

THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

The Impact of Urban Agriculture on the Livelihoods of School Children in Banket, Zimbabwe: An Analysis

Edison Chagadama

Head, Department of HOD Geography, Eastwise High School, Harare, Zimbabwe

Isel Ramirez Berdud

Lecturer, Department of Curriculum Studies, Bindura University of Science Education, (BUSE), Zimbabwe

Abstract:

Urban agriculture has stood the test of time to serve as a vital input in the livelihood strategies of urban households in Zimbabwe. In general, urban dwellers rely on the market for food but with the recent economic meltdown, high rural-urban migration, surge in rate of unemployment and rise in food prices beyond the reach of the majority of the population, the poor urbanites in Zimbabwe have resorted to intensifying urban agriculture. This effort has not spared the school children from these disadvantaged households, whose better access to food from urban farming has improved their nutrition base as well as general health. The study has been inspired by the rise in the practice of urban and peri-urban agriculture that has attained considerable levels in urban areas. The investigation has delved into the echelons of urban agriculture in developing nations like Zimbabwe, with a protracted bias towards its impact on the livelihoods of people in Banket particularly students. Triangulation of quantitative and qualitative paradigms has been chosen and perfectly blended in the case study approach. Analysis of the research findings was done using the SPSS. Key instruments that were used are observation guide, interview and questionnaire combined with consultation of secondary data sources. The respondents of the study were students, teachers and residents of Banket. The study has established that changes have occurred to the livelihoods of the school children of the Banket community as a result of the practice of urban agriculture in their academic, social, economic, environmental and even political spheres.

Keywords: *Work integrated education, science education, teaching of agriculture*

1. Introduction

Since time immemorial, farming has been seen as a rural occupation and cities as consumers of rural foodstuffs [Chadyiwanembwa, (2012) quoting Mbiba, 2000; Kisner, 2008; Sedze, 2006]. But the truth can be rather different. Many urban residents simply could not feed themselves without the produce of their backyards, roadside verges, river banks, parks and allotments (Chadyiwanembwa, 2012).

The most striking features of urban agriculture are that it is integrated into the urban economy and ecology; the largest part of the people involved are the urban poor; activities may take place at the homestead, land away from the residence, on private land, on public land; mainly food crops are grown and animals are kept for self-consumption with surpluses being traded; women and children to provide the bulk of labour; uses micro-and small farms; low technological level (Mougeot, 2000).

Mushamba, et al, (2003) asserted that although urban and peri urban agriculture (UPA) has many positive impacts that included food security, waste and nutrient recycling, employment creation and the associated incomes, it presented its own challenges in terms of environmental impacts, public health, aesthetics and security. Urban and peri-urban agriculture encompasses the production of food and non-food plants and animal husbandry both within and in the peri-urban areas.

Most of the urban poor are concentrated in the high-density settlements, where there are deplorable infrastructure and services to serve them. The economic meltdown that has rocked Zimbabwe from the late 1990s with the advent of the economic structural adjustment programme (ESAP) to the peak of 2008 characterised by hyperinflation, has seen the urban populace engage in widespread survival activities including farming activities within and at the fringes of urban areas for food security and income to sustain their children.

The acute food shortages that hit the country in 2008 as result of the combined effect of persistent drought, economic meltdown and the western imposed sanctions had a strong and indelible imprint on the livelihoods of urbanites especially school children all over the country. Since then, almost 90 percent of the urban dwellers have resorted to urban and peri-urban agriculture.

Most research efforts on urban and peri-urban agriculture have been revolving on urban land use policy conflicts and the environmental impact, with limited attention to the totality of effects on the livelihoods of urban populations in particular the school children. The school children contribute their labour to urban agriculture while they also benefit from the produce as nutritious food, source of school fees, cash to buy clothing, form of recreation and as a learning media obtained from the activity in their day-to-day lives. The school children especially from poor families, from child headed-families and orphans have been lured by the income earned from urban agriculture to the extent of dropping out of school entirely.

