

**Ways to Expand the Animal Welfare Component in the Extension System in Senegal: A
Case Study of Thies and Bambe**

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Abstract

In Senegal, in recent years the rural sector has undergone major reforms which are partly due to macroeconomic policy reforms adopted by the Senegalese government. Therefore, all the actors of economic and social development have a common concern and share in promoting rural agriculture (Bernard et al., 2008). Changes observed in the agricultural and rural sector reflect the will of the actors to have a productive, competitive, and sustainable agriculture system in order to ensure food security (International Monetary Fund, 2011). The purpose of the study is to develop a set of recommendations to improve the educational program planning and teaching skills of educators in the extension system by focusing on extending the animal welfare component teaching farmers and cart owners animal welfare practices for proper care of working animals. The extension agents and teachers involved in the animal husbandry and animal extension system in Thies and Bambe served as participants in this study. This descriptive qualitative study connected qualitative data derived from participant interviews, qualitative document analysis, observations of an educational program planning professional development program for state agents and university faculty members in Diourbel and Thies regions, as well as a final focus group to allow participants clarification of preliminary themes found in the data. The findings revealed 11 themes: characteristics of the participants, job expectation and responsibilities, institutional and organizational factors, capacity building and professional development plans, diagnostics of the extension system, regulations and legislations, limited sources of information, limited knowledge and skills technologies, recommendations for utilizing student-centered teaching practices, standard welfare for animal husbandry, recommendation for

acceptance and improvement standard animal welfare related to the four research questions which addressed the topics of challenging current teaching methods used in the extension system for other owners of animal species in the animal extension programs, the use of student-centered teaching practices in extension education and university instruction, and the level assistance given to farmers in order to ensure accepted standards of animal welfare working animal and other animal species in the animal husbandry system.

Abstract

In Senegal, in recent years the rural sector has undergone major reforms which are partly due to macroeconomic policy reforms adopted by the Senegalese government. Therefore, all the actors of economic and social development have a common concern and share in promoting rural agriculture (Bernard et al., 2008). Changes observed in the agricultural and rural sector reflect the will of the actors to have a productive, competitive, and sustainable agriculture system in order to ensure food security (International Monetary Fund, 2011). The purpose of the study is to develop a set of recommendations to improve the educational program planning and teaching skills of educators in the extension system by focusing on extension workers in Thies and Diourbel regions. The study also aims at teaching farmers and cart owners animal welfare practices for proper care of working animals. The extension agents and teachers involved in the animal husbandry and animal extension system in Thies and Bambey served as participants in this study. The methodology used for this descriptive qualitative study were interviews, qualitative document analysis, observations of an educational and professional development program planning for state agents and university faculty members in Diourbel and Thies regions, as well as a final focus group to allow participants clarification of preliminary themes found in the data. The data collected from participants were connected to the different used qualitative methods to gather data. The 11 themes found in this study were the characteristics of the participants, job expectation and responsibilities, institutional and organizational factors, capacity building and professional development plans, diagnostics of the extension system, regulations and legislations, limited sources of information, limited knowledge and skills technologies, recommendations for utilizing student-centered teaching practices, standard welfare for animal husbandry, recommendation for acceptance and improvement standard animal welfare related to the four research questions which addressed the topics of challenging current teaching methods used in the extension system

for other owners of animal species in the animal extension programs, the use of student-centered teaching practices in extension education and university instruction, and the level assistance given to farmers in order to ensure accepted standards of animal welfare working animal and other animal species in the animal husbandry system.

Dedications

Praise be to Allah, the merciful; peace and blessings upon his Prophet Muhammad.

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directly or indirectly in this achievement.

Hokie for life, Hokie forever!

Table of Contents

Abstract.....	ii
Dedications.....	vi
Acknowledgements	vii
Abbreviations	xii
List of Tables	xiii
Chapter 1: INTRODUCTION.....	1
Background to the problem	2
Purpose and Research questions	6
Importance and justification of the study.....	7
Conceptual Framework.....	9
Personal Reflection	11
Definition of Terms	12
Chapter 2: REVIEW OF LITERATURE	14
Purpose and Research questions	14
Adult education in African context	14
Extension Education	19
Senegalese Extension System.....	22
Animal husbandry in Senegal.....	23
Welfare and animal husbandry in Senegal.....	26
Concept of Animal Welfare.....	26
Animal welfare in the extension system in Senegal.....	28
Chapter 3: RESEARCH DEIGN AND METHODOLOGY.....	31
Purpose and Research questions	31
Research questions.....	31
Rationale for qualitative case study design	32
Research Design	32
Sampling and participant selection.....	34
Contacting the case study group.....	34
Preliminary work	35
Pilot testing	41

Data Collection	41
Continuing Professional Program for Animal Welfare in Bambey	42
Focus Group	43
Data Analysis Procedures	44
U hvdufkhuñ#Urch.....	45
Chapter 4: FINDINGS	46
Characteristics of the participants	47
<i>Research question 1: How are agricultural extension programs currently taught, presented or offered for other owners of other animal species in the Diourbel and Thies regions of Senegal?</i>	52
Job expectation and responsibilities	53
Institutional and organizational factors	55
Capacity building and Professional development Plans	57
Diagnostic of the extension system	59
Regulations and legislations	63
<i>Research question 2: How do extension agents and animal management faculty members respond to experiencing participants focused teaching practices in their professional training?</i> 64	
Limited sources of information	64
Limited knowledge and skills technologies	66
<i>Research question 3: How do extension educations in Senegal recommend student-centered teaching practices be used in the extension program?</i>	67
Recommendation of student-centered	67
<i>Research question 4: How do extension educators and faculty members assist farmers in ensuring that accepted standard of welfare for animal husbandry are maintained including the care, feeding and physical wellbeing of domestic animals?</i>	68
Standard welfare for animal husbandry	68
Recommendation for acceptance and improvement standard animal welfare	71
Summary	72
Chapter 5: DISCUSSION AND RECOMMENDATION	73
Discussion	74
Conclusion	81
Recommendations	82
Recommendation for further research	84
Implication and educational significance of the study	87

References	88
Appendices	100
Appendix A: Consent Form Script	101
Appendix B: Informed Consent Form	103
Appendix C: Informed Consent Form in French.....	105
Appendix D: Invitation Letter.....	107
Appendix E: French Invitation Letter.....	109
Appendix F: Recruitment Materials	110
Appendix H: French Recruitment form.....	111
Appendix I: Focus Group Protocol.....	112
Appendix J: First IRB Approval	118
Appendix K: Extended IRB Approval.....	120
Appendix L: Interview Protocol.....	122

Abbreviations

AAHC: Agricultural Animal Health Care

CFA: West African CFA franc

CONFINTEA: International Conference on Adult Education

GDP: Gross Domestic Product

MEF: Ministère de l'Economie et des Finances

MEL: Ministère de l'Éducation

NAD: National agricultural directory of South Africa

NGOs: Non-Government Organizations

PAPPEL: Programme de l'Éducation des Jeunes

RGPHAE: General Census of Population and Housing, Agriculture and Animal Husbandry

SODEVA: Société de Développement et de Vulgarisation Agricole

Chapter 1: INTRODUCTION

Located on the western side of the African continent, apart from the far south, much of Senegal lies in the drought prone Sahel area, with poor soil and erratic rainfall (Nation, 2010; Hassan, 2010). In Senegal, in recent years the rural sector has undergone major reforms which are partly due to macroeconomic policy reforms adopted by the Senegalese government. These reforms have resulted in restructuring of agricultural and rural support services and have also helped to clarify the major strategic sectoral guidelines in harmony with national economic policy. These guidelines have been defined, specified and operationalized in reference to the sectoral rural development policy (International Monetary Fund, 2013). Therefore, all the actors of economic and social development have a common concern and share in promoting rural agriculture (Bernard et al., 2008). Indeed, this sector occupies an important place in the economy because it contributes to 20% of the GDP and employs 65-70% of the active rural population (Bravo-Ureta, & Thiam, 2003). This heavy dependence on agriculture illustrates its importance and weight in the Senegalese economy. Changes observed in the agricultural and rural sector reflect the will of the actors to have a productive, competitive, and sustainable agriculture system in order to ensure food security (International Monetary Fund, 2011). The activities of this sector revolve primarily around crop production, forestry, fisheries and livestock production. The rural agricultural sector abounds with enormous potential but the production performance are heterogeneous, unstable and generally inadequate in view of the issues of security and food self-sufficiency (Duggan & Naarajarvi, 2015; Delgado et al., 2010; Roa, 2007). This poor performance is usually related to technical, commercial and organizational issues for actors involved in agricultural and rural development including the state services, the decentralized services, advisory support, financing institutions, NGOs, local authorities, producer

organizations and development partners (Knuth & Knierim, 2013; Jere, 2007; Povellato & Scorzelli, 2006). Further, the professional capacity of extension services and extension agents have decreased due to financial restraints, as well as decreases in technical, social and training opportunities (Okorley, 2007; Knuth & Knierim, 2013).

Background to the problem

The Senegalese agriculture system is still characterized as family and peasant based and largely reliant on animal energy (Lhoste et al., 2010a; Lhoste et al., 2010b; Pearson, 2004). Several publications emphasize the importance of working animals in developing countries, because of the roles that they play in the society, primarily in rural areas (Fuller & Aye, 2012; Rahman & Rahman, 2009; Pearson, 2004). The working animal energy is used to totally cover the energy needs for agricultural production of family farmers (Lhoste et al., 2010a; Lhoste et al., 2010b). Senegal has a large horse herd whose number was 523,095 head in 2014 (MEF, 2014). They occupy a prominent place in the Senegalese economy in general and particularly in agro-pastoral system based on family farming (MEL, 2014). The main working animals used by farm households are donkeys (45.3%), horses (37.9%) and cattle (16.7 %) (RGPHAE, 2013). As in many parts of the African continent, animal power still makes up an essential part of daily life. Thereby, working animals are used to transport locals, tourists and goods through the busy streets in towns and rural areas, ploughing fields, water pumps, weeding, sowing, and helping with the harvest and transportation of crops and residues (Simalenga and Joubert, 1997, Macleod, 1999, Starkey, 2000, Pearson & Krecek, 2006; Swan, 2006). Also important is the production of manure that is spread in the fields as organic fertilizer for the regeneration of the degraded or poor soils. Therefore, the success of efforts to ameliorate the difficult production conditions, increase the farm productivity and improve the integration of working animals to the

rural production systems are linked to the agricultural modernization and the reform of land rights and agrarian systems.

Working animals are involved in almost all sectors of socio-economic activities, but mainly in rural areas. The evidence that links z r u n l j # b q p d o # b g # s h r s c h i # s y n k r r o v # b # x u d # areas support promoting interest, motivation and commitment to animal welfare (Pritchard, 2005). As we know the use of working animals still continues and will continue for the foreseeable future in rural areas of developing countries, and services involved in the introduction of new technics and farm practices for rural producers are challenged to analyze in deep the evolution of the progress for a better of the appreciation of welfare for animal traction. Working and living conditions for working animals such as donkeys and horses are very fragile and require special attention not only from producers, users and owners, but also from state authorities, extension agents, Non-Governmental Organizations (NGO) and international funders (Smith & Pearson 2003, Kay et al., 2004, Pritchard et al., 2005, Pearson & Krecek 2006). Knowing the importance of the functions of working animals in the production systems, it is important to analyze their current situations and take in account the need for improvement by focusing on the living and working conditions, and treatment of these animals (Fall et al., 2003). As a result, the extension services have an important role to play in promoting the working animal conditions of life.

Human-animal relationship has a long and varied history, and generally depends on human needs (Mills, 2010, Demello, 2010, Hurn, 2012). The first scientific publications on animal welfare assumed that an animal that was not showing a physiological stress response would have good welfare and an animal that was showing a significant stress response would have poor welfare (Bareham, 1972; Bryant, 1972; Freeman, 1978), but these assumptions were

subsequently shown not always to hold true. The welfare of the working animals in developing countries is poor and many suffer from sickness and disease as a result of working for prolonged periods in a challenging climate, and without consideration about the time or the rest of the animal (Swann, 2006; Pritchard et al., 2005). Therefore, several problems are observed among the working animal population such as issues with foot care, proper feeding practices and problems associated with scarcity of fodder (Lhoste et al., 2010a), and disease management that are the result of their owners low level of knowledge about animal welfare as well as their lack of animal husbandry skills (Stringer et al., 2009). For example, horses and donkeys can have a common foot problem caused by traditional shoeing practices where local farriers are making shoes from reinforced steel and trimming the foot to fit the shoe (Sells et al., 2010, Pearson et al., 2003). Additionally, health problems associated with recurrent diseases such as strangles, colic, laminitis, African Horse Sickness (Horse Pest) have been recorded in northern and central regions, Moreover, generally the transportation carts in Senegal are of an average standard size however, and the harness used was often in disrepair and caused severe injuries. As a result, thousands of working animals in transportation system in Senegal are suffering, every day as a result of mistreatment because their owners simply do not have access to the skills or the understanding required to care for them properly. In addition, there is a lack of knowledge about caring for working animals because owners and cart-drivers often seek only to earn income by working with them without worrying about the rest of the animal (Lhoste et al., 2010a; Starkey, 1986, 1992 and 2000; Pingali et al., 1987. This situation is the result of a lack of knowledge, deficit of improved organizations and being part of organization for the owners (AAHC, 1999; Patrushev & Patrusev, 1939), because they never receive an educational program from the animal husbandry extension system.

In Senegal, the extension system services were used working animals before 1930 (Berrett, 1982) in the groundnut basin with the aim of improving the performance of production (Rossel et al., 2008; Vall et al., 2003). The animal husbandry is characterized by the coexistence of a traditional system in rural areas and a modern system in urban and peri urban areas, and it has mainly developed in center, north and part of the south eastern of Senegal. These zones have favorable zoo-technical and sanitary conditions for the survival of horses (Biot & Binswanger, 1987; Vall & Havard, 2004). As a result, almost all horse are raised in the rural farming system in the north and central areas of the country. In the center where the dominant activity is crop production followed by livestock, producers use horse in transporting crop residues, preparing field soils, in the drainage of water, in transporting people to weekly markets, and sometimes even medical evacuations to health centers (Biot & Binswanger, 1987).

Working animals are particularly important for food security of small farmers, because in the absence of modernization, all agriculture in the country is based on animal energy produced in particular by horses (Fall & Faye, 1999; Biot & Binswanger, 1987; Berrett, 1982). Moreover, the importance of horses is manifested in the domain of sport, recreation that is booming and in Exo d'log # row f d # h up r q l v # w k # d u h u # w v # f d q # r w # i n g # e # established based the number of working animals he possesses, so that in these agricultural zones the number of horses is strongly correlated with the agricultural area managed by producers. The economic role of horses and donkeys in both rural and urban areas has not been given particular attention, whereas these are the animals most used in transportation and fieldwork because of their speed, their strength and especially their maneuverability (Fuller & Aye, 2012; Rahman & Rahman, 2009). Unfortunately, the use of horses face many constraints and exploitation, especially access to quality food sources, sanitation of housing areas, untreated or poorly treated diseases, and lack of

general management practices. Despite these constraints that may affect their performance, horses play an important role in agricultural and economic development. Their use will continue to be relevant due to the low income of producers and the inadequacy of certain techniques for small farms.

If the welfare of working animals is included in the extension system these low levels of knowledge would be alleviated. The horse users will evolve or change their management practices. Indeed, numerous studies have evaluated and improved the welfare of certain animals, especially farm animals, although there is still much to do especially in sub-Saharan countries like Senegal (Lhoste et al., 2010a; Lhoste et al., 2010b). Therefore, an educational program addressing animal welfare conducted by extension agents and faculty members would contribute to increase the knowledge and skills of working animal owners. As a result, professional technicians who are involved in the management of working animals will help to overcome the lack of knowledge and skills of the owners and users by implementing these concepts in the extension system programs.

Purpose and Research questions

The purpose of the study is to develop a set of recommendations to improve the educational program planning and teaching skills of educators in the extension system by focusing on extension educational approaches to teaching animal welfare of working animals. By conducting educational program planning for state agents and university faculty members in Diourbel and Thiès regions, they will be able to develop several sets of points that will help them to improve the training opportunities offer to local farmers to improve the welfare of working animals by extension educators.

The four major questions guided this study:

1. How are agricultural extension programs currently taught, presented or offered for other owners of other animal species in the Diourbel and Thies regions of Senegal?
2. How do extension agents and animal management faculty members respond to experiencing student focused teaching practices in their professional training?
3. How do extension educations in Senegal recommend student-centered teaching practices be used in extension program?
4. How do extension educators and faculty members assist farmers in ensuring that accepted standards of welfare for animal husbandry are maintained including the care, feeding and physical wellbeing of domestic animals?

Importance and justification of the study

This study is important because the participation of faculty members and extension agents in the elaboration of extension programs and the facilitation of the professional education program are a significant contribution in the actual agricultural extension system, as well as the continuing professional and academic education programs (Upjohn et al., 2010). This study also focuses on the development and improvement of animal welfare training programs offered to farmers by the extension system in Senegal (Lhoste et al., 2010a). In order to illustrate the necessity of the improvement of animal husbandry practices, the program focused in welfare for working animals. Because of the low power of influence of the extension agents, inadequate organization of the extension system, and poor career development prospects for the proposed extension workers, it is essential in the current conditions of degradation of rural agricultural production along with climate change to reinforce the extension system by improving extension agent capabilities especially in developing countries like Senegal (Anderson & Feder, 2004).

