- That in many cases a complete coverage of the population is not possible
- Studies based on sample requires less time and produce quick answers
- It is economical because few subjects are involved
- Sampling requires less labour since a small portion of the target population is required

In the light of these arguments, both probability sampling ('random sampling' or 'chance sampling') which gives every item in the universe an equal chance of inclusion in the sample and non-probability sampling ("deliberate sampling" or "judgment sampling") were used. That is, simple random sampling (probability sampling) and purposive sampling (non-probability sampling) methods were used.

#### ***4.5.1 Purposive Sampling***

This is a technique in which the researcher chooses subjects he/she considers relevant to the study. Bailey (1987) explains that this technique offers the researcher an opportunity to use he/her own judgment to choose and pick only subjects that best meet the purpose of the study. According to Doorewaard & Verschuren (1999) as cited in Bonye (2007), the importance of adopting this design by researchers is the relative advantage of time and money inherent in the sampling. This is also so when the primary interest of the researcher is in understanding quantitative and rational issues other than qualitative problems pertaining to how, how often or to what degree a particular attribute or characteristic is distributed (Bernard, 1990 cited in Bonye, 2007).

The study District and area were purposively selected simply because of convenience and language limitation as the researcher hails from Fielmuo and cannot speak Sissali, the second language spoken in the District. Farmers' groups that were covered by the Agricultural Extension programmes in the District were also purposively selected and farmers randomly sampled and interviewed. Purposive sampling was also used in selecting twelve key informants altogether from the five communities from which the data was collected to elicit additional information from the farmers to support the data obtained from the structured interview.

#### ***4.5.2 Random Sampling***

Probability sampling, also known as 'random sampling' or 'chance sampling' gives every item in the universe an equal chance of inclusion in the sample. A sample drawn at random is unbiased in the sense that no member of the population has any more chance of being selected than any other member (Osuala, 2001). Therefore, five communities within the study area were randomly sampled and farmers within those communities also randomly sampled and interviewed. Simple random method was used.

#### **4.6 Sample size**

More often populations are so large that it either always becomes impossible or impracticable to measure every element of the population in a study. Hence, the advisable thing to do is to take a sample of the population from which inferences about the population can be made on the basis of the information provided by the sampled population examined (Nsawah-Nuamah, 2005). According to Nworgu (1991) the sample size is drawn based on the nature of the population and the purpose of the study. The fear has always been that conclusions drawn based on the sample might be misleading because the researcher could have problems with the representativeness of the sample in the population.

However, Miller (1991) stated that the researcher needs to select only few items from the universe for his study purposes. He further argued that a study based on a representative sample is often better than one based on a larger sample or on the whole population for there is no need interviewing large number of people saying the same thing. The size of a sample should neither be excessively large, nor too small. It should be optimal.

Fraenkel & Wallen (2003) went further to state that a minimum of 100 subjects randomly sampled in a descriptive study, makes the difference between the sampled and population relatively insignificant.

In view of this, a simple random method was used to randomly sample 100 farmers, and all the six Agricultural extension officers taken to constitute the sample size. The size of the population was influenced my choice of the sample size as indicated in Table 4.1 below



**Table 4.1: Name of community, number of farmers and number of extension officers**

| Name of Community | Distribution of Farmers | No. of AEAs |
|-------------------|-------------------------|-------------|
| Filmuo/Gaaper     | 13                      | 6           |
| Liero             | 15                      |             |
| Kankanduele       | 20                      |             |
| Buo               | 40                      |             |
| Kuochuur          | 12                      |             |
| <b>Total</b>      | <b>100</b>              | <b>6</b>    |

Source: Field Survey, 2010

#### **4.7 Data collection procedure**

There are two major approaches used in social research in gathering data. These are the Primary and Secondary sources (Miller, 1991). However, the selection of a particular approach to collect data must be decided upon in the light of the purpose of the study, the resources available and the skills of the researcher. Also, in deciding on the type of data collection method, the researcher must keep in mind the type of people he is dealing with, the nature of the social situation, the mood of the social environment and the psychology of the people (Grady, 1998). This is because some population for a number of reasons may not feel either at ease with a particular method of data collection.

Hence, data were collected from both primary and secondary sources. The primary source included the use of interviews, discussions, observation and questionnaires. In all data were collected from 100 respondents and all the extension agents (6) within the Sissala West District. Secondary data were also obtained from documentary sources such as books, journals, magazines, internets and other earlier researches on the subject matter

##### **4.7.1 Interviews**

Karma (1999) defined interview as any person-to-person interaction between two or more individuals with a specific purpose in mind. Interviews are useful for getting the story behind a respondent experiences. It helps the interviewer to collect in-depth information on a topic by

further soliciting more responses from the respondents (McNamara, 1999). The structured form of the interview was used to solicit information on the interplay between extension teaching methods and Indigenous knowledge and its Learning methods in the Fielmuo traditional area. A checklist with open ended questions was also administered to 12 key informants because of their deep knowledge in indigenous practices as a result of their age. The elderly were selected because they were thought to possess sufficient information about utilization of IK in agriculture production as they had lived long enough to witness the changes in utilization.

#### **4.7.2 Questionnaire**

This is a written list of questions, the answers to which are recorded by respondents. The respondents therefore read the questions, interpret what is expected and then write down the answers. The questionnaire (Appendix A) was administered to the AEAs because they could all read and write. However, interviewer-administered questionnaire (Appendix B) was conducted on the non-literate respondents, the farmers.

#### **4.8 Instruments used in Data collection**

The type of data to be collected determines the type of instrument to be used. Atengdem (1997, p. 112) citing Sproull (1988) defines a research instrument as any type of written or physical device which is purported to measure variable.

In view of this, the following instruments were used to collect the data.

- a) Questionnaire
- b) Interview
- c) Literature and documentary review

#### **4.9 Validity and Reliability**

Reliability and validity are important criteria for establishing and assessing the quality of research (Bryman 2004). Validity measure produces true results that reflect the true situation and conditions of the environment it is supposed to study. And reliability refers to the ability of an

instrument to produce consistent results (Sarantakos 1993). It is therefore important to always ensure that any instrument used for a study is valid and reliable.

Therefore, the questionnaire used for this study was pretested to ensure consistency in the responses. Also, the inputs of the study supervisor further guaranteed the validity and reliability of the questionnaire.

#### **4.10 Data Coding and Entry**

After the data was collected all the responses to the closed-ended questions were coded and stored into the Statistical Package for Social Sciences (SPSS) software. For the open-ended responses they were all studied and grouped based on their similarities. They were then post-coded to ensure uniformity and ensure easy analysis and also stored in the SPSS software. The stored data was then corrected and adjusted to make the data suitable for analysis.

#### **4.11 Method of Data Analysis**

Karma (1999) referred to data analysis as the computation of certain measures along with searching for patterns of relationship that exist among data-groups. The data analysis therefore employed both qualitative (descriptive) such as graphs, charts, frequencies, percentages, and averages and quantitative analysis using the Statistical Package for Social Science software (SPSS). Chi-square analysis was be used to determine relationship between variables in the study.

Indigenous knowledge acquisition was measured using a five point Likert scale (very low =1, low = 2, moderate = 3, high = 4 and very high = 5). Respondents were asked to indicate their level of knowledge on some of the common socio-cultural practices in the area.

Personal characteristics such as age, sex, religion and education which were some of the independent variables were Cross tabulated with the socio-cultural practices to assess how they affect indigenous knowledge acquisition of farmers. For easy statistical analysis, the ages of



respondents were regrouped into 20-40, 41-60 and 61-80 while the responses regrouped in “high” (moderate, high and very high) and “low” (very low and low). A four point scale (no formal education = 1, non formal education = 2, basic education = 3 and above basic education =4) was also used for respondents to indicate their levels of education. This was further regrouped into “formal” and “no formal” education and cross tabulated with the socio-cultural practices to determine the significant difference between education and indigenous knowledge acquisition.

Other variables measured included the effectiveness of indigenous learning methods and extension teaching methods. A five point likert scale (1 = Not effective, 2 = less effective, 3 = moderately effective, 4 = effective and 5 = very effective) was used to measure both variables.

#### **4.12 Challenges during the Research**

A number of challenges greeted the researcher in the face when he got to the field to collect the data. The first was the effect of the limited coverage of the agricultural extension services in the District and for that matter in the study area. This was due to the limited number of extension agents in the District. As such only few of the farmers had access to extension services in the study area. This posed a big challenge as the researcher had to keep on randomizing because more often it was realized that farmers who were originally sampled were not covered by the extension services and could not respond to most of the questions.

The second challenge the researcher faced was emigration. Because the study coincided with the dry season most of the farmers in the area had migrated down south to look for other jobs. What makes the situation more interesting was the fact that a limited number of farmers were benefiting from the extension services in the area and some of them were among those who travelled down south when the researcher got there.

Social events such as funerals and some prominent markets days also had an impact on the study. No farmer was met in the house anytime there was a funeral in any of the communities. Also, on Fielmuo and Bure markets days it was impossible to meet most men in the houses except the

women and children. This also extended the study period from a scheduled four weeks to five weeks.

Also, farmers had a lot of complains and expectations, as they mistook the researcher for a representative of either MoFA or an NGO. Some simply would not take his explanation that he was doing research. In addition, the cost of the research could not be downplayed as the communities were far apart and the researcher had to move from house to house in all the five communities. The motor-bike the researcher used for the study was refueled every two days.

Lastly, conducting research in the Upper West during the warm season is a very difficult task because of the impact of the hot weather. The communities from which the data were collected were far away from each other with dispersed settlements and the researcher had to move from house to house to look for farmers to interview. This situation called for extensive movements thought the weather was so hot.

#### **4.13 Conclusion**

Irrespective of the challenges the researcher had to grapple with during the collection of the data, the field experiences that he had were far enriching, especially the informal discussions. The farmers were warm in their reception as they were always ready to share with the researcher a pot of pito anywhere he got to. The interviews conducted were amidst such sharing of pito throughout the study. It was one of such occasions where an old lady explained to me how Dagaaba discovered pito. This further demonstrated the good cultural values of the Dagaaba which are perpetuated over the years, and these values should not be pushed aside merely because of exogenous knowledge.

## CHAPTER FIVE

### FINDINGS AND INTERPRETATIONS ON FARMERS AND AEAs

#### The Farmers

##### 5.0 Introduction

This section discusses indigenous knowledge acquisition, the influence of Personal Characteristics on Indigenous Knowledge acquisition, the relevance of indigenous knowledge, the instructors of indigenous knowledge, indigenous knowledge learning methods, indigenous knowledge learning by sex and the effectiveness of the indigenous knowledge learning methods. Others include indigenous source of information for livelihood, farmers' sources of inputs and services, socio-culture practices and innovation acceptance, reasons for the high patronage of some innovations, challenges faced by farmers in practising the innovations and how extension methods relate with indigenous learning methods.

##### 5.1 Indigenous Knowledge Acquisition

The amount of knowledge acquired by the rural people determines the amount of knowledge that can be passed on to the next generation. Once born into a family one goes through a form of informal education to acquire some amount of indigenous knowledge and practices to enable him or her fit into the society. Using a five point Likert scale (very low =1, low = 2, moderate = 3, high = 4 and very high = 5), respondents were asked to indicate their level of knowledge on some of the common socio-cultural practices carried out in the area.

**Table 5.1: Frequency Distribution of Respondents' knowledge on Cultural Practices**

| Cultural Practices      | very low | Low | Moderate | High | very high |
|-------------------------|----------|-----|----------|------|-----------|
| Storytelling            | 12       | 12  | 33       | 28   | 15        |
| Singing of dirges       | 45       | 2   | 4        | 13   | 36        |
| Singing of praise songs | 26       | 2   | 9        | 25   | 38        |
| Playing of drums        | 61       | 2   | 4        | 16   | 17        |
| Playing of xylophone    | 73       | 5   | 1        | 5    | 16        |
| Proverbs                | 14       | 4   | 18       | 32   | 32        |
| Riddles                 | 7        | 5   | 10       | 54   | 24        |
| Funeral rites           | 3        | 1   | 14       | 45   | 37        |
| Festivals               | 22       | 1   | 6        | 35   | 36        |

Source: Field Survey, 2010



As indicated in Table 5.1, a frequency analysis of the responses indicated that 24% of respondents had no or little knowledge on storytelling. This is because some of them said they had forgotten of the stories they learned when they were young due to disused as they regarded storytelling to be for the youth. On the hand, 76% of the respondents indicated they had moderate to high knowledge on storytelling (that is, 33% moderate, 28% high and 15% very high).

On the singing of dirges, 47 % of the respondents indicated they had little or no knowledge, while 53% indicated that they had moderate to high knowledge (this include 4% moderate, 13% high and 36% very high). The singing of dirges seems to be the preserve of the elderly, and also it is mostly sung at funeral grounds so most of the young ones shy away from it more especially the educated ones.

For praise songs, 28% said they had little or no knowledge of how to sing praise songs, and 72% had moderate to high knowledge (9% moderate, 25% high and 38% very high). The high percentage of respondents who can sing praise is not surprising because it is a family requirement for every Dagara.

Playing of traditional drums especially during funerals is also common among the Dagaaba but purely for men. For that matter respondents knowledge on this was also assessed. Sixty-three (63%) had either little or no knowledge on how to play indigenous drums while 37% had moderate to high knowledge on how to play drums (4% moderate, 16% high and 17% very high). This reiterated the fact that most of the youth are shying away from their own identity, culture.

The xylophone which is a major musical instrument of the Dagara recorded as much as 78% of respondents having little or no knowledge on how to play it, Only 22% of the respondents indicated they had moderate to high knowledge and can play it very well (1% moderate, 5% high and 16% very high). The common belief is that one is born with the skill to play it. So many young people would therefore not learn it if they discover that they lack the skill to play it. Also, it is one of the instruments that many people learn through trial and error, so a lot of people would discontinue the learning if they are faced with challenges.

Proverbs and wise sayings are the prerogative of the elders which express the wisdom of old age. They are value laden way of teaching the young ones by the elderly (Millar, 1996). So the use of proverbs amount the Dagara should be a daily event. Therefore, respondents were also asked to tell the amount of knowledge they had on how to use proverbs. The results showed that 18% of the respondents had little or no knowledge on proverbs use, and 82% had moderate to high knowledge on how to use them (that is, 18% moderate, 32% high and 32% very high).

Riddles are learned at a young age and any child born and bred in an indigenous home in the study area must learn riddles. But do people keep them as they grow up? From the data collected, it was revealed that 12% of the respondents had little or no knowledge on riddles, while 88% had moderate to high knowledge (10% moderate, 54% high and 24% very high).

“Death is a necessary end”, so goes the saying. The funeral rites that are performed when someone departs are necessary for everyone, both men and women, to learn in the study area. The data collected indicated that only 4% had little or no knowledge on funeral rites, with 96% of them having moderate to high knowledge on how to perform funeral rites (14% moderate, 45% high and 37% very high). This reflects the importance Dagaaba attached to funeral rites.

Celebration of festivals is a common event in the study area and they are fertile grounds for acquisition of rich indigenous knowledge. As such respondents were asked to indicate the level of knowledge they have on the celebration of festivals. 23% of them said they had little or no knowledge (22% very low and 1% low), and 77% (6% moderate, 35% high and 36% very high) had moderate to high knowledge on the celebrations of festivals.

In conclusion, the results showed that most indigenous people are losing touch with their cultural practices, which is their very existence, as most of them indicated low or no knowledge on all the indigenous cultural practices, especially the singing of dirges, playing of indigenous drums and xylophone, singing of praise songs and storytelling. But on the whole, majority of respondents indicated they had moderate to high knowledge on these practices.

## **5.2 Personal Characteristics and Indigenous Knowledge Acquisition**

Personal characteristics such as age, sex, religion and education and how they affect indigenous knowledge acquisition are discussed here. However, for easy assessment of how age, sex, religion and educational level relate to the amount of knowledge acquired by respondents the responses were categorized into “low” and “high”. That is, very low and low became “low” and “high” included moderate, high and very high.

### ***5.2.1 Indigenous knowledge of respondents by distribution by Age***

According to Ruddle (1993) two to five year old children begins to acquire indigenous knowledge on the names and characteristics of common biota. By the age of 14, they are competent in household tasks, cultivation (plant identification, harvesting), seed selection, weeding, animal husbandry, fishing, and hunting. The acquisition of indigenous knowledge starts at a very early age because, perhaps, it is passed on orally, usually by word of mouth and cultural rituals.