The impact of urban and peri-urban farming on peoples' livelihoods, school children included, has become a topical issue, not only in larger cities of the world, including Harare, but also for smaller towns such as Bantek whose populations are rapidly growing. Little research has so far been done on urban and peri-urban agriculture as related to livelihoods of young people of school going age, especially for Bantek town which has grown as an agricultural town, hence the need to use it as a case study and this paper presents the main results obtained in the research carried out by the main researcher, advised and assisted by the second one.

1.1. Development

1.1.1. Theoretical Background

The study has adopted as principal theoretical frameworks the food system analysis, the social policy dimension and the ecological policy dimension in a bid to unearth the impact of urban agriculture on the livelihoods of school children. These dimensions blend quite organically with the educational theories of constructivism and multiple intelligences which in their own right express the link between theory and practice. This has been inspired by the holistic approach that the authors have tried to embrace in this study, particularizing in the constructivist and the multi intelligence theories.

1.2. Constructivism: Principles of Learning and Urban Agriculture

An advocate for experimental learning, John Dewey quoted by Fang (2008) believed in creating a community within the school where a child's individuality could be continually cultivated in the social context, freedom is power: power to frame purposes, to judge wisely, to evaluate desires by the consequences which will result from acting upon them: power to select and order means to carry chosen ends into operation.

Fang (2008) also noted that Dewey sought to educate through "social occupations" –learning fundamental principles and skills through practical efforts. According to Fang (2008), Dewey found it essential to connect academic subjects with students' own experiences. It is these views that the researcher saw the correlation between urban agriculture (schools gardens included) and the livelihoods and learning experiences of school children.

Constructivism, as it has been used in academic circles, is the reflective practice of philosophical and psychological understandings about how humans learn and take on new information so that it can be incorporated with previously held information and knowledge. It is a philosophical point of view about teaching and learning in that it values the idea that authentic learning can only be achieved when an individual learner is given the opportunity to process new information in ways that make sense to that individual (Thirteen Ed Online, 2004).

Learning is an active process in which the learner uses sensory input and constructs meaning out of it: Learning is not the passive acceptance of knowledge which exists "out there" but that learning involves the learner's engaging with the world (Active learner-Dewey). (Christie, 2005)

People learn to learn as they learn: Learning consists both of constructing meaning and constructing systems of meaning (Christie, 2005).

The crucial action of constructing meaning is mental: It happens in the mind. Physical actions, hands-on experience may be necessary for learning especially for children, but it is not sufficient: There is need to provide activities which engage the mind as well as the hands. (Reflective activity) (Christie, 2005)

Learning involves language: the language we use influences learning. On the empirical level researchers have noted that people talk to themselves as they learn (Christie, 2005).

Learning is a social activity: our learning is intimately associated with our connection with other human beings, our teachers, our peers, our family as well as casual acquaintances, including the people before us or next to us at the exhibit (Christie, 2005). It is critical that children receive the social skills needed so that childhood violence and delinquency problems do not continue to grow. School garden programs are one such place to effectively teach life skills (Robinson & Zajicek, 2005).

Learning is contextual: we do not learn isolated facts and theories in some abstract ethereal land of the mind separate from the rest of our lives; we learn in relationship to what else we know, what we behave, our prejudices and our fears (Christie, 2005). To support this Smith & Molsenbocker (2005) asserted that concepts and skills from virtually every subject can be learned through a garden. Gardens also provide a link between concepts learned in the classroom and real-life applications (Mohrmann, 1999) quoted by Smith & Molsenbocker (2005).

One needs knowledge to learn: it is not possible to assimilate new knowledge without having some structure developed from previous knowledge to build on (Christie, 2005). School gardens in urban areas have the potential to be an effective way to incorporate the various components of life skills with the hands-on activities that a child needs in order to gain and retain these skills throughout (Robinson & Zajicek, 2005).

It takes time to learn: learning is instantaneous. For significant learning we need to revisit ideas, ponder then try then out, play with them and use them (Christie, 2005). In line with this view studies repeatedly show that time spent outside in nature leads to better health and improvement in the classroom (Bhargava, 2014).

Motivation is a key component in learning: There is need for understanding ways in which knowledge can be used (Christie, 2005). Gardens offer a place to learn delayed gratification, independence and motivation (Alexander et. al, 1995) cited Robinson & Zajicek, (2005). Allowing children to experience success in a garden setting gives them the feeling of being valued and a sense of belonging (Barker, 1992) quoted by Robinson & Zajicek, (2005).