The development and function of the extension services in developing countries are offered by both public and semi-public institutions as well as non-government organizations (NGOs). Historically, these institutions are generally associated farming activities with others such as input supply, agricultural equipment and funding of producers. Today, they continue to play the same role, but more concentrated in the promotion of women and food crop production. Extension educators participate in the modernization of the agricultural sector with the support and training for producers, organization of the markets of agricultural products and implementation of agricultural policies for the development of all sectors of rural areas (Knuth & Knierim, 2013; Okorley, 2007; Weiss, 2006). However, the distribution of these extension institutions has posed problems and continues to cause problems today because of their poor systems of outreach in rural and urban areas. In addition, insufficient networks between public extension agents, NGOs managers and para-public sectors are accentuated by duplicating the distribution of roles which is unfavorable for the sustainable development of family farms. As result of these dysfunctions and lack of performances, the function of extension agents are generally neglected by the policymakers and funders in developing countries (Rasaga et al., 2013; Dinar et al., 2007; Swanson et al., 2003).

The extension system should play a new role in the developing countries with support from policy makers who must pay special attention to its reform and modernization. As a result, extension agents could be a formidable force in the growing demand for practice-oriented educational programs. These opportunities could be useful for policy makers as the work to improve policy decisions and increase funding possibilities for the extension systems and advisory supporters. To ensure the success of the animal husbandry programs, capacity building

of extension agents should have an important place in the implantation process of future extension programs.

Conceptual Framework

Implementing program planning is an important part in human development, but it is often neglected by policy implementation. Ensuring that knowledge and ideas are shared with different groups of people is an important part of enabling them to perform their work effectively and achieve the desired outcomes. In addition, extension can help to facilitate outreach and communication to stakeholders at a local level including farmers, nurses and consumers, particularly those in rural areas (Ilvento, 1997). Program planning is a dynamic process (Caffarelle & Daffron, 2013; Cervero & Wilson, 2006) whereby, acquired knowledge at individual and institutional levels are required as catalyst for change. Program planning involves not only the individual level for researchers, extension staff and farmers, but also the political and social forces involved in the extension education such as the audience in which planners are facilitating or stakeholders of the specific program. Thus, misunderstanding or ignoring the reality of the political and social forces can lead to a tragic outcomes. Cervero & Wilson explained the importance of these two factors in the evolution extension organization. Being involved in the extension system as a faculty member requires to put in account the obstacles in identifying the vital stakeholders of a specific program.

Despite the improvement needs in extension education in the universities and extension offices, these services have been almost the primary advocate supporting the necessity of

improving or changing extension approach and principles (Jacobson & Kar, 2013). Continued professional educational training of extension workers allows them to act as facilitators in their work with animal owners and prepare for specific support to specialists on technical themes that helped to manage complex technical issues concerning animal welfare (Caffarelle & Daffron, 2013). The needs imply that a democratic negotiation is necessary to determine their learning needs (Lindeman, 1926), limit power impact and relationship in the process of planning. The planning theory describes the interaction between educational needs, political power of the group and political power as routine in program planning (p.124-125), therefore, planners must recognize who has the power within planning group and who can influence the direction of the planning process and outcomes (Cervero & Wilson, 2006).

The steps to implement program planning as an integral part of the Senegalese extension system strategy included the need to analyze the strengths and weaknesses of the existing capacity and skills for people (Caffarelle & Daffron, 2013). In the preparation phases, planners must convince and prove to the stakeholders that their programs are valuable to the community, so that they could identify the need of prior planning that could lead to an imperative success of the program. By diversifying the origin of the participants, educational program planners negotiated democratically the educational program, listen to diverse voices, and had the ability to operate and manage power (Cervero & Wilson, 2006). Because of the interaction between the extension agents and faculty members, as well as their important role in developing and implementing an animal husbandry program, systematic and consistent collaboration between them are critical and may be conducted through official networks, workshops, panel, among others involving all of the faculty members and extension agents (Hennessey et al., 2010; Forrer et al., 2010, Caffarella, 2002). Educational program planners can develop and assess the impact

of different response strategies on the management of animal welfare into the farm production (Garner et al., 2007), and identify the important strategies to make the program lessons relevant to the audiences.

Personal Reflection

In the field of agricultural extension education, I believe that faculty members and extension agents need to integrate the process of continuing professional education by working together and sharing information in improving the educational process and extension delivery methods. As a faculty member in animal husbandry I learned that planning is the process of determining organizational goals, developing premises about the current environment, selecting the course of action, initiating activities required to transform plans into action. Also, it is important to evaluate outcome, or a series of decision from general and strategic decision to specific operational details, based on the gathering and analysis of a wide range of information (Cervero and Wilson, 2006; Gibson, 2001; Swanson and *al.*, 1997). Completing, the program planning class has provided me the potential for the empowerment of my teaching practice. Per consequent, the planning process challenged my positive epistemology about the teaching process particularly in teaching extension professionals. This has influenced the development of my skills, knowledge and abilities to take full responsibility in my teaching process in the extension system.

I knew the Extension specialists from the local extension office and faculty members were my colleague at the university. Greene (1988) cited by Kelsey and Mariger (2003) discovered that giving extension professionals a voice at the program-planning table increased the probability that they would use study findings to improve works. Extension professionals who participated in this study are experts in animal husbandry and rural development, and their voice

in the process can represent the majority of the members of the extension system. I implemented a continual professional development program for extension educators after completion of the participant interviews and extension document analysis, because I believe that participants should know about existing program design principles, implementation practices and program assessments available for use in their educational programs. I believe that by helping them to learn within the continuing professional development program, they will be able to validate the precision and relevance of information for animal welfare.

Conducting the research process led me to reflect on my experiences as a faculty member and as a graduate student. In addition, I learned that extension programming ideas is critical because they have lacked the opportunity to design program that address specific needs for breeders and express extension professional needs. Therefore, a collaborative relationship with participants was maintained because they saw me as their peer, and these good relationships helped to define and explain expectations (Haverkamp, 2005; Suzuki, et al., 2005). From my experience as a graduate student, I wanted to integrate participant centered teaching strategies into the program to improve the teaching and learning experience

Definition of Terms

Adult: An individual whose age and biological maturity satisfy an expected mentality, form of behavior and a set of social roles.

Adult education: Activities or system that provided to learners new skills and knowledge through a variety of methods, formal or non-formal, using both print and non-print teaching and learning tools.

Adult learner: All the teaching / learning process designed for adults by using formal or non-formal system in order to increase their knowledge and improve their professional qualifications.

Animal Husbandry: It is the all technic management and care of farm animals by humans for profit and pleasure in which genetic qualities and behavior, considered to be advantageous to humans, are further developed and improved.

Animal welfare: The concept of animal welfare refers to the state of the animal, the treatment that an animal receives, is covered by other terms such as animal care, animal husbandry, and humane treatment.

Program: A plan limited in time that gives details to the learning situation. It explains the materials and resources that can be used to facilitate the learning process.

Welfare: It is the manner that an animal is coping with the conditions that surround it. It also is cognitive appraisal, experiencing positive emotions; and experiencing few negative emotions.

Working animals: animals raised to work for human included horse, donkey, beef, mules and camel.

Chapter 2: REVIEW OF LITERATURE

Purpose and Research questions

The purpose of the study is to develop a set of recommendations to improve the educational program planning and teaching skills of educators in the extension system by focusing on extension educators in Diourbel and Thies regions. By conducting educational program planning for state agents and university faculty members in Diourbel and Thies regions, they will be able to develop several sets of points that will help them to improve the training opportunities offer to local farmers to improve the welfare of working animals by extension educators.

The four major questions guided this study:

1. How are agricultural extension programs currently taught, presented or offered for other owners of other animal species in the Diourbel and Thies regions of Senegal?
2. How do extension agents and animal management faculty members respond to experiencing student focused teaching practices in their professional training?
3. How do extension educations in Senegal recommend student-centered teaching practices be used in extension program?
4. How do extension educators and faculty members assist farmers in ensuring that accepted standards of welfare for animal husbandry are maintained including the care, feeding and physical wellbeing of domestic animals?

Adult education in African context

The program planning studies in adult education provide a source of planning theory and models to draw upon as a resource to examine the planning practices in agricultural education. Adult education is defined as a whole processes that provides new skills for adults to be

successful in life through training in formal or non-formal programs (Tahir, 2000). Different theories and models have been developed which could be used to examine the planning practices in agricultural education (Jarvis, 1995).

CONFINTEA stated that: "A broad one, embracing formal, non-formal and informal learning processes in all areas of life, in all contexts, where the learning of adults takes place across their various social roles, in the home, the community, and the workplace, as well as in formal educational and training institutions. Opportunities for learning are availed by a wide variety of provisions."

Adult education started in Africa before any other Continent in the world. Indeed, school system were instituted first in Africa before the creation of the Greek alphabet and the use of Latin words. African adult education is very old according to Cheikh Anta Diop historical research, as well as Barry J. Kemp (2006), David M. Carr (2005) Henri J. Martin (1995). Indeed, Ancient Egypt still used scribes to write in the administration, philosophy and teach the royal court to read and write (Ki-Zerbo, 1990; Omolewa, 2000). The English government first used the term of Adult education in the 18th to explain government policies for adult literacy programs (Cookson, 1998). We cannot talk about adult education without discussing Eduard Lindeman who discussed many concepts of adult education in his book, *The Meaning of Adult Education*. He is an important founder of the modern adult education. He identified the importance of the place in which adult education takes place, the identification of stakeholders and gave direction for adult education (Lindeman, 1926). The role of learners as participants in the planning of his or her education has varied across the program models as they have evolved through history. In order to increase agricultural production with a maximum protection for

working animals, the role of the communities and their engagement in the participatory method of training and designing program for sustainable animal welfare improvement has become crucial in Senegal (Dijk & Pritchard, 2010; Upjohn et al., 2010).

The recognition of the traditions of adult education in Africa is important because it helps people to learn the living conditions, traditions and culture of their ancestors. It also provides information about past strengths and weaknesses which can be used to improve the future. In Africa, this information contributes in the process of learning. Understanding the history of adult education in Africa is necessary to make programs responsive to local issues and the development of local communities, and as educational programs can be designed to address the immediate and pressing needs of local residents (Draper, 1998). European and American versions of adult education appeared as a new and significant concepts in Africa during the 1990s, as a part of the strategies for development. In the goal to modernize African communities, the traditional type of adult education began to serve as an intervention for adults looking for additional training, or an initial training for those who do not have access to formal education. Modern and formal education systems have now begun to dominate African culture and society, as a consequence, there is a loss of the values that are the most important part of the traditional educational practices (Nkomo, 2000; Teffo, 2000). Indeed, this loss has affected not only the local knowledge, but also the teaching of traditional to the generations. To address this issues, a reorientation of the educational programs is needed in order to respect the indigenous cultures and practices. Therefore, it is indisputable that contemporary adult education practices must be recognized and developed that enhance cultural traditions as an academic discipline in African universities.

In Africa, the ancestors use a traditional model to educate people, and they left this heritage for education that served as the basis for creating great empires. All these political empires have experienced some form of stability resulting from the control exercised by the elders of the community through education in which people were systematically socialized and standards practices. This means that education in Africa did not begin in the colonial period; instead, Africans have been the great educators and trainers of the local people. It was in this context that young people were trained for adult life, as mentioned by Busla (1968). The young, for example:

Were prepared for their social roles in the home, the village, or town, or tribe. They were constantly being made aware of the community to which they belonged, in and for which they were trained through work and play and religious rites, through songs and dance and folklore, through customary service received or given within [an] all-embracing network of family and kinship ties (Busla, 1968: 15).

Thereby, they can cope with effectiveness the up and down life situation at any time and everywhere.

By recognizing this, it is important to develop education opportunities by taking into account all of the target population and all modalities for adult education and learning processes, while remaining within a holistic vision of learning throughout life (Merriam & Caffarella, 1999; Gee, 2001; Belzer & St Clair, 2003). In addition, Adulthood was traditionally celebrated through non-formal education programs that addressed a number of issues directly concerning the cohesion and stability of a society such as marriage and procreation, initiation for boys and girls in which they received useful training in day-to-day dealings within the society in which they lived (Mgadla, 2003). Moreover, this was itself educational, and every adult was a potential

educator and then the educational field was not the educational institution, but it was the society in the condition of work (fields, forges, forest, the river, etc.). This formation, organized and developed by elders and leaders from the local communities who were respected for their knowledge of cultures and their integrity in preserving such cultures, offered opportunities for people to learn, adapt and improve their life condition as well as prepare for future social position and administrative position (Hermans, 2004). The traditional educational system was collective, since the individual was always defined in relation to the group which ensured their education (Peatrik, 1994). Thereby, knowing these reasons, it is essential to adapt learning modalities and activities as well as educational experiences to address these specific requirements of adult learning conditions. Because the main objective of the educational process is to prepare an individual to take his or her full place in the society and to cope with the realities of life, there were no distinct or formal educational institution of society within traditional educational system (Matos, 2000).

Before the independence for West African countries which occurred in 1960, the aim of the traditional education was to provide information, skills and competencies necessary in daily life and in the society (Nkomo, 2000; Mgadla, 2003). The comparison of the modern (colonial system) and traditional educational systems show the negative impact of destroying the fundamental base of the African society because the colonial education system does not deal with how to live in the society. Indeed, the colonial system broke down the traditional education in Africa that was always based on the transmission of a number of values (ways of being and acting recognized and shared by members of a society) such as the community supremacy over the individual, solidarity, respect for elders. Furthermore, the colonial system was designed to serve the interests of other cultures by spreading their lifestyles

and cultural practices of community, which was also completely unfamiliar to Africans (Ki-Zerbo, 1990; Burke, 1996). In addition, the European colonizers thought that European culture represented a superior civilization to which the school was to lead the colonized. In short, the colonial school caused a "clash of cultures" (Deblé, 1994) and disrupted not only the cohesion between education and society, but more broadly social order itself.

After the independence, the literacy and adult education are progressively included in the national development policies in the context of African education. There also appears to be a level of access to other areas of learning and the exercise of the different social roles of adults. In addition, education can be appreciated as a possible strategy to encourage adults to think about their own questions and problems they pose and face while seeking appropriate solutions (Hillman, 2002). However, it was not until the late 1990s that literacy and adult education were truly considered as integral part of national education policies and redirected to serve local needs (Matos, 2000). Now, adult education needs to prepare African people in their new life and sensitize them to ways in which their societies can be developed. The leaders of the new states of Africa face the challenge of building a skilled workforce for the development of their countries. The educational model inherited from colonization produced uprooted citizens and must be replaced by an educational system that is responsive to the need for African people to interact with the natural world around them (Matos, 2000). It was also required at that time to solve the problem of identity and the alienating characters of the educational institution.

Extension Education

Extension education is indispensable in the improvement and development of life for farmers in Senegal. It provides not only expert assistance to raise the level of production and processing, but also diffuse information and support the transfer of knowledge, skills and

scientific findings from theory to practices (Mezirow, 2000; Norris, 2003; Merriam et al., 2007). In other terms, it helps to increase production, income, or even to participate in the amelioration for family living by increasing their prosperity. Extension education systems play an important role in the development of agricultural production. The agricultural extension agents must be aware of psycho-social and social aspects of group action and individual counselling. The extension education system is an educational process which can be used to diffuse the desired transformation in the productivity of agriculture for farmers. Indeed, the extension education uses teaching and learning processes to disseminate knowledge and skills for bringing about the maximum number of people with the desirable and required changes to them (Scarborough et al., 1997). Despite, the extension agents are facing numerous problems and relevant solutions are not found until now.

Extension education is defined by several professionals and practitioners in the field of knowledge generation including (Srinath, 2002; Sharma, 1998; Van den Ban & Hawkins, 1996; Rasmussen, 1989) as the processes that teach and diffuse knowledge for farmers, rural population and producers to have a better life and learn how to improve their livelihoods. Extension education uses the learning by doing teaching practices, similar to the experiential learning process, in partnership with government agencies, the private sector including the Fiber and Textile Development Company, Senegalese Council for Organic Agriculture, NGOS and the people in local communities. The principal goal of extension education is the development of people through the application of new information regarding the latest technologies, technological innovation, knowledge and skills in a specific community context (Scarborough et al., 1997). It is well developed with its own philosophy, principles, objectives, methods and techniques that must be understood by extension specialists, faculty members, funders and the

government (Mott, 2002). The principles, methods and techniques of the extension education programs are applicable not only to agriculture but also home economics, health, and family planning. By knowing and using the principles of educational program planning that consider participant interest and needs, cultural differences, motivation for participation and adaptability, the extension agents can be successful in their duties and objectives to put out the development educational, social, economic and political developments of people. Extension education is different from the formal education in the way that its educators prepare people to solve their daily life problems, verses formal education in which educators prepare student for their life after school (Baren-Stein & Draper, 1993; kwnoles, 1990). It may, however, be mentioned here that when extension education is put into action for educating the rural people, it does not replace formal education. In that sense, there are several differences between the two (Chauhan, 2000). The table below shows some differences:

Table 1: Comparison between Formal Education and Extension Education

Formal Education	Extension Education
1. The teacher starts with theory and works up to practical.	1. The teacher (extension worker) starts with practical and may take up theory later on.
2. Students study subjects	2. Farmers study problems.
3. Students must adapt themselves to the fixed curriculum offered	3. It has no fixed curriculum or course of study and the farmers help to formulate the curriculum
4. Authority rests with the teacher	4. Authority rests with the farmers
5. Class attendance is compulsory.	5. Participation is voluntary

6. Teacher instructs the students.	6. Teacher teaches and also learns from the farmers.
7. Teaching is only through instructors.	7. Teaching is also through local leaders.
8. Teaching is mainly vertical.	8. Teaching is mainly horizontal.
9. The teacher has more or less homogeneous audience.	9. The teacher has a large and heterogeneous audience
10. It is rigid.	10. It is flexible.
11. It has all pre-planned and pre-decided programs.	11. It has freedom to develop programs locally and they are based on the needs and expressed desires of the people.
12. It is more theoretical.	12. It is more practical and intended for immediate application in the solution of problems.

