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GRADE 12 LEARNERS' PERCEPTIONS OF THE EFFECT OF URBAN
AGRICULTURE ON LIFE SATISFACTION IN DUNCAN VILLAGE

BY

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SUPERVISOR: PROFESSOR E.O. ADU

DECLARATION

I declare that “**Perception of Grade 12 learners on the Effects of Urban Agriculture on Life Satisfaction in Duncan Village**” is my own work and that all the sources that I have used or quoted have been indicated.

MRS N. O. BENI

DATE

ABSTRACT

The importance of agricultural sciences in the school curriculum all over the world cannot be over-emphasized. It includes an alternative source of fresh produce, improved life satisfaction and a way to preserve cultural identity and traditions. This research study seeks to investigate the perception of Grade 12 learners on the effects of urban agriculture on life satisfaction in Duncan Village. The study adopts a descriptive survey design to elicit information from the respondents on their perceptions on the effects of urban agriculture on life satisfaction. A validated structured questionnaire whose reliability co-efficient is 0.81 was used to collect information. The simple random sampling technique was used to select 78 (seventy-eight) Grade 12 learners. The study reveals among others some components of life satisfaction as a result of urban agriculture. These components are; nutrition, self-employment, food security and poverty eradication and they have positive effects on life satisfaction of the respondents. The study recommends that the South Africa Government should make agriculture education as a compulsory subject for grade 10 and 11 learners in rural areas. This will enable them to develop entrepreneurial skills and self-reliance mentality before they finish their secondary school careers. Similarly, the practical components of this subject should constitute 50% if not more from the overall marks. Realisation of this idea will alleviate, to some extent burden of unemployment and food scarcity as school leavers will be able to implement right away agricultural skills already acquired.

KEY WORDS: Poverty eradication, self-employment, nutrition, food security, life satisfaction

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DEDICATION

This work is dedicated to my family and God. God is not unjust; he will not forget your work.

SUPERVISOR'S STATEMENT

This dissertation has been submitted with/without my approval.

Professor E.O. Adu (Supervisor)

Date

LIST OF ACRONYMS

DoA:	Department of Agriculture
DoE:	Department of Education
UN:	United Nations
UNDP:	United Nations Development Program
FSWG:	Food Security Working Group
FAO:	Food Agricultural Organisation
CAADP:	Comprehensive Africa Agriculture Development Program
ASAAE:	Association of South African Agricultural Educators

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 INTRODUCTION AND BACKGROUND

The concepts of nutrition and food security are commonly found not only in South African policy documents, but also in the South African Constitution. The Discussion Document on Agricultural Policy encourages home and school gardening as means of addressing food security. The concept of food security has since 1995 been common in both agricultural policy and social development policy. Governments and international development partners are increasingly interested in school gardens. These have traditionally been used for science education, agricultural training or generating school income. The belief is that school gardens can become a seed ground for a nation's health and security; this idea is increasingly backed up by experience and research. Today, given the urgent need for increased food security, environmental protection, more secure livelihoods and better nutrition, perceptions of the potential of school gardens are changing. (Muehlhoff, Boutrif, 2010)

The authorities need to understand the policy-related aspects and then take action. The following aspects should be well understood:

- Though urban agriculture will not solve all poverty problems, systematic support could help to make some contribution in this regard.
- Urban agriculture has the potential to absorb people with low-incomes and low skills into the economy.
- Urban agriculture is one of many survival strategies that poor people use and its

role in this regard should be acknowledged.

- There is a danger that too much emphasis could be placed on supply-side mechanisms (providing seed and other inputs) as opposed to helping farmers to access or open markets. However, supply-side mechanisms could play a prominent role in ensuring food security at the household level.

Urban agriculture could play a prominent role in municipalities' open-area policies and could thus reduce maintenance of such areas (Centre for Development Support, 2009). In future, food and agricultural policy will seek to ensure that national food requirements are met by the most efficient combination of domestic production and trade that is consistent with broader targets for economic growth, employment and agricultural restructuring. Household food security will be enhanced by a range of measures to improve the affordability of food. Agriculture in South Africa has a central role to play in building a strong economy and, in the process, reducing inequalities by increasing incomes and employment opportunities for the poor, while nurturing our inheritance of natural resources. (ANC Agricultural Policy, 1994).

The research study seeks to address, amongst other things, the effects of urban agriculture on Grade 12 learners' life satisfaction in Duncan village. Duncan Village is a former black township in the Buffalo City Metropolitan Municipality in the Eastern Cape province of South Africa with population total of 16,380. Duncan Village has a racial make-up of 74.8% Black Africans, 24.6% Coloured, 0.2% Indian/Asian and 0.1% White. (Census 2011).



Most children from this area are from disadvantaged backgrounds and have more challenges in relation to their class room performances and other related activities that they partake on in school. The perception on the effects of urban agriculture on learner's life satisfaction can help by providing learners better understanding of the importance of agriculture in their daily lives and also will give them an insight about its contribution to the economy of South Africa at large.

There are fundamental and contemporary issues that affect the predominance of agriculture in urban schools, amongst the few are the following: no adequate space to develop and practice agriculture for food production in most urban schools. Secondly,

there is a growing negative attitude towards agriculture as a career of choice in most peer children, which makes it difficult to groom them to consider agriculture in their career plans. In some areas in the Eastern Cape it is often taken as a form of social movement for learners in the surrounding communities.

Urban agriculture lacks support from various stake holders and institutional arrangements have to be made to bridge the gap that exists to our learners as compared to their counter parts in rural areas where the kids are actually practicing agriculture on daily basis, like watering of some vegetables in the gardens, shepherding of livestock after school and milking of the cows.

The importance of agricultural sciences in the school's curriculum cannot be over-emphasized, and a lot needs to be done to eradicate the negative thinking around this career especially to youth and motivate them by showing them the opportunities and the importance in studying agriculture. Strengthening of career guidance and exhibition shows, agricultural training expo's and study tours can play a significant role in improving the career.

Agriculture also serves as a tool for food security and good health for underserved communities. Urban agriculture can as well be practiced in any piece of land owned by a community, institutions, municipalities, land trust, or any other way like tower cropping i.e. growing some vegetables in a half drum or an old tyre. These plots can be kept for personal consumption or be used to procure supplemental income. Additional benefits

of urban agriculture beyond food provision include improving job skills, improving self-esteem and contributing to community revitalization (Coeker, et al, 2010).

The experience of growing food is correlated with its consumption, the more experience learners have in growing food, the more likely they are to get healthy and fresh produce. School gardening provides good skills, healthy and green environments and better exposure of our learners to agriculture (Adu, Beni, Oshati, 2014). The studies pointed out that the food system is really a clear way that it affects the learners and everyone because everyone eats. Walker (2005) and Kristin (2008) also explain why food works so well as the particular focus for the deeper interest in addressing injustice and inequality.

Food is really a good way to bring people from all different backgrounds together, particularly since it is a pivotal part of people's lives. Building trust through relationships centred on food becomes the vehicle for exploring poverty, racism, class, and justice. Learners must be well prepared in the discovery of agricultural science, teaching and learning, in fact, the need to provide a highly educated, skilled workforce capable of providing solutions in the recent challenges facing the industry and issues pertaining to food production in the region. There is a growing need to develop strategies to create a society of diverse, highly educated professionals at all levels to redress those challenges and develop innovations that drive economic growth (Doerfert, 2011).

Food production in any country is inevitable, but challenges with regard to food production and agriculture at large is indispensable, much needs to be done in terms of infusing agriculture curriculum in our schools with youth training and development ventures so as to bridge the gap between under development and poverty. It should as well be one of the fundamental centre pin that urban agriculture be pivoted to number of urban schools and metro poles to acquaint and expose our learners to agriculture.

Knowing what encourages learners to and discourages learners from pursuing agricultural careers allows practitioners to make modifications on a personal level concerning what is taught in classroom, without losing the integrity of the information taught in those courses (Adu, et al. 2014). Fort Cox and Grootfontein (2004) state that agricultural colleges offer an introductory course called Agriculture science application and is meant to be the first in a series of agricultural education courses.

This course is expected to positively affect the agricultural literacy and perceptions of agriculture upon its learners. Through community gardens, people may also have the opportunity to increase their access and ability to communicate with their neighbours. This communication is vital in strengthening relationships that could help an impoverished area to gain a better self-identity. The new neighbourhood connections could also be a source of awareness, education, and knowledge. All of which may help a community or an individual become more self-sustaining and independent. This form of self-empowerment could lead to better overall citizenry (Adu, et al. 2014).

The question of “What to produce? When to produce?How to produce?And for whom to produce?Are the basic principles that if one have to make an effect in production of any agricultural product have to answer. These basic production principles are still applicable and worth knowing in terms of improving your gross income in production and cash flow. Improved health, increased recreation, relaxation, and creativity are the outcomes that come with this concept. Since there is neither a right way, nor a wrong way to go about gardening, any method respectful of others may be acceptable(Grootfontein College of Education, 2004).

Gardening in a sense then could be an activity that actually encourages creativity, individuality, and different ways to approach things. Some people in a community that have never had the opportunity to express a creative self could be given the opportunity through individual decision making that comes with growing one’s own garden. The opportunity for stress relief is possible too.

Gardening can give people an outlet to take their minds off of the stresses of everyday life. Seeing the vegetables that they grow as an outcome of their labour would be a very rewarding accomplishment for people who may feel that they are not capable of accomplishing anything in life. There also may be obvious reasons why community gardens can be beneficial to the overall health of an individual i.e. getting exercise, but there are many more than just that. For example, community gardening can become one of the reasons individuals in a community get up off other couch and go outdoors (Deppe, 2012).

The potential benefits stemming from this activity alone could be huge. Getting out of the house and focusing energy on something creative like gardening could be a potential outlet for stress as well. The health benefits including recreation and relaxation opportunities surrounding gardening can apply to anyone. Community Growth Opportunities and Community growth potential exists through community gardening in a couple of areas. Community gardens can be strategically situated in communities as a central location or better yet, a location that utilizes abandoned lots. Abandoned lots come with their own set of environmental risks, but the ability to transform them into something pleasant to the eye can be useful in growing a community(Heimer, 2008).

Through the community garden, neighbours can work together towards a common goal and also identify other ways they could work together to enhance and grow their community. Networks may be established that could lead to neighbourhood groups that help to clean up low-income areas or lower the crime rates in the area. A cleaner, greener and safer community with more self-empowered people can always be useful in attracting new residents or business to community. Attracting new potential residents and businesses to an area will cause increased community growth because the community becomes a more desirable place to live and/or work.

Similarly, decreased Crime Safety is important to individuals and members of a community alike, although safety may not actually be a major issue for most areas in Fairfax County (Adu, et al. 2014). Many sources in literature about community gardens provide antidote evidence that there is a relationship between community gardens and

crime rates and community safety. The article, *Cultivating Community Gardens: The Role of Local Government in Creating Healthy, Liveable Neighbourhoods*, for instance, found that community gardens increase safety in communities.

There is at minimum the perception that community gardens may increase safety within the community. This antipodal benefit, however, has not yet been shown to be peer-reviewed evidence through specific studies to be necessarily true. For example, although researchers (Gorham, Waliczek, Snelgrove & Zajicek, 2009), recognised there was apperceived reduced risk from crime felt by members of communities with community gardens, their study actually “indicated that the presence of a community garden was not a predictor of a lower crime rate... [and There] were no crime number differences between the community garden areas and the randomly selected areas.” This particular study did conclude by stating that interviews with members of the community did however reveal a positive receptiveness to community gardens (Gorham et al., 2009, pp 291-296).

1.2 STATEMENT OF RESEARCH PROBLEM

The urban poor are often food and income insecure, particularly in less developed provinces like Eastern Cape. Sustainable development that enables the poor to improve their vulnerability context and that does not degrade the environment is required. Small scale community UAPs have been developed to address the problem at the local level by enabling food to be grown for own consumption and the possibility for earning income from the sale of surpluses. However most of the projects have failed due to lack of working together as team and laziness amongst the project participants.

Secondly, these projects fail to progress or even continue after support is reduced or withdrawn. The problem appears to be difficulty in creating strong, stable and sustainable projects that can develop further and in providing the type of on-going support that will achieve this (Kirkland, 2008).

The Department of Agriculture used to support the local projects in terms of equipment and machinery, water supplies and other valuable inputs like finances. But due to lack of responsibility amongst those project operators, everything got vandalized and stolen by some of the project members.

This study was designed to determine the perception of Grade 12 learners on the effects of urban agriculture on life satisfaction. Learners that are doing Agriculture in Duncan Village high schools are not motivated, adequate support in terms of nutrition, self -employment, food security and poverty eradication is lacking. In most townships the youth considers agricultural practices as a 'un-cool' form of generating food. Everything needs to be from the store, and they are flashy about which store to go buy from. Such mind-sets have unfortunately been influenced by media and the lack of principles being taught at home by their elders (Adu, et al. 2014).

They would rather go hungry, even though they have a piece of vacant land they could utilise. For researchers that is very upsetting because we are raising future leaders and states man whom believe the earth is only good enough to be misused and nothing given back to it. This fast paced world that we live in has blinded people in appreciating

the smallest and valuable things about life. Urban Agricultural practices ensures that we redirect all that thinking, fall in love with nature and appreciate the produce, that the very soil we walk on and take for granted, can produce. It is up to us to insure that we sustain our planet for the next generations that will walk this earth 200 years from now. (Bohn, 2014).

1.3 PURPOSE OF THE STUDY

The purpose of this study is to investigate the learners' perception of the effect of Urban Agriculture on Life Satisfaction. For the purpose of this study there are four variables that determine life satisfaction which are Nutrition, Self-employment, Food security and Poverty eradication. This study has also explored the effect of each of these variables on Grade 12 student's life satisfaction. The overall aim of the research is to report on Grade 12 learners' perceptions of urban agriculture in Duncan Village. This is to enable us to have a greater understanding of how a local community can internally address the problem of poverty and inadequate food availability, and how this process can be structurally supported by external institutions so as to achieve a better standard of living for all residents of the area.

1.4 RESEARCH OBJECTIVES

1. To investigate the perception of learners on how urban agriculture promotes nutrition
2. To find out from the learners how urban agriculture promotes self-employment
3. To establish from the learners the effect of urban agriculture on food security
4. To find out from the learners how urban agriculture can eradicate poverty.

1.5 RESEARCH QUESTIONS

1.5.1 Main Research Question

What is the Grade 12 learners' perception of the effect of urban agriculture on life-satisfaction?