From the constructivist point of view the practice of urban agriculture in which school children are involved helps in building their knowledge which they assimilate actively and cooperatively. Research has shown that there is a very strong relationship between child-rearing practices and all aspects of a child's adjustment including academic achievement and interpersonal skills (Rickel & Becker, 1997) cited by Robinson & Zajicek (2005).

In the school set up learning should maximize on the varied and rich knowledge that children have acquired from working in the fields either at home or school. Children know how to grow a wide range of crops and keeping small livestock. This knowledge should be harnessed in the teaching and learning of concepts in sciences such as Biology and Geography. Teaching life cycles and anatomy of plants would capitalize on those learners who are involved in crop farming activities. Similarly, broiler keeping aids in their better understanding of the digestive system and common diseases of poultry and how they are treated, all vital in a biology lesson.

In the research article "Effects of outdoor Education Programs for children in California", Beall and Haifley, (2014) found out that low-income students who attended an outdoor education program raised their science scores by 27 percent and increased their concern for conservation. It also found an increase in self-esteem, leadership, relationship with teachers, cooperation and conflict resolution (Beall and Haifley, 2014).

The results of this research by Beall & Haifley, (2014), though done in the California, USA affirms how students construct knowledge and personal attributes from outdoor experiences. This further illustrates the integration of the constructivism approach into urban agriculture's impact on school children's academic performance in science, their appreciation for environmental conservation, and cultivation and enrichment of socio-cultural values within the school and community.

1.3. The Multiple Intelligences Theory and Urban Agriculture

The Multiple intelligences theory by Gardner (1983), on the other hand, identifies intelligences (competencies) that relate to a person's unique aptitude set of capabilities and ways they might prefer to demonstrate intellectual abilities. Gardner identified a set of multiple intelligences that relate to the learning principles enshrined in constructivism.

According to Thirteen ed. online, (2004) these intelligences are:

- Verbal-linguistic intelligence (well-developed verbal skills and sensitivity to the sounds, meanings and rhythms of words).
- Logical-mathematical intelligence (ability to think conceptually and abstractly and capacity to discern logical and numerical patterns). Gardening in urban areas offer opportunities for hands-on or active learning experiences that encourage higher order thinking and problem solving (Athman & Monroe, 2001; Wajicek et. al., 2003) cited by Lohr & Pearson-Mims (2005)
- Spatial-visual intelligence (capacity to think in images and pictures, to visualize accurately and abstractly).
- Bodily-kinesthetic intelligence (ability to control one's body movements and to handle objects skillfully).
- Musical intelligence (ability to produce and appreciate rhythm, pitch and timber).
- Interpersonal intelligence (capacity to detect and respond appropriately to the moods, motivations and desires of others).
- Intrapersonal intelligence (capacity to be self-aware and in tune with inner feelings, values, beliefs and thinking processes).

Interpersonal and intrapersonal intelligences are evident in Robinson & Zajicek's (2005) assertion that youth who participated in the garden programmes increased their overall life skills as well as improved teamwork skills and self-understanding. These skills are extremely important to ensure socially responsible and productive citizens. Gardens are a place where students can work together, make decisions, manage problems (Pivnick, 1994) cited by Robison & Zajicek (2005) and gain a sense of responsibility (Bassert, 1979) quoted by Robinson & Zajicek (2005).

- Naturalist intelligence (ability to recognize and categorize plants, animals and other objects in nature). Gardening and environmental education programmes promote positive attitudes toward the environment in elementary school children (Jaus, 1984; Skelly and Zajicek, 1998; Waliczek and Zajicek, 1999) quoted by Lohr & Pearson-Mims, (2005). Direct experience with nature is the most highly cited influence on conservation values and inspiring environmental stewardship (Bhargava, 2014).
- Existential intelligence (sensitivity and capacity to tackle deep questions about human existence such as: What is the meaning of life? Why do we die? How did we get here?). Nature education and outdoor experiences like gardening help children gain a respect for living things, stimulate their curiosity and provide them with meaningful life experiences (Cooper Marcus, 1992; Bullock, 1994) cited by Lohr & Paerson-Mims (2005).