Chauhan, 2000

Senegalese Extension System

The purpose of extension services is to educate people such as producers, agribusiness, other entities about new technology, policies, and practices that may increase profitability, reduce pollution, or benefit society in some other way. The evolution of the extension system in Senegal has developed in four principal periods: the first period 1960 to 1980, the second period 1980 to 1989, the third period 1990 to 1997 and the last period which started in 1997. Each period has specific goals related to the specific needs for the rural population to ensure sustainable development. The extension system in Senegal has used different approaches to

spread and disseminate information for farmers. These organizational approaches are rural mobilization, commodity-oriented extension methods and extension classic methods.

The diversity of goals within the extension system require the establishment of modern mechanisms and procedures that govern the relationships between the various agricultural and rural advisory providers in order to facilitate the implantation of extension programs (Caffarella, 2002; Cafferella, & Daffron, 2013). These modern mechanisms and procedures facilitate the coherence and harmonize the level of communication between extension services, as well as agricultural and rural counseling methods through the entire national territory to achieve the goals of human development, improved living and working conditions, and increased productivity (Knuth, U., & Knierim, A.2013; Koundinya, 2010; Kapetanakis, & Kudenko, 2002). In addition, the modernization of the agricultural system is dependent on the shifts that will need to happen in the extension system. Extension services are still quite limited not only because they are underfunded, but also because many of the end users lack sufficient education to be able to respond to new information.

Animal husbandry in Senegal

Animal husbandry is an essential component of the Senegalese economy and occupies a dominant position in the search for food self-sufficiency. The value of animal husbandry is estimated to be up to 847.48 billion CFA francs in 2011, of which almost 585 billion is only from ruminants (MEF, 2011).. Based on the great Senegalese household survey (RGPHAE, 2013), over 56% of Senegalese households practice animal husbandry and 7% have of oxen, 16.7% own small ruminants and 32.4% have the two types small ruminants and oxen. Most rural

households (nearly 55%) raise both cattle and small ruminants (MEL, 2009; RGPFAE, 2013).

However, in Dakar and other cities, the small ruminants dominate the animal husbandry system.

In recent years, there were a real dynamism with significant increase in performance, especially in terms of adding value, thereby strengthening the contribution of local industries in meeting national demand. The added value of animal husbandry at current prices increased from 236 billion CFA francs in 2008 to 243 billion CFA francs in 2009, an increase of 3.2% against 7.9% a year earlier. It represented 24.8% of the total value added of the primary sector against 27.1% in 2008, in liaison with the dynamics of agriculture (up to 1.1 points) and mining and quarrying (extractive operations) up to 1.3 points (MEL, 2009; RGPFAE, 2013). Several constraints hinder the increase in productivity of animals. These constraints are primarily related to water, food, health, husbandry practices and the flow of products. In addition, the extension of crops and hunting zones significantly reduce space reserved for livestock. The alternation of wet and dry seasons, and the erratic nature of rainfall deeply mark the animal production systems. The breeding system practices depend on many factors, the most important is the rainfall patterns. Thus, depending on the availability of water and feed, there is a particular type of animal husbandry system in a given region.

In Senegal, there are three production systems namely. The pastoralism is essentially an extensive production system, which is in other words entirely dependent on natural resources, including water and fodder (Adriansen, 2008). The main feature of the pastoral system is the migration of humans and animals with the seasons. Depending on the form taken by this movement, this is either nomadism or transhumance. Nomadism is an irregular migratory movement that is primarily found in the north-Sahelian zone, while transhumance migratory movement is a more or less regular, yet is also subject to seasonal fluctuations and follows a path

from the Northern Sahel to the south, or north to the northern Sahel-Sudan zone (Adriansen, 2008; Graf et al., 1992). Natural pastures constitute the essence of feeding cattle. But the composition and evolution of the feeding value of pasture vary with rainfall (Ndiaye et al., 2003). The agro-pastoral system is based on the association of livestock to rain supported crops (millet, groundnuts, cotton, etc.) and irrigated crops rice, tomatoes and onions). The semi-intensive grazing system is used more in mixed-use areas where agriculture dominates the land use (Ba Diao, 2004). In this system, man intervenes by making improvements in the herd. It is characterized by the size of the often small herd and management of part of the animal health. Animals live in pens or are simply attached to stakes planted in fallow for manure. They receive a supplementary ration during the evening milking before their return to grazing and in the morning before departure (Mbaye, 1982). Animals are brought in rainy season into the more wooded areas or on routes kept aside temporarily for pasture (Rukunda, 2009). Peri-urban farming systems have recently been developed to partially meet the rapidly increasing demand of cities in animal products. They often involve short-cycle species (poultry, pigs) but also intensified forms of ruminant livestock (milk and especially fattening). It affects 1% of cattle and 3% of small ruminants. The farms are intensive and semi-intensive (Rukunda, 2009). In this type of farming, animals are kept in conditions of housing, feeding, assistance and perfect care. Intensification will always hand in hand with stabling and in this type of farming production strategy must always be set through the possibilities of forage crops and enhancement of agro-industrial and household-products. A rather general definition of the concept of production system: all techniques and practices implemented by a community to operate in a given space of plant resources intended for animals, under conditions compatible with its objectives and constraints of the soil (Bernard, 2008; Lhoste, 1984). It is clear that this notion of production

systems can be applied to different levels of scale; it is relevant at the farm level, it remains at the level of the rural community and to larger groups. The production systems shall implement use patterns of space, the relationship between animal production and plant productions and productions evaluation methods (Adriansen, 2008).

Welfare and animal husbandry in Senegal

Concept of Animal Welfare

The research defines the welfare and explains evidence of the welfare of an animal (evaluated according to scientific evidence) requires some fundamental criteria such as good health, sufficient comfort, good nutrition, safety, and ability of the animal to express natural behavior, lack of pain, fear or distress (OIE, 2011, Broom, 2007; Webster, et al., 2004). According to the Health Code of the OIE Terrestrial Animals (2011): "The concept of animal welfare refers to the state of the animal, the treatment that an animal receives, is covered by other definitions of working animal (horse, donkey, mule and cattle) welfare, but there is agreement that it includes both *physical* and *mental* components. Many definitions have been put forward to define animal welfare. One way of assessing welfare is by using the Five Freedoms framework (Fraser, 1997):

- ... **Freedom from Hunger and Thirst** - by providing ready access to fresh water and a diet to maintain full health and vigor.
- ... **Freedom from Discomfort** - by providing an appropriate environment including shelter and a comfortable resting area.

- ... **Freedom from Pain, Injury or Disease** - by prevention or rapid diagnosis and treatment.
- ... **Freedom to Express Normal Behavior** - by providing sufficient space, proper facilities and company of the animal's own kind.
- ... **Freedom from Fear and Distress** - by ensuring conditions and treatment which avoid mental suffering.

This framework assumes that the resources provided to an animal will produce an animal with good welfare (FAWC, 2009). However, this is an ideal world scenario and provision of an

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- ... the animal has dental disease and is unable to chew and digest the food properly
- ... the animal suffers from bullying by other animals and is unable to eat enough food
- ... the animal is overworked and does not have sufficient time to eat
- ... Etc.

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and to ignore the inputs. One such framework considers welfare as consisting of three overlapping components (Rollin, 1999):

- ... *Physical* component
- ... *Emotional* component (minimizing negative states such as fear, distress, pain and maximizing positive emotional states such as comfort, contentment, etc.).
- ... *Behavioral* component μ considering if an animal is able to carry all those behaviors

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different animal based welfare measures. Animal welfare is an essential component of the movement for sustainable agriculture. The designated operating methods avoid the depletion of resources while contributing to rural development. The Common Agricultural Policy provides financial assistance to farmers to comply with legislation on animal welfare or to apply higher standards than the legal requirements (DGHCP, 2007).

The animal welfare research conducted in poor communities contributed to the amelioration of the condition of living and wellbeing of working animals (Whay, 2010). The finding and contribution of veterinarians, scientists, experts and government agencies on working animals, animal welfare and environmental issues have helped to start improving animal husbandry and its ethic (Pearson et al., 2007). Now animals are estimated as creatures capable of feeling pain, so it has become necessary to protect and respect them as living beings and thus to ensure the safeguarding of their health, physical, psychological or in the exploitation of their forces (Carretero et al., 2005; Colunga et al., 2005; Pritchard, 2003) in different areas of economic system such as farm work and the water drainage, transportation of people and goods, and sport activities.

Animal welfare in the extension system in Senegal

Extension specialists have the responsibility to share the concepts of welfare in the animal husbandry to inform producers and farmers. Also, understanding of the existing lack of information about animal welfare in the extension system may help farmers to improve their responsibility and knowledge (Prokopy et al., 2008; Gendenning et al., 2010). Indeed, animal welfare is well known and well taken care of by the producers in developed countries, but in developing countries like Senegal, the welfare of an animal is not included in the production

system and the use of animals. In addition, it is clearer that the principle of welfare animal must be applied first for working animals. In order to illustrate the necessity of the improvement of life for the animal husbandry, the program faced in welfare for working animal. The working animals are very popular in Senegal, they are used as a light working animal for farm work, in the transportation of people and goods, and in the water drainage system. Also, they are involved in almost all different sectors of socio-economic activities. Thereby, seeing the role, importance and impact that working animals play in Senegalese agriculture an educational program for extension agents and faculty members on animal welfare should contribute to the life improvement of animals (Wilson, 2002; Stringer et al., 2010).

Despite the strong need for their contribution to production systems related to the socio-economic situation in Senegal, the welfare of working animals are not satisfying in many ways in the regions. However, although the current situation is certainly difficult, people are aware of the issue and are willing to change the working conditions (NAD, 2004). Because, today, for a family that does not have horses or donkeys in these areas, it is almost impossible for them to cultivate large areas especially during the transition to lean period (Fielding & Starkey, 2004). However, the ability to boost these horse and donkeys welfare are blocked by a chronic lack of basic information in a context of poverty and environmental degradation (Khodobo, 2006). In Senegal, we note a regulatory system which includes the protection of working animals in their work. However, all of the current regulations do not focus on animal welfare. Therefore, we note a broad system of protection acts that problems. This situation is the result of a lack of knowledge and organization for the animal owners (AAHC, 1999; Patrushev & Patrushev, 1939), extension agents and faculty members.

Extension specialists have the responsibility to share the concepts of welfare in animal husbandry to inform producers and farmers. Also, understanding the existing lack of information about animal welfare in the extension system may help extension agents to cope with difficulties and their responsibility in order to improve their knowledge (Prokopy et al., 2008; Gendenning et al., 2010). Indeed, animal welfare is well known and well taken care of by the producers in developed countries, but in developing countries like Senegal, the welfare of an animal is not commonly included in the production system and the use of animals. In addition, it is clear that the principle of welfare animal must be applied first for working animals. The working animals are very popular in Senegal, they are used as a light working animals for farm work, in the transportation of people and goods, and in the water drainage system Given the role, importance, and impact that working animals play in Senegalese agriculture, educational programs provided by extension agents and faculty members on animal welfare should contribute to the life improvement of working animals (Wilson, 2002; Stringer et al., 2010).

Chapter 3: RESEARCH DESIGN AND METHODOLOGY

Purpose and Research questions

The purpose of the study is to develop a set of recommendations to improve the educational program planning and teaching skills of educators in the extension system by introducing new approaches to teaching animal welfare of working animals. By conducting educational program planning for state agents and university faculty members in Diourbel and Thies regions, they will be able to develop several sets of points that will help them to improve the training opportunities offer to local farmers to improve the welfare of working animals by extension educators. This descriptive qualitative study connected qualitative data derived from participant observations, interviews, focus group and qualitative document analysis. The extension agents and teachers involved in animal husbandry and animal extension system served as participants. Four major questions guided the study:

Research questions

1. How are agricultural extension programs currently taught, presented or offered for other owners of other animal species in the Diourbel and Thies regions of Senegal?
2. How do extension agents and animal management faculty members respond to experiencing participants focused teaching practices in their professional training?
3. How do extension educators in Senegal recommend participant student-centered teaching practices be used in extension program?
4. How do extension educators and faculty members assist farmers in ensuring that accepted standards of welfare for animal husbandry are maintained including the care, feeding and physical wellbeing of domestic animals?

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education and training program for extensions agents and faculty members in Diourbel and Thies regions. The research focused on social development of people by improving their condition of social life and professional development with the support of a continuing professional education program planning framework (2006) adult education program planning theory. The participants selected for the study were the four state extension agents from the regions and three faculty members from the department of animal production at the regional university. The researcher used multiple means of data collection associated with the descriptive case study including:

- 1.) Qualitative document analysis (Yin, 2003),
- 2.) Formal in-depth interviews with each extension agents and faculty members,
- 3.) Participant observation of a continuing professional education program for extension agents and faculty members involved in animal management education,
- 4.) A single focus group that provided a member check (Patton, 2002) of the working themes developed in the preliminary data analysis.

The data collection process began with the selection of participants from the entire group of stakeholders and then included the following sequence of activities: individual interviews with each participant, document analysis of extension and government materials associated with the educational programs in animal management offered through extension agents, the continuing professional education program planning committee meeting conducted to provide the group

with an opportunity to discuss the final list of workshop topics that would be included in the extension education program for animal welfare, completion of the continuing professional education program and concluded with a focus group (Appendix I) discussion of preliminary finding.

Sampling and participant selection

Participation in this case study was based on the existing extension programs for animals and the agricultural education program in the department of animal production at the university. The participants selected for the study were the four state extension agents and three faculty members from the department of animal productions as the sample for this case study, as their experiences were relevant to the research questions (Stake, 1995; Schwandt, 2001; Patton, 2002). The reason why the group was chosen was b#f#x#n#i#k#h#(#s#h#w#g#E#i#r#p#d#i#r#g#i#f#k#S#P#Patton, 2002, p. 231) data that would be gathered from their insights and statements. All of the faculty members and extension agents participated in the interviews and in the focus group.

Contacting the case study group

After receipt of IRB approval (Appendix J and K), initial contact was made with the head of the extension office and the head of the department of animal production. The researcher provided these individuals with a general overview of the case study and a working of the interview and observation protocols as well as consent forms (Appendix F and H). Once approval was granted by these authorities, the researcher met with the participants to discuss the purpose and overview of the case study. This discussion included ideas regarding animal welfare instruction for the participants, the current practices and delivery methods within the extension system, review of the consent forms, review the working interview protocol (Appendix L), as well as the proposed interview schedule (Yin, 2003).

Consent forms (Appendix A, B and C) and a letter from the researcher (Appendix D and E) detailing an overview of the case study was sent to the participants by email for review prior to meeting with the researcher (Yin, 2003). The French language was used for all discussion with the participants and consent forms were written in French. By using French as the language of program and research activities the researcher avoided the possibilities of misunderstandings because all participants were able to read and understand the French language. The importance and purpose of the consent form was explained to all participants before consent was requested of the participants as it was necessary to document the interactions of the participants as they engage in the research activities.

Preliminary work

The Table 2 is the *a priori* propositions used to assist the researcher in the planning and development of the interview guide and observation protocol as described by (Yin, 2003). Indeed, the purpose of the propositions is to provide guidance in where to look for relevant evidence that should be examined within the scope of the study. Table 2 explains how the propositions are correlated to the participant interview guides, focus group and observation protocol, as well as the supporting literature.

Table 2: a Priori Propositions

Proposition	Supporting Literature	Research Questions	Interview Questions	Observation Guide
<p>The participation of extension agents is integral to the work of continuing extension education program for farmers.</p>	<p>Planning program and program development are a social activity whereby people construct educational programs by negotiating personal, organizational, and social interest in contexts marked by socially structure relationships of power (Cervero & Wilson, 2006, Caffarella & , 2006).</p>	<p>1. How agricultural extension programs are currently taught, presented or offered in other animal species in the same regions of Senegal?</p> <p>2. How do participants in an animal management extension education program respond to problem-based learning?</p> <p>1. How to educate farmers in ensuring that accepted standards of animal welfare are maintained including the care,</p>	<p>Describe how do teach animal welfare compound based working animal managements?</p> <p>What do think about delivery method used in the extension activities?</p> <p>What is your experience by using the extension delivery method?</p> <p>Can you give the list the animal welfare compound based on the modern system of working animal managements?</p>	<p>How extension agents shows their knowledge about the delivery methods?</p> <p>How extension agents put in practice their skills about the delivery methods?</p> <p>How extension agents and faculty member perceive adult education in the animal husbandry system</p> <p>How extension agents and faculty members perceive the animal welfare compound?</p> <p>Do extension agents and faculty members implement animal</p>

		feeding and physical wellbeing of domestic animals?	What was your experience as part of the extension system?	welfare compound in their job?
The communication dynamics within a group influences the ability of individuals to participate in teaching, group discussions and decisions for extension activities.	The ability of individuals to represent their ideas and perspectives within a group is influenced by the power they possess through the relationships that exist between them and others in the group.	<p>1. How agricultural extension programs are currently taught, presented or offered in other animal species in the same regions of Senegal?</p> <p>2. How do participants in an animal management extension education program respond to problem-based learning?</p>	<p>Describe the extension communication; particularly those who teach different groups?</p> <p>What should be the conduct of drivers to account for the animal welfare?</p>	

Table 2: *a Priori Propositions Continued*

Proposition	Supporting Literature	Research Questions	Interview Questions	Observation Guide
<p>When farmers value what they are learning, they respond better to animal management program.</p>	<p>Fabus et al., (2012) explained that in response to growing interest in horse welfare and the need for 4-H curriculum for horse welfare curriculum, the used tools are very relevant.</p>	<ol style="list-style-type: none"> 1. How do farmers respond to an animal management program on welfare for working animal? 2. How to educate farmers in ensuring that accepted standards of animal welfare are maintained including the care, feeding and physical wellbeing of domestic animals? 	<p>What are the constraints of the animal welfare according to the respondent?</p> <p>How do you feel being offered about a program planning for welfare?</p> <p>What are the prospects for improving the care of the animal welfare?</p> <p>How do you see the educational method influence the development or growth of the profession?</p>	

Table 2: *a Priori Propositions Continued*

Proposition	Supporting Literature	Research Questions	Interview Questions	Observation Guide
<p>The relationships between farmer groups responsible for extension education programs will influence how the individuals respond or participate in the management of the program work.</p>	<p>Different groups or organizations that provide continuing professional education programs do so through established relationships influence how they participate in the planning work and how their agendas influence the educational program (Cervero & Wilson, 2006)</p>	<ol style="list-style-type: none"> 1. How do participants in an animal management extension education program respond to problem-based learning? 2. How do farmers respond to an animal management program on welfare for working animal? 3. How to educate farmers in ensuring that accepted standards of animal welfare are maintained including the care, feeding and physical wellbeing 	<p>What do you think about these statements below, and their impact? Maintenance and hygiene of animals? Housing? Health? Sanitary? Feeding? Working condition?</p> <p>You have received training on welfare from the extension or state agents?</p> <p>Is there anything else you would like to share with us regarding the agricultural extension?</p>	

		of domestic animals?		
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Pilot testing

The interview guide was pilot tested with one extension agent and one faculty member who were involved in the extension system and teach in the field of animal welfare. The pilot test for the initial interview protocol took place two days prior to the first scheduled interview. As a result of the pilot test, the researcher was able to make modifications to the interview protocol based on feedback. Modifications included the addition of questions regarding (1) teaching methods and presentation used for other animal species in the extension system, (2) experiences in working with farmers, (3) feedback provided by the teacher, and (4) how farmers respond and interact with extension agents in their everyday life

Data Collection

Document Analysis

In this study, data was collected through the review of the documents that were related to the improvement of extension system based on animal welfare education program and program activities. Relevant documents (Appendix E) were requested and selected during the research process and continued to be collected throughout the study as relevant items were identified during the extension team meeting and the individual interviews.