1.5.2 Sub- Research Questions

1. What is the learners' perception of the effect of urban agriculture in improving nutrition?
2. In what way does urban agriculture promote self-employment?
3. What is the perception of learners of the effect of urban agriculture on food security?
4. How does urban agriculture eradicate poverty?

1.6 SIGNIFICANCE OF THE STUDY

Similar studies all over South Africa are talking about a broad overview of poverty and food in urban areas. Poverty and food are two issues that are intrinsically related. Poor households will invariably be food insecure. Access to proper and decent food resources, both in sufficient quantities and of good dietary quality is imperative if a household is to enjoy a good quality of life. For world leaders, development scientists, policy makers and other involved in improving human lives, few problems have proved to be as intractable and elusive as that of poverty.

Poverty alleviation is currently at the centre stage of most government plans, international development agencies programs and policy pronouncements. (Fox and Liebenthal, 2006). Observe that reducing poverty in Africa appears to be difficult, even unrealistic goal. They add that the style of improving the lives of the people. In South Africa, poverty reduction and alleviation seems to be the prominent goal in almost every social expenditure program. Most studies have emphasized the point that poverty is largely a rural phenomenon.

Most cities in developing countries have great difficulties to cope with this development and are unable to create sufficient formal employment opportunities for the poor. Urban Agriculture provides a complementary strategy to reduce urban poverty and food insecurity and enhance urban environmental management.

My findings cannot be generalized because I am dealing with a small scale and geographical areas, namely Duncan Village. Duncan Village is a low income residential area which is home to 90,000 people. Infrastructural facilities are minimal and densities are extremely high, being in excess of 2,500 people per hectare in some areas. Duncan Village today is poised to meet the challenges of the post-apartheid era. Like all townships around South Africa, it has suffered from years of administrative and institutional neglect.

Even the learners are neglected and most of them are exposed to drugs, alcohol and crime due to lack of parental care. Services are overburdened and in some areas have

collapsed; clinics are few and unable to meet even basic health requirements. Houses are overshadowed by the growing number of shacks. 80,000 people live permanently in Duncan Village in a horrific situation where 50% of the core city's population is crammed onto just 2% of the land. There are 3,500 formal dwellings and 14,000 shacks, while densities exceed 2,500 people per hectare in some areas.

1.7 THE SCOPE OF THE STUDY

The study focused on Grades 12 Agricultural sciences learners in some of the schools in East London district. The choice of this Grade was informed by the policy document, department of education (DoE, 2000) stipulated the learning of Agriculture at Grade 12 formal language of teaching and learning is English (LoLT). Again, it is a transitional phase where learners choose their subject and determine their career path.

1.8 OPERATIONAL DEFINITION OF TERMS

Urban agriculture (UA): The term urban agriculture is associated with several different definitions and meanings. National Research Agency describes urban agriculture to include: beyond that which is strictly for home consumption or educational purposes, production, distribution and marketing of food and other products within the cores of metropolitan areas and at their edges, Examples include community, school, backyard, and rooftop gardens with a purpose extending beyond home consumption and education, innovative food–production methods that maximize production in a small area, farms supplying urban farmers markets, community supported agriculture, and family farms located in metropolitan greenbelts. (Adapted from the American Planning

Association, 2011).

Food Security: A condition in which all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

Poverty eradication: A state or condition in which a person or community lacks the financial resources and essentials to enjoy a minimum standard of life and well-being that's considered acceptable in society. Poverty status in the United States is assigned to people that do not meet a certain threshold level set by the Department of Health and Human Services.

Self-employment: Self-employment is a situation in which an individual works for himself or herself instead of working for an employer that pays a salary or a wage. Self-employed individuals earn their incomes through conducting profitable operations from a trade or business that they operate directly.

Nutrition: Nutrition can be defined as diet, food, maintenance or nourishment. This is the provision to the body of the right mixture of nutrients found in food for attainment of proper health.

Life satisfaction: a self-reported assessment of one's overall psycho-social well-being. It is a combination of personality factors, such as mood and self-concept, more socially

related factors, such as the nature of one's social interaction, perceived health and financial security. In this study life satisfaction is the combination of many variables in which this study has explored four out of them, these are ***food security, poverty eradication, self-employment and nutrition.***

Food Agricultural Organization (FAO): A United Nations agency that works on international efforts to defeat hunger by helping developing countries modernize and improve agriculture, forestry and fisheries practices. Serving both developed and developing countries, the Food and Agriculture Organization also aim to be a neutral forum where nations can negotiate agreements and debate policy.

CHAPTER CONCLUSION

The purpose of this quantitative research was to explore the Grade 12 learners' perceptions of the effect of urban agriculture on life satisfaction in Duncan Village. The rationale for this study was an effort to understand the challenges faced by the community members of Duncan Village in terms of food insecurity and lack of employment.

This chapter introduced the study and explained more about Duncan Village and the challenges faced by Grade 12 learners that live in that area. Duncan Village is a crowded place with no space to cultivate. We introduced four variables namely nutrition, poverty eradication, food security and self-employment and these were defined in operational definition of terms.

CHAPTER TWO

THEORETICAL FRAMEWORKS AND LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter introduced the study and this chapter provides a discussion of a theoretical frameworks and the literature that are relevant to the study. The main body of this review addresses various effects that were identified in the literature and concludes with a review of challenges and barriers, existing gaps and further research needs.

2.2 HISTORICAL INVOLVEMENT OF URBAN AGRICULTURE IN DUNCAN VILLAGE

When asking learners about life in Duncan Village the reply is that it is tough but there is a great community spirit, the spirit of Ubuntu. But felt that today the community spirit is largely been lost. Since independence, people tend to only look after themselves. They had lost that habit of communal support including the spirit of making use of the available piece of land as an opportunity to cultivate or encourage community gardens in order to promote food security nutrition, self-employment and trying to alleviate or eradicating poverty and the crime.

East London as heart of Buffalo City that give the people a taste of the city but did not have full support and promoting urban agriculture in those urban poor communities around East London and it is directly affecting the learners at large, some of the schools in Duncan Village are not doing Agriculture as the part of the learning area or some schools that are doing agriculture is taken as a filter that can boost the student to get more points after matric.

As the research states, there is no adequate space available for agriculture in the Duncan Village as strictly limited spaces available are being occupied by the shacks, whereas food crisis and hunger is anything but silent. The researcher's primary focus is on land, water and food as human rights and nourishing the political struggle (Williamson, 2011).



The picture above shows the inaccessibility of space for urban agriculture in Duncan Village

Today Duncan Village with its numerous shacks is still there. Although considerable improvements have been made in service and in some properties, the shacks are built too close together, as a result fires from candles and paraffin stoves spread quickly, leaving many people and learners homeless. The mayor from Buffalo City gave figures of 100.000 residents 75% of whom are without an income living in some 15000 shacks. Duncan Village slogan starts small. Plans are in place for student's gardens to be

created or receiving attention (Williamson, 2011).

Urban Agriculture is thought to have evolved from the European system of allotment garden. These gardens are similar to the plots found around Mideavila cities first appeared around the edges of towns in the 18th Century due to agricultural transformation, urbanization and industrial in countries such as Germany, England, Sweden and Holland. Immigrants from these countries took allotment garden to the United States where they became important for food security in poor urban areas such as Boston and New York (Williamson, 2011).

Urban relief gardens played an important role in sustaining large population of Americans during Economic depression. At the same time upper-class city dwellers became worried about crime, safety and cleanliness of cities. They began the city with beautiful movement, a reform movement to clean up and revitalize urban canters and create beautiful spaces. This movement sparked the start of school gardens and garden clubs in vacant lots and backyard of many cities. The future belongs to those who prove themselves true friends of mankind. The Spatial Development Framework (SDF) for Buffalo City has been compiled to support the development vision, and sector objective and strategic identified in the Buffalo City Metropolitan Municipality's (BCMM) Integrated Development Plan (IDP). The SDF is intended for:

- Functions as a strategic indicative and flexible forward planning tool to guide decision on land development.
- Develop a set of policies and principles and an approach to the management of spatial development in the Buffalo City area which is clear enough to guide

decision makers in dealing with land development application i.e. (it will serve to uniform the formulating of a new land use Management system) (Buffalo City Municipality Spatial Development Framework)

2.2.1 Urban Agriculture: Duncan Village Scenario

The main focus of this research study is to investigate the perceptions of grade 12 learners on how urban agriculture affect life satisfaction in Duncan Village. To realise this, the following research methods and implementation will be followed:

- Identification of vulnerable beneficiaries in the Duncan Village.
- Community sensitization to garden-in-a-sack technology.
- Demonstration sessions on preparation of sack garden.
- Distribution of seedlings, monitoring and follow-up support to beneficiary house hold.
- Capacity building of beneficiaries through training on nursery production practises, field management, composing, organic/low cost pest and disease control.

2.3 LEARNER'S INVOLVEMENT IN URBAN AGRICULTURE

School gardens present unique opportunities for hands teaching combining practical experience in Maths, Science and Nutrition with outdoor physical activity. Out-dated school district policies should be isolated to encourage this type of educational experience. Learners get hands on while learning about urban agriculture. From the community garden teaches student about the role that soil quantity and nutrients rich fertilizer play a role in the growth of strong heartily plants. Urban Agriculture encourages the learners to smell and touch the plants, design, build and maintain their own small raised bed garden.

It gives them the ability to connect to nature and to food system at a number of different scales and to also see how you make a drastic difference in understanding what you can achieve. McKnight (2014) stated that a keen interest in urban garden is rooted in peoples increasing concern for their personal health as well as the health of their communities and the planet. Let us take a closer look on the picture below to substantiate learners' involvement in urban agriculture.

Picture: 1



Picture: 2



Picture 1 The white man in short pant is teaching young people the difference and the importance between inter and intra-row spacing when planting any crop.

Picture 2: shows weed control using hand hoes, meaning that you can control your weed without using chemicals.

Russell, (2007) argues that he was not aware of the desired effect of growing your own food especially how popular it is in an urban environment who recently works in a small group to find a suitable place to grow a strawberry plant that allowed for ample drainage and sunlight. With urban agriculture you can grow things in the city. There are options outside just going to the grocery store. It's good to know you can grow your own food sustain yourself and be independent.

It is also important to learn about the socio-economic issues that surround food distribution and consumption, and these lessons have made the agriculture class interesting to learners. Some learners grew up with zero interest in gardening, but urban Agriculture can change their attitude besides being able to grow your own

food. Gardening offers several social benefits to including fostering a sense of community among neighbour, community members and even people you meet in the garden stores. Learners develop their own little ecosystem of knowledge transfer and borrowing and lending tools.

McKnight (2014) stated that for her learners, being in the garden and working with one another in a new way enhance learning and leadership and reduce lethargy. She can see the difference in energy levels in her studies, while learners will often take the same seat each time in a typical classroom and avoid interacting with their classmate's something unique happen in an outdoor class, said he argues that you take people outside and their social world open up you see different leadership styles and a public presence emerge in student that you would otherwise never see.

A group of graduate learners in urban planning has created the first comprehensive picture of Urban Agriculture in Los Angeles (LA). While farming has long been the domain of rural landscape, increasing interest in the local food movement healthy eating and sustainable cities has sparked the growth of farming in urban environment. The new report cultivate Los Angeles: An assessment of Urban Agriculture in LA County is intended to aid city planners as they learn how to accommodate these land uses in the nation's most population county. Project managers also expect the data to be a useful tool for Urban Agriculture practitioners and start up entrepreneurs seeking information about current and future business models and setting opportunities for Urban Agriculture enterprise. (McKnight, 2014)

Advocates such as the Los Angeles Food Policy Council will use the research to inform efforts to create a more seamless infrastructure and support system to Urban Agriculture in Los Angeles County food ecosystem. In conducting its research the group contacted more than 3,000 individuals to establish a baseline understanding of the following:

- Land use regulation for Urban Agriculture
- The spatial distribution of Urban Agriculture
- The role of Los Angeles county 761 schools gardens in educating learners about the nutrition and sustainability McKnight(2014)

2.3.1 Challenges for Learners

- Limited spaces available for learners to learn effectively
- Damage to sacks, crops from stray animals, pest and diseases
- Sustainable access to inputs such as soil, manure, seedlings and water

Sakhisizwe with Ubuntu has made another service delivery milestone in Stoney Drift by providing the community of this (informal settlement) poor area with food that will enrich their community and provided clothing for some few pre-school children .The reason for the assessment of Duncan Village is that it is part of the affected townships around Buffalo city Municipality which needs special attention, according to the Buffalo City's Municipal Intergraded Developmental Plan (IDP), sixty percent of the communities in this local Municipality is affected. The other challenges facing learners in Duncan Village are also caused by the lack of opportunities, drug addiction, epidemic diseases and

counter–culture movement among the youth. The unemployment rate is increasing, discrimination against a particular gender e.g. woman and man, cultural discrimination, pollution and drug addicts are significant in this area. The research reveals that South African citizens tend to buy more of luxury goods than basic day to day necessities (Bert, 2007).

A challenge often seems very difficult or impossible to reach, for example to change the desert into a farm which produces vegetables and fruit or to remove the salt from the seawater. It is a challenge to find and implement solution to these problems. In general, people in Duncan Village experience problems with regard to relationships, working together sharing a shack with different genders and overcrowded. In addition through repeated failures in the community, young people drop out from school (destructive habits) no support on their needs that lost faith to young people in the possibilities that wait if they are successful in putting their lives together.

The research study represents a starting point in an exciting process of operationalizing a cross-sectorial research on agriculture for improved nutrition, self-employment, food security and poverty eradication, urban agriculture makes a contribution to the community and derives economic significance.

2.4 BENEFITS OF URBAN AGRICULTURE

Urban agriculture can reflect varying levels of economic and social development. In the global north it often takes the form of a social movement for sustainable communities, where organic growers, 'foodies,' and 'locavores' form social networks founded on a shared ethos of nature and community holism. These networks can evolve when receiving formal institutional support, becoming integrated into local town planning as a 'transition town' movement for sustainable urban development. In the developing south, food security, nutrition, and income generation are key motivations for the practice. In either case, more direct access to fresh vegetables, fruits, and meat products through urban agriculture can improve food security and food safety (Waterford, 2015).

Urban agriculture provides some form of livelihood for low-skilled people. Though urban agriculture will not solve all poverty problems, systematic support could help to make some contribution in this regard. Urban Agriculture is one of many survival strategies that poor people use and its role in this regard should be acknowledge within the above context of job loss, persistent poverty, food shortages and rising food prices, learners are busy starting their small plots projects trying to alleviate this problem (Adu et al. 2014).