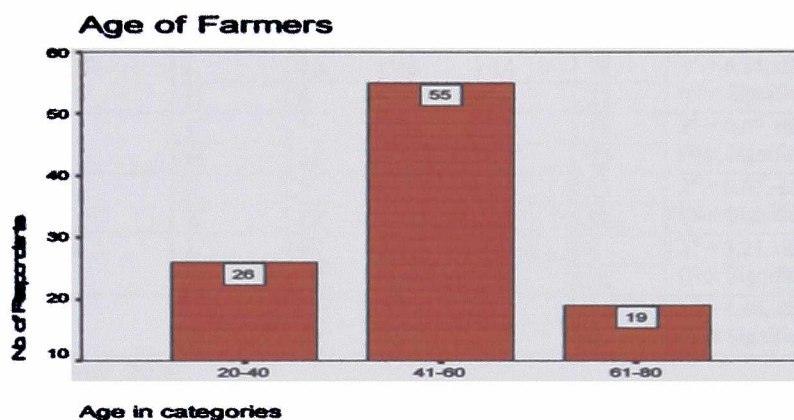
In view of this, the ages of respondents were taken to find out the amount of indigenous knowledge they had accumulated at the time of the data collection. The age distribution of respondents ranged from 23 years to 80 years, while the mean age of respondents was 50 years. The ages of respondents were then also regrouped into 20-40, 41-60 and 61-80 to ensure easy determination of statistical analysis.

With this regrouping it was realized that majority of the respondents fell within the category of 41-60, comprising of 55% of the total respondents. The elderly who are mostly less active in farming activities fell within the age category of 61-80, constituting 19% of the respondents. They are usually the custodians of indigenous knowledge and wisdom, and always available for consultation and mediate in family problems. Twenty-six percent (26%) of the respondents fell in the age category of 20-40 far less than those within 41-60 age category. The 20-40 age category were those who mostly travel down south, especially during the dry season, in search of menial jobs or to settle there to farm. This might have accounted for the smaller number in that age group because the study was conducted during the dry season, a time that most of them



traveled down south. In total, 81% of the respondents fall within the economically active group. According to the 2000 population and housing census 15-64 years constitute the economically active group in Ghana (Figure 5.1).

**Figure 5.1: Frequency Distribution of Respondents by Age**



The chi square test using the age categories (20-40, 41-60 and 61-80) was conducted with the cultural practices such as storytelling, singing of dirges, singing of praise songs, playing of drums and xylophone, use of proverbs, riddles, funeral rites and festivals. All the results obtained indicated no statistical significant difference between age and amount of indigenous knowledge acquired on the cultural practices (Table 5.2). In other words, the amount of indigenous knowledge acquired is not dependent on age.

**Table 5.2 Summary of Chi Square Results on Cultural Practices and Age**

| Age/Socio-cultural Practices  |   | Age Categories |       |       |       | Test/Interpretation                                                 |
|-------------------------------|---|----------------|-------|-------|-------|---------------------------------------------------------------------|
|                               |   | 20-40          | 41-60 | 61-80 | Total |                                                                     |
| Age and storytelling          | L | 6              | 16    | 2     | 24    | $\chi^2 = 2.68$ , $df = 2$ , $0.30 > p > 0.20$<br>(Not Significant) |
|                               | H | 20             | 39    | 17    | 76    |                                                                     |
| Age & singing of dirges       | L | 13             | 24    | 10    | 47    | $\chi^2 = 0.59$ , $df = 2$ , $0.80 > p > 0.70$<br>(Not Significant) |
|                               | H | 13             | 31    | 9     | 53    |                                                                     |
| Age & singing of praise songs | L | 10             | 12    | 6     | 28    | $\chi^2 = 2.57$ , $df = 2$ , $0.30 > p > 0.20$<br>(Not Significant) |
|                               | H | 16             | 43    | 13    | 72    |                                                                     |
| Age & playing of drums        | L | 13             | 37    | 13    | 63    | $\chi^2 = 2.56$ , $df = 2$ , $0.30 > p > 0.20$<br>(Not Significant) |
|                               | H | 13             | 18    | 6     | 37    |                                                                     |
| Age & playing of xylophone    | L | 20             | 44    | 14    | 78    | $\chi^2 = 0.35$ , $df = 2$ , $0.90 > p > 0.80$<br>(Not Significant) |
|                               | H | 6              | 55    | 19    | 22    |                                                                     |
| Age & proverbs                | L | 5              | 10    | 3     | 18    | $\chi^2 = 0.07$ , $df = 2$ , $0.98 > p > 0.95$<br>(Not Significant) |
|                               | H | 21             | 45    | 16    | 82    |                                                                     |
| Age & riddles                 | L | 3              | 7     | 2     | 12    | $\chi^2 = 0.07$ , $df = 2$ , $0.98 > p > 0.95$<br>(Not Significant) |
|                               | H | 23             | 48    | 17    | 88    |                                                                     |
| Age & funeral rites           | L | 0              | 2     | 2     | 4     | $\chi^2 = 3.21$ , $df = 2$ , $0.30 > p > 0.20$<br>(Not Significant) |
|                               | H | 26             | 53    | 17    | 96    |                                                                     |
| Age & festivals               | L | 4              | 15    | 4     | 23    | $\chi^2 = 1.46$ , $df = 2$ , $0.50 > p > 0.40$<br>(Not Significant) |
|                               | H | 22             | 40    | 15    | 77    |                                                                     |

Source: Field survey, 2010

### 5.2.2 Indigenous knowledge of respondents by distribution by sex

In addition to the productive responsibilities of the farm family, the man and the women also have the responsibility of learning and transmitting the cultural values to the children who are born into the family. The man may be seen training the boys how to rear animals, farm, hunt, select seeds and others whilst the woman is seen guiding the girl on how to cook, wash bowls, sow, how to sit properly in public, dress traditionally and above all respect the elderly.

In the light of this, the sex of respondents was taken to find out whether sex affects the amount of indigenous knowledge acquired by the people in the area. From the data, it was realized that only 17% of the women have their own farms as against 83% of men (Table 5.3).

**Table 5.3: Frequency Distribution of Respondents by sex**

| Sex    | Frequency (%) |
|--------|---------------|
| Male   | 17            |
| Female | 83            |
| Total  | 100           |

Source: Field survey, 2010

Besides playing of xylophone and drums which are exclusively men activities, storytelling, singing of dirges and praise songs, use of proverbs, riddles, funeral rites and festivals are all learned and practiced by both sexes. A chi square test between sex and the amount of knowledge acquired on the cultural practices revealed the following results:

There was no statistical significant difference between sex and storytelling, singing of praise songs, proverbs, riddles, funeral rites and festivals. In other words, sex is not a limiting factor to the learning of these cultural practices. But between sex and singing of dirges, playing of drums and xylophone, there was a statistical significant difference. This means that the amount of knowledge acquired on these cultural practices depends on whether the learner is a male or female (Table 5.4)

**Table 5.4 Summary of Chi Square Test on Sex and Cultural Practices**

| Sex/Socio-cultural Practices  |   | Sex of Respondents |      |       | Test/Interpretation                                                 |
|-------------------------------|---|--------------------|------|-------|---------------------------------------------------------------------|
|                               |   | Female             | Male | Total |                                                                     |
| Sex and storytelling          | L | 5                  | 19   | 24    | $\chi^2 = 0.07$ , $df = 1$ , $0.65 > p > 0.55$<br>(Not Significant) |
|                               | H | 12                 | 64   | 76    |                                                                     |
| Sex & singing of dirges       | L | 15                 | 32   | 47    | $\chi^2 = 12.06$ , $df = 1$ , $p = 0$<br>(Significant)              |
|                               | H | 2                  | 51   | 53    |                                                                     |
| Sex & singing of praise songs | L | 7                  | 21   | 28    | $\chi^2 = 1.06$ , $df = 1$ , $0.2 < p < 0.24$<br>(Not Significant)  |
|                               | H | 10                 | 62   | 72    |                                                                     |
| Sex & playing of drums        | L | 17                 | 46   | 63    | $\chi^2 = 10.19$ , $df = 1$ , $p = 0$<br>(Significant)              |
|                               | H | 0                  | 37   | 37    |                                                                     |
| Sex & playing of xylophone    | L | 17                 | 61   | 78    | $\chi^2 = 4.34$ , $df = 1$ , $0.03 > p > 0.02$<br>(Significant)     |
|                               | H | 0                  | 22   | 22    |                                                                     |
| Sex & proverbs                | L | 5                  | 13   | 18    | $\chi^2 = 1.00$ , $df = 1$ , $0.19 > p > 0.18$<br>(Not Significant) |
|                               | H | 12                 | 70   | 82    |                                                                     |
| Sex & riddles                 | L | 2                  | 10   | 12    | $\chi^2 = 0.14$ , $df = 1$ , $0.99 > p < 1.00$<br>(Not Significant) |
|                               | H | 15                 | 73   | 88    |                                                                     |
| Sex & funeral rites           | L | 2                  | 2    | 4     | $\chi^2 = 1.24$ , $df = 1$ , $0.14 > p > 0.13$<br>(Not Significant) |
|                               | H | 15                 | 81   | 96    |                                                                     |
| Sex & festivals               | L | 2                  | 21   | 23    | $\chi^2 = 0.08$ , $df = 1$ , $0.40 > p > 0.35$<br>(Not Significant) |
|                               | H | 15                 | 62   | 77    |                                                                     |

Source: Field survey, 2010

Note:  $\chi^2$  = Yates corrected and P = Fisher Exact



The statistical test showed that besides singing of dirges, playing of drums and xylophone which have statistical significant differences with regards to sex, the acquisition of knowledge on cultural practices such as storytelling, singing of praise songs, proverbs, riddles, funeral rites and festivals does not depend on the sex of the individual.

### ***5.2.3 Indigenous knowledge of respondents by distribution by religion***

According to Gyekye (2002) once an individual is born into the African society he or she is born into a culture that is intensely and pervasively religious and requires participation in the religious beliefs and rituals of the community. This is because every human being, irrespective of the culture to which you are born, essentially is a religious being. Religious life, then, is not an individual affair but a communal, woven into the culture of the people, and therefore has a strong influence on the people.

Since religion (traditional, catholic and Islamic religions) has a direct influence on the lives of the people, the religious background of respondents were assessed to determine how much influence religion has on indigenous knowledge acquisition in the area.

A frequency analysis of the data revealed that 69% of respondents believed and practiced traditional religion and 31% of the respondents were Christians (catholic). No Muslim was captured in the study. This could be due to the fact that almost all the Muslims (few though) within the study area are mostly involved in business activities and not farming.

**Table 5.5: Frequency Distribution of Respondents by Religion**

| Religion     | Frequency | Percent |
|--------------|-----------|---------|
| Traditional  | 69        | 69      |
| Christianity | 31        | 31      |
| Total        | 100       | 100     |

Source, Field Survey, 2010

The relationship between religion and amount of indigenous knowledge acquired on playing of xylophone and drums, storytelling, singing of dirges and praise songs, use of proverbs, riddles, funeral rites and festivals was also verified using chi square test and the results showed no statistical significant difference indicating that the amount of knowledge one acquired on these cultural practice did not depend on ones religious background. However, religion and festivals indicated a statistical significant difference (Table 5.6). All the chi square results are Yates corrected.

**Table 5.6: Summary of Chi Square Test on Religion and Cultural Practices**

| Religion/Socio-cultural Practices  |   | Religion of Respondents |              |       | Test/Interpretation                                              |
|------------------------------------|---|-------------------------|--------------|-------|------------------------------------------------------------------|
|                                    |   | Traditional             | Christianity | Total |                                                                  |
| Religion and storytelling          | L | 17                      | 7            | 24    | $\chi^2 = 0.00$ , df = 1, $0.99 > p > 0.98$<br>(Not Significant) |
|                                    | H | 52                      | 24           | 76    |                                                                  |
| Religion & singing of dirges       | L | 33                      | 14           | 47    | $\chi^2 = 0.00$ , df = 1, $0.99 > p > 0.98$<br>(Not Significant) |
|                                    | H | 36                      | 17           | 53    |                                                                  |
| Religion & singing of praise songs | L | 21                      | 7            | 28    | $\chi^2 = 0.32$ , df = 1, $0.58 > p > 0.57$<br>(Not Significant) |
|                                    | H | 48                      | 24           | 72    |                                                                  |
| Religion & playing of drums        | L | 47                      | 16           | 63    | $\chi^2 = 1.84$ , df = 1, $0.19 > p > 0.18$<br>(Not Significant) |
|                                    | H | 22                      | 15           | 37    |                                                                  |
| Religion & playing of xylophone    | L | 54                      | 24           | 78    | $\chi^2 = 0.06$ , df = 1, $0.82 > p > 0.81$<br>(Not Significant) |
|                                    | H | 15                      | 7            | 22    |                                                                  |
| Religion & proverbs                | L | 12                      | 6            | 18    | $\chi^2 = 0.00$ , df = 1, $0.97 > p > 0.96$<br>(Not Significant) |
|                                    | H | 57                      | 25           | 82    |                                                                  |
| Religion & riddles                 | L | 9                       | 3            | 12    | $\chi^2 = 0.02$ , df = 1, $0.76 > p > 0.75$<br>(Not Significant) |
|                                    | H | 60                      | 28           | 88    |                                                                  |
| Religion & funeral rites           | L | 3                       | 1            | 4     | $\chi^2 = 0.08$ , df = 1, $0.99 < p < 1.00$<br>(Not Significant) |
|                                    | H | 66                      | 30           | 96    |                                                                  |
| Religion & festivals               | L | 2                       | 21           | 23    | $\chi^2 = 47.19$ , df = 1, $p = 0$<br>(Significant)              |
|                                    | H | 67                      | 10           | 77    |                                                                  |

Source: Field survey, 2010

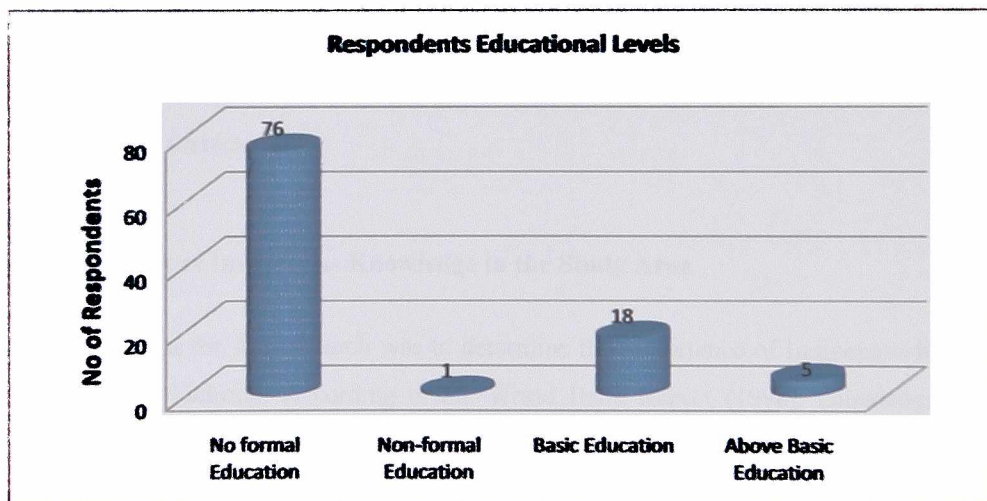
#### **5.2.4 Indigenous knowledge of respondents by distribution by Education**

Education whether formal, non formal or informal is the means through which social values are transmitted to the younger generation with the intension of preserving those values. It is in line with this that Chitamber (1993) indicated that education is a very important basic social institution. Both indigenous and scientific knowledge are transmitted through the mechanisms of education though the style of transmitting may differ.

However, formal education has the capacity of eroding indigenous knowledge by the very fact that it teaches people to be shy of their culture. Van Camp (2007) emphasized this fact by stating that the distinct culture of indigenous people and their identity, economic activities, religious beliefs, notions, and traditional ways of managing natural resources are often regarded as backward and superstitious.

As such, respondents educational levels were collected to determine whether the amount of indigenous knowledge acquired within the study area is based on whether the person has formal education or not. The options for respondents to choose included: No formal education = 1, Non-formal education = 2, Basic education = 3 and Above basic education = 4. A frequency test ran on the data indicated that out of the 100 respondents 76% had no formal education, one percent went through non formal education, 18% had basic education and 5% went beyond basic education.