Observations

Observations were made during the extension office meeting as well as the meetings of the teacher teams. These observations were recorded and later analyzed by the researcher. The observation occurred during the meeting that I had with the participant individually, during the implementation of the continuing educational program and focus group.

Interviews

The interview was conducted with extension agents and faculty members who were involved in the extension system and teach in the field of animal welfare. The interview for extension agents took in their extension office, and it was an individual interview. The interviewee was reminded about the confidentiality before starting to record data. It was the same thing for faculty member once we scheduled interview with all participants. The length of the interview was between 50 minutes and 90 minutes (Appendix L).

Continuing Professional Program for Animal Welfare in Bambey

Participants of the program were the group of extension agents who are active in the extension public office for animals in Thies and Bambey, and the faculty members at Thies University who are involved in the agricultural education program in the department of animal production and still delivered programs for breeders and farmer leaderships. They are selected because their experiences are relevant to the program. Also, the expected substantial information that can be gathered from these group are the main reason why the group was chosen. These people are key elements in the extension activities, and the extension process depends on their effectiveness. In addition, they are expected to respond to a given situation and function effectively. They can also evaluate the welfare impact on a specific animal species like goats or sheep, and create opportunities for extension agents, state agents, farmers in order to update their knowledge by proposing new curricula (Cafferella & Daffron, 2013; Cervero & Wilson, 2006). During the program, participants examined strategies that can be employed to improve the extension system for animal husbandry by increasing extension agents and faculty members' knowledge and skills toward improved welfare for working animals in Senegal. The table below shows the time-line of the program.

Table 3: Animal Welfare Program Time-Line

Activities	Dates
Module 1: Opening session/activity	1/27/2016
Module 2: diagnostic of the current extension system	1/28/2016
Module 3: Design and implement effective educational training program for animal welfare	2/1/2016 and 2/2/2016
Module 4: Animal rights and animal welfare	2/3/2016
Module 5: Evaluation of animal welfare and educational training program	2/8/2016
Module 6: Using technology in the animal husbandry extension system	2/9/2016

Focus Group

This study used findings developed during the preliminary analysis of the documents gathered from the extension office, observations gathered throughout the program planning, and the individual interviews (Patton, 2002). The focus group took place two days before the end of the continuing professional educational program. Before the focus group began, the researcher reviewed the focus group consent form with the participants and addressed any questions they had about the focus group process or the research project. The social context of the focus group helped participants respond the categories of questions with their own experience from participation in an animal management program. The focus group was audio-recorded to complement the field notes and observations gathered during the session (Hatch, 2002).

Data Analysis Procedures

The specific analysis process followed the process of the program and the different reports cumulated and compared for the final working animals. The researcher used the Windows Media Player© and Express Scribe© transcription software and the Atli ti© software package to store, manage, code into categories, and aid in the analysis of the transcripts and related documents. Upon completion of the transcriptions, the researcher reviewed the data and begin initial coding informed by the literature outlined in the propositions, the words of the participants, and the understanding interpretation of the investigation during the program. Then, a verification of the coding of the data was reviewed to identify properties and dimensions of the themes, and to demonstrate similarities with others that needed to be integrated into one category to represent the existing set of themes. The manuscripts of the themes were analyzed by the researcher and a consultant connected to the delivery of the continuing professional training program. Yin referred to this process as analytic generalization (Yin, 2003, p. 33) as a means of guiding the data analysis procedures. The specific analysis process followed the constant comparative method (Glaser & Strauss, 1967/1995, p. 103) were conducting grounded theory (Corbin & Strauss, 2008, p. 73) that will be specific to each category as they will be developed.

The researcher knew the extension specialists, associate, agents, technicians, and faculty members from the university from his experience as a teacher in the animal husbandry department. As a result, he was comfortable conducting the interviews for the research and the program planning, and the participants were more willing to share pertinent information and documents. The interviews and focus group (50 minutes to 90 minutes length), 7 planned program days, and the document analysis led the researcher to reflect on his experiences as a teacher. The stakeholders were talkative and shared information on-the-job experiences and working conditions because of w#hdu#khu# connection with the participants of the study.

Chapter 4: FINDINGS

This research study examined ways to develop a set of recommendations to improve the educational program planning and teaching skills of educators in the extension system who are focused on improving their educational approaches with farmers and cart owners to improve animal welfare for working animals. The chapter presents the data found to address the four research questions of this study:

1. How are agricultural extension programs currently taught, presented or offered for other owners of other animal species in the Diourbel and Thies regions of Senegal?
2. How do extension agents and animal management faculty members respond to experiencing participants focused teaching practices in their professional training?
3. How do extension educators in Senegal recommend student-centered teaching practices be used in the extension program?
4. How do extension educators and faculty members assist farmers in ensuring that accepted standard of welfare for animal husbandry are maintained including the care, feeding and physical wellbeing of domestic animals?.

The findings provide a detailed discussion of the different subjects from the research questions, and provides also an in-depth understanding of their opinions about the challenge and opportunities of the local extension system. For this study, several activities were implemented to capture data from document analysis, interviews, observation during a planned continuing professional education program for university faculty members and extension agents and a focus group. Between January 15 and February 17, 2016, seven individual interviews were conducted with four extension agents and three faculty members involved in the animal husbandry

extension system. Focus group with seven participants of the continuing professional education planning program in ISFAR at Thies University was conducted before the end of the program to enhance data gathered from the interview. The final piece of the data collection for this study was the observation of the participants in the continuing professional education program. All transcripts were read line-by-line to code, separate and analyze the data. Comparison of the data gathered from the research process permitted to identify similarities and differences within the categories and codes in the transcribed interview and focus group. Thereby, the researcher identified themes related to the four research questions, and the impact statements, success stories, constraints, solutions and recommendations were considered as pertinent for this study. Before providing finding to address the first research question, it is important to give the characteristics and background of the participants as discovered during the study.

Characteristics of the participants

The results revealed that the participants had a variety of years of experience, academic histories and education levels, professional positions, and roles in the animal husbandry extension system and university system. Three participants were campus-based faculty involved in the extension system and four were extension agents in the animal husbandry public extension system. Participants had similarities in work experience within the animal husbandry system, however, the amount of knowledge held by each participant regarding extension services and how it functioned were different prior to employment. All participants had at least one academic degree in animal husbandry and veterinary science. Other degrees held by participants included general agricultural, agricultural and rural development, and project management. The table 3 summarizes the characteristics of the participants.

Table 4: Characteristics of the participants

Participants	Position	Role	Education level	Years of experience
Diarra	Head of the Departmental extension office	Coordinate the extension activities and services	Labor Engineer and Project manager	8
Moussa	Extension specialist and previous head of the Departmental extension office	Implement extension activities	Agricultural Engineer	25
Niokhor	Head of the animal Production department at Thies university	Coordinate activities and teach	PhD and vet specialty	25
Diogoye	Teacher at the Thies university	Teach in the extension	PhD and Project manager	10
Dibokor	Extension agent	Implement extension activities	Under grade animal extension specialist	30
Adiouma	Teacher at the Thies university	Teach animal health in the extension	PhD candidate and vet specialty	10
Babacar	Extension agent	Implement extension activities	Under grade animal extension specialist	20

Parental influence, as well as personal and profession histories emerged as influential and key factors that affected participation in extension. All participants had prior involvement in animal husbandry and agriculture activities such as horse care, donkey care, beef management, crop production, sheep and goat management, because all of them were raised in farming families. Diarra was familiar with extension system prior to employment because of her father who was an extension agent in the agricultural public extension system. Her early knowledge of extension was obtained through her families. She said that: *mon père était un agent de la SOGHYD*

milk production to meat production, welfare animal, and pastoral production. Training of extension agents in these conditions furthers the effort to help achieve the objectives of modernization of agriculture in West Africa (Belay & Abebaw, 2004; Chizari & Karbasioun, 1998). Specifically training program in the Senegalese agricultural context will contribute to the training of agents to identify training needs, define training content, mobilize learning resources, and develop a training plans for farmers with different commodities or animals (Cafferella, & Daffron, 2013; Cervero, & Wilson, 2006; Caffarella, 2002).

Training program provided an opportunity for dialogue and a global perspective through the presence of participants from different regions of Senegal. It also allowed a better understanding of the challenges and opportunities for agricultural extension in other regions of the country (Cafferella, & Daffron, 2013; Cervero, & Wilson, 2006; Caffarella, 2002). This program and associated research will contributed to the implementation and consolidation of the positive program activities of our animal husbandry extension system through the training of educators responsible for its implementation. The training of extension educators is necessary to help them improve their performance in the transmission of new knowledge on practices, farming techniques, and new communication techniques. Thus, our program will help address this lack of training of extension educators in Senegal (Anderson & Feder, 2004; Scarborough et al., 1997).

A significant challenge in transferring agricultural knowledge and information to farmers has been the environment in which farmers and the agricultural extension system have had to operate (Bembridge, 1993). Indeed, there is a lack of knowledge and skills about caring for working animal because difficulties can be identified with extension professional, and owners and cart-drivers. Animal owners and cart-drivers generally seek only for earning income by working with them without unduly worrying about the time or the rest of the animal. Extension agents also

ignore generally the concept of animal welfare and its compound or did not have an update of knowledge about it, and faculty members give broad courses that brief or sporadically concern animal welfare. In addition, the difficult conditions of living for working animals are the result of a sum of lack of knowledge, skills and organization in the area (Burden et al., 2010).

The program process was formal and allowed researcher to easily maneuver where and how the instruction is going. And then, the formal process helped participants to identify, formulate clearly relevant welfare problems, and create educational programs (Caffarelle & Daffron, 2013). Writing and reaching consensus on the components and details of a welfare program can be a difficult and time-consuming process, particularly if the stakeholders have numerous priorities and level of powers. In addition, welfare program have many different components, all of which needed to be worked on based on the other activities. However, it is critically important to formally document the welfare program for transparency and consensus (Rong & Jia, 2008; Calixto & L ebre Larouvere, 2010).

Research question 1: How are agricultural extension programs currently taught, presented or offered for other owners of other animal species in the Diourbel and Thies regions of Senegal?

The first question of the study was designed to examine the existence and implementation of the current extension program for other animal species. The themes identified from the interview, focus group and the continuing professional education program implementation in response to this question included: job expectation and responsibilities, institutional and organizational factors, capacity building and professional development plans and recommendation for improvement. Indeed, the themes emerged for the current programs including poultry programs, cow and sheep fattening programs, the national vaccination campaign and artificial insemination programs

Job expectation and responsibilities

The participants explained that their job expectation centered on the organizational mission and goals of extension within the current agricultural extension programs for other animal species. These job expectations included helping breeders with their problems, answering their questions and also stated that their own goals as extension agents or faculty members was giving people practical and simple solution that can be utilized by breeders to enhance the livelihood with their personal skills and local materials. Diogoye expressed that he had to address variety of areas in his workload in order to meet the expectations of his organization. While he is an extension agent in animal husbandry, he also had crop or agroforestry duties. So he said: *Èy fñw#lynf#En#rsxw#lx#q#v#tx#l#q#w#dy#do#p#x#q#w#N#ly#u#dj#h#y#f#h#v#thèmes agricoles comme la culture du mil, du niébé et les cultures fourragères pour alimenter les animaux.* This means that *Èy* It was with these *e#h#h#u#h#r#s#x#w#l#x#q#v#h#h#h#h#r#u#l#j#p#x#l#j#w#h#d#l#q#l#h#d#v#r#q#z#l#k#d#j#u#l#f#o#x#u#d#k#p#h#v#x#f#k#d#v#* millet, cowpeas, maize, groundnuts and feed crops for feeding animals. Babacar thinks that he has the talent to work with producers since his professional background and responsibilities match an extension agent position. He is also comfortable with problem-solving and making a difference in behaviors, practices etc. To show the large rang of expectations, Babacar explains that he worked with different structures and partners in doing educational veterinary programs, management of local natural resources and vegetable gardening. Babacar described his experience with two partners and one national program:

Èy #ñ#d#h#x#h#u#y#d#l#o#u#y#h#f#h#x#{#w#x#f#w#h#v#h#o#ñ#d#ñ#e#r#g#ñ#d#w#r#f#l#w#r#q#s#r#x#u#h#d#éveloppement de Sengala, où il y avait un volet élevage comme formation des auxiliaires y#w#u#l#q#d#h#h#w#q#y#r#w#d#j#u#l#f#o#x#u#h#e#r#x#u#h#p#d#u#l#f#k#d#j#h#w#y#h#h#s#u#m#w#h#h#j#h#w#r#q#h#h#v#h#h#w#r#x#u#h#v#q#d#w#h#o#h#v#h#ñ#d#h#x#h#u#y#d#l#o#u#y#h#f#h#h#u#l#f#h#h#v#h#d#x#{#h#i#r#u#h#

Signifying that: *Èy* I had to work with two structures. The first one is the association for the

Institutional and organizational factors

Organizational supports are crucial for job successes, and *soufflons* emphasize that they need effective supports to accomplish their jobs in advising producers. Participants identified several problems in designing, implementing and evaluating extension programs. Mr. Babacar explained that difficulties such as limited local offices support of materials, equipment and no specific budget for extension activities for the local level affected their job particularly in implementing an educational program for fattening cows or artificial insemination. He said that: *il faut bien équiper les agents en moyen logistiques, matériels, pédagogiques pour leur* *shup hwhgñdnu#zud#nuudq srxu#ñp exfkh#xñlvtp hqwrq#lwlfltho#* Meaning *wkd#y l#v#ghfrwdu| #r#ht#x#s#kh#djhqw#q#rj lwfdo#p dñulo#shgdj#rj lfdoto* to allow them to go on the field for fattening or artificial insemination program.

Moussa illustrated the different types of factors which were beyond institutional and organizational issues. He explained the role and influence of authorities such as ministry and its staff on breeders, generally these relationships negatively affected extension agent work. *È* *h#* *paternalisme des autorités par rapport aux producteurs vis-à-vis desquels elles ont des obligations* *vdq#l#q#dwngun#ñx{ #q#hup hv#gh#hr lw#* In addition, he explained the lack of institutional and organizational supports that he faced in the national vaccination campaign:

È *Par rapport à mes activités sur le terrain, par exemple avec la campagne de vaccination nous* *d#r#q#h#p r|h#v#l#x#ñd#xw* pour suivre, sensibiliser et former les producteurs. Mais à la fin de la campagne de vaccination, ce support financière, logistique et matériel *vdu#lw*. Après la campagne de vaccination, si tu as des activités sur le terrain tu dois acheter ton propre carburant, de trouver la logistique et le matériel nécessaire pour tes activités sur le terrain ; parce que nos budgets sont pratiquement supprimés du budget national pour la vulgarisation animale. Le principal support que nous recevons venant des autorités se fait pendant la *ydf#l#q#w#r#q#h#h#p dx{ #*

Signifying that: *È* *in relation to my field work, for example with the national vaccination*

campaign we have the financial resources and material needed to follow, sensitize and train breeders. But at the end of the vaccination campaign, financial, logistical and material supports stop until the next vaccination campaign. After the vaccination campaign, if you have activities in the field you have to buy your own fuel, find the necessary logistics and materiel for your field activities and our budgets are practically deleted from the national budget for the animal extension system. The main support that we receive from the authorities is done during vaccination of animals Š

Diarra displayed her feeling about having limited institutional supports for implementing programs. She emphasized that the problems could be found within the governmental authorities, because the extension authorities and agents often were forgotten in designing development policies. Also, the lack of budget increases overtime and funding from state and local authorities was inadequate to provide training opportunities for extension agents and breeders.