Urban agriculture uses the resources in cities that would otherwise go to waste. Gardens can be built in empty lots, on top of buildings, on steep slopes and river banks, all examples of spaces that would otherwise be unproductive. These gardens can use waste water to water their crops, therefore doing away with the issue of waste water

treatment. The urban farm could use compost from food scraps in kitchens all over the city, these food scraps might otherwise be thrown away, wasting valuable nutrients. City farms use resources that would have been wasted to produce new resources for the community. They produce food, jobs, and a variety of less quantifiable benefits, many of which are listed below (Monique, et al, 1999).

Below some benefits of urban agriculture are outlined given some examples of these benefits and real cities around the country.

Socially it:

- Helps bring families and communities together by working toward a common goal that will be beneficial for all
- Gives direct links to food production
- Creates better living environment by greening up the city and making it more productive
- Makes people stronger by putting their food security into their own hands, making them more independent and empowered
- Teaches people life skills such as how to be more self sufficient
- Creates jobs, income, and food
- Helps combat hunger
- Educate people, who have been increasingly removed from food production, to participate in, and respect, its generation (Hamm, 1999).

There are many social benefits that have emerged from urban agricultural practices such as improved overall social and life satisfaction or emotional well-being, improved health and nutrition, increased income, employment, food security within the household, and community social life. Urban agriculture can have a large effect on the social and emotional well-being of individuals. Individuals report to have decreased levels of stress and better overall mental health when they have opportunities to interact with nature through a garden. (Henkel, 2015)

Many state that working in agriculture is much more interesting and fulfilling than going to the gym, and that it makes getting exercise fun. In addition to the exercise that individuals receive while actually working in gardens many people say that the majority of the exercise they receive through Urban Agriculture is actually getting to the gardens. Many people either walk or ride their bike to the cities which provide many physical benefits. Taking part in such practices is seen mostly as informal activity, but in many cities where inadequate, unreliable and irregular access to food is a recurring problem, urban agriculture has been a positive response to taking food concerns. The ability to produce and grow food for oneself has also been reported to improve levels of self-esteem of self-efficacy (Waterford, 2015).

Environmentally it:

- Greens up the city
- Can help to clean air and rain water
- Helps to stop erosion and topsoil removal

- increases the amount of food grown and bought locally, decreasing carbon footprint
- Facilitates reuse of wastes for food production
- Has direct effects on urban ecology

Economically it:

- Creates jobs and income from otherwise completely unproductive space
- Can be beneficial to people of any income
- Creates a better local economy that does not rely on food from far away
- Makes use of valuable resources, such as compost, that would otherwise go to waste in a city.

Growing your own food saves household expenditures on food; poor people in poor countries generally spend a substantial part of their income (50-70%) on food. Although the extent of the unemployment problem has been on the increase for the last two decades, it became particularly visible after 1994 which resulted in a large scale migration of native Africans from rural to metropolitan areas in predominantly fruitless search for work. This has resulted in the failure of the economy to provide jobs for the unemployed (Adu et al, 2014).

With seven billion mouths to feed, human agriculture exerts a tremendous toll on the planet, from water draws to pollution, and from energy use to habitat loss. But there is also a growing set of solutions, from organic agriculture to integrated pest management.

More people around the world are taking a look at urban farming, which offers to make our food as “local” as possible. By growing what we need near where we live, we decrease the” food mile's associated with long-distance transportation. We also get the freshest produce money can buy, and we are encouraged to eat in season (Pabular, 2013).

Another benefit of urban farming is that it can add greenery to cities, reducing harmful runoff, increasing shading, and countering the unpleasant heat island effect. Garden plots can help people reconnect with the Earth, and gain a greater appreciation for where our food comes from. Rooftop and patio gardens create peaceful places for relaxation or contemplation, and they can attract tourists, and urban farming can bring jobs to underserved and depressed urban areas (Green Garden Guru, 2015).

Although planners have a long way to go, boosters envision soaring vertical farms that will eventually produce most of what we need within a short walk from home, land in cities is often expensive, especially since gardens tend to contribute to gentrification and rising rents. Urban soils can be loaded with lead, arsenic, and other toxins, requiring remediation or replacement before planting can be done safely. Cramped conditions can limit yields, and getting enough water and sunlight can be concerns. Still if the right combinations of new technology, community support, and economic incentives align, it is possible we may soon be munching on skyscraper scallions and avenue arugula (Howard, 2014).

The sky is the limit for urban agriculture. What can cities hope to get from community gardens and urban agriculture? Rowe (2014), argues that we need to stop confusing apples and oranges, but we like them both. According to them, community gardens and urban agriculture is not the same thing. Community gardens are a fabulous manifestation of the commons of how neighbours can come together to create a shared resource that delivers multiple benefits for them that they could not possibly create by themselves. A vibrant community garden makes commensality one of the greatest gifts of urban life through the commons-possible. They hold the view that urban agriculture is completely something else. It is about growing food within the city at a scale that has the potential to put a dent in food security challenges. Scaling up growing food in cities is the laudable goal (Rowe, 2014).

Gardening improves opportunities for children, youth, adults and families to gain interest and eat fruits and vegetables. It also increases the variety of vegetables eaten (Ractliffe, Merrigan, Rogers, Goldberg, 2011). Graham, Beall and Lussier (2005) state or reported that school gardens can positively affect children's choices by improving their preferences for vegetables and their nutrition knowledge. After gardening children have shown more positive attitudes towards fruit and vegetable snacks and an improvement in vegetable preference scores (Lineberger, 1999).

Rachel (1999) sought answer to the following question: what can agriculture add to a city's sustainability? Beyond the immediate of fresh food, dietary variety and landscape diversity, do cities gain in the long term from growing food within and nearby? Research

suggests that it is worthwhile to look beyond traditional views of urban dwellers as consumers and rural dwellers as producers of food, especially in developing countries. Urban planners and policymakers seek practical, feasible solutions on infrastructure problems and environmental degradation while trying to address the social and economic ills of the inner city. Urban agriculture may have something to offer these policymakers (Smit, Ratta& Nasr, 1996).

Food production in cities and that in surrounding densely populated areas are called urban or peri-urban agriculture respectively. Definition of city varies by settlement characteristics and the laws of different countries. Regardless of the illegal definition, every city contains some urban agriculture in backyards, rooftop containers, public open spaces, community gardens, greenhouses and bona fide commercial farms on the periphery. Common to these diverse agricultural activities are limited space, products that are of high value or perishable (or both) and products often consumed by the growers themselves or by nearby populations. This study presents a framework for measuring the economic, social and environmental benefits and costs of urban agricultural production(Koc, MacRae, Mougeot and Welsh, 1999).

Because urban agriculture has only recently become the object of policy and academic interest, no standard method of quantitative analysis has yet been established to evaluate its effects. The moist detailed discussion of urban agriculture to date us urban agriculture: Food, jobs and sustainable cities (Smit et al. 1996).

2.5 URBAN AGRICULTURE AND LIFE SATISFACTION

Clearly, successful aging bears some relationship to life satisfaction, especially as considered in the third and fourth definitions presented above. Leonard (1981-1982) has addressed the relationship between life satisfaction and successful aging by viewing the former as the major component of the later. Another term frequently associated with life satisfaction is “well-being”. This sometimes referred to more specifically as subjective well-being (Larson, 1998) or social psychological well-being (George, 2004). According to Larson, well-being is assessment of the general effective experience of older persons, in terms of a positive-negative continuum.

Throughout the present discussion, well-being is used more or less interchangeably with life satisfaction. Life satisfaction represents “a global assessment of a person’s quality of life according to his/her [the respondent’s] chosen criteria”. It is well accepted that life satisfaction demonstrates in contrast to temporary variable positive and negative emotions the relatively stable component of subjective well-being and refers to cognitive judgments based on a selected set of constantly accessible and stable sources. In doing so, the one-dimensional construct of life satisfaction integrates important components of life domains such as marriage, health, work, and leisure by individual weightings and rankings, and thus, positive as well as negative aspects (Diener , Oishi & Lucas, 2013).

Therefore, life satisfaction is a promising approach to estimate positive psychological attributes in a more comprehensive and convenient way. For these reasons, life

satisfaction seems to be an appropriate measure to investigate associations with long-term outcomes in large longitudinal studies, especially since it has been shown that it is quite constant even over a longer period of time. Relationships between life satisfaction and mortality, subsequent work disability, and health behaviour have already been reported (Pitacco, 2012).

Furthermore, previous studies on psychosocial determinants and health recurrently emphasized differences in the extent of examined associations in men and women, wherefore a general gender-specific approach seems to be obvious. In this regard, an underlying net of structural, psychosocial, and behavioural factors, growing out of the social context that is substantially determined by gender roles and connected to specific coping strategies, have been discussed to mediate the differential vulnerability concerning psychosocial conditions. Sex-specific differences in disease development pathways due to biological sources such as hormonal and genetic disparities were assumed to play an additional role (Pitacco, 2012).

2.6 URBAN AGRICULTURE AND POVERTY ERADICATION

Low –income groups are generally not only poor in a financial sense, the health burden of being poor, the continuing struggle for resources, and the stress associated with providing for themselves and all their dependants have their costs. A strong and effective community can often address many of the deprivations suffered by poor individuals. Many projects have recognised the key importance of participation in terms of encouraging communities to be involved in the processes of decision making and influencing how resources are utilised, which increases the self–esteem of individuals

and households, stimulates community organisation and enhances communities capabilities to negotiate with other parties (Vanderschueren, Wegelin & Wekwete, 1996).

The missionstatement for agricultural policy, as set out in the White paper on Agriculture, was to 'ensure equitable access to agriculture and promote the contribution of agriculture to the development of all communities, society at large and the national economy, in order to enhance income, food security, employment and quality of life in a sustainable manner.' The White Paper onAgriculture recognised that food security consists of both national and household food security (White Paper on Agriculture, 1995).

National food security was defined as 'the availability of a constant supply of sufficient, safe, and nutritious food for the population within the country, whether from production, imports, or stocks, Household food security was defined as 'the availability and accessibility to households of affordable, nutritious food, whether from their own production, purchases, social welfare, or community support.'

According to the White Paper on Agriculture, national food security needed to be addressed through increasing the efficiency of food production and exploiting competitive advantages. Household food security needed to be addressed through job-creation, social subsidies, food distribution, land reform, urban food-production, and the reduction of the price of foodstuffs. The ideas of the White Paper on Agriculture were

further developed in the Discussion Document on Agricultural Policy released by the Department of Agriculture in 1998 (Department of Agriculture, 1998).

The 1998 Discussion Document on Agricultural Policy (Department of Agriculture, 1998) further affirmed the distinction between national and household food security. It also continued the ideas of addressing food insecurity through job creation (specifically in the agricultural sector), own food production, more efficient production, and a more equitable distribution of resources (especially access to productive resources). Furthermore, while the White Paper on Agriculture identified the need for further research into smallholder farming, the Discussion Document on Agricultural Policy encouraged home gardens and smallholder production as a means of addressing food security. Since the White paper on Agriculture, the Act on the Marketing of Agricultural Products, Act No 47 of 1996, which limits intervention in agricultural markets, was also discussed in the Discussion Document on Agricultural Policy. According to the Act, any intervention must be proven not adversely to affect food security or employment.

The White Paper for Social Welfare (Department of Welfare, 1997), was released in 1997, 'nourishment' was included as part of the agenda for action that was entitled the 'War on poverty'. The White Paper for Social Development envisaged incorporating nutrition in all of the programmes of the Department of Social Welfare cooperating with other departments to improve (specifically) household food security and providing of food aid during national disasters. Household food security was

defined as 'access by a household to enough food for active and healthy lives, The White Paper for Social Development further distinguished between acute (transitory and sudden) and chronic (long-term) food insecurity (Centre for Development Support, 2009).

2.7 URBAN AGRICULTURE AND FOOD SECURITY

Today the world faces the fundamental challenge of ensuring that millions of households living in poverty have access to enough food to maintain a healthy life. Agriculture remains a core sector for food security. The issue of food security has been critical in many parts of the world including South Africa. World human population is growing exponentially to reach 9 billion by 2050 and the current agricultural system will not be able to sustain it (Tracey, 2011).

Picture: 1



Picture: 2



Picture:1 shows the pot planting of maize crop, meaning you don't need a large piece of land in order to grow your plants.

Picture:2 the parents are given some seeds for them to establish their own food gardens.

Urban agriculture has been a successful strategy for improving food access to food insecure areas (Armstrong, 2000; Balmer, Gill, Miller, Peterason, Rhoads, Rosenbloom & Wall, 2005; Corrigan, 2011; Larsen and Gilliland, 2009). Despite the fact that studies have shown that urban agriculture cannot provide all the nutritional needs of communities, it can be an effective way to take direct action and can catalyse more comprehensive food –access strategies (SPUR, 2012). South Africa can learn from the experience of developed countries like United States of America to bring about food security.

Some reports suggest that more important than producing food, urban agriculture is a strategy to increase and health literacy (Spur, 2012). Urban agriculture has been a successful strategy for improving food access to food insecure areas like Duncan Village (Corrigan, 2011). Despite the fact that studies have shown that urban agriculture cannot provide all the nutritional needs of the communities, it can be an effective way to take direct action and can catalyse more comprehensive food access (spur, 2012).

Urban agriculture food projects evaluated by the Community Food Security Coalition produced 18, 7 million pounds of food with over 726,000 pounds donated for community food consumption in United States of America, whereas here in South Africa nearly a quarter of that being produced and sent to other countries (Stats SA 2011). Food security means that all people at all times have physical and economic access to adequate amounts of nutritious, safe and cultural appropriate foods, which are produced

in an environmentally sustainable and socially justifiable manner, and that people are able to make informed decisions over their food choices.

Food security also means the people who produce our food are able to earn a decent, living wage, catching, producing, processing, transporting, retailing, and serving food. The contribution of urban agriculture to food security and healthy nutrition is probably its most important asset. Food production in the city is in many cases respond to the urban poor to inadequate, unreliable and irregular access to food and the lack of purchasing power. The costs of supplying and distributing food from rural areas to the urban areas or the import food for cities are rising continuously and it is expected that food insecurity will increase.

Access to nutritious food both economically and geographically is another perspective via in the effort to locate and livestock production in cities. With the tremendous influx of world population to urban areas, the need for fresh and safe food is increased. The Community Food Security Coalition (CFSC) defines food security as; all persons in a community having access cultural acceptable, nutritionally adequate food through local, non-emergency sources at all times (Adu et al, 2014).