Gardner's focus on the human potential lies in the fact that people have a unique blend of capabilities and skills (intelligences), so the ideas can be used to understand "overall personality, preferences and strengths" (businessballs.com.n.d). Gardner also asserted that people who have an affinity towards one of the intelligences do so in concert with the other intelligences as "they develop skills and solve problems" (businessballs.com, 2009).

Life needs people who collectively are good at different things. A well-balanced world and well-balanced organizations and teams are necessarily comprised of people who possess different mixtures of intelligences. This gives that group a fuller collective capacity than a group of identical able specialists (businessballs.com, 2009).

Gardner's multiple intelligences theory can be used for curriculum development, planning instruction, selection of course activities, and related assessment strategies. Instruction which is designed to help students develop their strengths can also trigger their confidence to develop areas in which they are not as strong. Students' multiple learning preferences can be addressed when instruction includes a range of meaningful and appropriate methods, activities, and assessments (businessballs.com, 2009).

A garden or field in an urban area and the knowledge gained by gardening can be incorporated, integrated and used to its fullest academic, experiential and social potentials, not only outdoors but also inside a high school classroom (Fang, 2008).

It is thus imperative to "integrate educational theories, teaching strategies, and other pedagogic tools in meaningful and useful ways to better address the needs of students" (businessballs.com, 2009). Gardner himself asserts that educators should not follow one specific theory or educational innovation when designing instruction but instead employ customized goals and values appropriate to their teaching and student needs. Addressing the multiple intelligences and potential of students can help instructors personalize their instruction and methods of assessment (businessballs.com, 2009).

The relationship between the theory of multiple intelligences and urban agriculture children's intelligences manifest themselves upon working in the field or garden. This is supported by the following assertion: "Teachers should take children into the garden regularly to draw, to sit and listen, to enjoy a story read in the open air, to write poetry, to be outdoors in a quiet and peaceful space that is their own, as well as following specific lessons that reach the objectives of the science curriculum" (cityfarmer.org, 2007).

Students with higher self-esteem participate more in school and social activities, have higher school completion rates, have more self-direction, and generally have higher levels of achievement in life (Beani & Lipka, 1987) quoted by Robinson & Zajicek, 2005). School gardens programs offer youth opportunities to improve the skills necessary to succeed in all aspects of life (Robinson & Zajicek, 2005).

Verbal-linguistic, logical-mathematical, spatial-visual, bodily-kinesthetic, musical, interpersonal, intrapersonal, naturalist and existential intelligences are evident in the diverse activities the children would be doing in the garden set up.

2. Methodology

The researcher has chosen the multimethod approach in the form of triangulation. The study employed both quantitative and qualitative paradigms in order to ensure sufficient coverage of all the aspects of livelihoods of school children that are influenced by urban and peri-urban agriculture. By design the survey pursued the case study approach.

A survey method was used to gather quantitative data from respondents. In-depth interviews which are part of a qualitative methodology were used, in some instances, in discussions with key informants. As it is, the descriptive and exploratory nature of the study called for the mixture of quantitative and qualitative research methodologies to gather data on the prevalence of urban agriculture, socio-economic factors associated with it and suggestions on how to improve it.

With in-depth interviews commonly referred to as "qualitative interviewing" (Mason, 2002 quoted by Chadyiwanembwa, 2012), semi-structured, open-ended questions were used to gather perceptions and interpretations of key informants on lives of urban farmers and school children, the socio-economic factors that motivate them to engage in urban agriculture and the ways to strengthen this activity. Data from in-depth interviews were used to somehow validate data collected from respondents using the survey method.

The population to be studied was strictly consisting of those people who reside in Kuwadzana high density and the low-density areas of Bantek about 50 households. Stratified sampling was done proportionally, a larger sample (75%) being drawn from Kuwadzana high density suburb and a smaller one (25%) from the lowly populated low-density suburb. The situation translated to 35 key informants selected from the high-density suburb and 15 from the low-density suburb of Bantek.

As far as school children are concerned the research has drawn samples at 10 percent of the total enrolment from from each of the two high schools- Kuwadzana (130) and Sacred Heart (46) whom the researcher deemed to contribute relevant information of the impacts of urban agriculture on their livelihoods.