ÈFÑwà-gllh#xÑqgh#clonne pas les moyens pour aller et réussir
vu#h#nuduqŠ#

Meaning that: ÈIt is among the authorities that we find the problem. The agent is often forgotten in development policies. That is to say we do not give him the necessary supports to go in the fieldý Š

Moreover, Diogoye added an example from klv#wclwqz#khqk#z#dv#q#E dgd#K#h#lqñ# have support to move around the area of the county of under his responsibility during the national vaccination campaign. He said that

ÈF rp p h#h#x{#b#gl#sduh{hp sdn#l#h#hgvt#h#Edv#-#Ñvcl#E dgd, je suis resté pendant 6 ans sans moto pour mes déplacements sur le terrain. Jñvcl#redj#h#ñduh#p sukqhu# quelque part un moyen pour me déplacer pendant la campagne nationale de vaccinationŠ#

Representing that: ÈAs I can say for example if I take the case when I was in Banda, I stayed during 6 years without a bike for my field trips. I was obliged to go borrow somewhere a bike or motorcycle for my field trips within the breeders during the national vaccination campaignŠ

and practices related to the current programs as stated by Diarra by saying that "formations de renforcement de capacité et de temps en temps faire des recyclages et faire de la formation des agents une priorité pour améliorer leur méthodes de former"

Denoted to: "doing capacity building training for agents that have a good career plan and occasionally organize retraining sessions for the rest of the agents et making the formation of agents a priority to improve their teaching methods"

Furthermore, the ability to implement effective programs and develop leadership in the extension system could be obtained by attending in-service training, conferences and symposiums suggested Diogoye.

"faire la formation, la sensibilisation, les conférences, les symposiums et le plaidoyer à différent niveau je pense que ce sont les choses qui doivent être développées."

Signifying that "go the training sessions, conferences, symposia and advocacy at different levels I think these are the things that need to be developed."

Dibokor added that extension agents needed the newest knowledge on documents which could guarantee to get valuable knowledge and skills by asserting:

"Faire des séminaires de pour nos sessions de formation et sensibilisation des producteurs sur le terrain. Sur les plus productifs et performants"

Denoted to "Organizing workshops with supporting documents which will serve as a base for our training sessions and sensitization of producers in the field. About the training topics, they will depend on the type of breeder e.g. poultry farmer needs training, the milk producer and also those who are bovine or sheep fattening. Even agricultural themes for fodder crops will allow farmers to be more productive and efficient"

Mr. Babacar focused on the pedagogical aspects of the capacity building and professional

development plans by telling the role of repeating training session. *Èy woujours le reinforcement pédagogique, il faut toujours inviter les agents à suivre des formations pour rappels.* Meaning that: *Èy always capacity building because it is always said that repetition is educational. As repetition is pedagogical, therefore it is still good to invite the officers to attend training sessions for reminders.* Š

Adiouma complemented Dibokor *Èr q f h u* by recognizing the importance of documentations from workshops *Èr q f h u* the basic services and training objectives. He affirmed that: *Èr q f h u* des séminaires de formation *Èr q f h u* les documents de qualités. Ces documents vont nous servir de base *Èr q f h u* dans nos sessions de formation et de sensibilisation des producteurs sur le terrain. Š

Signifying that: *Èr q f h u* These documents will serve us as base and supports in our training sessions and sensitization of producers on the field. Š

All participants agree about the necessity of giving the extension agents the opportunities to have career improvement through capacity building. Capacity building for extension agents is crucial and critical problematic in improving the extension system.

Diagnostic of the extension system

Participants focused on several current programs for others animal species such as poultry programs, cow and sheep fattening programs, national vaccination campaign and artificial insemination programs to diagnose the extension system. Babacar *Èr q f h u* je travaille sur *Èr q f h u* er x f h bovine et ovine. Š *Èr q f h u* worked on poultry and the technics on cattle and sheep fattening. Š

He still used practice and demonstration in his teaching and training activities.

Èm#h#d#w#d#s#d#w#t#x#h#w#d#p#p#r#q#w#d#w#r#q#h#w#l#w#x#d#w#r#q#d#p#d#h#r#q#h#p#r#q#w#h#r#p#e#l#h#q#u
bon, il a besoin en fourrage, en concentré y u h#e#r#q#h#l#d#h#h#f#v#x#h#w#ce que ces excès
peuvent créer pour ton animal comme problème..S#

This tell that: È do it through practice and demonstration. If you have your animal, we show
you how - z h#o#h#h#g#h#r#g#h#f#r#q#h#q#w#d#w#y#h#u and well if there's excesses what these excesses
can create for your animal as problems good if there's excess what it can create such problems
for your pet on poultry and technical fattening S#

Also, he thought that using practice and demonstration in his context of teaching were the
most effective and useful tools when working with illiterate people. In addition, he thought that
theorize in the training session or workshop for illiterate producers is not relevant, and breeders
in his context need more practical activities. That is why Babacar said:

ÈLa pratique, n#h#q#v#h#x#h#h#w#d#p#h#l#d#x#h#f#r#d#h#h#f#u#l#{#q#ue#f#h#w#p#p#h#p#h#l#d#x#h#e
théoriser. P#d#h#t#x#h#q#h#h#u#r#q#h#d#d#s#k#d#e#w#h#w#x#b#d#d#w#h#w#k#t#r#u#h#h#o#h#h#x#e#d#h#
rapidement, mais tu lui montres par la pratique d#x#x#u#h#x#h#w#h#p#d#l#q#d#h#h#l#h#h#w#h#f#i#n#i#.
Donc je pense que pratique est la meilleur méthode t#x#h#q#h#r#l#w#d#w#h#g#d#v#h#f#r#q#h#l#r#q#h#
sénégalaises S#

Signifying that: ÈPractice, I think that it is the best school. I think it's even better than to
theorize. Because an illiterate person if you taught him theories he forgets it quickly, but if
you demonstrated him in practice today and tomorrow it is fixed forever. So, I think that
s#d#f#w#f#h#d#h#h#h#h#w#p#h#w#r#g#h#r#x#v#h#l#k#h#h#{w#q#v#l#r#q#h#|w#h#p#h#q#h#d#v#h#f#r#q#h#l#r#q#h#

Adiouma justified the importance of using practice and demonstration tools in his teaching duties
by giving an example of his successful teaching program on feeding cows.

F#h#w#d#u#h#p#p#r#q#w#d#w#r#q#h#w#d#s#d#w#t#x#h#x#h#p#x#v#d#w#r#q#h#h#w#h#x#o#j#d#u#d#w#r#q#h#x#u#d#w#p#h#q#w#h#h#
d#h#d#l#h#h#h#h#r#e#e#. T#x#h#o#h#h#w#d#h#x#d#w#h#h#h#d#l#h#x#h#d#x#g#u#h#q#f#r#u#s#r#h#u#h#f#h#p#h#h#d#x#e#l#h#q#h#
de d#h#h#h#h#g#d#w#f#r#p#e#l#h#q#h#p#s#v#h#h#q#u#and#est#f#h#h#x#h#d#x#g#u#h#x#u#d#w#h#d#h#s#x#h#e#s#animal etc.
en creusant par exemple des fosses S#

This indicates that: It is through the demonstration and practice that we are doing the
extension of the treatment of straw with urea. What quantity of straw it will need to
incorporate with salt or urea, for how long and when it is necessary to use it for animals by

irup d̄w̄r̄q̄#ñ̄d̄j̄#x̄#x̄h̄ñ̄w̄q̄h̄#s̄ūd̄t̄x̄h̄#x̄h̄h̄r̄l̄w̄#d̄w̄#l̄w̄h̄t̄+j̄d̄j̄h̄#w̄#x̄h̄r̄l̄w̄#l̄w̄h̄#x̄ūx̄ū#
appliqué d̄x̄h̄ȳh̄x̄#h̄v̄#d̄ȳh̄x̄ū#ñ̄q̄ḡl̄f̄w̄q̄j̄#k̄d̄#E The evaluation after training I saw that this is
a practice that must not be neglected and must be always applied at the level of farmers ã

However, the results of the study showed lacks of teaching methods within the extension system. All participants recognized these insufficiencies in the teaching methods. Moussa talked about the extension agents weaknesses in expressing their needs. Babacar explained his difficulties to tell his weaknesses by saying that the only thing he can do was telling his needs and not his weaknesses, Èmes faiblesses, est-ñ̄#x̄h̄ñ̄d̄h̄#d̄ēd̄w̄h̄#d̄f̄w̄h̄p̄ h̄q̄w̄ȳ est-ce que je peux voir ou savoir mes faiblesses. Tout ce que je peux exprimer peut-ñ̄#x̄h̄ñ̄w̄#h̄#h̄v̄l̄q̄# Representing that Èmy weaknesses is that I have weaknesses actually ... is that I can see or know my weaknesses. All I can express is perhaps my needs ã

Further, Adiouma lacked extension training techniques and methods and he explained this situation. Èh̄#h̄#f̄x̄q̄l̄x̄h̄#x̄h̄ñ̄# Utilise pour vulgariser un thème à part la démonstration, je ne fr̄q̄q̄d̄l̄#d̄#ñ̄d̄w̄h̄# Denoted to ÈTechniques that I use to disseminate an extension theme aside from the demonstration I do not know other methods ã#

Dibokor said he had enough knowledge and skills about extension. Èȳ ñ̄#ñ̄d̄j̄l̄w̄h̄# connaissances pour un bon agent de vulgarisation μ sur ça μ est-ñ̄#x̄h̄ñ̄d̄# les faiblesses sur ça ? Je ne crois pas. Peut-ñ̄#x̄h̄ñ̄d̄h̄# ñ̄w̄r̄ḡh̄#x̄h̄ñ̄d̄h̄# fr̄q̄q̄d̄l̄#d̄#h̄q̄p̄ d̄l̄-ñ̄#h̄# yx̄oj̄d̄īl̄#d̄w̄r̄q̄v̄# Translate to: Èȳ if it is about knowledge for a good extension agent μ do I have z̄h̄d̄h̄h̄w̄h̄#r̄q̄#l̄#h̄#ḡr̄ñ̄#k̄l̄n̄#r̄#h̄k̄d̄s̄v̄#k̄h̄ū#d̄h̄#w̄h̄#h̄#h̄k̄r̄ḡv̄#k̄d̄#h̄#r̄#h̄#q̄r̄z̄#r̄ū# yx̄oj̄d̄īl̄#d̄w̄r̄q̄v̄#

While Diogoye and Niokhor discussed about extension communication and their lack of knowledge and skills in this tool. They said: Èq̄r̄x̄#h̄ȳr̄q̄v̄oublié les techniques de

cela ne fait pas.Š

Connoting that: ŠThe created laws must be applied, even if it is necessary to act through repressionŠ It is shown for example during the vaccination campaign, normally during the campaign animal owner who does not vaccinate his animal must be denounced and sanctioned by the authorities. But it is not the case.Š

Research question 2: How do extension agents and animal management faculty members respond to experiencing participants focused teaching practices in their professional training?

Themes obtained through participant interview and the focus group were: there are limited sources of information for participants regarding student focused teaching practices. Participants expressed limited knowledge and skill of these practices, and relevant technology and useful methods of communication to apply in the classroom student focused teaching practices. All participants had a positive response to experiencing student focused teaching practices. They defined students as the target population of the extension system or students in animal production department. They also agreed about the teaching methods currently utilized in the animal extension system.

Limited sources of information

Dibokor reacted first by telling the most important feature about the practical and relevant experiences, developing participant independence and learning by doing. He argued that participants in the professional training are considered as faculty members and they are sources of skills and knowledge. In addition he always learned from them and facilitated positive responses and behavior. Šx#k#t#x#f#w#y#l#r#g#l#r#q#h#t#x#r#q#d#l#k#t#x#r#x#r#q#s#s#h#g# quelque chose sur cette activité µ chaque jour on apprend quelque chose. Soit des populations ou e#h#r#q#s#s#h#g#x#h#x#h#k#r#v#h#x#u#h#h#u#d#g#f#h#t#x#d#f#l#w#h#v#k#d#g#j#p#h#w#Š#

Indicating that: "On each traditional activity we do every day we learn something from this activity and every day we learn something. Either people or you learn something on the ground, facilitating the changes."

Moreover, the limited sources of information contributed significantly to the limited teaching practices methods. He explained that extension agents did not have the opportunity to access the newest practical teaching methods, so that sometimes it is difficult for them to appreciate behavioral changes. "Il est difficile de comprendre les gens avec leur comportements dans la classe." "It is difficult to understand people with their behavior in the classroom."

Niokhor discussed the importance of practical field experience in animal extension which is an influencing factor for the teaching practices for producers. Reasons for extension agents to fail in their teaching practices is having a lack of practical experiences. Diarra believed that having practical experiences is one of the best way to engage breeders to complement knowledge in their professional training. "On le fait par la pratique et la démonstration. Si tu as ton animal, on te montre les besoins nécessaires en fourrage, en concentré. Et si tu as l'excès, ça peut lui créer comme problèmes de santé?"

"We do it through practice and demonstration. If you have your animal, you are shown the need for fodder, concentrates. And if there's excess what it can create it as health problems?"

She also added that the lack of experiences could be the resultant of multiple factors such as personal motivation, job diversities and limited exposure to foreign experiences among others.

Limited knowledge and skills technologies

The extension extensions have an obsolete teaching practices and their professional training required an every update of knowledge and skills. Therefore, they need annual continuing professional education programs, but this is a big challenge for extension specialists to have good orientation, professional development plan and new teaching resources. Moussa said that to show their lack of their teaching practices: *Peut-être que nous avons de nouvelles méthodes que nous ne connaissons pas. Peut-être qu'il y a d'autres nouvelles méthodes que je ne connais pas concernant les vulgarisations.*

Despite of these challenges, extension agents and animal management faculty members respond positively to experiencing student focused in their teaching practices defended by

Babacar: *Je pense que nous avons de nouvelles méthodes que nous ne connaissons pas. Mais vous aussi, quand avez des questions, nous allons vous répondre et je complète si la réponse n'est pas complète. Mais vous aussi, quand avez des questions, nous allons vous répondre et je complète si la réponse n'est pas complète. Mais vous aussi, quand avez des questions, nous allons vous répondre et je complète si la réponse n'est pas complète. Mais vous aussi, quand avez des questions, nous allons vous répondre et je complète si la réponse n'est pas complète.*

Diogyoe talked about the integration and exposure to new exchange and sharing knowledges.

She said: *Il y a une différence entre les connaissances que nous avons reçues à l'université ou dans l'école et les connaissances que nous avons reçues dans les écoles de formation, ce qui fait que nous sommes obligés d'intégrer les deux. Les connaissances que nous avons reçues à l'université ou dans l'école sont très différentes, alors nous étions obligés d'intégrer les deux. Les connaissances que nous avons reçues dans les écoles de formation, ce qui fait que nous sommes obligés d'intégrer les deux.*

Meaning that:

The difference between the knowledge we have received at the university or in training school and breeders approach are very different approaches, so we were obliged to integrate

this parameter in the exchange and training session, which means that we were rather in a sharing environment where everyone brought what he knew. And in return everyone chose what interested him the most, and this has impacted too much my way of seeing and doing so far... It was something very positive.

Internships, research assistance and extension programs are possible solution for the limited knowledge and skills technologies defended by participants of planning program. Diarra mentioned the necessity to have diverse support systems to overcome the limited knowledge and skills technologies through new types of networks, partnerships, internal training session, field trips and university resources.

Research question 3: How do extension educations in Senegal recommend student-centered teaching practices be used in the extension program?

Recommendation of student-centered

In the third research question of the study, researcher examined the recommendation of student-centered teaching practices in the extension system. Participants, extension agents and faculty members, with different backgrounds, level of study, variety of experiences, and job position and responsibility were very engaged in sharing their experience and practices in order to apply student-centered teaching in their training sessions. Researchers noticed that the term student-centered was not a common used word by participants, and after brief definition and explanation all participants were confident to share their professional practices. Participants listed different student-centered teaching strategies that they experienced. They cited as examples of student-centered methods the conducting participant-led seminars, roundtable, analyzing visual image, group games, group discussion and think-pair-share. Diarra explained her history with the use of analyzing visual image in her training class. She said that I designed my class a way that participants were involved in class activities and at end of the activities

participants shared their opinion and understanding of the pictures. Je formais des groupes entre jeunes et les vieux pour qu'ils analysent les photos. Telling that I formed groups between young and the old for that they analyze photos.

In addition, Mr. Babacar exhibited his used strategies in the classroom. He talked about assigning different roles of breeders in his class activities. Chaque éleveurs avait un rôle dans la classe pour faire les activités. Signifying that Each breeders had a role in the classroom for doing activities.

Diogoye shared his experience by using demonstration strategy. I still used demonstration to address welfare for working animals and help student to identify the relevant information that could enhance the living condition for working animal. Moreover, Dibokor emphasized the roundtable discussion. His strategy was to help each table to choose a subject of discussion. The discussion started within the table before sharing ideas with tables and producers were always talkative.

Research question 4: How do extension educators and faculty members assist farmers in ensuring that accepted standard of welfare for animal husbandry are maintained including the care, feeding and physical wellbeing of domestic animals?

Standard welfare for animal husbandry

By doing a diagnostic of the animal husbandry system in their response to the fourth research question, participants discussed problems of welfare for working animal and the other animal species in the animal husbandry during the planning program for working animals. During these exchanges, several constraints were identified by participants, and among these constraints, they cited injuries caused by mistreatment of these animals or due to poor harnessing, health problems associated with recurrent diseases such as strangles, colic, laminitis, African Horse Sickness,

lack of control of certain pathologies, self-medication with veterinary products for the animals, working animals (Webster, 2005). Within participants, only Diarra had previous knowledge before she was hired in the extension system. That is why she said, by attending workshops organized by the world health welfare, she discovered the concept of animal welfare and gained knowledge and experience.