Student involvement in community or school garden program can help them to eat more of vegetables and fruit and less junk food as a result of their participation (Ober Allen etc. 2008). Eastern Cape Department of Agriculture have been engaged in a process of seeking to transform agriculture production system, livelihood patterns and human

development (Moshiri, 2010). Assistance in terms of garden, establishment was provided in homes, clinics, schools, and communities. Also in addition to that there was provision of seed capital and starter packs for agricultural production such as farming implements (e.g. wheel barrows, garden forks, spades, rakes, watering cans etc.) and production inputs (e.g. seeds, seedlings, fertilizer, and insecticides). The program failed because of poor handling and information support system that was not available (Moshiri, 2010)

Mkwambisi, Fraser and Dougill (2007) state that “despite persistent economic growth around the world, food insecurity and unemployment remains as a pressing problem in many parts of Africa”. According to Musotsi, Sigot and Onyango (2008), malnutrition has been identified as primarily being caused by food insecurity while poverty has been shown to be one of the underlying causes of food insecurity. In South Africa, hunger and malnutrition are not caused by insufficient food; instead, it is because certain categories of individuals and households in the population do not have adequate access to food.

FANRPAN (2006) also argued that there is a strong bond between vulnerability to food security and chronic poverty. This means that “poverty undermines the ability of people to develop livelihood strategies, adaptive behaviours and coping strategies which help to ensure long-term food security”. Those that are at risk of food insecurity are found in two marginalized groups which have been broadly defined as:

(a) The economically bounded group such as those lacking land, tools and capital, livestock, literacy as well as other formal skills (FANPAN, 2006). This group of people

make up the under-employed or the working poor;

(b) The other group is the socially bounded group of people vulnerable to food in security due to age (children and elderly), gender (women and girls) or as a result of illness or disability.

Food security in developing cities could be substantially improved by increased investments and policy reforms. It is crucial to identify how households respond to these effects in order to identify positive food security entry points and design strategies that can effectively alleviate food insecurity amongst the households of people living with HIV/AIDS. This study seeks to establish how HIV/AIDS affected households in an urban Duncan Village setting in terms of response to food shortages and interrelations between the practice of agriculture in order to help households within and around Duncan Village.

Food picked right from the ground and eaten is healthier than food that has travelled; we therefore encourage backyard farming and promote wealthy creation through culture to Duncan Village learners. The Discussion Documents was produced by the food security working group (FSWG) set up by the Minister of Agriculture and Land Affairs in October (1996). In addition it provides a policy statement on food security on food security in South Africa.

Food insecurity affects both rural and urban households and thus becomes a problem since rural households are characterised by having a larger number of members than urban households (FAO, 2010). One would usually think that cities and towns (urban areas) are not places where home gardens should be undertaken, but urban agriculture (home gardening) has come to life due to urbanization which leads the majority of people residing in urban areas to be poverty stricken (Enviropaedia, 2007). Thus, throughout the years the practice of agricultural activities in rural areas only has changed due to people migrating to the urban areas in search of better standards of livings (looking for employment) which resulted to agricultural activities being practiced in urban and Peri-urban areas as well due to the problem of food insecurity (Drennan, 2009).

2.8 URBAN AGRICULTURE AND SELF-EMPLOYMENT

Where social issues are concerned, it has been demonstrated that urban agriculture projects reduce hunger and malnutrition by providing the urban poor with greater access to healthier, more affordable foods (UNDP, 1996). This in turn reduces household expenditures on food –which often make up the largest portion of urban household budgets, especially for low-income residents (Ruel and Garrett, 2004), and frees up scarce cash resources for other needs (Viljoen and Home, 2005). Given that city dwellers are highly dependent on cash income to pay for household expenses, urban agriculture's positive contribution to resource allocation is meaningful, especially where high levels of unemployment and rising food prices are complicating factors (Battersby - Lennard, 2011).

Urban agriculture promotes economic development primarily by creating small urban farming businesses focused on growing and selling food, but also via ancillary enterprise opportunities such as food transport or delivery services, compost production, seedling propagation or sale of value-added food products like chutneys or dried herbs (Walker, 2011). It may further contribute to cities' poverty reduction strategies by providing marginalised urban farmers with income generation and employment prospects linked to small-scale food production (Hovorka, de Zeeuw, H and Njenga, 2009). This is especially meaningful in a South African context when we recognize that chronic poverty and social exclusion are closely linked, with disadvantaged groups being excluded from opportunities to earn a living, access the labour market and build assets (Adato, Carter and May, 2006).

Self-employed people are happier about their work-life balance even though they work the longest hours because they have more control over their time. They take responsibility for their own future, and take control of their own destiny. Urban agriculture can create self - employment and can generate significant income and often certain contribution to household support. Self-employment in home and community gardens may strengthen self-esteem and can create an abundance of food for people in need by supporting and encouraging the establishment of homestead food gardens on unused lands and space while increasing diversity, raising awareness for health, wellness, inspiring and educating Grade 12 learners to create an economically sustainable system to uplift the communities around them. The pictures below show

practical example of urban agriculture and self-employment (Adu et al, 2014).

Agriculture is the way of life for most people in the Eastern Cape. The vast majority of cultivated land is used by small farmers for subsistence agriculture which does not promote commercial value to boost the economy of the country (Food and agriculture survey bulletin). Learners will develop fear on future job availability after graduating. Judging from the products of Duncan Village Secondary schools ,the gateway to tertiary institutions is the Agricultural Sciences which is not taken up to tertiary level. Matriculates with Agricultural Sciences as one subjects passed at matriculation level are not motivated to practice the Agricultural knowledge acquired at school. Number of factors that may come to play include, but not limited to the following: way of living, lack of arable land, land deterioration (Bert, 2007).

The cultivation of urban land is significant, mainly as a palliative for underdevelopment through its connections with the food preparations. Urban agriculture can also create employment in both the informal and formal industrial sectors. A training ground for learners' entrepreneurs, urban agriculture as we have seen, is especially important as a source of supplementary food and income for households headed by learners (Adu et al, 2014).

In addition, however, many learners may use it as their entry into the commercial world of East London, Duncan Village's informal sector, e.g. by setting up kiosk in the industrial areas and serving prepared food grown on their own plots in the location. The

experience of conducting these businesses has an effect on learners and overcoming the major impediments of lack of education and alternative business experience opportunities (Freeman, 1991).

Beyond its tangible impact on physical and financial well-being at the household level, the practice of urban agriculture is also a source of empowerment, leadership development and social cohesion in the community (Dunn, 2010). Particularly in situations where historical inequalities persist, urban agriculture has been recognized as having a role in redressing societal imbalances related to gender, race and poverty (Battersy, Finchman, Frayne and Haysom, 2009; Phiri, 2008) not only through community capacity-building, but through increased public attention to fundamental issues of social equity and redistribution such as land reform, the need for formal engagement with the informal economy and institutional support of historically oppressed communities.

The study analyses heterogeneity among the self-employed in 74 developing countries, representing two-thirds of the population of the developing world. After profiling how worker characteristics vary by employment status, it classifies self-employed workers outside agriculture as "successful" or "unsuccessful" entrepreneurs, based on two measures of success: whether the worker is an employer, and whether the worker resides in a non-poor household. Four main findings emerge (Gindling and Newhouse, 2012).

First, jobs exhibit a clear pecking order, with household welfare and worker education highest for employers, followed by wage and salaried employees, non-agricultural own-account workers, non-agricultural unpaid family workers, and finally agricultural workers. Second, a substantial minority of own-account workers reside in non-poor households, suggesting that their profits are often a secondary source of household income. Third, as per capita income increases, the structure of employment shifts rapidly, first out of agriculture into unsuccessful non-agricultural self-employment, and then mainly into non-agricultural wage employment (Gindling and Newhouse, 2012).

Finally, roughly one-third of the unsuccessful entrepreneurs share similar characteristics with their successful counterparts, suggesting they have the potential to be successful but face constraints to growth. The authors conclude that although interventions such as access to credit can benefit a substantial portion of the self-employed, effectively targeting the minority of self-employed with higher growth potential is important, particularly in low-income contexts. The results also highlight the potential benefits of policies that facilitate shifts in the nature of work, first from agricultural labour into non-agricultural self-employment, and then into wage and salaried job (Gindling and Newhouse, 2012).

2.9 URBAN AGRICULTURE AND NUTRITION

Nutrition, the process of providing or obtaining the food necessary for health and growth. Hunger, malnutrition and poor health are widespread and stubborn development challenges in the Duncan Village in East London daily intake of a variety of fruits and

vegetables is linked to a decreased risk of chronic diseases including diabetes, heart disease and cancer. Urban agriculture is associated with increased consumption of fruits and vegetables which decreases risk for disease and can be a cost-effective way to provide citizens with quality, fresh produce in urban settings (Drescher, Shackleton, Pasquini, 2009).

The contribution of urban agriculture to food security and healthy nutrition is probably its most important asset. Food production in the city is in many cases a response of the urban poor to inadequate, unreliable and irregular access to food, and the lack of purchasing power. Most cities in developing countries are not able to generate sufficient (formal or informal) income opportunities for the rapidly growing population. The World Bank (2000) estimates that approximately 50% of the poor live in urban areas (25% in 1988). In urban settings, lack of income translates more directly into lack of food than in a rural setting (cash is needed). The costs of supplying and distributing food from rural areas to the urban areas or to import food for the cities are rising continuously, and it is expected that urban food insecurity will increase (Argenti, 2000). Food prices in Harare, for example, rose 534 percent between 1991 and 1992 due to the removal of subsidies and price controls, spurring poor urban consumers to get access to food outside of market channels through home production or bartering (Tevera, 1996).

Urban agriculture may improve both food intake (improved access to a cheap source of proteins) and the quality of the food may improve (poor urban families involved in farming eat more fresh vegetables than other families in the same income

category).Agriculture has made remarkable advances in the past decades, but progress in improving the nutrition and health of poor people living in Duncan Village is trailing behind which directly affects the learners due to lack of interest in our youth and young adults in agricultural. Two urgent needs for the poor are good nutrition and good health. In its new vision with the learners we are desperately seeking the strategy to reduce poverty and hunger, improving human health and nutrition (Tevera, 1996).

Nutrition is commonly regarded as the process of providing or obtaining good and balanced food necessary for health and growth. Hunger, malnutrition and poor health are widespread and stubborn developmental challenges in the Duncan Village in East London as identified by local Municipality of the area in the past few years.Innovations and best practices in urban nutrition, high rural-urban migration, high population growth rate, increasing vulnerability levels, rising food prices and poor health in Duncan Village are fundamental aspects that needs urgent attention by the stakeholders, we are trying to start implementing food aid and garden in-a-sack project, trying to improve food production, offer security and income-generating opportunities, e.g. positive environmental effects. (Bert, 2007)



Picture: 1 young people are shown how to grow and maintain flower garden that is weeding and loosening of soil for penetration of water and other nutrients.

Picture:2 this is harvesting time and the young chap shows how he managed to have such a harvest.

Learners are more likely to try new vegetables when they take an active role in the planting and cultivation of an urban garden. Produce from urban gardens can be perceived to be more flavourful and desirable than store bought produce which may also lead to a wider acceptance and higher intake. Michigan (2008), found that those participating in community gardens consumed fruits and vegetables more times per day and were 3.5 times more likely to consume fruits or vegetables at least 5 times daily. Garden based education can also yield nutritional benefits in children. An Idaho study reported a positive association between school gardens and increased intake of fruit, vegetables, vitamin A, vitamin C and fibre among sixth grader (Rasambula, et al 2007)

Urban gardening improves dietary knowledge. Youth who were part of a community garden intervention were better able to communicate specific nutritional benefits of fruits

and vegetables on the body than those who had not participated in a community garden. Community gardeners were also found to consume fewer sweet foods and drinks (Alaimo, Packnett, Miles and Kruger, 2008).

The nutrient content of produce from an urban garden may be higher due to decrease in time between production and consumption. A 30-50% nutrient loss can happen in the 5–10 days it takes to travel from farm to table. Harvesting fruits and vegetables initiates the enzymatic process of nutrient degradation which is especially detrimental to water soluble vitamins such as ascorbic acid and thiamine. The process of blanching produce in order to freeze or can reduces nutrient content slightly but not nearly as much as the amount of time spent in storage. Harvesting produce from one's own community garden cuts back on storage times significantly (Elma and Hicks 2013).

Urban agriculture also provides quality nutrition for low income households. Studies show that every R1 (One Rand) invested in a community garden yields R6 (Six Rand) worth of vegetables, if labour is not considered a factor in investment. Many urban gardens reduce the strain on food banks and other emergency food providers by donating shares of their harvest and provide fresh produce in areas that otherwise might be food deserts. The supplemental nutrition program Women, Infants and Children (WIC) as well as the Supplemental Nutrition Assistance Program (SNAP) have partnered with several urban gardens nationwide to improve the accessibility to produce in exchange for a few hours of volunteer gardening work.(McMahon, 2010).

The conclusion is that poorer South Africans, especially in rural and informal urban areas, are less able to afford healthy, nutritious meals on a daily basis. An increasing reliance on purchasing food instead of growing it has also meant that consumers are more vulnerable to price shocks. (Pereira, 2014)

2.10 AGRICULTURAL EDUCATION

Several notable factors that influence attendance and grades are motivation, prior grade point average (GPA) self-financing by learners hours worked on jobs, quality of teaching and nature of class lectures. The study provides strong empirical evidence of the positive influence of class attendance on student performance. (Devadoss Stephen, Foltz & John, 1996)

Agricultural Education is the teaching of agricultural, natural resources and land management through hands on experience and guidance to prepare learners for entry level jobs or to further education to prepare learners for advanced agricultural jobs. Classes that may be taught in an agricultural education curriculum includes horticulture, land management, Turf grass management, agricultural science, small animal care, machine and shop classes, health and nutrition, livestock management, biology courses etc. Agricultural education can be taught at the elementary level, middle school levels. According to Philipps (2008), elementary agriculture is taught in public school and private school and deals with each subject as how plants and animals grow and how soil is formed and conserved.

Vocational agricultural trains people for jobs in such areas as production, marketing and conservation. College of agriculture involves training of people to teach, conduct, research or provide information to advance the field of agriculture and food science in other ways. General education agriculture informs the public about food and agriculture (Elma and Hicks, 2013).

In the United States of America, agriculture is taught at both the Elementary and at the University levels. On completion of the degree at any of the colleges and or Universities, the student is offered a position to work in an agricultural related field. Some of these fields include the teaching of agriculture in the high school. A qualification in the first degree will qualify one to teach up to the high school. For one to qualify to teach in the college one would have to qualify for the degree of Master of Agriculture. Coupled with the above qualifications is the extension work for university work and agricultural related companies and organization (Elma and Hicks, 2013).