**Figure 5.2: Bar Chart of Respondents Educational Levels**



Source: field survey, 2010

To ensure easy analysis, the options were categorized into "No formal education" and "Formal education". That is, "No formal education" and "non-formal" became No formal education and "Basic education" and above became "Formal education". The statistical test showed that as far as knowledge acquisition on storytelling, singing of dirges, singing of praise songs, playing of





drums and xylophone, use of proverbs, funeral rites and festivals are concerned education is not a determinant factor. That is, no statistical significant difference exists between education and knowledge acquisition on these cultural practices (Table 5.7).

**Table: 5.7 Summary of chi square test on Cultural Practices and Education**

| Variables/Socio-cultural Practices |   | Educational Level of Respondents |              |       | Test/Interpretation                                              |
|------------------------------------|---|----------------------------------|--------------|-------|------------------------------------------------------------------|
|                                    |   | No Formal Educ.                  | Formal Educ. | Total |                                                                  |
| Education and storytelling         | L | 19                               | 5            | 24    | $\chi^2 = 0.00$ , df = 1, $0.98 < p < 0.99$<br>(Not significant) |
|                                    | H | 57                               | 19           | 76    |                                                                  |
| Educ. & singing of dirges          | L | 35                               | 12           | 47    | $\chi^2 = 0.11$ , df = 1, $0.75 > p > 0.74$<br>(Not significant) |
|                                    | H | 41                               | 12           | 53    |                                                                  |
| Educ. & singing of praise songs    | L | 22                               | 6            | 28    | $\chi^2 = 0.00$ , df = 1, $0.96 < p < 0.97$<br>(Not significant) |
|                                    | H | 54                               | 18           | 72    |                                                                  |
| Educ. & playing of drums           | L | 49                               | 14           | 63    | $\chi^2 = 0.00$ , df = 1, $0.99 < p < 1.00$<br>(Not significant) |
|                                    | H | 27                               | 10           | 37    |                                                                  |
| Educ. & playing of xylophone       | L | 59                               | 19           | 78    | $\chi^2 = 0.06$ , df = 1, $0.95 < p < 0.80$<br>(Not significant) |
|                                    | H | 17                               | 5            | 22    |                                                                  |
| Education & proverbs               | L | 14                               | 4            | 18    | $\chi^2 = 0.05$ , df = 1, $0.99 < p < 1.00$<br>(Not significant) |
|                                    | H | 62                               | 20           | 82    |                                                                  |
| Education & riddles                | L | 9                                | 3            | 12    | $\chi^2 = 0.04$ , df = 1, $0.99 < p < 1.00$<br>(Not significant) |
|                                    | H | 67                               | 21           | 88    |                                                                  |
| Education & funeral rites          | L | 3                                | 1            | 4     | $\chi^2 = 0.26$ , df = 1, $0.99 < p < 1.00$<br>(Not significant) |
|                                    | H | 73                               | 23           | 96    |                                                                  |
| Education & festivals              | L | 15                               | 8            | 23    | $\chi^2 = 1.56$ , df = 1, $0.28 > p > 0.21$<br>(Not significant) |
|                                    | H | 61                               | 16           | 77    |                                                                  |

Source: Field survey, 2010

Note:  $\chi^2$  = Yates corrected

### 5.3 Relevance of Indigenous Knowledge in the Study Area

One of the reasons for this research was to determine the importance of Indigenous Knowledge to the people of Fielmuo. According to the World Bank Report (1998), knowledge, and not capital, is the key to sustainable social and economic development therefore, building on indigenous knowledge, the basic component of any country's knowledge system, is the first step to mobilize such capital. Therefore, every group of people identified by culture, put premium on the knowledge system they have and how it is transmitted. Using a five point Likert scale (1= strongly disagree, 2= disagree, 3= undecided, 4= agree and 5= strongly agree) farmers, who were all indigenes, were asked to indicate the extent to which they agreed with statements regarding the importance of indigenous knowledge to them (Table 5.8).

**Table 5.8: Frequency Distribution of the Importance of Indigenous Knowledge**

| Levels of Agreements | IK is used to develop community | We are united by our cultural system | IK is easy to transmit and learn | Indigenous entertainments is more enjoyable than non Indigenous | Community problems are solved by IK | Poverty can be manage through IK |
|----------------------|---------------------------------|--------------------------------------|----------------------------------|-----------------------------------------------------------------|-------------------------------------|----------------------------------|
| Strongly disagree    | 1                               |                                      |                                  |                                                                 |                                     |                                  |
| Disagree             | 1                               |                                      | 37                               | 2                                                               |                                     | 16                               |
| Undecided            |                                 |                                      | 3                                | 1                                                               | 2                                   | 8                                |
| Agree                | 21                              | 24                                   | 41                               | 32                                                              | 43                                  | 64                               |
| Strongly agree       | 77                              | 76                                   | 19                               | 65                                                              | 55                                  | 12                               |

Source: Field Survey, 2010

The responses showed that 77% of respondents strongly agreed with the statement that “Indigenous knowledge is used for the development of their community”, 21% also agreed with the statement and only 2% either disagreed or strongly disagreed with the statement. That is, 1% disagreed with the statement and 1% also strongly disagreed with the statement.

Societies exist because of the cultural bond that exist between people forcing them to come together and occupy a specific locality and depend on each other for survival (Haviland, 1990). Therefore, respondents were asked to indicate whether they were more united because of their cultural system, 76% strongly agreed and 24% also indicated that they agreed with the statement. There was no disagreement with the statement thereby confirming Haviland (1990) that rural communities exist on strong cultural ties.

To the statement that “Indigenous Knowledge is easy to transmit and learn”, the responses got were mixed. A total of 37% disagreed with the statement and 3% were undecided. Those who disagreed with the statement argued that the content of Indigenous Knowledge is difficult to learn but the methodology for learning is simple. However, 60% agreed with the statement (that is, 41% agreed and 19% strongly agreed). This indicates that majority of the respondents agreed that IK is easy to transmit and learn. This supports the stand of Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, (2007) that it is easy to grasp the concepts and practices of indigenous knowledge because it can be passed on orally using the local language.

Respondents were also asked to indicate their level of agreement with the statement that “indigenous source of entertainments is more enjoyable than the non indigenous entertainment”.



The responses obtained showed that only 2% disagreed with the statement, 1% was undecided and as much as 97% agreed with the statement (32% agreed and 65% strongly agreed). No one strongly disagreed with the statement. Indigenous dances such as *bewaa* (mostly performed by the youth) and *bine* (performed by both youth and elderly) are some of the avenues through which indigenes entertain themselves.

Indigenous people have their own ways of solving their social, health and production problems. Haviland (1990) noted that cultures serve as the means through which people deal with problems or matters that concern them. Also, Atawodi (2001) specifically indicated that before the discovery of synthetic drugs, indigenous herdsmen were controlling trypanosomiasis through ethno veterinary practices. In this regard, respondents were asked to indicate their level of disagreement or agreement with the statement that “most problems in the community are solved using IK”. The responses indicated that 98% agreed with the statement and only 2% were undecided.

The last statement was for respondents to indicate whether they agreed, disagreed or otherwise with the statement that “poverty in the community can be managed through indigenous knowledge”. The responses got also indicated a mixed reaction because 16% of the respondents disagreed with the statement, 8% undecided and 78% agreed with the statement. This confirms the view of Tripathi & Bhattacharya, (2004) that indigenous knowledge is also a valuable resource for decision making, policy planning, agriculture, poverty alleviation, health care, food preparation, education, and a host of other activities in communities. The summary of the results on the importance of indigenous knowledge are shown in the table 5.8.

On the whole, most respondents agreed with all the statements, thereby restating the fact that IK is a valuable resource to them in all spheres of their lives. This suggests that though farmers may wish to use modern agricultural production techniques such as planting in rows, using improved seeds, practicing soil conservation techniques like contour ploughing, mulching, use of veterinary medicine, but they would still prefer their indigenous knowledge. Hence, a blend of the two knowledge systems (that is, IK and Western knowledge) may be the best option. As such, if extension services want to achieve more effective and lasting results then local



knowledge and capacities must be granted legitimacy within the scientific and development communities, and greater attention paid to the priorities, needs, and capacities of rural people. (Thomas-Slater, Kabuth, & Ford, 1991).

#### **5.4 The instructors of Indigenous Knowledge**

According to Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, (2007) the elderly, including farmers, local artisans, and cattle keepers are the custodians of IK. They are knowledgeable about their own situations, their resources, what works and what doesn't work, and how one change impacts other parts of their system. To pass on this knowledge, the elders would normally demonstrate the task to the apprentice and ask him or her to repeat what has been done (Millar, 1996). Learning within the rural setting is oral and the teaching done by elders who have gone through long period of experience.

To confirm this, the study enquired from respondents the kind of individuals responsible for the transmission of indigenous knowledge in the community resulting in learning and for that matter skills development. From the data gathered, father, mother, elders within the community and family heads were said to be the teachers of indigenous knowledge within the community. That is, they are the key people responsible for transmitting indigenous knowledge to the younger generation and among themselves (Table 5.9). Information from these sources is mostly considered reliable since the source is known.

**Table 5.9: Instructors of Indigenous Knowledge within the Community**

| The Instructors | Responses |        |
|-----------------|-----------|--------|
|                 | Yes (%)   | No (%) |
| Father          | 100       |        |
| Mother          | 100       |        |
| Elders          | 100       |        |
| Family heads    | 99        | 1      |

Source: Field survey, 2010

#### **5.5 Indigenous Learning Methods**

Indigenous learning is a life-long process; from birth, through the various stages of life till death of the individual. Learning is strongly influenced by the culture within which the individual finds him/herself. Ansu-Kyeremeh (1997) citing Ong (1982) stated that people in cultures learn by

apprenticeship, by listening, by repeating what they hear, by mastering proverbs and ways of combining and recombining them and by assimilating other formulary materials. In most third World cultures, Ghana for that matter, oral tradition and cultural performances are the primary ways of educating the young and promoting and reaffirming beliefs and values among adults.

The generation, transmission and learning of indigenous knowledge are done within the family influence by culture. According to Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwoeza, (2007) indigenous knowledge when generated (or refined) is stored in people's memories and activities, and expressed in stories, songs, folklore, proverbs, dances, myths, cultural values, beliefs, rituals, community laws, local languages and agricultural practices, equipment, materials, plant species and animal breeds. As such learning is done by imitation, observation, trial and error, practice, oral instructions and others.

Therefore, respondents were asked to indicate the methods used in learning the cultural practices indicated in Table 5.10. For uniformity, the answers that were obtained were recoded before taking through statistical analysis. Methods used in learning some of the farming activities were also investigated using the key informant interview.

**Table 5.10: Frequency Distribution of Socio-Cultural Practices and Indigenous learning Methods**

| Socio-cultural practices | Indigenous Learning Methods |           |             |                   |                 |                   |                       |                |
|--------------------------|-----------------------------|-----------|-------------|-------------------|-----------------|-------------------|-----------------------|----------------|
|                          | Listening and practice      | Imitation | Observation | Oral instructions | Trial and error | Self (God's gift) | Questions and answers | Not learned it |
| Storytelling             | 77                          | 6         |             |                   | 1               | 1                 |                       | 15             |
| Singing of dirges        | 27                          | 3         | 2           | 3                 | 16              | 3                 |                       | 46             |
| Singing of praise songs  | 48                          | 8         | 3           | 2                 | 12              |                   | 1                     | 26             |
| Playing of drums         | 1                           | 4         | 19          | 1                 | 11              | 2                 |                       | 62             |
| Playing of xylophone     |                             | 8         | 4           | 2                 | 10              | 1                 |                       | 75             |
| Proverbs                 | 77                          | 4         |             |                   | 2               |                   | 1                     | 16             |
| Riddles                  | 81                          | 7         | 1           | 1                 | 1               |                   |                       | 9              |
| Funeral rites            | 3                           |           | 94          |                   |                 |                   |                       | 3              |
| Festivals                |                             |           | 79          |                   |                 |                   |                       | 21             |

Source: Field Survey, 2010





On storytelling it was revealed that learning methods such as observation, oral instructions and questions and answers do not apply. Trial and error and being born with the skill (God's gift) are minimally used here. Listening and practice is the popular way by which people learn storytelling in the area (77%) followed by imitation which represented 6% of the respondents. The youth comes together in the evening to tell and learn storytelling or an elderly person can tell stories to the young children, mostly grandsons, in the evening. People would normally sit down and listen to the stories often and often and eventually acquire the skills and know the stories to also tell one day. However, 15% of the respondents said they did not learn storytelling though some said they learned but forgot due to disuse.

Singing of dirges is one of the important socio-cultural practices of the Dagara, hence, most of the learning methods with the exception of questions and answers are used. Listening and practice appears to be the most common method of learning how to sing dirges (27%) followed by trial and error (16%), imitation (3%), observation (2%), oral instructions (3%) and people being born with the skill (God's gift) (3%). As said early on singing of dirges is done at funeral places where many young people listen and practice how to do it. But as much as 46% of the respondents indicated that they did not learn how to sing dirges.

Praise songs are also learned through varied methods. Listening and practice again is the commonest way of learning it (48%) followed by trial and error (12%), then imitation (8%) and observation (3%). Oral instructions (2%) and questions and answers (1%) are also means of learning but are not very popular methods. However, the data revealed that it is not learned through God's gift (self), because even if you are gifted with intelligence but you still need to rely on other people by listening, observing, imitating and others. Also, as much as 26% of the respondents indicated they did not learn how to sing praise songs.

Playing of drums is purely men affair with the women having nothing to do with it. Observation (19%) and trial and error (11%) are the popular ways by which people learn how to play drums. Other methods such as listening and practice (1%), imitation (4%), oral instructions (1%) and being gifted by God (2%) are also used though listening and practice and oral instructions are rarely used. However, the results also showed that questions and answers is not a learning



method when it comes to drums playing. But surprisingly enough, as much as 62% (more than half) of the respondents said they have not learnt how to play the drums.

As a unique symbol and a beautiful musical instrument, the xylophone is the commonest and most important musical instrument among the Dagara and for that matter in the study area. Most events such as entertainments, funerals and social activities hardly take place without the xylophone. The 25% of the respondents who can play the xylophone (Table 5.10) indicated that they learned it through imitation (8%), observation (4%), oral instructions (2%), trial and error (10%) and by being gifted (1%). Trial and error appeared to be popular method of learning, followed by imitation and observation. The results indicated that 75% of the respondents did not learn how to play the xylophone.

Proverbs and wise saying according Millar (1996) are the prerogative of the elders which express the wisdom of old age. So how do people learn these proverbs and wise sayings and use them when they are old? To find out this, respondents were asked to indicate the various methods by which they learn proverbs. The results indicated that listening and practice is the commonest way (77%) they learn proverbs. This is because proverbs are often heard from the elderly when they are talking especially on issues deemed important. See an example in Box 5.0.

## Box 5.0

In Buo (one of the communities where the data collected the data) the researcher interviewed an old lady called Tuobedaar. The meaning of the name is that *suffering is not bought*. Tuobedaar was misinformed to believe that the researcher was an agricultural officer coming to interview her. So she packaged all her problems to tell the researcher. When the researcher got to the house and after the exchanging of pleasantries, Tuobedaar told the researcher how she ran away from the husband house back to the father's house after she lost the husband because her late husband brothers started maltreating her. She added that she was then in the father's house helping the brothers on their farm and cultivating groundnuts, on her own, to support herself. After narrating her story, the researcher then said she should not be worried, God was with her and her needs would be met. Then she quickly said, "My son age has caught up with me now, how long will I live again to wait for my blessings". But she then agreed with the researcher that what he said was true because the old people say, then she released a proverb, which is given in Dagaare, that:

*Var be yaar tie liebu ei*; meaning a leaf can easily become a tree.

The morale of this proverb, which she explained, is that no one should underrate another person for; the future of the person being underrated is unknown. The researcher since then has kept the proverb in mind. This might be the reason why listening and practice is the commonest way of learning proverbs.

20<sup>th</sup> February, 2010.

In addition to listening and practice, imitation (4%), trial and error (2%) and questions and answers are other ways by proverbs are learned, but questions and answers are rarely used as only one percent indicated that as a ways of learning proverbs. Respondents who have not learnt proverbs were 16% (Table 5.10).