ÈLe bien-être n'est pas un concept nouveau pour moi parce que j'ai travaillé avec world horse welfare qui utilisait ce concept dans leurs activités. J'étais déjà équipé sur les techniques de formations. Je pouvais donner aux producteurs des thèmes de travail et les outils nécessaires pour appuyer et conseiller les producteurs. Ce n'est pas le cas pour les autres agents d'extension qui n'ont jamais travaillé sur le bien-être.

Meaning that: Welfare was not a new concept for me because I had worked with world horse welfare which used this concept in their activities. I was somehow equipped on the techniques of training. I could give producers awareness themes. This passage really gave me the necessary tools to support and advise the producers. This is not the case for other extension agents who have never had to work on animal welfare.

Niokhor talked about his first experience on animal welfare. He explained that he was invited in a forum which focused on horse welfare by an NGO organization three years ago, and he was impressed by the importance of the theme and the necessity to apply the concept in the extension system. In order to clarify his opinion, he explained that the knowledge and responsibilities of horse owners and cart-drivers regarding animal welfare specifically for horses was very low and limited. If welfare of horses is included in the extension system, the knowledge from the users about how to properly handle and maintain the animals will be improved.

Le bien-être des chevaux est très faible et limité à propos du bien-être des animaux de traits. Si le bien-être des chevaux est intégré dans le système de vulgarisation, ils seront en mesure de prendre en compte le bien-être dans leurs activités.

Indicating that: "The knowledge and responsibility of horse owners and cart-drivers are very low and limits about the welfare of the working animals. If the welfare of horses is included in the extension system, they will be able to take into account the well-being in their everyday activities in the management and maintenance of horses."

Diogo explained his first time to experiencing on animal welfare. He was applying for a job position for a project manager which focused on the working conditions and care for horses.

Since this date, he was more conscientious about animal welfare. Diogo said that: "Je suis plus sensible à cette dynamique de préservation du bien-être"

Denoting that: "It was really after this experience that I told myself that - I am more sensitive to this dynamic of preservation of animal welfare."

The other participants recognized that they do not know or hear about animal welfare in the animal husbandry extension system. They do not have any experience or opportunities on animal welfare training sessions. Dibokor recognized that working animals must be treated in a good way to stay healthy, including proper feeding and housing. He explained the need of working animals by saying: "Pour rester en bonne santé, un bon logement surtout ça va permettre d'éviter certaines maladies ou de vol. Je ne sais pas. Et peut-être ça te permet de récupérer le fumier pour aller disperser et fertiliser les champs. Donc tout ceux-ci sont des actions de vulgarisation que nous menons à tout moment".

He added that the owners abused their animals because sometimes animals needed rest more when they were sick. "Les animaux en convalescence ou sous traitement ne sont pas mis au

target population from the primary and middle schools in order to make behavioral change overtime.

Renforcer la capacité des différents acteurs tels que les techniciens, les producteurs, les autorités locales et aussi insister spécialement sur l'aspect renforçant les enfants sur le bien-être animal pour bien encren ce concept dans leur esprit. Au niveau des jeunes sujets dans les écoles primaires déjà que ce soient déroulé dans le cadre de la sensibilisation. Je crois que ça permettrait peut-être de faire passer la prise en compte du bien-être

Signifying that:

Strengthen the capacity of different actors such as technicians, producers, local authorities and also insist especially on the aspect strengthening children about animal welfare to anchor this concept in their minds. At the level of children in primary schools, already these concepts should be applied, and which in one way or another can be held as part of the awareness. I think it will perhaps help to advance the application and consideration of welfare

Summary

This chapter discussed the results found from research questions: (1) to describe current teaching methods for other owners of other animal species in the animal extension programs, (2) to find the response of the extension agents and animal management faculty members through their teaching practices, (3) to describe the use of the recommendation of student-centered teaching practices and (4) to elucidate the assistance given to farmers in order to ensure accepted standards of animal welfare in the animal husbandry system.

Chapter 5: DISCUSSION AND RECOMMENDATION

This descriptive case study examined ways to develop a set of recommendation in order to improve the educational program planning and teaching skills in the animal extension system. The researcher focused on animal welfare for working animals and extension education approaches to gather the investigation data. Interviews, document analysis, participant observations of a series of continuing educational workshops about program planning, and a focus group were used to gain an in-depth understanding of the challenge and opportunities faced by extension agents and faculty members involved in the animal husbandry extension system.

Four major questions guided this study:

- 1) How are agricultural extension programs currently taught, presented or offered for owners of other animal species in the Diourbel and Thies regions of Senegal?
- 2) How do extension agents and animal management faculty members respond to experiencing participants focused teaching practices in their professional training?
- 3) How do extension educations in Senegal recommend participant-centered teaching practices be used in extension program?
- 4) How do extension educators and faculty members assist farmers in ensuring that accepted standards of welfare for animal husbandry are maintained including the care, feeding and physical wellbeing of domestic animals?

The extension agents and faculty members involved in the animal husbandry extension system were the focus of this study. The discussion is presented by examining each of the different themes of the findings from the research questions.

Discussion

Parents and closer family still have a strong influence upon children on two significant life events such as marriage and career as defended by Larson (1995). This assertion corroborates the primary reason for participants of this study to choose to learn animal production and become involved in the animal husbandry extension system; the encouragement and influence they received from their parents, their own love for animal and their desires to help people. These findings also align with Ferry (2006) claims that children that have been found to be the key roles in choosing career paths. In addition, the early contact with animal and parental network with animals were influential to become involved in the extension system. Personal histories also appeared as a factor that embrace an extension career. These influences were an encouragement, because participants considered their parents as admired and respected role models, who helped them develop more confidence in their abilities to learn about available careers in the animal husbandry system.

Aspiring agricultural extension professionals must complete significant educational requirement to even be considered for positions hired by the state or private extension organizations. They are considered as specialist in extension methodology as well as technical knowledgeable and skills (Cooper & Graham, 2001; Levine, 2004). Academic histories and education levels of the participants show not only the diversity of the level of studied and degrees, but also indicate that the participants of the study were well-educated in animal sciences and agricultural extension education with a bachelor or graduate level in animal sciences and rural development. Therefore, they are capable of apply their knowledge in practice and ensure effective performance in extension work (De Beers, 2000; Cooper & Graham, 2001; Levine,

2004). The number of years of experience in the extension system possessed by participants indicated that extension agents and faculty members in this study had a good experience being involved in the extension system. Indeed, the number of years of experience held by participants helped them to consider each educational situation individually and adopt a position or role suitable to that particular situation.

All participants had more than one position and/or role within the extension system and those varied from administrative to technical responsibilities. These results support the person-fit paradigm which required the match between job-demand and personal skills and knowledge (Chan, 2005; Anderson et al., 2004). In addition, the well-experienced participants in the extension system showed their well-experienced (Koundinya, 2010; Kwaw-Mensah, 2008; Jayaratne, 2001), and allowed them to provide service to the agricultural community by focusing on their high expectations. The varied positions occupied and roles played by participants in the animal husbandry extension system were relevant characteristics showed by the results of the study.

All participants have a good experiences in the animal husbandry extension system as an educator, and have a good understanding of the nature of extension work as centered on producers. Therefore, they have the abilities to do the job, provide services to the community and help producers to solve problems (Dalton et al., 1977). The findings showed that participants were assigned more than one areas of responsibility as explained by Diogoye who explained that he faced a variety of areas in his workloads in order to meet the expectations of his organization which needs to provide relevant services to the community (Enslie, 2005, Ragasa, et al., 2013) While, he is an extension agent in animal husbandry, he also had crop or agroforestry duties, and these varieties of duties attract him to remain in the extension system. As a group the extension

agents and educators are busy with many responsibilities. Despite of the variety of responsibilities, participants were very enthusiast to serve breeders by focusing on the desire to help them solve problems. Niokhor described the different responsibilities that he occupied before his current position. He discussed the varieties of responsibilities and expectations in his workloads: È# ã#k#p dçdj#h#i#h#j#rçdç#l#f#w#r#i#k#p d#k#v#d#g#|#/#w#p #r#u#z r# years, then in the national office of animal husbandry and finally in the national center of d#l#f#d#ç#p#l#ç#w#r#r#u#v#š

The participants talked about the need to clarify and state job expectations at the entry level of the extension system, so that extension agents will be able to better serve the breeder community and assist them in solving problems efficiently. Indeed, the lack of clear stated job expectations indicated by participants could be a source of conflict of interests between extension agent expectations and organization expectations. As the government works to increase the number of extension professionals, it will be important to not only expect them to efficiently work with breeders and provide them with clearly stated job expectations, but also to ensure that these professional are equipped with current extension skills and knowledge.

In order to accomplish their jobs, extension agents need more financial, technical and effective organizational networks, because inadequate infrastructure and organization are the roots of the main extension problems. These results corroborated with Burke and Litwin (1992) model to solve problems and explain organizational performance and innovation. The model suggested to diagnose where problems exist in the organization and what appropriate solutions are required for improvement and organization change. These factors were supported by the career stages model defined by Kutilek et al., (2002). The lack of budgets from state and local authorities raised the inefficacy of designing, implementing and evaluating extension programs

as explained by Niokhor and Diarra. Indeed, the availability of funding and the institutional networks involved in its delivery are important for extension success. The needed technical supports from local offices include access to materials and equipment necessary to increase the level of involvement of both the agents and breeders in varieties of provided programs. The negative social networks in which various authorities often have conflicting expectations of breeders has a negative impact in the extension system as explained by Moussa: The paternalism of the authorities in relation to the producers with whom they have obligations without expecting anything from them in terms of products. The extension system can be further strengthened by developing partnerships between government, non-government and development organizations, and private sectors. These partnerships are vital for extension organization according to Biradar et al., (2006), as they can gain more benefit collectively than by working individually.

Studies have shown the need of continuous professional development for extension agents, clarity on the extension profile, role and responsibilities ((Dromgoole, 2007; karbasion, et al., 2007; Chandler, 2004). Background, level of experiences and program areas dictate and impact the professional development needs of extension professionals. The results from the research process revealed the urgent needs for capacity building, because several factors such as limited funding, absence of current training programs and curriculum do not promote opportunities for capacity building and professional development plans in the goals to improve knowledge, and increase skills (Garst et al., 2007; Squire, 2003). The findings aligned with the purpose of the demonstration of high level of professional competence which is the primary justification for the extension service successes as defended by Strother (1977). The findings supported the assertions that the study will contribute to the development of extension services (Kouddinya, &

martin, 2013; Venkatraman et al., 1993; Huber, 1967) is the professional competences of its members, as they are a valuable asset of an organization. Moreover, participants recognized the importance to attend workshops, documentations in-service training, conferences and symposiums. Therefore, government and local authorities need to pursue an active and continuous professional development program plan including all agents at all level in order to allow them to study higher level skill and knowledge for improved programming as well promotion. Participants found that limited sources of information negatively impacted their teaching methods because of a limited access to the newest practical teaching information. As Diogoye explained about the need for integrating and exposing extension agents to new type of interchange, sharing knowledge and skills with advanced extension systems.

The participants identified several programs that are currently taught, presented and offered for other animal species such as a poultry program, a cow and sheep fattening program, and an artificial insemination program. These programs show that the extension system offers opportunities for breeders to improve their livelihood by having new and practical activities as Mr. Babacar said. In these programs, participants of the study still used practice and demonstration in their teaching and learning program activities. In addition, participants agree about the effectiveness of demonstration, group discussion and question-answer teaching methods for illiterate people. These results are similar to those reported by Shinn (1997). However, participants thought that discussion of theories in the training session in a formal workshop for illiterate producers is not relevant, and breeders in this context need more practical activities as justified by Adiouma in term of the importance of using practice and demonstration tools in their teaching duties. He provided the example of his successful teaching program about feeding cows,

démonstration et la pratique que nous faisons cette vulgarisation du traitement de la paille à
pendant combien temps et quand est-
soulève. This indicates that: It is through the demonstration and practice that
we are doing the extension training for the treatment of straw with urea. What quantity of straw it
will need to incorporate with salt or urea, for how long and when it is necessary to use it for
animals by for example by digging
centered strategies show the level of experiences of the members of the extension and animal
husbandry, but on the other side there is a limited number of participants who do not diversify
their teaching strategies in their job activities to ensure that all breeder needs are met.
Participants support practice and demonstration teaching methods while expressing their need for
student-centered strategies which are vital for the extension system as emphasized by Diarra and
Niokhor.

The findings showed that participants agree to the urgent need to modernize regulations and
legislations to change the situation. They defended that the country had several good regulations
and legislation, but the application of these regulations and legislation still poses problem for the
entire administration. Modernizing regulations and legislations for effective and efficient control
require good governance and appropriate legislation for the animal husbandry system. Also,
changing the regulations and legislation should be accompanied by the reinforcement of
infrastructure, materials and financial resources as Diarra explained. She said that case of
rambling animals which are prohibited in the country, its applicability pose problems because of
the lack of adequate infrastructures to keep animals in confined areas. In addition, capacity
building programs on basic welfare issues for public security services could be done, however

there is a need to reinforce extension agent's authority in applying regulations by implementing these security services.

Participants discussed welfare for animal husbandry for both small and large ruminants, working animals and poultry. They chose to focus the discussion on the health, treatment and dietary resources of working animals. For the health constraint, they talked about current diseases such as African Horse Sickness, colic and laminitis, about the treatment, they mentioned injuries from poor harnesses, hard work and limited rests. The findings corroborate with Webster (1994) assertion of the critical importance of good welfare that include proper housing, as well good health and feeding practices. The results shows that the majority of participants did not know the concept of animal welfare, however they are applying practices that support animal welfare. Participants lacked an understanding of the concept of animal welfare, because they do not have any experience or opportunities for animal welfare training sessions. Additionally, the findings reveal an ineffective animal welfare application program by the public extension agents focusing on the five freedoms (Noordhuizen & Metz, 2005). This means that they have to advise and sensitize producers to understand animal welfare and the basic welfare issues such as: animal welfare and dairy production, animal welfare and feeding, animal welfare and sustainable animal knowledge, animal welfare and health, animal welfare and safety, animal welfare and security. Then they must help animal owners understand the link between income and animal welfare, and quality of animal products and animal welfare. Consequently, extension agents and faculty members need capacity building and training sessions on animal welfare because it is a new concept and it is necessary to understand this concept.

Conclusion

All participants received a variety of influences to enter in the extension system, and these influences center around parental, personal, profession and educational level. They also are well-experienced with at least one academic degree in animal husbandry and veterinary science. This means that extension agents and faculty members represent a spectrum of academic experience. Also, extension educators had a positive attitude about sustainable animal welfare and were ready to attend animal welfare educational programs, so that they will be able to build training conducting participant-led seminars, roundtable, analyzing visual image, group games, think-pair-share, and group discussions were considered as an effective student-centered teaching methods, but student-centered was not a commonly used term by participants in the extension system.

Professional commitment, technical competency and job satisfaction were important factors that influence behaviors in responding to missions and extension goals. The lack of capacity building programs and professional advancements did not discourage participants to remain in the extension system, but proved the lacks of teaching methods established in the extension system. However, offering career opportunities with capacity building lead to develop organizational promotion and improve the extension system. Therefore, it is crucial to create career and professional development plans for agents within each stage that includes the necessary individual and organizational supports. Major constraints identified by participants in animal welfare focused on mistreatment, animal mental and physical health, and abuse from inappropriate work activities. The remains problematic and needs urgent solutions in order to improve the

welfare of animals. Animal welfare and its compounds are a new concept in the local extension, therefore participants need to attend training program in order to be efficient in spreading the concept and changing the mindset as well as behaviors of breeders.

Recommendations

The following recommendations are based on the finding and conclusions of this descriptive case study:

1. Continuing professional development programs

Programs are needed in order to cover broader skills applicable locally by extension professionals to better serve farmers by providing necessary technical support and capacity building programs. Also, continuing professional development programs should be introduced in the extension system, because extension agents need better training in a varied number of dimensions through participatory approaches in order to improve their professional development plans. These educational programs should be short and long term training to enhance extension methods and tools for farmers, and entrepreneurial and management skills. In addition, continuing professional development programs should be equitable opportunities for both new and experienced extension professionals in the extension system with the goal to give extension educators opportunities to continue to develop their skills, conduct effective research programs, and share learning experiences. In the process of increasing their educational level, extension professionals will increase their technical competences and learn more up-to-date technical knowledge and skills to address their needs and better the extension system.

2. Increasing finances

The limited financial resources negatively impact the extension system, consequently findings has to be increase in order to improve work qualities and outreach in an effective and efficient ways to enhance rural livelihood. In addition, the financial resources should be under their direct control to provide and implement requested and needed extension programs. Finally, extension agents should play a fundamental role in facilitating credit to producers from public sector or public-private partnerships.

3. Improving linkages throughout the system

This study shows the importance of linkages between extension system, public and private sectors and research system. In order to promote extension activities and develop collaborative strategies, it is urgent to build sustainable networks between university, research and extension system. This linkage needs to be improved, thereby producers can receive information and support including practical activities, ameliorating access to research information in general and needs. In addition, this link should ensure that all actors from the extension system and research

4. Hiring qualified and motivated extension agents

Good extension programs do not yield positive outcomes unless they are executed by a qualified, motivated and energetic staff, thereby local authorities and government should hire qualified extension agents to address the needs of breeders and apply best practices in the extension service. Indeed, strong motivation and competences are critical to the extension delivery of knowledge, skills and field experiences to producers, and can also impact positively do a good job.

5. Facilitating access to research information

Research data and appropriate delivery systems should be designed to match and help educators to better communicate with producers, and to enhance the educational process. The network between extension system and research system will permit centralize information and documentation the professionals in extension system need to integrate into their education programs. Develop a document that will help to identify roles and expectations for communication and interaction between agents and specialists in extension system and partners. Resource centers should be built to help extension agents to come to obtain the updated information.