There are also other qualifications for agriculture; colleges of agriculture prepare learners for some careers such as food science, veterinary science, farming, ranching teaching, marketing, agricultural communication, management and social services. Thus agriculture offers a lot of employment opportunities to its learners.

2.11 AGRICULTURE POLICY IN SOUTH AFRICA

Agricultural policy is relevant to the current state of food security in South Africa. The policies that were put forth since the early 1900s including those in more recent years have resulted in the discrimination and suppression of black farmers eventuating in an agricultural sector dominated by white farmers. Work by both Kirsten, Edwards and Vink (2009) and Vink & van Zyl (1998) reviewed the history of agricultural policy since the 19th century. Through tactics such as land dispossession and prohibition of black land owners, combined with the formalized investment and financing schemes solely for white farmers, black farmers were removed as competition against white farmers from the agricultural industry and diverted towards the growing mine industry in order to meet the demand for low cost labour (Kirsten et al., 2009; Vink & van Zyl, 1998).

This approach of supporting white farmers and discouraging black farmers was continued and propagated for several decades until after the Second World War (Grobler, 1998 as in Kirsten et al., 2009). Between 1910 and 1935, 87 governmental acts were introduced aimed at aiding white farmers and suppressing black farmers through credit systems (Minaar, 1990 as in Kirsten et al., 2009). After the 1950s, agricultural policy was focused on the extensive support and regulation of commercial white farmers beneath the backdrop of increasing separation from the global market as most prominent in the 1980s. Such policies emphasized the use of capital intensive technology, which decreased reliance on low cost, labour intensive job-creating schemes, further excluding and reducing dependence on black labour and black entrepreneurs throughout all sectors and the formal economy.

The main policy tool of this period was the 1984 White Paper on Agriculture (Department of Land Affairs, 1997), which focused primarily on the phasing out of agricultural state protection and control boards. Yet regardless of its market focused improvements, it supported white farmers and actively segregated and disadvantaged black farmers. Although attempting to reform previously segregationist policies, it was not successful in eradicating the market-based principles utilized in the apartheid-regime agriculture food sector (Vink & Kirsten, 2003). Throughout the 1990s, agricultural policy was directed increasingly toward deregulation and trade liberalization and post-apartheid, most notably for its attempt to dismantle the previous segregationist policies (Kirsten et al., 2009). Such policies included the Marketing of Agricultural Products Act no. 47 and the 2001 Strategic Plan for agriculture. Jacobs (2011) argued that these policies, rather than focusing on promoting food security, a multi-faceted issue, take the linear supply side approach which emphasizes the productivity of the agricultural market, and ultimately prioritizes profitability.

South Africa's existing agriculture market practices as well as food security policies are clearly failing in ensuring that the population of South Africa is food secure in a comprehensive, broad-based manner. The supply and market based approach has been unsuccessful, and a more comprehensive and holistic approach is required. The result has been over-profiteering and domination of major supermarkets while many South Africans suffer from food insecurity (Letts, 2013).

The agricultural sector and their associated policies must undergo a reform towards which the assurance of food for all is the main focus. The recent agro-policies in addition to the legacy of the suppressive and exclusionary policies from over one hundred years ago have had their consequences. Current policies to mitigate adverse effects such as the Land Redistribution have not been successful Valente, (2009). Consequences include rising black unemployment and lack of skills in the black workforce, low employment in the rural subsistence and informal urban sectors, the scarcity of competitive independent black farmers and business people in the modern agricultural sector and thus widespread poverty and population of South Africa (Grobler, 1999; Jacobs, 2011; Kirsten et al., 2009 Minaar, 1990; Vink et al, 1998)

2.12 CHALLENGES OF URBAN AGRICULTURE

Urban agriculture (UA) is defined as the production of crop and livestock goods within cities and towns. According to some accounts, 200 million people are employed in urban farming and related enterprises, contributing to the food supply of 800 million urban dwellers (UNDP, 1996). In African countries 40% of urban dwellers are said to be engaged in some sort of agricultural activity and this percentage rises to 50% in Latin American countries (Ruel, Garrett, Morris, Maxwell, Oshaung, Engle, Menon, Slack and Haddad, 1998).

If these numbers are accurate (and they may well not be, as we discuss in this paper), urban agriculture may have a role to play in addressing urban food insecurity problems, which are bound to become increasingly important with the secular trend towards the

urbanization of poverty and of the overall population in developing regions. Ravallion et al. (2007) estimated that about one-quarter of the developing world's poor live in urban areas, but also that poverty is becoming more urban and the poor are urbanizing faster than the population as a whole.

The recent world food price crisis has rendered the importance of understanding and confronting the causes of food insecurity of the urban poor even more apparent. Poor urban dwellers, being largely net food buyers and depending mostly on markets for their food supplies, are particularly vulnerable to adverse food price shocks, and are consistently the group in society that suffers most from higher food prices (Zezza, Azzarri, Davis, Covarrubias, Tasciotti, Anriquez, 2008 and Dessus, Herrera and de Hoyos, 2008).

Analysing the extent to which urban agriculture might help shield the urban poor from some of these shocks becomes therefore a topical policy question

In many cities around the world, patrons of high end restaurants want quality food that is flavourful and fresh. To satisfy their guest chefs are looking closer and closer to home-to local growing produce from neighbouring farms and even there from their own restaurant owned gardens (American Society of Agronomy, 2013).

More evidence and thus further research in a number of diverse contexts within which subsistence farmers engage in agricultural should be conducted to determine the nature of support required in different context, below I'm going to talk about potential problems

with urban agriculture.

- Polluted or contaminated soils
- Toxic chemicals
- Use of water
- Theft of produce and breaking laws to plant on some vacant lots

1. Industrial Activity: Industrial activity has been the biggest contributor to the problem in the last century, especially since the amount of mining and manufacturing has increased. Most industries are dependent on extracting minerals from the Earth. Whether it is iron ore or coal, the by products are contaminated and they are not disposed of in a manner that can be considered safe. As a result, the industrial waste lingers in the soil surface for a long time and makes it unsuitable for use (Ribadiya and Mehali, 2015).

2. Agricultural Activities: Chemical utilization has gone up tremendously since technology provided us with modern pesticides and fertilizers. They are full of chemicals that are not produced in nature and cannot be broken down by it. As a result, they seep into the ground after they mix with water and slowly reduce the fertility of the soil. Other chemicals damage the composition of the soil and make it easier to erode by water and air. Plants absorb many of these pesticides and when they decompose, they cause soil pollution since they become a part of the land (Ribadiya and Mehali, 2015).

3. Waste Disposal: Finally, a growing cause for concern is how we dispose of our waste. While industrial waste is sure to cause contamination, there is another way in which we

are adding to the pollution. Every human produces a certain amount of personal waste products by way of urine and faeces (Ribadiya and Mehali, 2015).

While much of it moves into the sewer the system, there is also a large amount that is dumped directly into landfills in the form of diapers. Even the sewer system ends at the landfill, where the biological waste pollutes the soil and water. This is because our bodies are full of toxins and chemicals which are now seeping into the land and causing pollution of soil (Ribadiya and Mehali, 2015).

4. Accidental Oil Spills: Oil leaks can happen during storage and transport of chemicals. This can be seen at most of the fuel stations. The chemicals present in the fuel deteriorate the quality of soil and make them unsuitable for cultivation. These chemicals can enter into the groundwater through soil and make the water undrinkable (Ribadiya and Mehali, 2015).

5. Acid Rain: Acid rain is caused when pollutants present in the air mixes up with the rain and fall back on the ground. The polluted water could dissolve away some of the important nutrients found in soil and change the structure of the soil. Acid rain is believed to harm vegetation by changing soil chemistry (Ribadiy and Mehali, 2013).

Acid rain influences both the quality and yield of agricultural products. Acid rain can damage the leaves of vegetables such as spinach and cause blemishes on delicate products such as tomatoes. The production and quality of root vegetables is reduced. The damage depends on the strength of the acids in the acid rain and the frequency

with which the crops are exposed. In addition to cosmetic damage, there is the possibility that crops grown under acidic conditions have lower nutritional value with fewer minerals (Markgraf, 2014).

The acidic nature of acid rain leaches plant nutrients out of the soil and can make it less productive for agriculture. Soils with high alkaline content, such as those containing calcium carbonate or limestone, can neutralize the acids and are less sensitive. Other soils normally contain the minerals that plants need, but the acid in acid rain dissolves them and replaces the metallic ions with hydrogen. When the plants absorb water that normally contains the minerals, they get hydrogen instead and can't grow as large or as quickly as before. In severe cases, this lack of minerals can kill the plants (Markgraf, 2014).

2.13 USE OF WATER

The amount of water involved in agriculture is significant and most of it is provided directly by rainfall. A rough calculation of global water needs for food production can be based on the specific water requirements to produce food for one person. The present average food ingest 2800 kcal/person/day may require 1000 m³ per year to be produced (Walski and Savic, 2001).



The pictures show the efficient use of water when one is using sprinkler irrigation and the other one is using watering cans.

The world population is about 6 billion, so water needed to produce the necessary food, excluding water losses due to the irrigation system, is 6000 km³. Most of it is provided by rainfall stored in the soil profile and only 15% is provided through irrigation. Irrigation therefore needs 900 km³ of water per year for food crops. On average just about 40% of water withdrawn from rivers, lakes and aquifers for agriculture effectively contributes to crop production (the rest is lost through evaporation and deep infiltration). Consequently the current global water withdrawals for irrigation are estimated to be about 2000 to 2500 km³ per year (Acton, 2013).

According to Acton (2013), the irrigation level varies from area to area, mostly depending on climate conditions and on the development of irrigation infrastructure. The following figure shows the area equipped for irrigation as percentage of cultivated land by country. Irrigation-water management has a long way to adapt to the increasing production requirements; however water-saving technologies are already available and can significantly reduce the waste of water. If incentives are in place, as increasing the price of irrigation water, farmers will adopt water-saving irrigation technologies. The main technologies likely to be used in developing countries, where labour is normally abundant

but capital scarce, are underground and drip irrigation. Both technologies depend on the frequent application of small amounts of water as directly as possible to the roots of crops (Acton, 2013).

Reducing the pollution loads of water used by farms, industries and urban areas would enable much more of it to be re-used in irrigation. There are enormous potential benefits to be had from the use of wastewater for irrigation. Agriculture will remain the dominant user of water at the global level. In many countries, in particular those situated in the arid and semi-arid regions of the world, this dependency can be expected to intensify. The contribution of irrigated agriculture to food production is substantial but in future the rate of growth will be lower than in the past. Both irrigated and non-irrigated agriculture still have scope for increasing productivity, including water productivity. Arguably, the expansion of irrigated agriculture protected people on the nutritional fringe from premature death, and preserved tracts of land under forest and wetlands from encroachment by hard-pressed farmers (Acton, 2013).

2.14 MECHANISM TO INCREASE URBAN AGRICULTURE

The department has formed a new program called 4Hs (Head, Hands, Heart, and Health,) is leading a Revolution of Responsibility - a movement for positive change in every community in America but has expanded to South Africa, Eastern Cape. The Department of Rural Development and Agrarian Reform held a campaign to prepare young people to make a positive effect in their communities through Agriculture, arts and culture and many other activities. 4H empowers the youth to reach their full potential, working and learning in partnership with caring adults (4H Mission Statement).



The picture above showing the capable and dedicated learners while doing the mulching, protecting their crops

This campaign was held in Nkwezana Public School (Great Kei) on the 13th of August 2014 East London. It was launched in 2012 in one of the schools in Duncan Village called Ebenezer Majombozi, East London and it created a number of projects and competitions which enabled one of our Grade 11 learner who is now in grade 12 an opportunity to go to UK and being trained in Leadership skills, how to cultivate their perishable products, how to be a young entrepreneur and lot more.



Pictures above showing the launching of the 4H Programme at Ebenezer Majombozi High School in East London in 2012

4H youth are a living breathing, culture-changing revolution for doing the right thing, breaking through obstacles and pushing our country forward by making a measurable difference right where they live. That takes uncommon commitment (Department of Agriculture, 2014).

4-H across the nation is responding to challenges every day in their communities and their world. With a rich history and an expansive network reaching every corner of the country, 4-H is the nation's largest youth development organization. More than 6 million 4-H youth in urban neighbourhoods, suburban schoolyards and rural farming communities stand out among their peers: building revolutionary opportunities and implementing community-wide change at an early age.

2.14.1 Proven Results

The Positive Development of Youth: Comprehensive Findings from the 4-H Study of Positive Youth Development is the first-ever research project of its kind. The decade-long study, completed by a team of researchers at the Institute for Applied Research in Youth Development at Tufts University, Medford, MA, is influencing research and practice around the world.



The picture above shows the practical experience of the learners who are planting the crops

The report shows that 4-H youth excel beyond their peers. 4-H'ers is about:

- Four times more likely to make contributions to their communities(Grades 7-12);
- Two times more likely to be civically active (Grades 8-12);
- Two times more likely to make healthier choices (Grade 7);
- Two times more likely to participate in Science, Engineering and Computer Technology programs during out-of-school time (Grades 10 – 12); and
- 4-H girls are two times more likely (Grade 10) and nearly three times more likely (Grade 12) to take part in science programs compared to girls in other out-of-school time activities (Lerner, 2013).

2.14.2 Unparalleled Reach and Scope

With 540,000 volunteers, 3,500 professionals, and more than 60 million alumni, the 4-H movement supports young people from elementary school through high school with

programs designed to shape future leaders and innovators. Fuelled by research-driven programming, 4-H'ers engages in hands-on learning activities in the areas of science, citizenship and healthy living. This program 4-H is enhanced by leading corporations, foundations, and organizations that have made a commitment to support America's youth. Together, we are developing and providing cutting-edge programs for young people to learn real-world skills that will prepare them for the challenges of today and tomorrow. 4-H appreciates the support of our partners, and is proud to feature how these partnerships are making an effect. (Hardman and Larkham, 2014).



The picture above showing the learners busy harvesting given support by caring parents.

The caring support of adult volunteers and mentors inspires young people in 4-H to work collaboratively, take the lead on their own projects and set and achieve goals with confidence. 4-H'ers charts their own course, explore important issues and define their place in the world, 4-H'ers stand up for themselves and their communities.