Proverbs/riddles sessions during moonlight serve as entertainment and at the same time offer opportunities for the children to learn a lot. So this research was also interesting in knowing how people learn riddles. The data collected indicated that riddles are mostly learned through listening and practice (81%) and imitation (7%). Learning by observation, oral instructions and trial and error are however not popular ways by which riddles are learned because for each of them only one percent of the respondents pointed to them as learning methods. On the other hand, God's gift and questions and answers were ruled out as learning methods when it comes to riddles. Then also 9% of the respondents said they have not learned riddles.

Imitation, oral instructions, questions and answers and trial and error were also indicated by the respondents not to be learning methods for the performance of funeral rites. But observation was

pointed out as the most common way (94%) of learning funeral rites followed by listening and practice (3%). Also, 3% of the respondents indicated they have not learned how to perform funeral rites.

Lastly, observation was pointed out by 79% of the respondents as the only way by which they learn festivals. The respondents (21%) indicated that they did not learn it. It therefore means that imitation, oral instructions, listening and practice, questions and answers trial and error and being gifted are not the conventional ways one can learn about festivals (Table 5.10).

However, what is striking about the results on the cultural practices learned is the high percentages of respondents who have not learnt most of the indigenous practices that identified them as a people. For instance, storytelling = 15%, singing of dirges = 46%, singing of praise songs = 26%, playing of drums = 62%, playing of xylophone = 75%, ability to use proverbs = 16% and festivals = 21%. It was only riddles and funeral rites that many respondents learned as only 9% and 3% respectively were recorded as those who have not learnt them. This shows that indigenous knowledge in the area is gradually diminishing in the face of foreign cultures appearing in a form of modernization and globalization.

This situation is a confirmation of the World Bank Report (1998) that many indigenous practices may disappear because of the intrusion of foreign cultures (technologies) or development concepts that promise short-term gains or solutions to problems without being capable of sustaining them. Warren (1991) cited in Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, (2007) also agrees with this view on the ground that indigenous knowledge is dynamic and it changes through creativity and innovativeness as well as through contact with other local and international knowledge systems. But the World Bank Report (1998) however warned that the disappearance of many indigenous practices could have a negative effect on rural people.

Summary of the socio-cultural practices and their indigenous learning methods are shown in Table 5.11. Questions and answers appeared to be the method that is not used in learning most cultural practices with exception of how to sing praise songs and the learning of proverbs. This



might be due to the fact that under the indigenous family system children are trained to fear the elderly. So it is very unusual for a child to ask an elderly person questions about something he/she does not know when the opportunity is not given. Hence, children hardly asked questions in the community. But it can be effective in horizontal learning.

**Table 5.11: Summary of Socio-cultural Practices and their Learning Methods**

| Socio-cultural Practices | Learning Methods Used                                  |                                                                          |                                                                                                                      |
|--------------------------|--------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
|                          | Popular Methods                                        | Less Popular Methods                                                     | Methods not Applicable                                                                                               |
| Storytelling             | listening and practice<br>Imitation                    | Trial and error and<br>Self (God's gift)                                 | Observation<br>Oral instructions<br>Questions and answers                                                            |
| Singing of dirges        | Listening and practice<br>Trial and error              | Imitation,<br>Observation,<br>Oral instructions<br>Being gifted          | Questions and answers                                                                                                |
| Singing of praise songs  | Listening and practice<br>Trial and error<br>Imitation | Observation<br>Oral instructions<br>Questions and answers                | Being gifted                                                                                                         |
| Playing of drums         | Observation<br>Trial and error                         | Listening and practice<br>Imitation<br>Oral instructions<br>Being gifted | Questions and answers                                                                                                |
| Playing of xylophone     | Trial and error<br>Imitation                           | Observation<br>Oral instructions<br>Being gifted                         | Questions and answers<br>Listening and practice                                                                      |
| Proverbs                 | Listening and practice                                 | Imitation<br>Trial and error<br>Questions and answers                    | Observation<br>Oral instructions<br>Being gifted                                                                     |
| Riddles                  | Listening and practice<br>Imitation                    | Observation<br>Oral instructions<br>Trial and error                      | Being gifted<br>Questions and answers                                                                                |
| Funeral rites            | Observation                                            | Listening and practice                                                   | Oral instructions<br>Questions and answers<br>Being gifted<br>Trial and error                                        |
| Festivals                | Observation                                            | x x x x x x x                                                            | Oral instructions<br>Questions and answers<br>Being gifted<br>Trial and error<br>Listening and practice<br>Imitation |

Source: Field Survey, 2010

On the whole, the farmers indicated that they have acquired a lot of knowledge on these socio-cultural practices through the learning methods used in the area. Sixteen percent (16%) of them said they have acquired very good knowledge on the cultural practices, 72% said they have good knowledge, with 11% saying they have average knowledge. Only one percent indicated that he/she has fair knowledge of the cultural practices.

## **5.6 Agricultural Practices and Learning Methods**

Learning within the area is not limited to only socio-cultural practices but also farming practices. Most of the farming practices that are taught men, in some cases, are different from what the women are taught. But both men and women used almost the same methods of learning. From the data collected, the minimum age at which a child begins to learn farming is 4 years.

For the men they are taught farming practices such as making of mounds for grains and yam, making of ridges, weeding, earthing-up, crop rotation, seed selection for the next season, harvesting of the crops and storage. The methods of learning include observation, demonstrations, oral instructions which involved careful listening, imitation, and sometimes questions and answers.

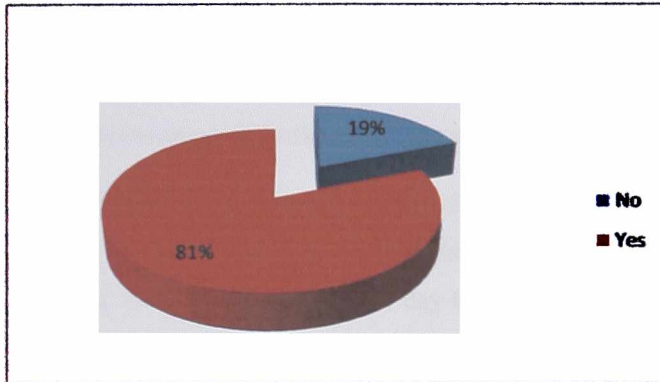
For the women they are taught sowing, weeding, transplanting, gathering of debris on the farm (*vaara vab*) to be burnt, processing and storage methods. The methods through which the women learn these practices are not different from the way the men learn.

## **5.7 Perception about Indigenous Knowledge Learning Style by Sex**

Since some of the socio-cultural responsibilities of men and women in the rural setting differ, the perception has been that boys and girls used different styles in their learning in the area. This is because Burge (1990) and Plummer (2000) cited by Kwapong, (2007) noted that men and women have different learning styles. The responses got from respondents confirmed the perception that differences do exist in the style of learning between men and women (Figure 5.3). As much as 81% of the respondents said difference exists while 19% held the view that there was no difference in learning style. They noted that the major difference emanates from the

fact that: 1) they learn at different places (girls learn in the house and boys outside the house), 2) they are taught by different people (girls by their mother and boys by their father), and 3) learning is according to gender and socio-cultural roles.

**Figure 5.3: Perceived Differences in the Learning styles of Boys and Girls**



Source: Field survey, 2010

When the data was subjected to statistical test, using Fisher Exact value, the results ( $\chi^2 = 12.79$ ,  $df = 1$ ,  $p = 0$ ) showed that there was a statistical significant difference in the learning styles of boys and girls. This means that differences exist with regards to the styles used by boys and girls to acquire indigenous knowledge. The difference could be traced to the fact that greater majority of the men (88%) noted that there were differences in the way men and women learn, then also majority of the women (53%) said there were no differences in the way men and women learn. The Chi Square test was used assess the significant difference of the learning styles because according to Sarantakos (1993), the Chi square tests are the most popular and most used test of significance in the social sciences. In the same vein, Siegel and Castellan (1988), noted that Chi Square may be used to determine the significance between two independent groups if the data consist of frequencies in discrete categories.



**Table 5.12: Distribution of respondents on their Perception of difference between the Learning style of Boys and girls**

| Sex of Respondent | Difference between boys and girls learning styles |      |      |      | Total |     |
|-------------------|---------------------------------------------------|------|------|------|-------|-----|
|                   | No                                                |      | Yes  |      |       |     |
|                   | Freq                                              | %    | Freq | %    | Freq  | %   |
| Female            | 9                                                 | 52.9 | 8    | 47.1 | 17    | 100 |
| Male              | 10                                                | 12.0 | 73   | 88.0 | 83    | 100 |
| Total             | 19                                                | 19.0 | 81   | 81.0 | 100   | 100 |

( $\chi^2 = 12.79$ ,  $df = 1$ ,  $p = 0$ ) ( $\chi^2$  is Yates corrected & P is Fisher Exact) Significant

### 5.8 Effectiveness of Indigenous Learning Methods

Knowledge acquisition depends on the effectiveness of both the teaching and learning methods. According to Knowles (1980) adults prefer self-directed learning, learn most effectively through experience, and by means of actual day-to-day jobs and routine, rather than from formal and structured training program. Since the acquisition of indigenous knowledge involve the use of concrete situations such as farming, carving, cooking, dancing and practicing, it is possible learning can be effective. To confirm this, respondents were asked to indicate the effectiveness of the various indigenous learning methods used in the community.

The responses on the effectiveness of these learning methods were rated. The rating used was 1 =not effective, 2 = less effective, 3 = fairly effective, 4 = effective, and 5 = very effective. Subjecting the responses to a frequency analysis it came out that respondents have confirmed all the learning methods used in the area to be effective. Responses that fell within fairly effective, effective and very effective were considered effective and responses falling under not effective and less effective were taken not to be effective. In view of this, all the responses got indicated a minimum of 72% effectiveness for all the indigenous learning methods. It was only trial and error that got respondents up to 28% saying that it is not effective (Table 5.13).

**Table 5.13: Frequency Distribution of the Effectiveness of Indigenous learning Methods**

| IK Learning Methods   | Level of Effectiveness |                |                  |           |                |
|-----------------------|------------------------|----------------|------------------|-----------|----------------|
|                       | Not effective          | Less effective | Fairly effective | Effective | Very effective |
| Imitation             |                        |                | 2                | 29        | 69             |
| Oral instructions     |                        |                | 1                | 9         | 90             |
| Trial and error       | 3                      | 25             | 18               | 46        | 8              |
| Storytelling          |                        | 1              | 1                | 48        | 50             |
| Proverbs              |                        |                | 1                | 23        | 76             |
| Observation           |                        |                |                  | 47        | 53             |
| Demonstration         |                        |                | 1                | 12        | 87             |
| Questions and answers |                        |                |                  | 13        | 87             |
| Experiences           |                        |                |                  | 86        | 14             |

Source: Field Survey, 2010

## 5.9 Sources of information for Livelihood

Information plays an important role in almost every human activity, hence the saying that Information (or knowledge) is power. According to Meyer, (2005) citing Sturges & Neill, (1998) and Van Rooyen, (1995) information is one of the most important resources needed for rural development. Boon, (1992) cited by Meyer, (2005) confirmed this when he said development is impeded when information is not properly used or absent. The elderly, including farmers, local artisans, and cattle keepers are regarded as the libraries of the rural communities (Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwogeza, 2007).

Farmers normally receive information not only among themselves but also from external sources on seeds, farming practices, breeding stock, marketing, storage, and many others. Sometimes the information is received in a form of services.

Therefore, farmers were asked to indicate the source(s) from which they get their information on farming activities including land preparation, source of seeds, planting, pesticides/insecticides use, fertilizer use, crop storage, crop protection, breeding stock, management practices and disease/pests control. A frequency analysis of the data (Table 5.14) showed that they depended on both internal and external sources with regards to the various farming activities. However, it should be noted that the figures given below for each case would total more than 100% because the responses were multiple.

**Table 5.14: Frequency Distribution of farmers' sources of Information for agricultural Practices**

| Agricultural Practices  | Sources of Information |         |      |       |            |
|-------------------------|------------------------|---------|------|-------|------------|
|                         | Family                 | Friends | AEAs | Radio | Plan Ghana |
| Land preparation        | 100                    | 61      | 71   | 71    | 30         |
| Source of seeds         | 89                     | 44      | 70   | 34    | 22         |
| Planting                | 85                     | 47      | 67   | 41    | 23         |
| Pesticides/insecticides | 50                     | 10      | 71   | 14    | 30         |
| Fertilizer use          | 69                     | 12      | 74   | 15    | 27         |
| Crop storage            | 81                     | 27      | 66   | 12    | 18         |
| Crop Protection         | 66                     | 5       | 65   | 5     | 22         |
| Disease/pest control    | 40                     | 1       | 63   | 7     | 18         |
| Mgt practices           | 65                     | 11      | 59   | 7     | 17         |
| Breeding stock          | 77                     | 2       | 16   | 2     | 18         |

Source: Field survey, 2010.

On land preparation, all the farmers rely on family source (100%) for information. AEAs and the radio are preferred equally (71% in each case) after family followed by friends (61%) and Plan Ghana (30%) in that order. Besides the land preparation, farmers also need reliable information on where and how to get good seeds to crop. Hence, the family became their main source again (89%) for information followed by the AEAs (70%). Friends become their third preferred source (44%) with radio coming forth (34%) and lastly Plan Ghana (22%).

Also farmers within the area have been planting their crops using their experiences and sharing ideas until the intervention of development agencies. As such, they still depend more on the family (85%) as their number one source of information followed by the AEAs (67%) and then friends (47%). Radio (41%) is the forth preferred source with Plan Ghana (23%) being the least.

With regards to on information on pesticides/insecticides use, farmers depended more on the AEAs (71%) with the family being second (50%) followed by Plan Ghana (30%). Many of them also depended on radio (14%) as compared to friends (10%). Also, for fertilizer use the AEAs became their preferred source (74%) with 69% of them depending on the family followed by Plan Ghana (27%) then radio (15%) and lastly 12% of them rely on friends for information.

Over the years farmers depended on indigenous knowledge which they shared among themselves regarding crops storage. As such farmers depended more on the family (81%) source with the AEAs (66%) being their second preferred source of information. This might be due to the fact



that many farmers still rely on the local crop varieties with little attention on the improved crops varieties which they said are poor at storage. 27% of them depended on Plan Ghana with 12% of them using radio.

Whether on the field or in storage farmers look for ways and means to protect their crops. So they normally depend on both the family (66%) and the AEAs (65%) for information. They also preferred Plan Ghana (22%) to friends and radio which they used without preference. Five percent of the farmers said they depended on both radio and friends.

Again farmers said they depended on the family (65%) for information than the AEAs (30%) as regards poultry and small ruminant livestock management practices. About 17% of the farmers relied on the Plan Ghana for information followed by friends (11%) and lastly the radio. On where and how to obtain breeding stock, farmers depended more on the family (77%) for information because many of them still use the indigenous breeds of animals which are resistant to harsh weather conditions. So they tend to rely on each other for information. Also some farmers got information from Plan Ghana (18%), with 16% of them relying on the AEAs. Their last source of information with regards to breeding stock was the radio (2%).

Lastly, the data also indicated that 63% of the farmers depend on the AEAs as their source of information on how to control diseases/pests with 40% of them depending on family source. In addition, 10% of the farmers relied on Plan Ghana while seven percent depended on radio with only one percent depending on friends.

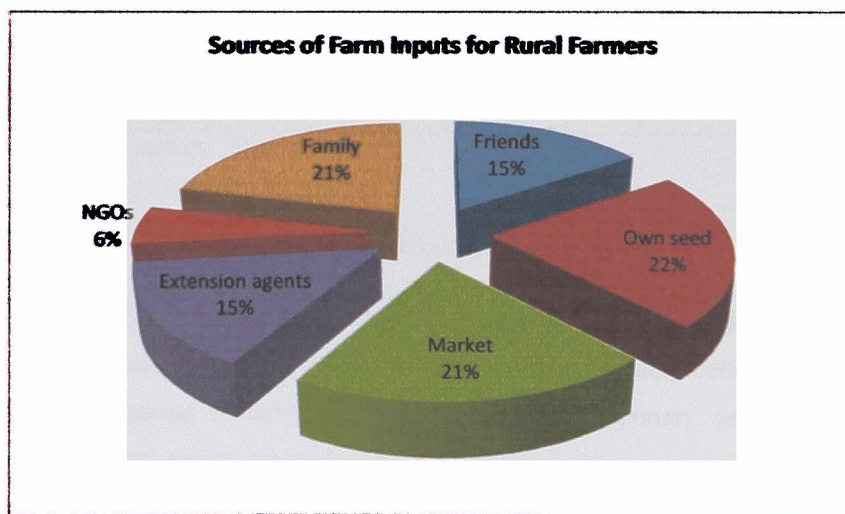
On the whole, family source of information is the frequently used followed by the AEAs. This outcome confirms the views of Millar (1996) that rural people have more confidence in the information that is available in their immediate environment (the family) than information coming from elsewhere, and that information within their immediate environment is given the benefit of doubt when there is conflict of information.