6. Focusing on animal welfare for a sustainable agriculture and breeding system

It is necessary to appreciate extension work and develop knowledgeable technical competencies for the major farming and breeding systems such as administration, training materials and tools, technical information, internet tools and access, and economics. Thereby, faculty members should design courses and curriculum focusing on animal welfare for the future extension agents. Acceptable working conditions for animals and innovative livestock management practices should be identified as important educational activities in order to improve the agricultural education system. Hence, it is recommended that continuing professional educational programs be offered to emphasis planning processes such as need assessment, program planning, learning and delivery methods, and evaluation systems for animal extension professionals.

Recommendation for further research

This study found the following potential research areas that need to be addressed by further research:

1. The study needs to be replicated in other Senegalese regions, because the purpose of study requires more detailed investigations, so that different perspectives could emerge and validate this study. Also, this study should be replicated with agricultural extension educators in the view of the large spectrum of job expectations of the extensions agents in order to invest and identify their perception of animal welfare. In addition, the identification of other educational areas which could strength the extension system should be carry out in order to cover extension professional development. The extension professionals could then offer greater overall coverage in the growing diversity of extension services in different sectors and needs for producers.
2. A study should be carry out to examine the various organizational factors, structural, political, and human resources that affect the educational program and professional development as suggested by Cervero and Wilson (2006). Indeed, educational programs and professional development planning are an ongoing social activities as argued by Cervero and Wilson where interests of people are causally related to the produced educational programs by negotiating personal social, organizational and power. This will ensure an effective and efficient management of both physical and human resources in the extension system.
3. A study of extension educators regarding their perceptions about appropriate teaching methods should be conducted to identify preferred teaching methods and barriers to teaching about sustainable extension systems. Indeed, extension delivery services are facing various questions such as efficiency and technical competency possessed by extension agents to execute extension programs because of the different competency needs. In addition, research should continue to develop improve curriculum regarding

attitudes toward farm animal welfare related to appropriate teaching methods and strategies in order to acquire high levels of program impacts. Further study is required to enhance understanding of the specific practices that promote greater concern for working animals in the animal husbandry system by extension professionals and researchers. By improving the understanding of these practices, it will help to develop more effective policy measures for advancing animal welfare. Extension professionals have an important role to play in reaching this goal.

4. A survey of the professional competences regarding livestock management. Repeated researcher processes could allow participants to indicate specific motivation, job expectations, job satisfaction in their future participation in a same study. Also, it is recommended to replicate the study by comparing the perception of animal science faculty members and extension agents in service in the various regions of Senegal regarding the animal welfare concepts. Analyzing the different welfare factors in the formation of attitudes toward animals should call for the inclusion of different level of perceptions, motivation and skills to improve these factors in educational animal husbandry systems.
5. A study of the factors influencing capacity building for livestock development should be carried out to identify strategies to improve training outcomes for rural development in Senegal. Understanding how extension professionals are doing their respective activities and whether they have perceived the needs for additional training remains crucial in order to develop a sustainable and innovative extension system. Furthermore, the importance of capacity building for livestock education including technical and professional

competencies is uncontested because of different perceptions of their competencies by extension professionals.

Implication and educational significance of the study

This descriptive case study examined ways to develop a set of recommendations to improve the educational program planning and teaching skills of educators by focusing on animal welfare for working animals. Findings can be generalized only within the Diourbel region where Bambe is subdivision of Senegal. This study may have implication that can include planning and implementing educational programs focused on sustainable animal husbandry. Therefore, it is necessary to develop well designed educational programs that address the interests of the participants. According to this study, animal welfare concepts and student-centered teaching methods were ambiguous and confusing terms for participants. This implies the need for clarifying these terms in order to help educators develop acceptable definitions of animal welfare concept and student-centered teaching practices. Therefore, it is essential to design a favorable learning environment for participants to develop positive perception toward sustainable animal husbandry system. The participants had positive perceptions regarding the educational process, but had a negative opinion about the professional development competencies identified in this study. Indeed this opinion is the result of the challenging possibilities and opportunities to improve extension educator competencies in communication through a continuing professional education experience that includes current animal welfare teaching strategies and application of the legislation. Further, the blocking factors of political powers lead to an extension system that is not very efficient.

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Appendices

Appendix A: Consent Form Script

Consent Form Script

Investigators: Ousmane Kane, Donna Westfall-Rudd

The purpose of this research will be to provide a greater understanding of welfare for the working animals and develop a set of recommendations to improve the extension education programs for state agents and teacher staffs in Diourbel and Thies regions. The results of the study will be published and used for a graduate thesis.

I would like to invite you to participate in a study of ways to expand the animal welfare component in the extension system about the process of identifying strategic plan to improve the extension system. The study will focus on animal welfare to develop a set of recommendation to reach the objectives of the study.

By participating in this study, you will ask to participate in an interview, focus group and assist in the program planning. Participate in a one-on-one interview where you will be asked questions about your experiences, knowledge and skills in teaching farmers and implanting the extension programs, and in a focus group where extension agents and teachers will discuss the improvement of the animal husbandry extension system.

I am planning to audio-record and transcribe each interviews and the focus group. Taking part in this study is completely voluntary and confidential, and you may choose to refrain from participating in the interview now or at any time in the future. The interviews and focus group will be length approximately 60 to 90 min each.

Please ask any questions you have now. If you have questions later, you may contact Ousmane Kane at ousmane@vt.edu or +1-540-449-8011 or Donna Moore at mooredm@vt.edu or +1-540-231-5717.

Should you have any questions or concerns about the study & risks conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact the VT IRB Chair, Dr. David M. Moore at mooredm@vt.edu or (540) 231-4991.

Appendix B: Informed Consent Form

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for participants in Human Subjects Research

Title: Ways to expand the animal welfare in the extension system in Thies and Bambey, Senegal: A Case Study Approach

Investigators: Oummane Kane, Donna Westfall-Rudd

I Purpose of this Research

The research will be conducted to provide a greater understanding of welfare for the working animals and will help to develop a set of recommendations to improve the extension education programs for state agents and teacher staffs in Diourbel and Thies regions. The results of the study will be published and used for a graduate thesis.

II Procedures:

You are invited to take part in a research study focused on the extension system improvement for teachers and extension agents. We are asking you to take part because you are a member of the extension system, teacher who involve in the extension system. If you agree to be in this study, you will be asked to participate in an audio-recorded interview and focus group that will help us examine the themes developed from the analysis of the interviews. Participants will be observed in extension team meetings and professional educational training programs as part of study participation. Notes will be taken for the observation process. The interview and focus group will be about 60 - 90 minutes and will be tape-recorded.

III Risks:

We do not anticipate any risks for you participating in this study, other than those encountered in day-to-day life.

IV Benefits:

The study will not have any direct benefits for you, but your participation will help us learn more about how extension professionals can ameliorate the system.

V Extent of Anonymity and Confidentiality

In any written publications the researcher will not include any information that could make it possible to identify you. The audiotapes from the interviews will be kept in a locked file. Only the researcher will have access to this tape. The written transcript of the observations and electronic file will also be kept secure. This consent form will be stored in a locked file separately from the tape and transcript. An alias will be used during the interviews rather than your real name.

VI Compensation

There will be no compensation for your participation in this study.

VII Freedom to Withdraw

Taking part in this study is completely voluntary. You may choose to refrain from participating in the interview now or at any time in the future. If you decide not to take part it will not affect your current or future relationship with Virginia Tech University. If you decide to take part, you are free to withdraw at any time.

VIII Subject's Responsibilities:

Taking part in this study is completely voluntary and I agree and accept to participate in the study. I have the following responsibilities:

- Participation in a 60-90 minutes interviews and focus group;

- Ask questions of the researcher about the study at any time.

IX Subject's Permission

I have read the consent form and conditions of this project. I have all my questions answered. I am not a minor and my voluntary consent to participate in this study.

Please ask any questions you have now. If you have questions later, you may contact Ousmane Kame at okame@vrt.edu or +1-540-449-8011 or Donna Westfall-Rudd at dwestfal@vrt.edu or +1-540-231-5717.

If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Institutional Review Board for Human Participants (IRB), Dr. David Moore at +1-540-213-4991 or moored@vrt.edu

You will be given a copy of this form to keep for your records.

Statement of Consent: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

I understand that the interview will be audio taped.

Your Signature _____ Date _____

This consent form will be kept by the researcher for at least three years beyond the end of the study and was approved by the IRB on.

Appendix C: Informed Consent Form in French

Formulaire de consentement pour participer aux interviews du Programme de Recherche sur "Education Extension"

Titre : Moyens d'élargir le bien-être animal dans le système de vulgarisation à Thiès et Bambey, Sénégal: Une approche d'étude de cas

Vous êtes invités à participer à une étude de recherche axée sur l'amélioration du système de vulgarisation par les enseignants et les agents de vulgarisation. Nous vous demandons de prendre part parce que vous êtes un membre du système de vulgarisation, des enseignants qui sont impliqués dans le système d'extension ou personnes bénéficiaires du système de vulgarisation. S'il vous plaît lire attentivement ce formulaire et poser toutes les questions que vous pourriez avoir avant d'accepter de participer à cette étude.

Sur quoi porte cette étude: Le but de l'étude est de développer un ensemble de recommandations visant à améliorer les programmes d'éducation du conseil agricole et rural pour les producteurs, les agents de l'Etat et le personnel enseignant dans les régions de Diourbel et Thiès. Vous devez faire partie du groupe de recherche afin de prendre part à cette étude.

Ce qu'on va vous demander de faire: Si vous acceptez de participer à cette étude, vous serez invité à participer des interviews qui nous aideront à examiner les thèmes développés à partir de l'analyse des entretiens effectués. Les interviews dureront environ 60 - 90 minutes et sera enregistrée.

Les risques et les avantages: Nous ne prévoyons pas de risques pour vous en participant à cette étude, autre que celles rencontrées dans la vie courante. L'étude n'aura pas d'avantages directs pour vous, mais votre participation nous aidera à en apprendre davantage sur la façon dont les professionnels du conseil agricole et rural peuvent améliorer le système de vulgarisation agricole.

Prime ou rémunération : Il n'y aura pas de prime ou rémunération pour votre participation à cette étude.

Participation volontaire: Prendre part à cette étude est entièrement volontaire. Vous pouvez choisir de ne pas participer aux entretiens maintenant ou à tout moment à l'avenir. Si vous décidez de ne pas prendre part il n'affectera pas votre relation actuelle ou future avec l'Université de Virginia Tech, le projet ERA. Si vous décidez de participer, vous êtes libre de vous retirer à tout moment.

Confidentialité: Un pseudonyme sera utilisé lors des entretiens plutôt que votre vrai nom. Dans les publications écrites le chercheur ne prendra aucune information qui permettra de vous identifier. Les audio des entrevues seront conservés dans un fichier sécurisé. Seul le chercheur aura accès à ce fichier sécurisé. La transcription écrite des interviews, des observations et fichier électronique seront également conservés en lieu sécurisé. Ce formulaire de consentement sera stocké dans un fichier sécurisé séparément avec les enregistrements audio et les documents transcrits.

Si vous avez des questions: Le chercheur réalisateur de cette étude est Ousmane Kane. S'il vous plaît poser toutes les questions que vous avez maintenant. Si vous avez des questions plus tard, vous pouvez communiquer avec **Ousmane Kane** au ousmane@vt.edu ou +1-540-449-8011 ou +221 77-506-63-58 ou Donna Moore au mooredm@vt.edu ou + 1-618 -330 à 8028. Si vous avez des questions ou des préoccupations concernant vos droits en tant que sujet dans cette étude, vous pouvez communiquer avec le Conseil institutionnel d'examen pour les participants humains (CISR) c'est-à-dire le bureau de régulation éthique de la recherche aux Etats unis, Dr. David Moore at +1-540-213-4991 on dmoores@vt.edu.

Vous recevrez une copie de ce formulaire à conserver pour votre information personnel.

Déclaration de consentement: J'ai lu et compris toutes les informations ci-dessus et j'ai obtenu aussi des réponses satisfaisantes à toutes mes questions. Je consens à participer à l'étude.

Je comprends que l'interview sera enregistré (e).

Nom et Prénom : _____

Signature _____ Date : _____

Ce formulaire de consentement sera conservé par le chercheur pendant au moins trois ans au-delà de la fin de l'étude et a été approuvé par le Conseil institutionnel d'examen pour les participants humains (CISR) c'est-à-dire le bureau de régulation éthique de la recherche aux Etats unis.

Appendix D: Invitation Letter

Invitation Letter to participants in the Study

Dear

You have been identified as a resources for your work in the extension system and teaching process. Because of your knowledge, experiences and skills about the implementation and training process in the extension system, I believe you can provide meaningful and essential information regarding your involvement and work in the development of the extension system. Your roles in the extension system and relationships with farmers offer opportunities and perspectives that are unique to many issues and subjects related to extension improvement and capacity building.

Therefore, I would like to ask you to participate in a study of ways to expand the animal welfare component in the extension system about the process of identifying strategic plan to improve the extension system by focusing on animal welfare. By participating in this study your commitment would consist of an interview, focus group and assist in the program planning. As a participant you will be ask to:

- Participate in a one-on-one interview where you will be asked questions about your experiences, knowledge and skills in teaching farmers and implanting the extension programs approximately 1 hour. I am planning to audio-record and transcribe each of the interviews.
- Participate in a focus group with other extension agents and teachers discussing the improvement of the animal husbandry extension system approximately 1 hour. I am planning to audio-record and transcribe the focus group.
- Participate in the implementation of a program planning for teachers and extension agents.

I am really interested and excited about the opportunity you gave me to learn about your experience and perspective about the implementation and improvement of the Senegalese extension system. It is very important to me that you feel that the time you give to participating in the study is time well spent, and will be of benefit to you. I can finish my request without thanking you for your willingness to help me out with my study of ways to expand the animal

Page 1 of 2

welfare component in the extension system after you accepted to meet with me and discuss the purpose and overview of the study. If you are interested in setting up a time to interview or would like more information about this study after our first meeting please feel free to contact me. I am looking forward to meeting with you on , at for our interview. If that is not going to be convenient for you, please give me a call at +221 77 506 63 58 (local number) or email me on ousmane@vt.edu.

Sincerely,

Page 2 of 2

Appendix E: French Invitation Letter

Lettre d'invitation

Cher Participant,

Vous avez été identifié comme une personne ressource à cause de votre travail dans le système de vulgarisation animale et le processus d'enseignement. Grâce à vos connaissances, vos expériences et vos compétences dans la mise en œuvre et le processus de formation dans le système de vulgarisation, je crois que vous pouvez fournir des informations significatives et essentielles concernant votre implication et le travail dans le développement du système de vulgarisation. Votre rôle dans le système de vulgarisation et des relations avec les agriculteurs offrent des possibilités et des perspectives uniques qui peuvent répondre aux nombreuses questions et des sujets liés à l'amélioration de la vulgarisation et les renforcements de capacité.

Par conséquent, je voudrais vous demander de participer à une étude sur les moyens utilisés pour diffuser les composantes du bien-être animal dans le système de vulgarisation et sur le processus d'identification de plan stratégique pour améliorer le système d'extension en se basant sur le bien-être des animaux. En participant à cette étude de votre engagement consistera à être interviewé et participer à un focus groupe avec les autres participants de cette étude. **Vous serez aussi appelé à participer dans un séminaire de formation de renforcement de capacité.**

L'interview et le focus group vont durer en moyenne 1 heure à 1 H 30 min et ils seront enregistrés pour les besoins de cette étude. Je suis vraiment intéressé et excité à propos de l'occasion que vous me donnez à apprendre de votre expérience et de la perspective de la mise en œuvre et de l'amélioration du système de vulgarisation sénégalais.

Je ne peux terminer ma demande sans vous remercier pour votre volonté de participer dans étude. Si vous êtes intéressé pour la mise en place d'un temps d'interviewer ou si vous souhaitez plus d'informations sur cette étude après notre première rencontre s'il vous plaît contacter moi. Si l'heure du rendez-vous fixé n'est pas praticable pour vous aussi, s'il vous plaît appeler moi au +221 77 506 63 58 (numéro local) ou envoyez-moi un Email sur ousmane@vt.edu.

Cordialement

Page 1 of 1

Appendix F: Recruitment Materials

Recruitment Materials

The researchers will include extension specialists involved in the animal husbandry extension and teaching system in Thiès and Diourbel. The researchers will discuss first with the heads of the department of animal productions and extension office in order to identify potential participants of the research processes. The researchers will provide these heads of institutes a general overview of the study and draft of the data collection protocol and consent forms. Once approval will be granted by these authorities, initial contact will be made by phone, skype or google hangout to call for participation. After that, the researcher will meet individually with the potential participants to discuss the purpose and overview of the study in order to invite them in person to participate in the study. In order to formalize these discussions, individual invitations will be send to the participants. All teachers and extension agents who accept to involve in the study will be chosen as a sample, and will be asked to participate in the interviews, focus group and program planning.

The participants select for the study will be the extension agents and teachers from the extension office and department of animal productions. The expected rich information that can be gathered as data and their relevant experiences will be the main reasons why the group will be chosen to participate in the study. The recruitment for this study will occur with an individual invitation. We will use the French language for all discussion with the participants and the consent forms will be translated in French. By using French as the language of work, it will help us to avoid certain misunderstanding because all participants can read and understand the French language. Before signing a consent form, we will explain the importance of the consent form for participants and why it is essential for participants to have a copy form that they must keep for their personal information.