These pivotal experiences build a foundation of leadership and skills for success in their future careers. Learn more about 4-H programs or find out how you can get involved. According to Hardman and Larkham (2014), Urban Agriculture is rapidly growing in popularity and significance across the Western Hemisphere. For over two decades, North Americans have embraced the concept, although in Europe the idea of Urban Agriculture has only recently gained attention from academics, practitioners and policy makers. Networks are beginning to form in the UK sometimes bound by a food charter a statement aims which brings together businesses, interesting sustaining noble food system. More recently, food charter have become popular tools for pursuing the UA agenda. In this paper we provide a view on this method of moving forward the local food agenda primarily using a case study of Birmingham, we comment on its success and potential for the future (Hardman and Larkham, 2014)

2.15 FOOD SECURITY AND REVOLUTION

The right to food is one of the most basic rights of humankind. However, hunger remains unacceptably widespread, while many systems of food production in use are simply unsustainable. The believers addressing climate change and achieving sustainability in the global food system need to be recognised as dual imperatives. Urban Agriculture is guided by the Climate Justice Principle

2.15.1 Effects of food security

Department of Agriculture is committed to create holistic solutions to the big challenges facing agriculture. They are currently providing seeds for fruits, vegetables and staples like corn and soybeans that can help fight off disease, pests and drought, which can wipe out harvests. They develop crop protection products to help keep crops safe from

attacks. And they are collecting and finding new ways to use data to solve day-to-day problems on the farm, such as tracking weather conditions in the fields and finding the optimal times for watering (Department of Agriculture, 2002).

No person in any country should have to wonder where their next meal is coming from, or forgo food themselves in order to feed their children. Unfortunately, easy access to food is a necessity that far too many in the developing world do not have. For those who farm their own food, changing conditions and demand can wreck one's livelihood, driving food prices up, and farmers out of business. Our Food and Agriculture Services aim to educate aid organizations and food analysts on conditions on the ground by using real-time survey data. The Food Security Product releases data sets quarterly and is available in all Food security can quickly change in a region, suddenly putting countless people at risk. Weather, population movement, and road conditions are only a few of the many factors which can lead to a sudden decrease in food security. Accurate and timely data directly from the field can literally save lives, allowing international organizations to act swiftly when a crisis arises. With GeoPoll's Food Security Measurement Service, food analysts are now able to quickly access near real-time data to aid in making more informed decisions on food security (GeoPoll.com, 2013).

The Food Security Service collects data through SMS and voice surveys to determine two internationally recognized indicators: the Food Consumption Score (FCS) and Reduced Coping Strategies Index (RCSI). Respondents answer questions on individual consumption patterns over a period of seven days, and data includes number of meals

eaten per day, types of food consumed, and general demographic information (Vhurumuku, 2014).

2.15.2 Factors contributing to food insecurity

There are many dimensions of food insecurity such as its geographical scale, social factors like gender, and temporal factors, to list a few. For the purpose of this study, the research will focus on the factors that contribute to chronic and transitory household food insecurity in urban settings. Temporally food insecurity can be identified as chronic in the case that a person is continually unable to obtain a sufficient quantity of food and it can also be defined as transitory in the case whereby a person is in a temporary period of being unable to obtain food. (Chung, Haddad, Ramakrishna and Riely,1997).

Shariff and Khox (2008) found that the majority of food insecure households were living below the poverty line, had more people living in their households, a higher number of children and children attending school and had stay at home mothers. McLanahan (2009) found that in female-headed households food insecurity was higher and the children were more likely to have reduced socio-economic mobility and suffer from food insecurity as compared to those in households that are male-headed. Kham and Gill (2009) explored the factors contributing to the three pillars of food security (availability, accessibility and utilization) they found that accessibility is affected by the resources which a household has i.e. income or otherwise which can be used to trade for food as well as having electricity in their house as adult literacy. They observed that food utilization is affected not only by the existing nutritional state of those in a household but

also positively by access to clean water and sanitation, child immunization, female literacy and access to hospitals.

Food availability they found to be affected by the sufficient production of crops and livestock and market availability of these things. Generally food insecurity can be related to high food prices and poverty.

2.15.3 Measuring food security

Because food security is multi-dimensioned it has been difficult to develop reliable indicators and measurement tools to accurately capture this condition across geographical, socio-cultural and economic contexts. As actual indicators to estimate household food security, Anderson (2009), cited in Kassie et al, (2012) suggests that one can compare total household income and food prices, under presuppositions of certain household behaviours, expenditure on other goods and services and the shared income distribution in the household. Other measures focus on the use of more objective measures, such as calorie consumption or household expenditure on food, Rafi et al (2010), however argue that these measures can vary drastically depending on the season and thus cannot capture the true state of food security in any given context.

2.16 RISING POPULATION

The "population growth rate" is the rate at which the number of individuals in a population increases in a given time period as a fraction of the initial population. Specifically, population growth rate refers to the change in population over a unit time period, often expressed as a percentage of the number of individuals in the population at the beginning of that period.

There will be 219,000 people at the dinner table tonight who were not there last night, many of them with empty plates. Globally, the growth rate of the human population has been declining since peaking in 1962 and 1963 at 2.20% per annum. In 2009, the estimated annual growth rate was 1.1 %.The World book gives the world annual birth rate, mortality rate, and growth rate as 1.89%, 0.79%, and 1.096% respectively. The last 100 years have seen a rapid increase in population due to medical advances and massive increase in agricultural productivity made possible by the Green Revolution. Although it was the case in the majority of places in the country, the opposite was true of Duncan Village. Buffalo City population grew by 0, 6 % between the period 1996 – 2001, and 2001-2011 the growth rate was 0, 7%. Even though the growth rate shows consistency it is still below the provincial average of 1, 5% and 1, 4% respectively in the 2001 and 2011 period. Growth projections to the year 2020, taking into account the anticipated effect of HIV/AIDS, indicate an estimated total population of some 1,290,000 people.

Census 2001	Community Survey 2007	Census 2011
191 958	208 389	223 568

As shown in the table above, there has been an increase of 15 179 new households from 2008 to 2011. It must be noted that an increase in the number of dwelling units does not necessarily equate to a correlated increase in population as recent surveys have shown a trend for households to “split”, whereby large families will occupy several small informal structures e.g. Duncan Village either attached to a formal dwelling or in a separate locality as the children of the household get older and require more personal space. This results in lower occupancy rates per unit, which in turn equates to an increase in demand for housing and more food produce. Such demand however, does not necessarily indicate a commensurate growth in population thus putting pressure on the need for accommodation and food security hence infrastructure and agriculture.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter presented the theoretical frameworks and literature review that underpins this study. This chapter presents research paradigm; research approach; research design; research methods; data generation and analysis; ethical issues; etc.

3.2 RESEARCH PARADIGM

Research Paradigm was described as Intellectual perception or view, accepted by an individual or a society as a clear example, model, or pattern of how things work in the world (Kuhn, 2012). This term was used first by the US science fiction historian Thomas Kuhn, (1922-96) in his 1962 book 'The Structure Of Scientific Revolution' to refer to theoretical frameworks within which all scientific thinking and practices operate. A paradigm is simply a belief system (or theory) that guides the way we do things, or more formally establishes a set of practices (Gagne, 1941: 288). This can range from thought patterns to action. The study is located on positivism as a research paradigm because positivism, in philosophy, generally is any system that confines itself to the data of experience and excludes a priori or metaphysical speculations.

3.3 RESEARCH APPROACH

Quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world (Burns & Grove (1997:27). As quantitative research is essentially about collecting numerical data to explain a

particular phenomenon, particular questions seem immediately suited to being answered using quantitative methods.

Quantitative research methodology which is informed by the interpretive approach to phenomena being studied was used in the study. Quantitative is a challenge to the conventional scientific view that everything can be measured. Many of the approaches aim to involve different methods by consultation through questionnaires, interviews or participatory.

Advantages using quantitative research

Quantitative research has two distinct advantages. The first (if designed and conducted properly) is that the results are statistically reliable. That is, quantitative research can reliably determine whether one concept, idea, product, package and son on, is better than the alternatives. The second distinct advantage is that the results are projectable to the population (Nykiel, 2009).

Kruger (2003) confirms that 'quantitative methods allow us to summarize vast sources of information and facilitate comparisons across categories and over time' Personal bias can be avoided by researchers keeping a 'distance' from participating subjects and employing subjects' unknown to them(Hopkins, 2008: 210)

Disadvantages of using quantitative research

Collect a much narrower and sometimes superficial dataset; Results are limited as they provide numerical descriptions rather than detailed narrative and generally provide less

elaborate accounts of human perception. The research is often carried out in an unnatural, artificial environment so that a level of control can be applied to the exercise. This level of control might not normally be in place in the real world yielding laboratory results as opposed to real world results. In addition, pre-set answers will not necessarily reflect how people really feel about a subject and in some cases might just be the closest match. The development of standard questions by researchers can lead to 'structural' bias and false representation, where the data actually reflects the view of them instead of the participating subject (Hopkins, 2008: 210).

3.4 RESEARCH DESIGN

A research design is a systematic plan to study a scientific problem (Herman and Gideon, 2008). The design of a study defines the study type (descriptive, correlation, semi-experimental, experimental, review, meta-analytic) and sub-type (e.g., descriptive-longitudinal case study), research question, hypotheses, independent and dependent variables, experimental design, and, if applicable, data collection methods and a statistical analysis plan (Muaz, 2013). Therefore, the study adopted descriptive survey research to gather information on grade 12 learner's perception of the effect of urban agriculture on life satisfaction.

The function of a research design is to ensure that the evidence obtained enables the researcher to effectively address the research problem as unambiguously as possible (Gay and Airasian, 2003: 355). In social sciences research, obtaining evidence relevant to the research problem generally entails specifying the type of evidence needed to test

a theory, to evaluate a program, or to accurately describe and assess meaning related to an observable phenomenon (Gay and Airasian, 2003: 355). However, researchers can often begin their investigations far too early, before they have thought critically about what information is required to address the study's research questions. Without attending to these design issues beforehand, the conclusions drawn risk being weak and unconvincing and, consequently, will fail to adequately address the overall research problem. It identifies the research problem clearly and justifies its selection, particularly in relation to any valid alternative designs that could have been used.

Review and synthesize previously published literature associated with the problem. Clearly and explicitly specify hypotheses [i.e., research questions] central to the research problem. Effectively describe the data which will be necessary for an adequate test of the hypotheses and explain how such data will be obtained, and describe the methods of analysis which will be applied to the data in determining whether or not the hypotheses are true or false (Zikmund, 2003: 271). However, the research design chosen for this study is descriptive that adopted survey method to elicit information from the Grade 12 learners on their view of the effect of urban agriculture on life satisfaction.

3.5 POPULATION AND SAMPLES/SAMPLING TECHNIQUE

Population and sampling technique is the process of taking a subset of subjects that is representative of the entire population. The sample must have sufficient size to warrant statistical analysis. Sampling is done usually because it is impossible to test every

single individual in the population. It is also done to save time, money and effort while conducting the research (Explorable.com, 2009)

All elements, individuals, or units that meet the selection criteria for a group to be studied, and from which a representative sample is taken for detailed examination. The total of all populations is called a universe. Populations are not just people. Populations may consist of, but are not limited to, people, animals, businesses, buildings, motor vehicles, farms, objects or events.

When looking at data, it is important to clearly identify the population being studied or referred to, so that you can understand who or what are included in the data. For example, if you were looking at some Australian farming data, you would need to understand whether the population the data refers to is all farms in Australia, just farms that grow crops, those that only have livestock, or some other type of farm (Mbokane, 2009). The population consists of Grade 12 learners at Duncan Village in East London District. The sample consists of 85 randomly selected learners from Grade 12 to provide information on their perceptions of the effect of urban agriculture on life satisfaction

3.6 RESEARCH INSTRUMENT

The research instruments used in this research is structured questionnaire. Questionnaires are very productive because they provide new information, and information that cannot otherwise be obtained, especially up-to-date information, while questionnaires can provide evidence of patterns amongst large populations (Kendall, 2008).

A questionnaire is a means of eliciting the feelings, beliefs, experiences, perceptions, or attributes of some sample of individuals. As a data collecting instrument, it could be structured or unstructured. The questionnaire is mostly frequently a very concise, pre-planned set of questions designed to yield specific information to meet a particular need for research information about a pertinent topic. The research information is attained from respondents normally from a related area (James, 1997).

The structured questionnaire used in this research modified certain scale responses which consist of five parts. Part A includes items to elicit information from respondent about bio -data. Part B consists of items on poverty eradication. Part C consists of items on self-employment. Part D consists of items on nutrition. Part E consists of items on food security.

3.6.1 Validity of instruments

Validity has to do with whether the instrument is measuring what it is intended to measure (Lodico, Spaulding & Voegtle, 2006: 20). Patient-Reported Outcome (PRO) is an umbrella that covers a whole range of potential types of measurements but is used specifically to refer to self-reports by patients. Empirical evidence that PROs measure the domains of interest allows strong inferences regarding validity. To provide such evidence, investigators have borrowed validation strategies from psychologists who for many years have struggled with determining whether questionnaires assessing intelligence and attitudes really measure what is intended.

Validation strategies include:

Content-related: evidence that the items and domains of an instrument are appropriate and comprehensive relative to its intended measurement concept(s), population and use;

Construct-related: evidence that relationships among items, domains, and concepts conform to a priori hypotheses concerning logical relationships that should exist with other measures or characteristics of patients and patient groups; and

Criterion-related (for a PRO instrument used as diagnostic tool): the extent to which the scores of a PRO instrument are related to a criterion measure.

Establishing validity involves examining the logical relationships that should exist between assessment measures. For example, we would expect that patients with lower treadmill exercise capacity generally will have more shortness of breath in daily life than those with higher exercise capacity, and we would expect to see substantial correlations between a new measure of emotional function and existing emotional function questionnaires (Lodico, et al. 2006:23).

When we are interested in evaluating change over time, we examine correlations of change scores. For example, patients who deteriorate in their treadmill exercise capacity should, in general, show increases in dyspnoea, whereas those whose exercise capacity improves should experience less dyspnoea. Similarly, a new emotional function measure should show improvement in patients who improve on existing measures of emotional function. The technical term for this process is testing an instrument's construct validity.

Review authors should look for, and evaluate the evidence of, the validity of PROs used in their included studies. Unfortunately, reports of randomized trials and other studies using PROs seldom review evidence of the validity of the instruments they use, but review authors can gain some reassurance from statements (backed by citations) that the questionnaires have been validated previously (Lodico, et al. 2006:23).

A final concern about validity arises if the measurement instrument is used with a different population, or in a culturally and linguistically different environment, than the one in which it was developed (typically, use of a non-English version of an English-language questionnaire). Ideally, one would have evidence of validity in the population enrolled in the randomized trial. Ideally PRO measures should be re-validated in each study using whatever data are available for the validation, for instance, other endpoints measured. Authors should note, in evaluating evidence of validity, when the population assessed in the trial is different from that used in validation studies (Punch, 2003). The instrument was validated by the expert in this area and the supervisor.