### 5.10 Farmers Sources of Inputs and Services

Besides information, farmers also need inputs and services for their farming activities. For inputs such as seeds it was found out that farmers relied more on themselves. That is, 22% of the farmers said they depend on their own seeds, and then 21% said they rely on family members when they need seeds. Some of the farmers (21%) also said they go to the market to buy anytime they lack seeds and 15% indicated that they go friends. Besides the seeds, farmers also depend on family members, friends, the market and their own resources for inputs such as hoe and cutlasses.

For the external sources they basically rely on them for seed. Fifteen percent (15%) said they got seeds from the Agricultural Extension agents and only 6% said they have been receiving seeds from Plan Ghana (an NGO). They explained that they do not depend more on friends because a friend can disappoint you at the time you need him/her most, likewise the agricultural extension agents, who more often do not deliver on their promises (Figure 6.1).

**Figure 5.4: Sources of Farm inputs to farmers in the study Area**



Source: Field Survey, 2010

In terms of services, the farmers indicated that they have been receiving services from two main sources: Ministry of Food and Agriculture (MoFA) and Plan Ghana (NGO based in the District). But very few farmers indicated that some time ago Catholic Agricultural Programme used to

provide them services. The results showed that farmers received more services from MoFA (82%), followed by Plan Ghana (59%) with Catholic Agricultural Programme providing only 3% because they suspended their services in the District for many years now. The responses here were multiple.

For frequency of services provided, MoFA provides more of its services on a quarterly basis as 43% of the farmers said they receive services quarterly, 22% said they get the services yearly and those who have been receiving monthly were 13%. Some of farmers (5%) said they receive the services once in a year. For Plan Ghana 31% said they receive quarterly services, 12% said yearly, 10% get the services on a monthly basis and 7% receive the services once every year. The services of the Catholic Agricultural Programme could hardly be recalled to mind because they folded up many years ago (Table 5.15). Only the elderly could still recollect their existence in the District.

**Table 5.15: Sources and frequency of Extension Services to farmers in the study Area**

| Source of Services     | Services |        | Frequency of Services Received |               |            |               |
|------------------------|----------|--------|--------------------------------|---------------|------------|---------------|
|                        | Yes (%)  | No (%) | Monthly (%)                    | Quarterly (%) | Yearly (%) | Only Once (%) |
| MoFA                   | 82       | 14     | 13                             | 43            | 22         | 5             |
| Plan Ghana             | 59       | 37     | 10                             | 31            | 12         | 7             |
| Catholic Agric Program | 3        | 93     | 1                              | 1             | 1          | 0             |

Source: Field survey, 2010

### **5.11 Socio-cultural Practices and Innovation Acceptance**

Within the Fielmuo traditional area varied cultural values are diffused daily which include drumming and dancing, farming practices, leadership roles, beliefs, taboos, playing of the xylophone, making of farm tools, basket weaving and pottery, respect for elders, and many others. Cultural values transmissions are important for every society as Fishman (1991) has warned that, "the road to societal death is paved by cultural activity that is not focused on intergenerational continuity" (p. 91). This means that the transmission of indigenous knowledge is very vital if aboriginal societies are to continue to survive.



In view of this there is often conflict between indigenous farming practices and western practices which are normally packaged and delivered by the Agricultural Extension Agents. Farmers are very careful in accepting innovations brought to them from elsewhere, especially when they are in conflict with their indigenous practices. This led to the conclusion by Upton (1997) that local farmers do not change easily the attitudes developed and the knowledge acquired over time, which are so special and unique to them. This is particularly visible in a homophilous society where the people are from similar backgrounds and hold on strongly to their social system and norms. Hence this study wish to find out whether culture influences the acceptance of innovations introduced to farmers in the study area.

Compatibility according to Rogers (1995) is the degree to which the farmer perceived an innovation to be consistent with his values, management objectives, level of technology and the stage of farm development. Many innovations are often rejected because they are not compatible with indigenous values and practices. For any innovation to be accepted it should be compatible with the existing farm technology (Adams, 1982). Kwarteng & Zinnah (1995) pointed out a case in point where the larger white sorghum was rejected in northern Ghana because it did not taste like the local sorghum variety they use to brew their beverage – pito and prepare their local dish known as tuozaafi. This emphasized on the fact that the values and beliefs of rural people inform their choice of which innovation to accept or not to accept.

Innovations introduced to farmers in the area included improved cultural practices (leveling of mounds and sowing in rows), improved seeds, improved processing methods, improved storage methods, fertilizer application, chemical application, improved livestock management practices, control of farm animals diseases, information on marketing, credit and source of farm inputs (Table 5.16).

**Table 5.16: Frequency Distribution of Innovations being practised by Farmers**

| Innovations                     | Frequency of Respondents (N=94) | Being Practised |        |
|---------------------------------|---------------------------------|-----------------|--------|
|                                 |                                 | Yes (%)         | No (%) |
| Improved cultural practices     | 94                              | 56              | 38     |
| Improved seeds                  | 94                              | 51              | 43     |
| Improved processing methods     | 94                              | 83              | 11     |
| Improved storage methods        | 94                              | 78              | 16     |
| Fertilizer application          | 94                              | 54              | 40     |
| Chemical application            | 94                              | 68              | 26     |
| Improved livestock management   | 94                              | 68              | 26     |
| Control of farm animal diseases | 94                              | 66              | 28     |
| Marketing                       | 94                              | 4               | 90     |
| Access to credit                | 94                              | 10              | 84     |
| Source of farm inputs           | 94                              | 40              | 54     |

Source, Field Survey, 2010

With the exception of marketing and access to credit which are practiced at a minimal level in the area because of varied reasons, all other innovations introduced to farmers are being practiced. For the marketing, it was disclosed that the market was only available to those who cultivated the improved seeds given by either MoFA and could afford to convey them to the District capital. This became a disincentive to many of the farmers who decided to abandon the idea altogether. Those who however accepted the improved seeds sold the proceeds anywhere of their choice. But almost half of the respondents (43%) decided not to use or accept the improved seeds. For accessing of credit, they said the processes involved were so cumbersome coupled with high interest charged on it, and above all they were afraid of being arrested in default.

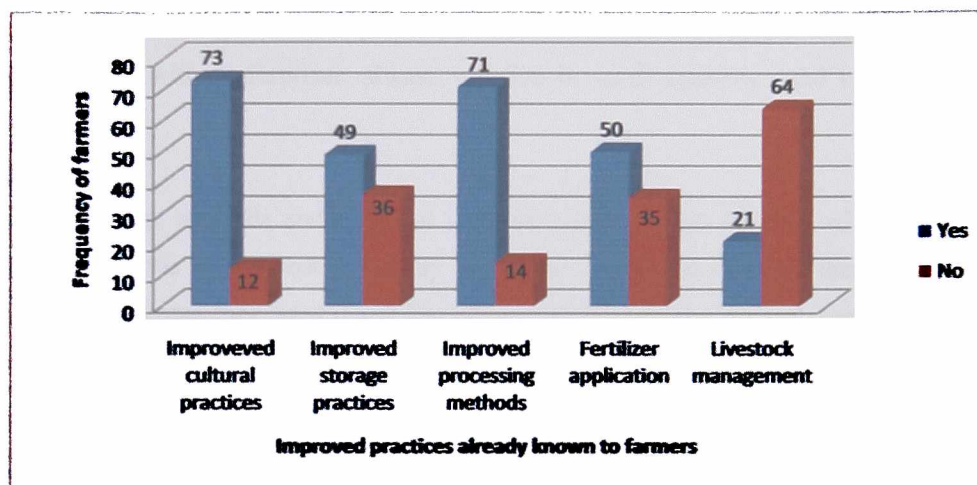
Besides, fertilizer application though practiced by the majority (54%) still did not receive full patronage by farmers as many of the respondents (40%) indicated that they do not use it because of the high cost and late supply (that is, it comes when the farming season is half way gone). For farm inputs they prefer those around them and that also accounted for as much as 54% of the respondents indicating that they do not access inputs from anywhere (Table 6.6).

## **5.12 Reason for the high Patronage of some innovations**

The high patronage of some of the innovations such as improved cultural practices, processing, storage, livestock management and fertilizer use was due to the fact that they are similar to the

indigenous practices of the farmers (Figure 5.5). It should be noted that fifteen farmers did not respond in each case.

**Figure 5.5: Bar chart of innovations already known to farmers**



Source: Field survey, 2010

On the other hand, there are no traditional beliefs, values or taboos that are prohibitive to agricultural practices in the area. But the non Christians noted that the only cultural practice in the area is their traditional way of blessing their seeds before sowing. As a confirmation, the AEAs also said the absence of community restrictions such as, beliefs and taboos is accounting for the good patronage of innovations by farmers. Majority of the AEAs (83.3%) said there were no restrictions as against only one (16.7%) who indicated that there was a restriction and cited totemic beliefs as a practice that encouraged the keeping of crocodiles in certain communities.

### **5.13 Challenges faced by farmers in practising the innovations**

The farmers noted that they are practising these innovations with some difficulties. For instance, one of the improved cultural practices introduced to them is that the mounds on which they sow should always be leveled into a flat land before sowing. But they complaint that it is labour intensive to level their farms because they have no access to bullocks and/or tractors and even if



they got the tractor or bullocks the cost involved was above their means. They also indicated that the technology is not suitable for low lands as it easily becomes flooded and weed control is also difficult on the flat lands, though they admitted that those who are always able to overcome these difficulties get good harvest.

On the improved seeds, they enumerated the following difficulties: late supply (not available at the appropriate time), cannot be preserved in the traditional way unless with chemicals, cannot be cultivated without fertilizer, always supplied in small quantities and cannot be sown on mounds.

For the storage methods and chemical use they indicated that the cost of the chemicals for preservation was high, mostly sold by authorized people, it prevents them from using the produce at the time they want it and fear of its' bad side effects. As such some said they prefer the indigenous methods of preserving their crops. Also, high cost, late supply, not available when needed, fear of side effects were some of the difficulties the respondents enumerated regarding the use of fertilizer.

For livestock management, they complaint of high cost of vaccinating and treating the farm animals because the transportation and lunch allowance of the veterinary officer must be paid in addition to the cost of treating the animals, and in most cases it is difficult to get him at the right time. Some of the respondents said because it was difficult getting the veterinary officer controlling animal diseases were difficult for them if they were to use the improved methods of controlling animals' diseases.

These difficulties that the farmers are facing could have been avoided or reduced if the AEAs were using the individual methods. This could have helped them to identify the specific problems the individual farmers were facing. Majority of the farmers (69%) interviewed indicated that they have being farming for more than 20 years now (Table 6.8), and they know why they carry out certain practices such as making of mounds (to reduce run-off), castration (to tame the animal), burning of farms, and others. For instance, they said they burn the farms to drive away harmful creatures such scorpions and snakes which hide in the debris on the farm and

to prevent termites which are also attracted by the debris. Also, they noted that they used dawadawa seeds to treat protracted labour of animals, *lodol* (a herb) for treating sores, ticks and lice of animals, honey for animals without appetite, and more. Hence, they have a lot of experiences (Table 5.17) on farming which they could have shared with the AEAs on one-to-one basis. According to Adhikarya, (1994) a study carried by FAO indicated that farmers should not always be assumed as ignorant and requires all the information there is to know. Rather, efforts should always be made to understand and assess farmers' indigenous knowledge, values and belief systems on farming practices which may be good, need to be improved, or perhaps need to be discouraged.

**Table 5.17: Frequency Distribution of Farmers Experiences in Farming**

| Years of Farming Experiences | Frequency (%) |
|------------------------------|---------------|
| 1-10                         | 17            |
| 11-20                        | 23            |
| 21-30                        | 33            |
| 31-40                        | 15            |
| 41-50                        | 11            |
| >50                          | 1             |
| Total                        | 100           |

Source: Field study, 2010

#### **5.14 Extension and Indigenous Learning Methods: Level of relationship**

One of the objectives of this study was to also investigate the relationship between the extension methods used in the study area and the learning methods of the indigenous farmers who are the beneficiaries of whatever message that is brought to them.

The aim of extension is to change the behavior of farmers through education to ensure high productivity. But according to Fliegel (1984) any discussion of communication between the AEAs and farmers must begin with some understanding of the context in which farmers live, operate their farmers and make day-to-day decisions. This is because the farmer is the main actor in agricultural production. Farmers live within a cultural context which determines their beliefs and values and how they learn and transmit these beliefs and values. Hence, it is importance that

the extension methods used to change the behavior of farmers be compatible with the learning methods of the farmers.

As indicated above, rural people (farmers) learn their cultural values, farming practices and other economic activities that affect their daily lives. They adapt various learning methods to acquire the knowledge and later transmitted it to the younger generation. Common indigenous learning methods identified in the study area included listening and practice, imitation, observation, oral instructions, questions and answers and trial and error.

Indigenous learning is mostly experiential. Learners usually listen, observe, take oral instructions and then go ahead to practice or imitate whatever that is observed or heard. According to Millar (1996) the elders would normally demonstrate the task to the apprentice and ask him/her to repeat what has been done.

However, according to the data collected, it has been indicated that among the three broad extension methods: individual, group and mass methods only two of the group methods are used in the area. That is, method demonstration and group discussions. This means that farmers are not benefiting from individual methods such as farm and home visits, office calls, telephone call and others. Though time consuming and costly, the individual methods of teaching offers the extension worker an opportunity to learn more about the people of the area, how they think, their practices, what their needs are and how they carry out their work. The farmer on the other hand, also gets to know the extension agents when they work on one-to-one basis leading to the establishment of a bond between them (Kang & Song, 1984). This will also eliminate what Ascroft (1978) cited in Van der Stichele (1998) described as *the conspiracy of courtesy*; the ability of rural people to treat outsiders nicely without revealing themselves or the truth.

Also, the individual methods according to Kang & Song (1984) have been found to be highly effective when dealing with illiterate farmers working on small holdings who are not normally exposed to other educational techniques. This is true because majority of the farmers in the study area are illiterates and are only used to their indigenous methods of learning and not any other methods. In addition, Garforth (1993) believes that the individual contact methods usually are



superior for conviction, enhances interaction and action because of face-to-face relationship of teacher and learner.

Contrary to the benefits of the individual methods, the AEAs only rely on the group methods of teaching farmers in the area which they said enable them to reach many farmers at a time. But according to Kang & Song (1984) each individual attending a demonstration (a group method) should be given the opportunity to practice the new skill during the demonstration session. But normally, due to time constraint, only few are allowed to participate in the demonstration. The greater majority do not normally get the chance to practice the skill. In the light of this, Brookfield (1986), cited in Jones and Hendry (2001) noted that the principles of adult learning shows that experiential learning is crucial to adult learners, as it enhances further learning, and that adults learn best when there is interconnection and meaning. In this case farmers do not get the interconnection between the messages they get from the group discussion or the explanation by the AEAs and real life experience as most of them do not normally get the chance to participate in the demonstration.

On the other hand, apart from the discussions and demonstrations, other group methods such as field trips, field days and agricultural shows are rarely or never used in the area. This clearly indicates that the extension teaching methods are not at the same wave length with the indigenous learning methods because the extension methods that are used in the area do not create much room for experiential learning for the greater majority of the farmers which is the way they learn in the area.



## **The Agricultural Extension Agents (AEAs)**

### **5.15 Introduction**

This section discusses the personal characteristic of the AEAs who were included in the study, Extension methods commonly used in the area, farmers involvement in the decision making process, effectiveness of extension teaching methods, distribution of extension services by sex.

### **5.16 Personal characteristics of the AEAs**

The personal characteristics of respondents described here include age, educational levels, religion, work experience and use of indigenous language. The respondents here were the AEAs included in the study.