Appendix H: French Recruitment form

Recrutement

Les chercheurs comprendront des spécialistes impliqués dans le système de vulgarisation et la formation des agents de vulgarisation en élevage à Thiès et Diourbel. Les chercheurs vont discuter d'abord avec les chefs de département des productions animales et des services de vulgarisation animale afin d'identifier les potentiels participants du processus de recherche. Les chercheurs fourniront ces chefs d'instituts un aperçu général de l'étude et le protocole de collecte de données et des exemplaires du formulaire de consentement pour la participation des agents et des enseignants sélectionnés. Une fois l'approbation accordée par ces autorités, un premier contact se fait par téléphone, Skype ou Google Hang out pour appel à la participation. Après cela, les chercheurs vont rencontrer individuellement les potentiels participants pour discuter de l'objectif et la vue d'ensemble de l'étude afin de les inviter en personne de participer à l'étude. Afin de formaliser ces discussions, une invitation individuelle sera envoyée à chaque participant. Tous les enseignants et les agents de vulgarisation qui accepteront de participer à l'étude seront choisis et vont constituer l'échantillon. Ils seront demandés de participer à une interview, un focus group et programme de renforcement de capacité.

Les participants sélectionnés pour l'étude seront les agents de vulgarisation et des enseignants du département des productions animales engagés dans le système de vulgarisation animale. Leurs expériences et les informations pertinentes qui peuvent être collecté à leur niveau, seront les principales raisons pour lesquelles ce groupe de personne sera choisie pour participer à cette étude. Le recrutement pour cette étude se produira avec une invitation individuelle. Nous allons utiliser la langue française pour toute discussion avec les participants et les formulaires de consentement seront traduits en français. En utilisant le français comme langue de travail, il nous aidera à éviter certains malentendus parce que tous les participants peuvent lire et comprendre la langue française. Avant de signer un formulaire de consentement, nous allons leur expliquer l'importance du formulaire de consentement pour les participants et pourquoi il est essentiel pour eux d'avoir une copie qu'ils doivent garder pour leur information personnelle.

Appendix I: Focus Group Protocol

Focus Group Protocol: Ways to expand animal welfare in the animal husbandry extension system

The focus group moderator will follow a standard protocol for each session that includes:

- Questions and answers period
- Wrap-Up

Participants for the program planning of the expansion of Animal Welfare will be encourage to identify, clarify and prioritize its animal welfare interests and common objectives for the improvement by using a combination of resource-based and workshops.

Focus Group Questions

Let's quickly go around the table and share a few facts so that we all can understand the make-up of our group:

Passons rapidement un tour de table et partageons quelques faits afin que nous puissions tous comprendre la composition de notre groupe:

- a. Round table of presentation.

Tour de table pour la presentation des participants

- b. How long have you been in the extension system or education system?

Depuis combien de temps êtes-vous dans la vulgarisation ou l'enseignement ?

- c. What is your role/function in the extension system or education system?

Quelle est votre dans la vulgarisation or l'enseignement?

- **Working animal and welfare**

1. Do you participate in 'pre-packaged animal welfare programs' delivered by other government agencies or animal welfare organizations (e.g. Project, NGOs, schools education program, Animal Club etc.)?

Participez-vous à «des programmes de bien-être animal» fournis par d'autres organismes gouvernementaux ou des organisations de protection des animaux e.g. Project, NGOs, schools education program, Animal Club etc.)?

- o If so, how have these programs been helpful for your work with farmers?

Si oui, comment avoir ces programmes été utiles pour votre travail avec les fermiers ?

- Have there been any challenges in working with these programs?

Y at-il eu des difficultés à travailler avec ces programmes

- If so, what type of assistance might help you work through these challenges?

Si oui, quel type d'assistance pourrait vous aider à relever ces défis?

2. Are you aware of these animal welfare programs?

Êtes-vous au courant de ces programmes de protection des animaux

- o If you are aware, are there any particular reasons why you are not using them?

Si vous êtes au courant, y at-il des raisons particulières pour lesquelles vous ne les utilisez pas?

3. Are you aware of other schools/teachers/extension agents who participate in animal welfare programs or who teach or implant the topic?

Connaissez-vous d'autres écoles / professeurs / agents de vulgarisation qui participent à des programmes de bien-être animal ou qui enseignent ou implantent le sujet

4. Are you aware of any animal welfare teaching or implementing resources?

Connaissez-vous des formations ou implantation de ressources sur le bien-être animal?

- o If you are aware, are there any particular reasons why you are not using them?

Si vous êtes au courant, y a-t-il des raisons particulières pour lesquelles vous ne les utilisez pas?

5. Do you teach about animal welfare in the classroom?

Formez ou Enseignez-vous sur le bien-être des animaux dans la salle de classe ou activités?

6. If you do teach about animal welfare what topics do you cover? What resources do you use?

Si vous enseignez/formez sur le bien-être animal quels sujets couvrez-vous? Quelles ressources utilisez-vous ?

7. If you do not teach about animal welfare what would you need before you might consider the topic for your classroom or working animal owners?

Si vous n'enseignez/formez pas sur le bien-être des animaux, de quoi auriez-vous besoin avant d'envisager le sujet pour votre classe ou les propriétaires d'animaux de travail ?

8. If you don't, why not?

Si non pour quoi pas?

9. What methods do you use to bring new knowledge to working animal owners about animal welfare?

Quelles méthodes utilisez-vous pour apporter de nouvelles connaissances aux propriétaires d'animaux sur le bien-être des animaux ?

- **Improve the animal husbandry extension system**

10. What methods do you use to bring new knowledge to farmers in the animal husbandry extension system?

Quelles méthodes utilisez-vous pour apporter de nouvelles connaissances aux producteurs dans le système de vulgarisation de l'élevage ?

11. Which methods work the best with farmers in the animal husbandry extension system?

Quelles sont les méthodes qui fonctionnent le mieux avec les producteurs dans le système de vulgarisation de l'élevage ?

12. Which methods have not work with farmers in the animal husbandry extension system?

Quelles sont les méthodes qui n'ont pas fonctionné avec les producteurs dans le système de vulgarisation de l'élevage?

13. Why these methods did not work well with farmers in the animal husbandry extension system?

Pourquoi ces méthodes ne fonctionnaient-elles pas bien avec les producteurs dans le système de vulgarisation de l'élevage?

14. What opportunities do these issues and trends present for the University of Agricultural Sciences?

Quelles opportunités ces questions et changements présentent-elles à l'Université des Sciences Agricoles ?

15. What opportunities do these issues and trends present for the extension system?

Quelles opportunités ces questions et tendances présentent-elles pour le système de vulgarisation de l'élevage?

16. What opportunities are there for collaboration within the University, across the state, and/or with extension system?

Quelles sont les possibilités de collaboration au sein de l'Université, niveau de l'ensemble du pays et / ou avec le système de vulgarisation?

17. In what areas do you feel less supported/more supported in your work?

Dans quels domaines vous sentez-vous moins soutenus / bien soutenus dans votre travail?

18. What are the areas in which you have received support/training and resources?

Quels sont les domaines dans lesquels vous avez reçu de l'aide / de la formation et des ressources?

19. How do continuing professional education opportunities contribute to your experience in your position in the animal husbandry extension system?

Comment les possibilités de renforcement de capacité professionnelle contribuent-elles à votre expérience de votre poste dans le système d'extension de l'élevage?

20. What continuing professional education topics are needed to support agents in the animal husbandry extension system?

Quels sont les sujets de renforcement de capacité professionnelle nécessaires pour soutenir les agents du système de vulgarisation?

- o What technical information do you still need to teach or share information with producers?

Quelles informations techniques avez-vous encore besoin pour enseigner ou partager des informations avec les producteurs?

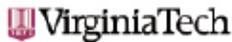
- o Experiencing other practices in teaching producers?

Avez-vous d'autres expériences pratiques dans l'enseignement/formation des producteurs?

Wrap-Up

At the end of the focus group questions, we will sincerely thank all participants for their time and input. If they will have any questions or final comments, we will ask them to be free to state them.

Appendix J: First IRB Approval



Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax: 540/231-0959
email: irb@vt.edu
website: <http://www.irb.vt.edu>

MEMORANDUM

DATE: December 18, 2015
TO: Donna Westfall-Rudd, Ousmane Kane
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires July 29, 2020)
PROTOCOL TITLE: Ways to expand the welfare animal component in the extension system in Thies and Bambey, Senegal
IRB NUMBER: 15-530

Effective December 18, 2015, the Virginia Tech Institutional Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: **Expedited, under 45 CFR 46.110 category(ies) 6,7**
Protocol Approval Date: **December 18, 2015**
Protocol Expiration Date: **December 17, 2016**
Continuing Review Due Date*: **December 3, 2016**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

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VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
An equal opportunity, affirmative action institution

Date*	OSP Number	Sponsor	Grant Comparison Conducted?
12/15/2015		US Agency International Development	Compared on 12/18/2015

* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

Appendix K: Extended IRB Approval

TO: Donna Westraï-Kuoo, Ousmane Kane
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)
PROTOCOL TITLE: Ways to expand the welfare animal component in the extension system in Thies and Bambey, Senegal
IRB NUMBER: 15-530

Effective November 21, 2016, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the Continuing Review request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: Expedited, under 45 CFR 46.110 category(ies) 6,7
Protocol Approval Date: December 18, 2016
Protocol Expiration Date: December 17, 2017
Continuing Review Due Date*: December 3, 2017

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
An equal opportunity, affirmative action institution

Date*	OSP Number	Sponsor	Grant Comparison Conducted?
01/05/2016	11018707	US Agency International Development	Compared on 12/18/2015

* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

Appendix L: Interview Protocol

In-depth Interview protocol

The purpose of this interview is to understand how agricultural education teachers who are involved in the animal husbandry extension system and extension agents perceive their participation, roles and experiences in the extension process in order to develop a set of recommendations to improve the extension education programs for training farmers, state extension agents, staffs and teachers who are involved in the animal husbandry extension system in Diourbel and Thies regions. To do so, the following questions will be asked to the participants:

I. Please share with me the perception of your participation, roles and experiences in the current teaching, presenting and offering methods used in the extension system by responding these several questions:

- a. How long has you been involved in the extension system?

Depuis combien de temps participez-vous au système de vulgarisation ?

- b. What influenced your decision to become involved in the extension system?

Qu'est-ce qui a influencé votre décision d'intégrer le système de vulgarisation ?

- c. What was your first experience as part of the extension system?

Quelle a été votre première expérience dans le cadre du système de vulgarisation ?

- d. How are animal husbandry extension programs currently taught, presented or offered in other animal species in the Diourbel and Thies regions of Senegal?

Comment les programmes de vulgarisation sont-ils actuellement enseignés, présentés ou offerts pour d'autres espèces animales dans les régions de Diourbel et Thies au Sénégal?

- e. How are animal husbandry extension programs currently taught, presented or offered for working animals?

Comment les programmes de vulgarisation sont-ils actuellement enseignés, présentés ou offerts pour les animaux de travail ?

- f. How determines the current teaching curriculum that you used for students/farmers?

Comment détermine les actuels programmes d'enseignement que vous avez utilisé pour les étudiants / agriculteurs ?

- g. How much flexibility do you have to include any topic that will allow your students/farmers to meet the standards by which achievement and progress is measured for any domain or key learning area?

Quelle flexibilité devez-vous inclure dans tout sujet qui permettra à vos élèves / agriculteurs de respecter les normes qui permettent de mesurer la réalisation et le progrès de tout domaine ou domaine clé d'apprentissage?

- h. What criteria do you apply when choosing content to meet the curriculum?

Quels critères appliquez-vous lorsque vous choisissez le contenu pour répondre au programme?

- i. Do you teach or implant about animal welfare in the classroom for your stakeholders in the extension system?

Enseignez-vous ou implantez-vous sur le bien-être animal dans la salle de classe pour vos intervenants dans le système de vulgarisation?

- j. From your experiences what recommendations will you make to improve the current teaching, presenting and offering methods used in the extension system?

D'après vos expériences, quelles recommandations feriez-vous pour améliorer les méthodes actuelles d'enseignement, de présentation et d'offre utilisées dans le système de vulgarisation?

II. Now thinking about your personal animal husbandry education program and the recommend student-centered teaching practices be used in extension program during the implementation of these program; please share with me about these issues by responding the following questions:

- a. What courses are you currently teaching?

Quels sont les cours que vous enseignez actuellement?

- b. How have your courses changed over time?

Comment vos cours ont-ils changé au fil du temps?

- c. How do extension agents and teachers in an animal management extension education program respond to problem-based learning?

Comment les agents de vulgarisation et les enseignants d'un programme de vulgarisation en gestion des animaux répondent-ils à l'apprentissage par problèmes?

- d. How extension agents and teachers in an animal management extension education program defined problem-based learning?

Comment les agents de vulgarisation et les enseignants d'un programme d'éducation de vulgarisation en gestion des animaux ont-ils défini l'orientation de l'élève?

- e. What strategies and methods have been used to support livestock extension agents and teachers in coping with student-centered teaching practices?

Quelles stratégies et méthodes ont été utilisées pour soutenir les agents de vulgarisation et les enseignants dans l'adaptation aux pratiques pédagogiques centrées sur l'élève ?

- f. How do continuing professional education opportunities contribute to your experience in your position in the animal husbandry extension system?

Comment les possibilités de renforcement de capacité contribuent-elles à votre expérience de votre position dans le système d'élevage ?

- g. What factors influence the effectiveness of different continuing professional education approaches for livestock extension agents and teachers?

Quels sont les facteurs qui influencent l'efficacité des différentes approches de renforcement de capacité pour les agents de vulgarisation et les enseignants ?

- h. What continuing professional education topics are needed to support agents in the animal husbandry extension system?

Quels sujets de renforcement de capacité sont nécessaires pour soutenir les agents du système de vulgarisation de l'élevage ?

- i. How do you think the continuing professional education topics should be implanted to support agents in the animal husbandry extension system?

Comment pensez-vous que les thèmes de renforcement de capacité devraient être implantés pour soutenir les agents de vulgarisation de l'élevage ?

- j. How can the continuing professional education of livestock extension agents and teachers be strengthened?

Comment le renforcement de capacité des agents de vulgarisation et des enseignants peut être renforcé ?

- k. From your experiences what recommendations will you make to improve the animal husbandry education program and **student-centered teaching practices** you faced during the implementation process?

D'après vos expériences, quelles recommandations feriez-vous pour améliorer le programme d'éducation sur l'élevage et les pratiques d'enseignement centrées sur l'élève auxquelles vous rencontrez pendant le processus de mise en œuvre

III. In the implementation processes for farmers your experiences varied over time, please share with me in responding to experiencing participant's focused teaching practices in their professional training by responding these questions:

- a. How do farmers respond to an animal management program focused on animal husbandry practices for working animal?

Comment les agriculteurs répondent-ils à un programme de gestion des animaux axé sur les pratiques d'élevage des animaux de trait?

- b. How do extension agents and teachers perceive farmers' responses on animal husbandry practices for working animal?

Comment les agents de vulgarisation et les enseignants perçoivent-ils les réponses des agriculteurs aux pratiques d'élevage des animaux de travail ?

- c. What strategies are used to facilitate positive farmers' responses on animal husbandry practices for working animal?

Quelles sont les stratégies utilisées pour faciliter les réactions positives des agriculteurs sur les pratiques d'élevage des animaux de travail ?

- d. What recommendations will you make to improve farmers' responses on animal husbandry practices for working animal?

Quelles recommandations feriez-vous pour améliorer les réponses des agriculteurs aux pratiques d'élevage des animaux de trait?

IV. Assisting farmers to ensure standards welfare for animal husbandry require the partnerships with the extension educators, faculty members and others involved in the extension educational system in animal husbandry practices for working animal by responding the questions below.

- a. How do extension educators assist farmers in ensuring that accepted standards welfare for animal husbandry are maintained including the care, feeding and physical wellbeing of domestic animals?

Comment les éducateurs de vulgarisation aident les agriculteurs à veiller à ce que les normes acceptées de bien-être pour l'élevage soient maintenues, y compris les soins, l'alimentation et le bien-être physique des animaux domestiques ?

- b. What opportunities are there for collaboration within the University, across the state, and/or with extension system in order to ensure accepted standard welfare for animal husbandry?

Quelles sont les possibilités de collaboration au sein de l'Université, dans l'ensemble de l'État et / ou avec le système de vulgarisation afin d'assurer un bien-être standard accepté pour l'élevage ?

- c. In what areas do you feel less supported/more supported (training and resources) for collaboration within the University, across the state, and/or with extension system?

Dans quels domaines vous sentez-vous moins soutenus / plus soutenus (formation et ressources) pour la collaboration au sein de l'Université, à travers l'état, et / ou avec le système de vulgarisation?

- d. In what areas do you feel less supported/more supported in order to ensure accepted standard welfare for animal husbandry?

Dans quels domaines vous sentez-vous moins soutenus / soutenus davantage pour assurer un bien-être standard accepté pour l'élevage?

- e. What are the key problems to improve in order to ensure accepted standard welfare?

Quels sont les principaux problèmes à améliorer afin d'assurer un bien-être standard accepté?

- f. What are the major challenges facing by farmers developed to ensure a standard welfare for working animals?

Quels sont les principaux défis auxquels sont confrontés les producteurs pour assurer un bien-être normal aux animaux de travail?

- g. What kind of teaching/learning methods might be used for to ensure a standard welfare for working animals?

Quelles méthodes d'enseignement / d'apprentissage pourraient être utilisées pour assurer un bien-être standard aux animaux de trait?

- h. From your experiences what recommendations will you make to ensure a standard welfare for working animals?

D'après vos expériences, quelles recommandations feriez-vous pour assurer un bien-être standard aux animaux de trait?

Wrap-Up

We are now at the end of the focus group questions. We want to sincerely thank you for your time and input. If you have any questions or final comments, please feel free to state them.