3.6.2 RELIABILITY OF INSTRUMENT

Whiston (2012) explains reliability as something that you can use when testing; evaluating instruments, reliability evidence is an important step in determining whether to use it. According to her there are no clear guidelines in determining what constitutes acceptable reliability.

According to Wood and Ross-Kerr(2010), reliability refers to the consistency, stability and repeatability of a data collection instrument, a reliable instrument does not respond to chance factors or environmental conditions. A test is reliable to the extent that whatever it measures it consistently. There are three major categories of reliability for most instruments. Key indicators of the quality of a measuring instrument are the reliability and validity of the measures.

The process of developing and validating an instrument is in large part focused on reducing error in the measurement process. Reliability estimates evaluate the stability of measures, internal consistency of measurement instruments, and integrate reliability of instrument scores. The responsiveness of the measure to change is of interest in many of the applications in health care where improvement in outcomes as a result of treatment is a primary goal of research. Several issues may affect the accuracy of data collected, such as those related to self-report and secondary data sources. Self-report of patients or subjects is required for many of the measurements conducted in health care, but self-reports of behaviour are particularly subject to problems with social desirability biases.

The reliability of a research instrument concerns the extent to which the instrument yields the same results on repeated trials. Although unreliability is always present to a certain extent, there will generally be a good deal of consistency in the results of a quality instrument gathered at different times. The tendency toward consistency found in repeated measurements is referred to as reliability (Carmines & Zeller, 1979).

In scientific research, accuracy in measurement is of great importance. Scientific research normally measures physical attributes which can easily be assigned a precise value. Many times, numerical assessments of the mental attributes of human beings are accepted as readily as numerical assessments of their physical attributes. Although we may understand that the values assigned to mental attributes can never be completely precise, the imprecision is often looked upon as being too small to be of any practical concern. However, the magnitude of the imprecision is much greater in the measurement of mental attributes than in that of physical attributes (Nuttall and Willmott, 1975).

3.7 DATA ANALYSIS

Analysis of data is a process of inspecting cleaning, transforming and modelling data with the goal of discovering useful information, suggesting conclusions (Agresti, 2007). The data was analysed using descriptive statistics. The process of evaluating data using analytical and logical reasoning to examine each component of the data provided. This form of analysis is just one of the many steps that must be completed when conducting a research experiment. Data from various sources is gathered, reviewed, and then analysed to form some sort of finding or conclusion. There are a variety of specific data analysis methods, some of which include data mining, text analytics, business intelligence, and data visualizations (Agresti, 2007). Tables were used for data presentation and analysis.

3.8 ETHICAL CONSIDERATION

According to Michael, Jay, Polanski and Waller (2010), ethical considerations can be addressed at individual and at societal levels, the way that individuals are affected by the conduct of others merits ethical consideration.

Anonymity

Bergman (2001) stated that anonymity determined to re-examine the family's self-image in the light of this new awareness sought by keeping learners actively involved.

Informed Consent

Fix (2007) explained informed consent is an on-going process in which a participant is informed about the fact of a specific chemical trial so that he/she can decide whether or not to participate or continue to participate. Informed consent involves signing a written consent from which informs the basis of the person's willingness to participate. A request letter to conduct research at Ebenezer Majombozi High School in Ducan Village was forwarded to the principal and permission was granted.

Privacy

Nissenbaun (2009) explained that what people really care about when they complain and protest that privacy has been violated and it's not the act of sharing information itself and this is crucial to social. The researcher could have informed the respondent

not to put their personal name on the questionnaire. Will not expose their true identity by not writing their names and there will be no disclosure of personal information.

Confidentiality

Data collection and storage was done in strict confidentiality and was used for the purpose of the study alone.

3.9 LIMITATION OF THE STUDY

The enormous amount of school work for Grade 12 learners made it a bit difficult to collect data as some of the learners took some time to complete and return back the questionnaires given to them. The focus of the study was mostly directed to Grade 12 learners from Ebenezer Majombozi High School, this excluded many other schools and residents from Duncan Village who might have provided useful information for this study.

CHAPTER CONCLUSION

This Chapter examined research paradigm, research approach, research design, research methods, data generation and analysis, and ethical issues. The data collection method included a structured questionnaire designed to yield specific information about the topic. The data collection plan included purposeful sampling and selection of Grade 12 learners in Ebenezer Majombozi High School.

CHAPTER FOUR

DATA PRESENTATION AND DISCUSSION

4.1 INTRODUCTION

The previous chapter presented the methodology of the study. This chapter presents the results and discussion of the data. Survey questionnaires were administered to all the eighty-four learners in the grade 12 class in the village. However, only seventy-eight of the learners returned the questionnaires completed. The response rate of the survey was good as approximately a total 93 per cent response rate was recorded. Results were obtained from SPSS 15.0.

4.2 DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Table 4.2.1: Demographic Characteristics of Respondents

Variables	N	Percent
Sex		
Male	40	51.3
Female	38	48.7
Total	78	100

The demographic characteristics of the respondents are presented in table 4.2.1. From the table, the gender group of the respondents shows that a little more than half (51.3 percent) were males, while 48.7 percent were females.

Table 4.2.2: Age of Respondents

Age	N	Percent
16	1	1.3
17	8	10.3
18	16	20.5
19	22	28.2
20	14	17.9
21	13	16.7
22	3	3.8
23	1	1.3
Total	78	100

The age of the respondents were grouped into eight categories. Ages consisted of 16, 17, 18, 19, 20, 21, 22, and 23 years. The mean age of the respondents is 19.23. 32.1 percent of respondents (n=25) were between the age 16 and 18 years, 28.2 percent (n=22) were exactly 19 years of age, while majority of the respondents, 39.7 percent (n=31) were between the age 20-23 years of age.

Table 4.2.3: Race

Variable	N	Percent
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Black	74	94.9
White	4	5.1
Total	78	100

The majority of the respondents (n-74) were Black indicating that the grade 12 class is a black-dominated class.

In achieving the objectives of the study, items on section B, C, D, and E, of research instrument asked the grade 12 learners on the effect of urban agriculture on their life satisfaction proxy by nutrition, self-employment, food security and poverty eradication respectively. A four point Likert scale, consisting of strongly disagree =1 to strongly agree =4 was used to measure their respective responses. These responses were used to examine, investigate and established the effect of urban agriculture.

Research Question 1: what is the learners' perception on the effect of urban agriculture on nutrition?

Table 4.3: Descriptive Statistics on the learners' perception on the effect of urban agriculture on nutrition

S/N	Items	N	Mean	Standard Deviation
1	Urban agriculture brings about nutrition by providing food for health	78	3.27	0.832
2	Urban agriculture promotes nutrition through the process of obtaining food necessary for growth	78	3.32	0.592
3	Urban agriculture reduces the widespread of hunger in Duncan village	77	2.66	0.940
4	Urban agriculture can reduce the widespread of poor health in Duncan village	77	3.22	0.737
5	Improving nutrition in Duncan village is trailing behind due to lack of urban agriculture	77	3.08	0.684
6	Hunger can negatively affect academic performance	77	3.53	0.771

This is investigated through the responses of the grade 12 learners. The table 4.3 shows the descriptive statistics of the six indicators for nutrition. The result shows that 'hunger affects academic performance and is the most significant indicator showing the effect of urban agriculture on nutrition of having a mean of 3.53 and a standard deviation of .771.

This is immediately followed by the proxy 'urban agriculture promotes nutrition through the process of obtaining food necessary for growth with mean 3.32 and SD .592. Urban agriculture brings about nutrition by providing food for health, it is identified as the third most significant indicator for understanding the effect of urban agriculture on nutrition. It has the third highest mean of 3.32 and SD of .832.

Extensive and mounting evidence shows that school-based garden programs have significant health effects on young people. In these non-traditional learning labs, youth become familiar with good and healthy food, especially the fruits and vegetables critical to reducing obesity and chronic diseases. It is precisely these foods that are missing from our children's usual diets. School garden programs teach a skill and a lifetime hobby that provides exercise, mental stimulation, and social interactions (French SA, Wechsler, 2004).

Research Question 2: How does urban agriculture promote self-employment?

Table 4.4: Descriptive Statistics of the learners' perception on the effect of urban agriculture on self-employment

S/N	Items	N	Mean	Standard Deviation
1	Urban agriculture can lead to self-employment	77	3.31	0.782
2	Self-employed people are happy about their work life	77	3.36	0.657
3	Self-employed people have more control over their time	75	3.41	0.617

4	Urban agriculture enables people to take responsibilities for their own future	76	3.04	0.840
5	Self-employed people take control of their own destiny	76	3.17	0.773
6	Urban agriculture in home and community may strengthen self esteem	77	3.00	0.795
7	Establishment of gardens on unused land encourages Grade 12 learners to create self-employment	77	3.44	0.716

The research question two which is to find out how urban agriculture promotes self-employment is addressed from the response of the grade 12 learners whose responses are summarized in table 4.4. In the era of youth unemployment found in many developing countries especially in the rural areas, South Africa inclusive the potential of urban agriculture in creating job cannot be exaggerated. Urban agriculture is definitely one of the sure ways to sustenance of daily living. The descriptive statistics result of indicator of self-employment shows that establishment of gardens on unused land encourages Grade 12 learners to create self-employment, Self-employed people have more control over their time and Self-employed people are happy about their work life are the third best indicators revealing urban agriculture- self-employment relationship. The three indicators having mean 3.44, 3.41, 3.36 and SD of .716, .617 and .657 respectively

Urban farming improves social equity by improving the health and productivity of poorer populations and providing an opportunity to earn additional income. Urban agriculture often helps the weakest members of poorer communities disproportionately, a group that includes the aged, youth, women, migrants, immigrants, refugees, and people in long-term civil crises. The work opportunities provided by urban agriculture generate employment and income for those who have the fewest employment opportunities. Urban agriculture is a way for people in these groups, and day-wage earners and the unemployed, to become entrepreneurial (Jac Smit et al, 2001).

Research Question 3: What is the perception of learners on the effect of urban agriculture on food security?

From the observed responses of the Grade 12 learners shown in table 4.5 below, it can be established that food security which covers provision of access (physical and economic) to adequate amount of nutritious food, opportunity to make food choices, earning income to purchase necessary foods among others can be aided and achieved through the practice of urban agriculture.

As affirmed by the response of the learners, individuals or households that practices urban agriculture either through vegetable production or small scale livestock production will be able to provide themselves with healthier and quality food always. In addition, the selling of produces from this urban agriculture can enables individuals or household to earn a living and buy food basket they could not produce their own. Summarily as affirmed by the learners' response, it is therefore being rightly established that urban

agriculture has a positive effect on food security of individuals and households. Urban agriculture contributes to the health and well-being of a community by reducing hunger, strengthening access to food, improving nutrition, and improving environmental conditions that affect health. The benefits offered by urban agriculture are thus both quantitative and qualitative- increasing food quantities reduces hunger, while improving food quality fosters better health and nutrition (Bellows et al, 2013).

Table 4.5: Descriptive statistics of learners' perception on the effect of urban agriculture on food security

No.	Items	N	Mean	Standard Deviation
1	Urban agriculture can promote food security	77	3.39	0.632
2	Urban agriculture allows people to have physical access to adequate amounts of nutritious foods	77	3.26	0.523
3	Urban agriculture allows people to have economic access to adequate amounts of foods	76	2.91	0.696
4	People make informed decisions over their food choices through urban agriculture	75	2.80	0.822
5	Urban agriculture can make people earn decent living wages	76	3.14	0.667
6	Urban agriculture can remove food insecurity among the people	76	3.16	0.731
7	Urban agriculture provides food directly from the farm which is healthier than food that	77	3.35	0.855

hastravelled

The table 4.5 shows the items on food security and its relationship with urban agriculture. The result reveals that urban agriculture can promote food security is the best identified indicator that reveal the effect of urban agriculture on food security with highest mean of 3.39 and SD of .632. This is followed by 'urban agriculture provides food directly from the farm which is healthier than food that has travelled' indicator with second highest mean of 3.35 and SD of 0.855.

Research Question 4: How does urban agriculture eradicates poverty?

From the table 4.6 below, the majority of the Grade 12 learnersbelieved that urban agriculture has the potential of eradicating poverty. This is further revealed by their responses that urban agriculture can possibly empower Grade 12 learners in practicing agriculture thus providing them with productive employment which eventually has an outcome of eradicated poverty status. Poverty which negatively affects the social and emotional well-being of people can be taking care of through the practice of urban agriculture (Bellows et al, 2013).

Table 4.6: Descriptive statistics of learners' perception on the effect of urban agriculture on poverty eradication

No.	Items	N	Mean	Standard Deviation
1	Urban agriculture can eradicate poverty in the village	77	3.18	0.721
2	Urban agriculture can empower grade 12 learners to practice agriculture so as to eradicate poverty	77	3.51	0.620
3	Productive employment through urban agriculture eradicate poverty	77	3.22	0.737
4	Urban agriculture has a large effect on the social well-being of the individuals	76	3.17	0.719
5	Urban agriculture has a large effect on the emotional well-being of the individuals	74	2.96	0.784
6	Poverty eradication should be mutually supported	77	3.29	0.871
7	Environment protection can eradicate poverty in the village	77	3.26	0.677

Table 4.6 shows the indicators identified for understanding how urban agriculture can eradicate poverty. The result shows that the indicator 'urban agriculture can empower grade 12 learners to practice agriculture so as to eradicate poverty' is the most excellent performed indicator having a mean of 3.51 and SD of 0.620. This is followed by the

indicator 'productive employment can eradicate poverty' with mean 3.22 and SD of 0.737. It is further seen that the effect of urban agriculture is more reflected on the social wellbeing of individuals than the emotional wellbeing. The mean of indicator urban agriculture has a large effect on the social wellbeing of individual (3.17) is higher than that of the indicator 'urban agriculture has a large effect on the emotional wellbeing of the individuals (mean 2.96).

Urban agriculture can contribute significantly to combating urban hunger and malnutrition in several ways. Production for self-consumption and barter increases the food security of the poor by making it possible to obtain food they could not otherwise afford or find — even during bad financial times. Because daily food intake does not depend on their unstable daily income, poor families gain control over the quantity, quality, and stability of their diet.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter presented the discussion of data generated from the field. This chapter summarises the entire study, makes conclusions based on the findings in the previous chapter and suggests recommendations emanating from both the discussion and the conclusions of the study.