#### ***5.16.1 Age Distribution of respondents***

The Agricultural Extension Agents (AEAs) were involved in the study since they are charged with the responsibility of improving the living conditions of farmers using scientific knowledge. In all, only six AEAs were in the District at the time of the study and participated in the study. With the average age being 45 years, the youngest was 32 years and oldest was 59 years

#### ***5.16.2 Educational levels of respondents***

Two (33.3%) of the respondents had attained a first degree from the university, and 3 (50%) were holders of college certificates with one person (16.7%) being a polytechnic graduate with an HND certificate (Table 5.19).

**Table 5.18: Frequency Distribution of Educational level of Respondents**

| Respondents Educational Level | Frequency | Percent |
|-------------------------------|-----------|---------|
| Agric college                 | 3         | 50.0    |
| Tertiary                      | 2         | 33.3    |
| HND                           | 1         | 16.7    |
| Total                         | 6         | 100.0   |

Source: Field survey, 2010

### ***5.16.3 Religious distribution of respondents***

The data collected indicated that out of the six AEAs who participated in the study four (66.7%) were Christians, one Moslem (16.7%) and also one traditional religious practitioner (16.7%).

### ***5.16.4 Work experience of respondents***

The data revealed that four of the AEAs had worked for more than ten years at the time of the study and two of them had work experience between 1-5 years. But since the district is just barely six years old, three respondents indicated that they started working in the district since its creation. Two said they have being working in the district for three years now and one person said he was four years in the district.

### ***5.16.5 Use of indigenous language by respondents***

The most important factor that determines effective interaction between individuals leading to learning is language. According to Van Den Ban & Hawkins (1988) extension education involves the conscious use of communication of information to help people form sound opinions and make sound decisions. Among the six AEAs in the district two were Dagara and could therefore speak the language of the farmers in the study area. Two were also Akans, one Waala and one Sissala. All the four (Akans, Waala and Sissala) representing 66.7%, noted that they could not speak the language of the farmers. Hence, they mostly used Twi or English to pass on their messages to the farmers.

## **5.17 Extension Methods commonly used in the study area**

According to Davis (2001) Teaching is the interaction of a student and a teacher over a subject. In other words, it is undertaking certain activities the intention of which is to induce learning. The purpose of teaching lies in getting students to truly understand the concepts being taught. Teaching when properly done gives the learner the opportunity to change his/her attitude and improves upon his/her experience. This is achievable depending on the teaching and learning methods used. Over the years, organizations such as Agricultural extension service and NGOs, especially Plan Ghana, have being offering services to farmers in the study area. The idea is that



modifying and/or replacing some of the indigenous practices would improve their living conditions.

Extension studies have shown that the more teaching methods used, the higher the percentage of people changing their practices. Thus, using a variety of techniques will be the most effective approach in seeking to bring about behavioral changes. Therefore Extension Teaching methods should be selected carefully and specifically and should emanate from a knowledge base that addresses all facets of the learning situation (Cole, 1981).

In line with these arguments, the study sought to find out the Extension Methods that are employed in the study area and whether they are suitable for achieving the intended objective of ensuring better living conditions for farmers or the methods are simply not working. It was also to find out whether the methods selected suit the beneficiaries style of learning, the farmers.

The data collected indicated that all the respondents (AEAs) used only group methods (method demonstration and discussions). For them the group methods cover many people at a time so it makes their work easier. This is contrary to the views held by Garforth (1993) that the individual contact methods usually are superior for conviction, enhances interaction and action because of face-to-face relationship of teacher and learner. Examples, of individual methods enumerated include farm and home visits, office calls, telephone calls, correspondence and result demonstration. Though, correspondence may not be suitable due to the high illiteracy rate in the area, but the rest of the methods could have offered farmers the opportunity to personally share their production problems and personal experiences with the AEAs for better results.

It therefore means that the group methods alone (group discussions and method demonstrations) are not fully serving the needs of farmers. This is because farmers are not given the opportunity to learn the way suitable to them and to share their personal experiences with the AEAs for better results. For instance, some of the farmers are not practicing the improved cultural practices taught them because the locations of their farms are not conducive for the practice. This could have been avoided if there were face-to-face interactions between the farmers and the AEAs.

### 5.18 Perception about the Effectiveness of Extension Methods

Using a five point likert scale (1 = Not effective, 2 = less effective, 3 = moderately effective, 4 = effective and 5 = very effective) the Agricultural Extension Agents were asked to indicate their level of perception about the effectiveness of teaching methods including those that are not used in the area. For a clearer picture of the situation, the perception levels were regrouped into “not effective” (not effective and less effective) and “effective” (that is, moderately effective, effective and very effective). The results revealed that farm and home visits, discussions, demonstrations, field trips, field days and agricultural shows were effective and the rest of the methods were not effective (Table 5.20).

**Table 5.19: Frequency Distribution of Perception about Effectiveness of Extension Methods**

| Teaching Methods     | Not Effective |      | Effective |      |
|----------------------|---------------|------|-----------|------|
|                      | Freq          | %    | Freq      | %    |
| Office visit         | 5             | 83.3 | 1         | 16.7 |
| Farm and home visits | 0             | 0    | 6         | 100  |
| Personal letters     | 6             | 100  | 0         | 0    |
| Lecture              | 4             | 66.7 | 2         | 33.3 |
| Discussions          | 1             | 16.7 | 5         | 83.3 |
| Demonstrations       | 0             | 0    | 6         | 100  |
| Field trips          | 0             | 0    | 6         | 100  |
| Field days           | 0             | 0    | 6         | 100  |
| Agric shows          | 1             | 16.7 | 5         | 83.3 |
| Radio                | 4             | 66.7 | 2         | 33.3 |

Source, Field Survey, 2010

According to the AEAs individual and mass methods are not used in the area. For that matter, farm and home visit, which is an individual method, in principle, is effective but not in practice in the area. On the other hand, the reason offered for the ineffectiveness of the other extension methods was high illiteracy rate in the area. But illiteracy cannot prevent the use of farm and home visit as a method.

### 5.19 Sustainability of innovations introduced to farmers by AEAs

In response to whether the innovations introduced to farmers were sustainable or not, the AEAs pointed out that improved cultural practices, fertilizer application and source of farm inputs were

sustainable. Improved processing methods, improved storage methods, improved livestock management and access to credit were said not to be sustainable. They were however divided in their opinions on the sustainability of improved seeds and chemical application (Table 5.18). The fact that some of the innovations are not sustainable might be due to the use of inappropriate teaching methods (that is, relying on only group methods), while ignoring the view of Kang & Song (1984) that individual teaching methods are highly effective when dealing with illiterate farmers working on small holdings who are not normally exposed to other educational techniques. Also, the limited involvement of farmers in decision making regarding their problems might account for this situation.

**Table 5.20: Frequency Distribution of improved innovations sustainability**

| Improved Innovations                | Level of Sustainability |      |             |      |
|-------------------------------------|-------------------------|------|-------------|------|
|                                     | Unsustainable           |      | Sustainable |      |
|                                     | Freq                    | %    | Freq        | %    |
| Improved cultural practices         | 0                       | 0    | 6           | 100  |
| Improved seeds                      | 3                       | 50   | 3           | 50   |
| Improved processing/storage methods | 5                       | 83.3 | 1           | 16.7 |
| Fertilizer application              | 0                       | 0    | 6           | 100  |
| Chemical application                | 3                       | 50   | 3           | 50   |
| Improved livestock management       | 4                       | 66.7 | 2           | 33.3 |
| Access to credit                    | 5                       | 83.3 | 1           | 16.7 |
| Source of farm inputs               | 2                       | 33.3 | 4           | 66.7 |

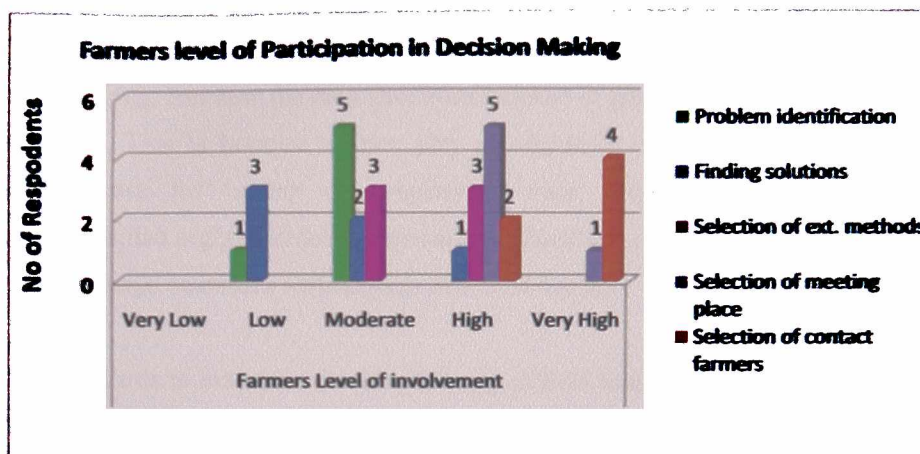
Source: Field survey, 2010.

## 5.20 Farmers' Participation in Decision Making as seen by the AEAs

Since it was found out that only group methods of teaching are used in the area, the critical question was whether farmers play a role in the decision making process with the AEAs leading to the selection of the extension methods. It turned out, from the data collected, that farmers only have the upper hand in the decision making process when it comes to selection of contact farmers and selection of meeting places. But on problem identification and finding solutions to their production problems, farmers' participation is in moderation and low respectively.



**Figure 5.6: Bar graph of Farmers' level of Participation in Decision making as seen by AEAs**



Source: Field Survey, 2010

This reaffirmed the fact that the Food and Agriculture Sector Development Policy (FASDEP) failed in 2007 because problem analysis was weak and did not sufficiently reflect client perspectives on their needs and priorities (MoFA, 2007) probable due to the non involvement of farmers in the decision making process. On the other hand, it also went contrary to Farrington and Martin, (1988) and Reijntjes, Haverkort, & Waters-Bayer, (1992) opinion that the indigenous knowledge and participation of the rural people in development processes should be seen as an active and equitable partnership between rural people, researchers and extensionists.

However, on the selection of extension methods, the AEAs were not unanimous. Three of them (50%) said farmers participation was moderate while three (50%) also indicated that farmers participation was high (Figure 6.2). But whether farmers participation was moderate or high it can be deduced that the farmers would not always assist in deciding on the use of the same teaching methods every time, but should have been interested in going on a field trip at least once to another place to see what goes on there. Or the question could be whether the farmers were aware that other teaching methods were available and could be used by the AEAs? It could also be that, if at all the farmers were aware of other teaching methods and suggested them, the AEAs, after all, hold the right to taking the final decision.

### 5.21 Distribution of Extension Services by AEAs

In the study area it is the men who own the land and carry out the farming activities in support of their women. Women mostly have limited access to the control and use of land though they provide substantial amount of labour in harvesting, weeding, storing, transportation, marketing and processing. But now the men have seen wisdom in giving land to women to support in food production. This is because women play an important role in household food security and generate cash for buying oil, vegetables, meat and, increasingly, extra staple foods (<http://www.ifad.org/gender/learning/resource/natural/40.htm>). Many women also now keep animals in large quantities with support from Plan Ghana.

So with regards to extension services delivery to both men and women, a chi square test ( $\chi^2 = 26.76$ ,  $df = 1$ ,  $p = 0$ ) showed that there was statistically significant difference between services provided to men and women by MoFA. That is, more men receive services than the women. This might be due to the fact that AEAs still provide services to farm families resulting in greater majority of men (94%) receiving extension services as compared to 44% of the women having access to extension services (Table 5.21).

**Table 5.21: Distribution of Extension Services by AEAs**

| Sex of Respondents | Extension Services from AEAS |      |      |      | Total |     |
|--------------------|------------------------------|------|------|------|-------|-----|
|                    | No                           |      | Yes  |      |       |     |
|                    | Freq                         | %    | Freq | %    | Freq  | %   |
| Female             | 9                            | 56.2 | 7    | 43.8 | 16    | 100 |
| Male               | 5                            | 6.2  | 75   | 93.8 | 80    | 100 |
| Total              | 14                           | 14.6 | 82   | 85.4 | 96    | 100 |

$\chi^2 = 26.76$ ,  $df = 1$ ,  $p = 0$  Significant

### 5.22 Conclusion

On the whole, all the 100 farmers (100%) agreed that though they cherished their culture and would not like to part with their practices especially their way of farming, the way they perform their funerals, their herbal medicines, marriage system, how they celebrate festivals and their cultural system of arbitration but they still need the scientific knowledge. Hence, they wished for a mutual blend of both the indigenous and scientific knowledge systems. This was confirmed by all the AEAs, 6 (100%) that if the two knowledge systems (Indigenous knowledge and scientific

knowledge) are mutually incorporated it would help sustain extension programmes and ensure efficiency.

Again, the farmers indicated that they were confronted with annual food shortages because of lack of appropriate farm implements such as bullocks and tractors, poor soil nutrients because of pressure on the land, over population due to early marriages and migration, poor rainfall pattern, non preparedness of the youth to engage in agricultural activities because of laziness and the rampant stealing of farm animals resulting in insufficient animals' droppings to improve the soil. So they think the scientific knowledge may have solutions that they do not have.



## CHAPTER SIX

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 6.0 Introduction

This study is meant to find out whether indigenous knowledge learning methods are given a place in agriculture through the use of formal extension methods, with particular reference to the Fielmuo peasant community in the Upper West Region of Ghana. This chapter is therefore devoted for the summary of the entire work of this research, the conclusion, recommendations and suggestions.

#### 6.1 Summary of the Findings of the study

Chapter one of the thesis underscored the fact that indigenous knowledge is a cultural-based one and can be effective, efficient and functional in agricultural knowledge transfer since agriculture constitute the major occupation of the indigenous people (Thrupp, 1989). This is because the indigenous knowledge system can help agriculture scientists to identify agriculture interventions to address farmers' plight and improve soil productivity (Herbarurema & Sleiner, 1997).

So the problem that motivated this study was based on the fact that indigenous people and their knowledge, practices and learning methods are often undermined by agricultural research, extension service organization, development agencies and others in the rural areas (Upadhyaya, 2004). This resulted in intervention strategies developed to respond to the needs of agriculture development in northern Ghana going through some setbacks. Then also attempts by both government and NGOs to empower rural communities through dialogue have become problematic. The antidote possibly is to find space in the extension teaching methods used in learning situations for indigenous form of learning (Millar, 1996).

The research questions, research objectives, hypothesis, the significance of the study, operationalization of concepts, the scope of the study and limitations of the study are also spelt out in the chapter one.



Chapter two of this study examined the concepts and the theoretical relevance of this study. It covers extension teaching methods that are used to influence rural farmers. Theories on indigenous teaching methods among the Dagaaba, indigenous knowledge and culture, the relevance of indigenous knowledge and how indigenous knowledge is used in agriculture have also been discussed. For instance, a herb known as “lodal” is used to treat sores of farm animals and dawadawa flour to cure diarrhea of animals.

In addition, issues on challenges confronting indigenous knowledge system, communication as a means of interaction between the AEA and farmers, indigenous knowledge communication, information transfer, indigenous knowledge diffusion and learning (adult learning and learning theories) were not left out.

The chapter ended with social networking and its role in extension service. This is because social networking is “a specific set of linkages among a defined set of persons with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behaviour of the persons involved” (Mitchell, 1969 cited in Atengdem, 1997 p. 255). Dagaaba have maintained their social structures most especially through the clan system which shows that they are of a common decent (*doglu*) and belong to one family (*yir-been dem*) (Bekye, 1991).

Chapter three of this study gave an overview of the study area. It indicated the location of the study area in the Upper West Region, relief and drainage and the type of climate and vegetative cover of the place. The demographic profile of the area indicated that all the communities are rural with dispersed settlements. A brief description of the people living in the area, the way they construct their houses, religious and cultural practices, some of the cultural symbols used in the area and how farming is done in the area are also given.

Also, the chapter looked at the type of farms used in the area, and economic activities (both on farm and non-farm activities). The concluding part of the chapter dealt with some of the situations under which learning usually occur since Millar (1996) indicated that tutelage (“wulu”) and experiential learning (“banfu”) are protracted and starts at the age of four with the opening, feeding and driving of chickens.

Chapter four dealt with the research methodology. According to Brown (1996) research methodology is an important component of any study and provides the framework on which the whole process is suspended. So this chapter outlined the framework upon which the objectives of this research would be achieved by providing an in-depth explanation of the research design, the population of the study, sampling size and methods, methods of data collection, the instrument used to collect the data, how the data was coded, recorded and analyzed. In conclusion, the chapter also looked at challenges that came up during the research.

Chapter five of this study contains the main findings. The main issues leading to whether extension teaching methods are compatible with indigenous learning methods in the Fielmuo traditional area are summarized in this section. This includes among others, the farmer and AEAs characteristics, indigenous knowledge and learning methods, farmers sources of information for livelihood, socio-cultural practices and innovations acceptance, farmers' participation in decision making as seen by the AEAs and extension methods used in the area.

The among of knowledge acquired by farmers on cultural practices such as storytelling, singing of dirges, singing of praise songs, playing of drums and xylophone, knowledge on proverbs, riddles, funeral rites and festivals indicated that majority of them have high knowledge on these cultural practices. For instance, 77% of the farmers said they have moderate to high knowledge on storytelling, and then 82% said they know how to use and interpret proverbs. This means that the rural people are much abreast with their cultural practices.

However, on practices such as playing of drums and xylophone, a good number of farmers, 63% and 78% respectively, have no knowledge or little knowledge on how to play drums or xylophone. But these figures include the 17% women who by the cultural orientation of the area do not play drums and xylophones

The minimum age of farmers was 23 years and the maximum age was 80 years. Then average age was 50 years. It was also realized that majority of the farmers fell within the age brackets of 41-60 (55%) followed by 26% belonging to the age bracket of (20-40) with the aged (61-80) forming the least. A chi square test between age and the socio-cultural practices indicated that



there was no significant difference between age and among of indigenous knowledge acquired on the cultural practices ( $p > 0.05$ ).

The percent distribution of farmers by sex showed that 83% were men and 17% were women. A cross tabulation between sex and socio-cultural practices indicated no significant difference in some cases and significant differences in some cases. For instance, sex and storytelling, singing of praise songs, use of proverbs, riddles, funeral rites and festivals showed no significant difference ( $p > 0.05$ ). But sex and playing of drums, xylophone and singing of dirges showed significant difference ( $p < 0.05$ ). This situation occurs because of cultural barriers that debar women from playing drums, xylophone and singing of dirges.

On percentage distribution of farmers by education, it revealed that 76% had no formal education, 18% had basic education, 5% had above basic education and one percent went through non formal education. A chi square analysis indicated that education is not a determinant factor in indigenous knowledge acquisition ( $p > 0.05$ ).

Also, the percentage distribution of farmers by religion revealed that 69% were practising traditional religion and 31% were Christians. No Moslem was captured in the study. The chi square test indicated that religion and knowledge acquired on festivals was significant ( $p < 0.05$ ). But religion and storytelling, singing of dirges, playing of drums and xylophone, use of proverbs, riddles and funeral rites was not significant ( $p > 0.05$ ).

In line with the view of Haviland (1990) that societies exist because of the cultural bond that exist between people forcing them to come together and occupy a specific locality and depend on each other for survival, a greater majority of the respondents (farmers) agreed that their indigenous knowledge and practices are important to them. For instance, to a statement that indigenous knowledge is used to develop the community, 98% of the respondents agreed with the statements (Table 5.8).

On learning methods used in the area, farmers identified listening and practice, imitation, observation, oral instructions, questions and answers, trial and error and being gifted in certain

areas as the commonly used learning methods (Table 5.11). A greater majority of the respondents (an average of 98%) noted that all the learning methods used in the area are effective (Table 5.13).

According to Akullo, Kanzikwera, Birungi, Alum, Aliguma, & Barwoeza, (2007) the elderly, including farmers, local artisans and cattle keepers are regarded as the libraries of rural communities. They have the knowledge and vital information which they share with the rest of the community members. So with regard to sources from which farmers obtained information for their on-farm activities, family, friends, AEAs, radio and Plan Ghana were identified. However, the results show that farmers depend more on the family source of information. This confirms the view of Akullo et al (2007) that the elderly and local artisans are regarded as libraries in the local communities. On land preparation for example, they depended more on the family (100%) for information than friends (61%), AEAs (71%), radio (71%) and Plan Ghana (30%). In most cases, with the exception of pesticides/insecticides use, fertilizer use and disease/pests control where farmers depended more on the AEAs, the family was identified as their major source of information. The situation is not different when it comes to sources of inputs such as seeds. Farmers rely on themselves (22%), family (21%), market (21%) and friends (15%). Only 15% of them depended on the AEAs for seeds though a greater majority of them (82%) said they received services from the AEAs and 6% also depended on Plan Ghana for seed with 59% of them indicating that they received services from them.

The study also revealed that there was a weak relationship between extension teaching methods and indigenous learning methods. This is because indigenous learning is experiential and involves learning by doing. However, the extension teaching methods used did not fully allow experiential learning among the farmers, as they were taught through only discussions and method demonstrations (both group methods) with just a few of the farmer participating in the demonstrations leaving out the greater majority. This means that the AEAs do not have any knowledge of the context in which farmers live (farmers' cultural background), how they operate their farms and take day-to-day decisions because individual teaching methods are not used to allow one-on-one interaction between the AEAs and farmers in the area (Fliegel, 1984). In addition, the individual methods are effective in dealing with illiterate farmers who are not

exposed to any other educational techniques (Kang & Song, 1984). This probably resulted in some of the farmers not patronizing some of the innovations because their individual peculiar problems are overlooked. This is because many people would not ask questions when they are in a group.

But interestingly enough, farm and home visits, discussions, demonstrations, field trips, field days and agricultural shows were identified as teaching methods which are effective in passing on knowledge to farmers. But only the discussion and method demonstrations are used.

The failure to use varied teaching methods, by the AEAs, that permit indigenous style of learning might be due to the fact that farmers participations in the decision making process was limited. The data revealed that farmers usually have an upper hand in the decision making process when it comes to the selection of contact farmers and selection of meeting places. But when it comes to identifying their production problems and finding solutions to them, farmers' participation are either low or moderate (Figure 5.6). The AEAs were however divided when it came to farmers' participation in the selection of the extension teaching methods. Of the six AEAs three (3) said farmers' participation was low and three (3) also said it was high.

Besides, it is believed that rural farmers do not change easily attitudes developed and the knowledge acquired over time (Upton, 1997) especially when the innovations introduced to them is not compatible with their indigenous values and practices (Rogers, 1995). In the case of the Fielmuo traditional area, farmers are practicing innovations such as improved processing and storage, chemical application, livestock management, control of animal diseases, use of improved seeds, fertilizer application and some of the improved cultural practices (Table 5.16). This was so because some of the farmers said innovations such as livestock management, fertilizer use, improved processing method and storage and some of improved cultural practices are similar to their practices, hence the high patronage despite the difficulties they faced.

But whether the innovations introduced were sustainable or not, a greater majority of the AEAs (83.3%) said improved storage methods, improved livestock management and access to credit (66.7%) were not sustainable. On the other hand, all the AEAs (100%) noted that improved



farming methods and fertilizer use are sustainable. However, they were divided on whether improved seeds and chemical application are sustainable or not. That is, 50% (3) of the AEAs in both cases said they are not sustainable and 50% (3) also said in both cases that they are sustainable.

However, on the whole both farmers and AEAs agreed that a mutual blend of the two knowledge systems, that is, indigenous knowledge and scientific knowledge would ensure sustainability in food production, agricultural programmes and efficiency.

## **6.2 Conclusions**

The study is set out to answer questions regarding the compatibility of the extension methods and indigenous knowledge learning methods in the Fielmuo traditional area. In that regard, objectives were set to properly guide the study to address the research questions. Findings of these objectives are briefly looked at in this concluding part of the work.

### **Objective One: To find out how socio-cultural factors affect the acquisition of indigenous knowledge**

Some of the socio-cultural factors investigated in this study included age, sex, education and religion. The minimum age of respondents was 23 years and the maximum was 80 years with the average being 50 years. It was realized that majority of the respondents fell within the age bracket of 41-60 (55%) with the aged bracket of 61-80 forming the least. The percent distribution of respondents by sex showed that 83% were men and 17% were women. For education the percentage distribution of respondents revealed that 76% had no formal education, 18% had basic education, 5% had above basic education and one percent went through non formal education. Also, percentage distribution of farmers by religion revealed that 69% were practicing traditional religion and 31% were Christians.

The results showed that majority of the farmers have acquired good amount of knowledge on the cultural practices in the area. An average of 75% of the respondents indicated that they had high

knowledge of the cultural practices with exception of playing of drums and xylophone where 37% and 26% respectively have high knowledge of how to play them.

The chi square test showed that age and education are not limiting factors to the acquisition of knowledge on cultural practices such as storytelling, singing of dirges, playing of drums and xylophone, use of proverbs, riddles, funeral rites and festivals. The chi square analysis showed no significant difference ( $p > 0.05$ ) between age and amount of knowledge acquired on the cultural practices and between education and the cultural practices. But there was a significant difference between sex and knowledge acquisition on singing of dirges, playing of drums and xylophone ( $p < 0.05$ ). This situation is so because women are not allowed, culturally, in the study area to play these instruments. But there was no significant difference between sex and storytelling, singing of praise songs, use of proverbs, riddles, funeral rites and festivals ( $p > 0.05$ ). The chi square test also indicated that religion and knowledge acquired on festivals was significant ( $p < 0.05$ ). But religion and knowledge acquired on storytelling, singing of dirges, playing of drums and xylophone, use of proverbs, riddles and funeral rites was not significant ( $p > 0.05$ ).

On the whole, 16% of the respondents said they had acquired very good amount of indigenous knowledge, 72% indicated they acquired good amount of indigenous knowledge and 11% said they had acquired average amount of indigenous knowledge.

#### **Objective Two: To determine the importance of indigenous knowledge to rural people.**

The results revealed that majority of the farmers noted that the culture, indigenous knowledge and socio-cultural practices in the area were very important to them. For instance, 100% of the respondents agreed with the statement, “we are united by our cultural system” and 98% also agreed with the statement that, “community problems are solved by using indigenous knowledge” and others. In addition, the respondents also indicated that their marriage system, herbal knowledge, defense system (the use of bow and arrow), funeral rites, traditional sacrifices that ensures safety and peace, festivals and cultural means of solving problems were important and must be preserved and transmitted.

The relevance of their cultural system saw manifestation in the way they depend and share information and inputs among themselves than they depend on external sources. For instance, for input such as seed they rely on themselves (22%), family members (21%), friends (15%) and the market (21%). For external sources such as AEAs and NGOs, 15% and 6% respectively depended on them. Also, respondents noted that they depended more on each other, especially family members, for information regarding their farming activities. For instance, 100% of respondents relied on family for information concerning land preparation, 89% for seeds, 85% for planting of their crops, 81% for storage of crops, 77% for breeding stock, 66% for crop protection and 65% for management of small ruminants.

It was also noted by the respondents that they relied more on the AEAs for information on fertilizer use (74%), pesticides/insecticides (71%) and disease control (63%). Other sources of information included friends, radio and Plan Ghana. They tend to depend more on the AEAs for information on these services because they are scientific innovations introduced to them, hence they do not know much about them.

### **Objective Three: To determine the indigenous learning methods amongst the Dagaaba.**

Learning methods such as listening and practice, imitation, oral instructions, observations, trial and error, questions and answers and being born gifted were identified as some of the learning methods commonly and effectively used in the area. For example, the most common way of learning storytelling is by imitation and listening and practice, for singing of dirges learning is done through listening and practice and trial and error. Listening and practice appeared to be the commonest learning method and observation was the most used method with regards to funeral rites and festivals.

On the whole, listening and practice, imitation, oral instructions, questions and answers, trial and error, observation and being born gifted were some of the learning methods identified in the area. These learning methods apply to the learning of both cultural practices and farming activities. The data revealed that with regards to farming, learning starts at the age of 4 years and at a maximum age of 16 years, but most children start learning farming at the age of 10 years.



Parents, elders in the community and family heads were said to be the source of the knowledge in the community.

**Objective Four: To determine the effectiveness of extension methods within the Fielmua traditional area.**

Though farm and home visits, discussions, demonstrations, field trips, field days and agricultural shows were identified as the effective extension teaching methods of passing on innovations to farmers, only discussions and demonstrations (both group methods) are the methods that are actually used. Individual methods are not used but the farmers noted they also depended on their radios for valuable information on farming.

This implies that not much result can be achieved in the area with regards to increased food production because the AEAs are not interacting with the farmers closely enough to know the context in which they live (farmers' cultural background), how they operate their farms and take day-to-day decisions. This will prevent farmers from discussing their personal production problems with the AEAs since there is no personal relationship between them. Also, 76% of the respondents had no formal education and the only effective way to deal with them is to use the individual teaching methods and not group teaching methods. Or at best a blend of both the individual and group methods of teaching is required if much is to be achieved in the area.

**Objective five: To assess how adoptable the extension methods are to the indigenous learning methods of the Dagaaba.**

To be able to change someone's attitude and practices needs close and mutual interaction with the person. The aim of extension service is to change the behavior of farmers through education to ensure high productivity. Farmers live within a cultural context which determines their beliefs and values and how they acquire and transmit knowledge. Rural people learn by doing or imitating what they observed or practicing what they have been instructed.

However, the study revealed that the extension methods used in the area to pass on innovations to farmers did not permit them to learn experientially. This is because they are not given the opportunity to practice what they are told immediately after the group discussions. Some of the farmers may not even have the chance to practice the innovation on their own when they get home, as most of the innovations involve cost.

In the view of Jones and Hendry (2001) citing Brookfield (1986) adults learn best when there is interconnection with meaning. The interconnection between the message farmers get from the group discussion and actual practice is often absent, perhaps leading to little or no learning. Hence, the study revealed a weak relationship between extension teaching methods and indigenous learning methods.

### **6.3 Recommendations**

Based on the findings of this study, the following recommendations are made:

#### **Recommendations for Policy makers and Development Agencies**

1. The study found out that only group methods of teaching are being used in the study area to the neglect of individual and mass methods of teaching. This situation does not allow farmers to get the benefits that are associated with the individual methods of teaching, such as getting to know the extension agent better to determine whether he/she should be taken seriously or not, and be able to ask questions that one would not ask in a group.

In view of this it is recommended for the policy makers such as MoFA and the Sissala West District Assembly to make provision for periodic in-service training for the extension agents as regards the proper manipulations of extension methods to bring out the desired result. Such training will also help the extension agents to have adequate knowledge of the characteristics of each of the extension teaching methods as well as know the characteristics of the respondents. These will enable them to use appropriate methods to suit the cultural background and the learning style of group of rural people they are dealing with.

2. This study discovered that only six extension agents are operating in the district. This number is woefully inadequate for the over fifty (50) communities in the district. This might have called for the over reliance on the group methods of teaching farmers. This is because according to Kang & Song (1984), group teaching methods enable limited staff who are limited by time to reach many farmers at a time. It is recommended for MoFA to endeavour to post more extension agents to the district to curb the situation.
3. The study also found out that greater majority of the farmers had high knowledge on indigenous cultural practices and as well as farming practices and are proud of their knowledge system. This study wish to recommend that in as much as the people in the area would wish to integrate modern practices into their indigenous farming practices, development agencies such as Agricultural extension service and NGOs should grant legitimacy to the indigenous knowledge system and practices in the area. Indigenes should be more involved in decision making and their views respected because most of them are endowed with a lot of indigenous knowledge on farming.

#### **Recommendations for further studies**

4. The Dagaaba covered the length and breadth of the Upper West Region and heavily settled in some parts of this country outside their region of origin, and also in some parts of Burkina Faso. But the scope of this study was limited only to the Fielmuo traditional area. It is recommended that further research that will cover many Dagaaba communities is needed to come out with results that can be generalized.
5. Also further study is necessary to find out the cultural implications that debar women from learning playing the xylophone and drums among the Dagaaba, and whether there are cultural restrictions for setting up a xylophone training centre in the area to train the youth on how to play, design and construct xylophones. This could serve as a source of income to many people and help reduce poverty in the area.



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## LIST OF APPENDICES

### Appendix A: Questinnnaire for Farmers in study Area.

The rural people and their knowledge, how they learn and transmit it to the younger generation.

#### A) INDENTIFICATION

Serial number..... Date of interview.....

Interviewer..... Name of Respondent.....

Village.....

#### B) Bio-data

1. Sex:      Male [   ]                      Female [   ]

2. Age .....

3. Religion: a) traditional [   ] b) Islam [   ] c) Christianity [   ] d) others (specify)

.....