5.2 SUMMARY OF THE STUDY

In Chapter 1, I introduced urban agriculture, the concepts of nutrition and food security and the effect of urban agriculture on life satisfaction in Duncan Village. I followed with Chapter 2, theoretical frameworks and literature review on urban agriculture and historical involvement of urban agriculture in Duncan Village. I also discussed four variables, namely, nutrition, self-employment, food security and poverty eradication.

In Chapter 3, I described my research methods, research design, data collection strategy, validation strategies, data analysis, issues of trustworthiness, ethical considerations and limitations to the study. Data presentation and discussions were detailed in Chapter 4. In Chapter 5, I presented the summary of the study, my conclusions and recommendations.

5.3 CONCLUSIONS

Based on the findings in the previous Chapter, the following conclusions are made: all the variables (food security, nutrition, poverty eradication and self-employment) have an effect on the well-being of the Duncan Village residents. It is further found/observed that the effect of urban agriculture is more reflected on the social wellbeing of individuals than the emotional wellbeing. This means urban agriculture has a large effect on the social wellbeing of individuals. It was further revealed that urban agriculture can possibly empower Grade 12 learners in practicing agriculture thus providing them with productive employment which eventually has a possibility of eradicating poverty in their communities.

Although Urban Agriculture is widely practised in South Africa and has some significant potential to address poverty concerns, it would appear that appropriate institutional support mechanisms are not as yet fully in place. While policy is evolving in South Africa and in Ndola in Zambia, applied interventions in support of UA appear less spread wide, although there are some South African exceptions. In the case of South Africa, greater levels of support and funding are clearly needed. While policy has been established or is an advanced state of preparation in South Africa, considerations such as ensuring land access, whether support should also target backyard producers, and how to support marketing are key challenges that exist.

My findings agree that urban agriculture is definitely one of the sure ways to sustenance of daily living. The descriptive statistics of self-employment show that gardens on unused land encourage Grade 12 learners to create self-employment.

5.4 RECOMMENDATIONS

Based on the findings in the previous Chapter and the conclusions above, the study recommends the following:

The South Africa Government should encourage learners to undertake agriculture education as a compulsory subject for grade 10 and grade 11. This will enable them to develop entrepreneurial skills and self-sufficient mentality before they finish their secondary school careers. The subject will also help them in building job skills, improving self-esteem and contributing to community revitalization. Similarly, the practical components of this subject should constitute 50% if not more from the overall marks. Hence, leaving secondary schools will no longer be a mirage and nightmare at all because of un-employment.

In Duncan Village, food insecurity has become a major challenge to which an immediate solution must be found. The Buffalo City should thus support urban agriculture through an orderly land allocating. Descriptive statistics show that hunger affects the academic performance of learners. It is therefore recommended that the government should come up with a policy to fully support urban agriculture by allocating land to the people of Duncan Village in order for them to embark on community gardens.

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APPENDIX A
CONSENT LETTER

I _____ (Full names of participant)
hereby confirm that I have been informed about the nature, purpose and procedure for
the study: Grade 12 Learners' Perceptions of the Effect Of Urban Agriculture On Life
Satisfaction In Duncan Village.

I have also received, read and understood the written information about the study. I
understand everything that has been explained to me and I consent voluntarily to take
part in the study.

I understand I am at liberty to withdraw from the research project any time without
penalty should I desire to do so.

Signature of participant: _____ Date: _____

Signature of Witness/ Research Assistant: _____ Date: _____

Thanking you in advance

Mrs Beni O.N.

APPENDIX B
LETTER TO SCHOOL

ENQ. Octavia Beni
Cell: 082 210 8069

No. 55 Circle Road
Amalinda
East London
5247

The Principal
Ebenezer Majombozi High School
P.O. Box Kwalotyi
Duncan Village

REQUEST TO CONDUCT RESEARCH: EBENEZER MAJOMBOZI HIGH SCHOOL:
DUNCAN VILLAGE

I, Ntombomzi Octavia Beni, am a Master's Degree student at Fort Hare University, East London Campus. My specialization is in the field of Education at the said institution. To satisfy requirements for the degree, I am expected to complete a research dissertation. I hereby kindly seek permission to conduct research at the Ebenezer Majombozi High School with Grade 12 learners as my research participants.

The title of my research is: Grade 12 Learners' Perceptions of the Effect of Urban Agriculture on Life Satisfaction in Duncan Village. The study is aimed at exploring effects of each of the variables: nutrition, self-employment, food security and poverty eradication, on Grade 12 learners' life satisfaction. Data collection will be through questionnaire distribution and conduction of interviews, and participants will be voluntary in nature. The study will be conducted after normal teaching hours. You will be provided with the necessary documentation that will be used during the project before the proceedings so that no one's rights are violated in any manner. Participants may withdraw from the study at any time if they wish to do so and anonymity will be adhered to without incurring any penalties.

For further information on this research, please feel free to contact my Supervisor, Prof. E.O. Adu from the University of Fort Hare. Research tools are attached hereto for perusal. Thanking you in advance

Yours faithfully

Ntombomzi Octavia Beni
Cell: 082 2108 069 Email: ntombomzibeni@gmail.com.

APPENDIX C QUESTIONNAIRE

GRADE 12 LEARNERS' PERCEPTIONS OF THE EFFECTS OF URBAN AGRICULTURE ON LIFE SATISFACTION IN DUNCAN VILLAGE

Instruction:

Dear Respondents,

This questionnaire is designed to learn about the effects urban agriculture on grade 12 student's life satisfaction at Duncan Village All the information you provide is purely for research exercise. Please answer each question below. Your response will be treated with strict confidence

Section A

Background Information:

Sex:

Male	Female
------	--------

Age:.....

Race:.....

No. in household:

Please provide the answer that best suits you by indicating with (X) for each statement.

Section B

Nutrition

No.	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1.	Urban agriculture brings about nutrition by providing food for health				
2.	Urban agriculture promotes nutrition through the process of obtaining food necessary for growth				
3.	Urban agriculture reduces the widespread of hunger in Duncan Village				
4.	Urban agriculture can reduce the widespread of poor health in Duncan village				
5.	Improving nutrition in Duncan village is trailing behind due to lack of urban agriculture				
6	Hunger can negatively affect academic performance				

Please use the space below to write any comment pertaining to the effect of urban agriculture on Nutrition

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Section C

Self-Employment

No.	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1.	Urban agriculture can lead to self-employment				
2.	Self-employed people are happy about their work life				
3.	Self-employed people have more control over their time				
4.	Urban agriculture enables people to take responsibility for their own future				
5.	Self-employed people take control of their own destiny				
6.	Urban agriculture in home and community may strengthen self esteem				
7.	Establishment of gardens on unused landEncourages Grade 12 students to create Self-employment				

Please use the space below to write your comment pertaining to how urban agriculture can create Self-Employment

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Section D

Food Security

No.	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1.	Urban agriculture can promote food Security				
2.	Urban agriculture allows people to have physical access to adequate amounts of nutritious foods				
3.	Urban agriculture allows people to have economic access to adequate amounts of foods				
4.	People make informed decisions over their food choices through urban agriculture				
5.	Urban agriculture can make people to earn decent living wages				
6.	Urban agriculture can remove food insecurity among the people				
7.	Urban agriculture provides food directly from the farm which is healthier than food that has travelled				

Please use the space below to write your comment pertaining how urban agriculture will promote food security

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Section E

Poverty Eradication

No.	Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
1.	Urban agriculture can eradicate Poverty in the village				
2.	Urban agriculture can empower Grade 12 students to practice agriculture so as to eradicate poverty				
3.	Productive employment through urban agriculture eradicate poverty				
4.	Urban agriculture has a large impact on the social well-being of the individuals				
5.	Urban Agriculture has a large impact on the				

	emotional well-being of the individuals				
6.	Poverty eradication should be mutually supported				
7.	Environment protection can eradicate poverty in the village				

Please use the space below to write your comment pertaining how urban agriculture can play a central role in Poverty Eradication

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APPENDIX D

DATA PRESENTATION

Codes used:

Strongly agree=1 Agree=2 Disagree=3 Strongly disagree=4

SECTION B: NUTRITION

Question	01	02	03	04	05	06
Student 1	2	1	4	3	2	1
Student 2	2	1	2	1	1	1
Student 3	2	2	1	2	2	1
Student 4	2	1	1	1	2	1
Student 5	2	1	3	3	2	1

SECTION C: SELF-EMPLOYMENT

Question	01	02	03	04	05	06	07
Student 1	2	2	1	2	1	3	2
Student 2	1	1	1	1	2	2	2
Student 3	1	1	1	1	2	2	2
Student 4	2	2	4	1	1	1	2
Student 5	2	2	1	3	3	3	1

SECTION D: FOOD SECURITY

Question	01	02	03	04	05	06	07
Student 1	2	2	2	2	2	3	2
Student 2	1	1	1	1	2	2	2
Student 3	1	2	3	2	2	3	1
Student 4	2	2	4	1	1	1	2
Student 5	2	2	1	3	3	3	1

SECTION E: POVERTY ERADICATION

Question	01	02	03	04	05	06	07
Student 1	3	2	2	2	2	1	1
Student 2	1	2	2	2	3	3	1
Student 3	2	2	3	2	2	1	1
Student 4	1	1	1	1	1	1	1
Student 5	3	2	2	3	3	2	1

APPENDIX E

LANGUAGE CLEARANCE CERTIFICATE

Dr S.E. Mthiyane, 11 Rethman Street, New Germany, 3610

22 February 2016

LANGUAGE CLEARANCE CERTIFICATE

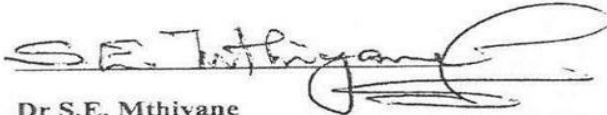
TO WHOM IT MAY CONCERN

This serves to inform that I have read the final dissertation titled:

Grade 12 Learners' perceptions of the effects of urban agriculture on life satisfaction in Duncan Village
By NTOMBOMZI OCTAVIA BENI.

To the best of my knowledge, all the proposed amendments have been effected and the work is free of spelling and grammatical errors. I am of the view that the quality of language used meets generally accepted academic standards.

Yours faithfully



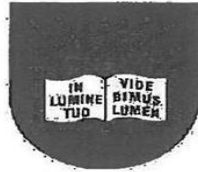
Dr S.E. Mthiyane
B.A (English & Education), (UNIZULU); B.Ed (Hons.); M.Ed; PhD (UKZN).

Dr S.E. Mthiyane; P.O. Box 852 New Germany, 3620

Tel: +27(0)31 260 1870; Cell: +27(0)73 377 4672

Email: Mthiyanes@ukzn.ac.za

APPENDIX F
ETHICAL CLEARANCE CERTIFICATE



University of Fort Hare
Together in Excellence

ETHICAL CLEARANCE CERTIFICATE
REC-270710-028-RA Level 01

Certificate Reference Number: ADU051SBEN01

Project title: Grade 12 learners' perceptions of the effect of urban agriculture on life satisfaction in Duncan Village.

Nature of Project: Masters

Principal Researcher: Ntombozi Octavia Beni

Supervisor: Prof EO Adu

Co-supervisor:

On behalf of the University of Fort Hare's Research Ethics Committee (UREC) I hereby give ethical approval in respect of the undertakings contained in the above-mentioned project and research instrument(s). Should any other instruments be used, these require separate authorization. The Researcher may therefore commence with the research as from the date of this certificate, using the reference number indicated above.

Please note that the UREC must be informed immediately of

- Any material change in the conditions or undertakings mentioned in the document
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research

The Principal Researcher must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

Special conditions: Research that includes children as per the official regulations of the act must take the following into account:

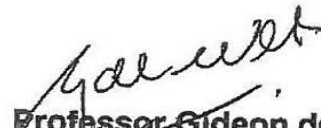
Note: The UREC is aware of the provisions of s71 of the National Health Act 61 of 2003 and that matters pertaining to obtaining the Minister's consent are under discussion and remain unresolved. Nonetheless, as was decided at a meeting between the National Health Research Ethics Committee and stakeholders on 6 June 2013, university ethics committees may continue to grant ethical clearance for research involving children without the Minister's consent, provided that the prescripts of the previous rules have been met. This certificate is granted in terms of this agreement.

The UREC retains the right to

- Withdraw or amend this Ethical Clearance Certificate if
 - Any unethical principal or practices are revealed or suspected
 - Relevant information has been withheld or misrepresented
 - Regulatory changes of whatsoever nature so require
 - The conditions contained in the Certificate have not been adhered to
- Request access to any information or data at any time during the course or after completion of the project.
- In addition to the need to comply with the highest level of ethical conduct principle investigators must report back annually as an evaluation and monitoring mechanism on the progress being made by the research. Such a report must be sent to the Dean of Research's office

The Ethics Committee wished you well in your research.

Yours sincerely


Professor Gideon de Wet
Dean of Research

23 September 2014

APPENDIX G

PERMISSION TO UNDERTAKE A THESIS RESEARCH



EBENEZER MAJOMBOZI HIGH SCHOOL

Tel: 043 – 7332245

Douglass Smith Highway
Duncan Village

P.O. Box 102 Kwa-Loyiti
Duncan Village
East London
5209

Enquiries:

Mrs N.O Beni
Ebenezer Majombozi High School
East London
5201

PERMISSION TO UNDERTAKE THESIS RESEARCH: GRADE 12 LEARNERS' PERCEPTIONS OF THE EFFECTS OF URBAN AGRICULTURE ON LIFE SATISFACTION IN DUNCAN VILLAGE

1. Thank you for your application to conduct a research.
2. Your application to conduct research in our school is approved based on the following conditions:
 - a) There will be no financial implications from the school.
 - b) The institution and respondents must not be identifiable in any way from the result of the investigation.
 - c) You will make your arrangements concerning your research prior.
 - d) The research may not be conducted during official contact time, as teachers programmes should not be interrupted.
 - e) Should you wish to extend the period of research after approval has been granted, an application to do this must be directed to the principal
 - f) Your research will be limited to the institution for which approval has been granted, should changes be effected written permission must be obtained from the Principal.
 - g) Upon completion of the research , a brief summary of fundings, recommendations or full report dissertation/ thesis must be submitted to the Principal
 - h) You comply with your ethical undertaking (commitment form)
- 3 The school reserves the right to withdraw permission should there be no compliance to the approval letter and conditions to conduct Research in the School
- 4 The school and SGB wishes you well in your undertaking

E.M NTSHIQA (ACTING PRINCIPAL)

A handwritten signature in black ink, likely belonging to E.M. Ntshiqha.