4. Educational level: a) no formal education [   ] b) Non-formal [   ] c) Basic education [   ] d)  
Above basic education [   ]

5. How long have you been living in this village? .....

### C) The Social Relevance of Indigenous Knowledge

Please indicate the extent to which you agree with these statements

| Statements                                                                             | Strongly disagree<br>1 | Disagree<br>2 | Undecided<br>3 | Agree<br>4 | Strongly agree<br>5 |
|----------------------------------------------------------------------------------------|------------------------|---------------|----------------|------------|---------------------|
| 6. Indigenous knowledge is used to develop our community.                              |                        |               |                |            |                     |
| 7. We are more united because of our cultural system                                   |                        |               |                |            |                     |
| 10. Indigenous knowledge is easy to transmit and learn                                 |                        |               |                |            |                     |
| 11. The indigenous source of entertainments are more enjoyable than the non indigenous |                        |               |                |            |                     |
| 12. Most problems in the community are solved using indigenous knowledge               |                        |               |                |            |                     |
| 13. Poverty is managed through indigenous knowledge.                                   |                        |               |                |            |                     |

### D) Indigenous Knowledge and Learning Methods

14. Indicate your level of knowledge in the following.

| Cultural Activities             | Very Low | Low | Moderate | High | Very High |
|---------------------------------|----------|-----|----------|------|-----------|
| Storytelling                    |          |     |          |      |           |
| Singing of dirges (langni)      |          |     |          |      |           |
| Singing of praise songs (dannu) |          |     |          |      |           |
| Playing of drums                |          |     |          |      |           |
| Playing of xylophone            |          |     |          |      |           |
| Proverbs                        |          |     |          |      |           |
| Riddles                         |          |     |          |      |           |
| Funeral Rites                   |          |     |          |      |           |
| Festivals                       |          |     |          |      |           |



15. Indicate how you learnt each of the following.

| Cultural Activities             | Learning Methods |
|---------------------------------|------------------|
| Storytelling                    |                  |
| Singing of dirges (langni)      |                  |
| Singing of praise songs (dannu) |                  |
| Playing of drums                |                  |
| Playing of xylophone            |                  |
| Proverbs                        |                  |
| Riddles                         |                  |
| Funeral Rites                   |                  |
| Festival                        |                  |

16. Indicate your major occupation in rank order.

| Major Occupation | Who taught you (eg parents, friends, self) | Age at which you learnt the skill |
|------------------|--------------------------------------------|-----------------------------------|
| 1.               |                                            |                                   |
| 2.               |                                            |                                   |
| 3.               |                                            |                                   |
| 4.               |                                            |                                   |
| 5.               |                                            |                                   |
| 6.               |                                            |                                   |
| 7.               |                                            |                                   |
| 8.               |                                            |                                   |

17. Are there any difference between learning styles of boys and girls? a) Yes [ ] b) No [ ]

18. If yes, list them.....

19. Whose duty is it to pass on indigenous knowledge to the younger generation? Tick all that apply. 1) Father [ ] 2) Mother [ ] 3) Elders in the community [ ] 4) Family heads [ ]  
5) Everybody [ ]

20. How would you rank these learning methods in order of effectiveness.

| Learning Methods      | Not effective<br>1 | Less effective<br>2 | Fairly effective<br>3 | Effective<br>4 | Very effective<br>5 |
|-----------------------|--------------------|---------------------|-----------------------|----------------|---------------------|
| Imitation             |                    |                     |                       |                |                     |
| Oral instructions     |                    |                     |                       |                |                     |
| Trial and error       |                    |                     |                       |                |                     |
| Storytelling          |                    |                     |                       |                |                     |
| Use of proverbs       |                    |                     |                       |                |                     |
| Demonstration         |                    |                     |                       |                |                     |
| Questions and answers |                    |                     |                       |                |                     |
| Experiences           |                    |                     |                       |                |                     |

21. How would you rate the indigenous knowledge you have learned?

1) Poor [ ] 2) Fair [ ] 3) Average [ ] 4) Good [ ] 5) Very good [ ]

**E) Influence of Extension Teaching Methods on Indigenous Methods of farming**

22. For how long have you been farming on your own? a) 1-10yrs [ ] b) 11-20yrs [ ]  
c) 21-30yrs [ ] d) 31-40yrs [ ] e) 41-50yrs [ ] f) above 50yrs [ ]

23. How did you learn the farming skills? Tick all that apply. a) By observing and imitating my parents [ ] b) Through instructions from parents [ ] c) Through trial and error [ ]

24. What obstacles do you face in your farming activities?.....  
.....

25. Indicate the sources from which you receive Agricultural Extension services and the frequency.

| Source of Services | Frequency |             |         |           |           |
|--------------------|-----------|-------------|---------|-----------|-----------|
|                    | Weekly    | Fortnightly | Monthly | Quarterly | Any other |
| 1.MoFA             |           |             |         |           |           |
| 2.Plan Ghana       |           |             |         |           |           |
| 3.                 |           |             |         |           |           |
| 4.                 |           |             |         |           |           |

26. What innovations do they bring to you? Tick all that apply.

| Innovations                          | MoFA | P. Ghana | Others | Relevant | Practiced |
|--------------------------------------|------|----------|--------|----------|-----------|
| Improved farming methods             |      |          |        |          |           |
| Improved seeds                       |      |          |        |          |           |
| Improved processing methods          |      |          |        |          |           |
| Improved storage methods             |      |          |        |          |           |
| Fertilizer application               |      |          |        |          |           |
| Chemical application                 |      |          |        |          |           |
| Improved mgt. practices of livestock |      |          |        |          |           |
| Control of farm animal diseases      |      |          |        |          |           |
| Information on marketing             |      |          |        |          |           |
| Information on credit                |      |          |        |          |           |
| Information on source of farm inputs |      |          |        |          |           |

27. Indicate the innovations introduced to you which were found not to be relevant.

| Innovation | Introduced by | Why not Relevant |
|------------|---------------|------------------|
|            |               |                  |
|            |               |                  |
|            |               |                  |
|            |               |                  |

28. What are the major languages used in communication between you and the Agricultural extension agents?

a) Dagaare [ ] b) English [ ] c) Twi [ ] d) Others (Specify).....

29. Are there some of the innovations that the AEAs taught you thinking they are new to you but you already know them? a) Yes [ ] b) No [ ]

30. If yes, name some of them.....  
 .....



31. Indicate any difficulty that you face in practicing the innovations introduced to you.

| Innovation                                 | Introduced by | Difficulties in practicing |
|--------------------------------------------|---------------|----------------------------|
| Improved farming methods                   |               |                            |
| Improved seeds                             |               |                            |
| Improved processing methods                |               |                            |
| Improved storage methods                   |               |                            |
| Fertilizer application                     |               |                            |
| Chemical application                       |               |                            |
| Improved management practices of livestock |               |                            |
| Control of farm animal diseases            |               |                            |
| Information on marketing                   |               |                            |
| Information on credit                      |               |                            |
| Information on source of farm inputs       |               |                            |

32. Please indicate the major sources from which you get information by rank order. Tick all that apply.

| Farming Practices           | Source of Information |         |      |       |        |         |
|-----------------------------|-----------------------|---------|------|-------|--------|---------|
| <b>Crop Production</b>      | Family                | Friends | AEAs | Radio | Others | Ranking |
| Land preparation            |                       |         |      |       |        |         |
| Source of seeds             |                       |         |      |       |        |         |
| Planting                    |                       |         |      |       |        |         |
| Pesticides/insecticides use |                       |         |      |       |        |         |
| Fertilizer use              |                       |         |      |       |        |         |
| Crops storage               |                       |         |      |       |        |         |
| Crop protection             |                       |         |      |       |        |         |
| <b>Livestock Production</b> |                       |         |      |       |        |         |
| Breeding stock              |                       |         |      |       |        |         |
| Management practices        |                       |         |      |       |        |         |
| Disease/pests control       |                       |         |      |       |        |         |

33. From which source do you normally get your farm inputs at the beginning of every farming season? Tick all that apply. a) from friends in the village here [ ] b) My own seeds [ ] c) I buy from the market [ ] d) From the extension agents [ ] e) From NGOs [ ] f) From family [ ]

34. Do you think the knowledge the extension agents give you will benefit you more if they take into consideration your traditional practices? a) Yes [    ]    b) No [    ]

35. Indicate the type of farm animals that you have and the type of veterinary service you receive.

| Farm Animals       | Vet. Services Received | Frequency |              |        |        |        |
|--------------------|------------------------|-----------|--------------|--------|--------|--------|
|                    |                        | Weekly    | Forthnightly | Mnthly | Qterly | Others |
| Cattle             |                        |           |              |        |        |        |
| Sheep              |                        |           |              |        |        |        |
| Goat               |                        |           |              |        |        |        |
| Pigs               |                        |           |              |        |        |        |
| Fowls/Guinea fowls |                        |           |              |        |        |        |

**Appendix B: Questionnaire for the AEAs in the District.**

What extension teaching methods are used by the AEAs in the study area, and their effectiveness?

**A. Identification**

Serial number.....Date of interview: .....

Name.....

Official Rank (E.g. TO, STO, PTO, ETC).....

**B. Bio-data**

1. Sex:      Male [   ]                                      Female      [   ]
2. Age as at 1<sup>st</sup> December, 2009.....
3. Highest educational level .....
4. Religion .....
5. For how long have you been working as an extension officer? A) 1-5yrs [   ]  
b) 5-10yrs [   ] c) more than ten years [   ]
6. For how long have you been working in this District?.....
7. Please indicate the following

| Mother tongue | Other languages spoken fluently |
|---------------|---------------------------------|
|               |                                 |

**C. Knowledge of community**

8. The farmers that you serve do you understand their language? Yes [   ]    No [   ]
9. Indicate the major languages that you used in communicating with farmers and the method of acquisition.

| Language | How I acquired it |        |
|----------|-------------------|--------|
|          | Native            | Learnt |
| 1.       |                   |        |
| 2.       |                   |        |
| 3        |                   |        |
| 4.       |                   |        |



10. How did you get to the farmers the first time you visited the community?  
 a) Through the chief [ ] b) through contact farmer [ ] c) Personal contact [ ]

**D. Extension Teaching Methods Commonly used in the communities**

11. Indicate the level of participation of farmers in the following extension related activities

| Activities                   | Level of participation of farmers |          |               |           |              |
|------------------------------|-----------------------------------|----------|---------------|-----------|--------------|
|                              | V. low<br>1                       | Low<br>2 | Moderate<br>3 | High<br>4 | V. high<br>5 |
| Problem identification       |                                   |          |               |           |              |
| Finding of solutions         |                                   |          |               |           |              |
| Extension methods used       |                                   |          |               |           |              |
| Meeting time/place           |                                   |          |               |           |              |
| Selection of contact farmers |                                   |          |               |           |              |

12. Which of the teaching method do you commonly used and why?  
 a) Individual teaching method [ ] b) Group method [ ] c) Mass method [ ]

.....

13. Please indicate your level of perception about the effectiveness of the following methods in respect of the community you serve. Select the corresponding levels.

| Teaching Methods     | Not effective<br>1 | Less effective<br>2 | Moderately effective<br>3 | Effective<br>4 | Very effective<br>5 |
|----------------------|--------------------|---------------------|---------------------------|----------------|---------------------|
| Office visit         |                    |                     |                           |                |                     |
| Farm and home visits |                    |                     |                           |                |                     |
| Telephone calls      |                    |                     |                           |                |                     |
| Lecture              |                    |                     |                           |                |                     |
| Discussions          |                    |                     |                           |                |                     |
| Demonstrations       |                    |                     |                           |                |                     |
| Field trips          |                    |                     |                           |                |                     |
| Field days           |                    |                     |                           |                |                     |
| Brainstorming        |                    |                     |                           |                |                     |
| Agric. Shows         |                    |                     |                           |                |                     |
| Radio/TV             |                    |                     |                           |                |                     |

- 15 Please comment on those that are not/less effective

.....

16. Indicate how each of these characteristics of the farmer influence the selection of your Teaching Methods.

| Characteristics                    | Very low<br>influence<br>1 | low<br>influence<br>2 | Moderate<br>influence<br>3 | High<br>influence<br>4 | Very high<br>influence<br>5 | Reasons for<br>choice |
|------------------------------------|----------------------------|-----------------------|----------------------------|------------------------|-----------------------------|-----------------------|
| Age                                |                            |                       |                            |                        |                             |                       |
| Sex                                |                            |                       |                            |                        |                             |                       |
| Level of<br>Education              |                            |                       |                            |                        |                             |                       |
| Social<br>background               |                            |                       |                            |                        |                             |                       |
| Cultural<br>background             |                            |                       |                            |                        |                             |                       |
| Size of Farm                       |                            |                       |                            |                        |                             |                       |
| Experience of<br>farmer            |                            |                       |                            |                        |                             |                       |
| Learning<br>abilities of<br>Farmer |                            |                       |                            |                        |                             |                       |

#### **E. Extension methods and Indigenous knowledge practices**

17. Does the culture of the people promote your work? a) Yes [ ] b) No [ ]

18. If yes, how? .....

.....

19. If no, why? .....

.....

20. Do you get the full participation of farmers in your programmes? a) Yes [ ] b) No [ ]

21. If no, why? .....

.....

22. Are there any indigenous farming practices in the community that you think should be stopped?

a) Yes [   ]

b) No [   ]

23. If yes, name them

.....  
.....

24. Do you take into consideration the indigenous Agricultural knowledge of the people when planning your extension teaching activities?

a) Yes [   ] Explain.....

.....

b) No [   ] Explain.....

.....

25. Are there restrictions in the community that prevent farmers from accepting innovations?

a) Yes [   ] Explain.....

b) No [   ]

26. Do you think it is necessary to consider the experiences of the farmer when deciding on extension teaching methods?

a) Yes [   ] Explain.....

.....

b) No [   ] Explain.....

.....

27. Do the farmers normally practice all the innovations teach them?

a) Yes [   ]

b) No [   ]

28. If no, why?.....

.....



29. Do you think all the innovations introduced to farmers in the communities have been successful? a) Yes [ ] b) No [ ]

30. Do you think there are any indigenous knowledge practices that you can tap and use as an AEA? a) Yes [ ] b) No [ ]

31. Have you ever learned anything new from the indigenous knowledge practices of the farmers? a) Yes [ ] b) No [ ]

32. If yes, mention some of them.....

.....

33. Please rank the innovations that you introduced to the farmers according to their sustainability.

| Innovations              | Highly unsustaina<br>ble<br>1 | Unsustai<br>nable<br>2 | Uncertain<br>3 | Sustaina<br>ble<br>4 | Highly sustaina<br>ble<br>5 |
|--------------------------|-------------------------------|------------------------|----------------|----------------------|-----------------------------|
| New farming methods      |                               |                        |                |                      |                             |
| Improved seeds           |                               |                        |                |                      |                             |
| Improved storage methods |                               |                        |                |                      |                             |
| Fertilizer application   |                               |                        |                |                      |                             |
| Chemical application     |                               |                        |                |                      |                             |
| Mgt. of livestock        |                               |                        |                |                      |                             |
| Source of credit         |                               |                        |                |                      |                             |
| Source of farm inputs    |                               |                        |                |                      |                             |
| Others:                  |                               |                        |                |                      |                             |
| 1.                       |                               |                        |                |                      |                             |
| 2.                       |                               |                        |                |                      |                             |

34. Do you agree with the view that the objectives of extension would be better achieved if indigenous knowledge practices of rural people are incorporated into extension teaching activities? a) Yes [ ] b) No [ ]

35. Incorporating indigenous knowledge into extension programmes will lead to efficiency, effectiveness, and sustainable programmes. a) True [ ] b) False [ ]

36. In your own assessment what will you say about the adoption of innovations introduced to the farmers in the communities? a) Poor [ ] b) Fair [ ] c) Good [ ] d) Very good [ ] e) Excellent [ ]

## **APPENDIX C: Interview schedule for rural people/farmers**

1. What are some of the farming practices that your father taught you?
2. How did you learn these farming practices that you were taught?
3. What are some of the crops that you know which were cultivated and are no more today?
4. What is responsible for the frequent food shortages this time in the village?
5. How do you manage Pests/disease control (crops/animals) on the farm?
6. Why do you carry out the following farming practices? E.g. Burning, seed selection, making of mounds, capping of yam mounds, early planning, and castration.
7. What indigenous knowledge practices do you think are good and should be maintained?