Teachers from the two secondary schools were also targeted in the survey as important sources of information. A sample of 20 teachers has been picked from Kuwadzana High school and 10 from Sacred Heart High. They interact with the students whose livelihoods are impacted on by urban agriculture.

The stratified sampling method has been used to collect information as the population was stratified into two strata: the residents of Kuwadzana high density area and those of the Low-density area. However, selection of households and people for application of questionnaires and interviews have been done by systematic sampling in both suburbs i.e. an interval of 10 households for the high-density area and 5 households for the low-density area.

Proportionality has been used to draw student samples for questionnaire administration, interviews and observation. The larger chunk of students sampled was drawn from Kuwadzana High school on the grounds that it has a larger enrolment of 1 300. A relatively smaller sample of students was then drawn from Sacred Heart High school with an enrolment of 460. Both secondary schools have the biggest proportion of their students hailing from Kuwadzana high density area and the low-density suburbs.

The research instruments for the study are primary and secondary documents, questionnaires, interview schedules and observation guides (See Appendixes 1 to 5). Several definitions and characteristics have been given of both primary and secondary sources of data that can sustain a research from which the researcher has compiled and adopted in this study.

Secondary data analysis was done by the researcher for several reasons as proposed by McCaston (2005): Secondary data analysis can be carried out rather quickly when compared to formal primary data gathering and analysis exercises.

The Statistical Package for the Social Sciences (SPSS) is a Windows based program that can be used to perform data entry and analysis and to create tables and graphs. SPSS is capable of handling large amounts of data and can perform all of the analyses covered in the text and much more. (Data Step Development, 2004).

With regard to qualitative data analysis, non-parametric tests (Pearson chi-square and Kruskal Wallis were used to test for statistical significance and association so as to establish the relationship between the dependent and independent variables. Information on the quantities and monetary values of farm produce would be obtained by asking respondents to estimate the amounts of produce they had harvested during the 2012 to 2013 and 2013 to 2014 agricultural seasons from the different crops they had grown.

The monetary value of the different types of commodities and urban agricultural produce was based on the local prices that prevailed at the time of the survey. All reported incomes from urban agricultural production are sums of annual cash earned from the farming activities minus the production costs put against the amount used for the welfare of school children per household. The information gathered was recorded on prepared recording sheets and a base map for Banket.

3. Results, Interpretation and Discussion

3.1. Characteristics of Urban Agriculture

Two major urban farming activities were evident in the research namely animal and cropping activities. The data illustrates that cropping activities alone dominate urban agriculture accounting for 51.6% of the total sample made from the area of study.

It is also evident that from the sample population a good proportion practices both animal and cropping activities in the town representing 25.8%. Only a small part of the population selected in the survey does not entirely engage in any urban agriculture activity shown by only 6.5%. Cumulatively a high response rate was achieved totalling 87.3%. There was a considerable section of the respondents who upon being selected in the questionnaire did not answer and return their responses representing 12.7% of the total sample population.

Urban agriculture is also characterised by its two major scales which are subsistence and commercial. Subsistence farming is the main scale of urban agriculture accounting for 53.1 percent of the total samples made in the town of Banket. On the other hand, commercial activities are also done as part of urban farming represented by 10.9 percent of the total sample population.

There is another group of urban farmers who engage in urban agriculture on both subsistence and commercial scales shown by 26.4 percent of the entire population. There is evidence of people who do not practice urban farming reflected in the sample by 6.5 percent. Of all the respondents there is only one who omitted this part on the questionnaire represented by only 0.4 percent while the remaining 12.7 percent indicated as missing shows those questionnaires that were administered by were not answered and returned.

3.2. Crop Grown Under Urban Farming

A variety of crops are grown under urban agriculture as evidenced in the research findings. Regardless of the wide range of crops noted in the questionnaire survey maize, beans, groundnuts, and vegetables are the main food crops grown. Cash crops like soya beans, tobacco, wheat and cotton are evident in the findings. Maize alone represents 18.5 percent of the crops grown under urban farming in the study area. However, it is also grown together with other food crops as well as virtually all cash crops. The major combinations of crops in this category include maize and beans; maize and groundnuts; maize and soya beans; maize, soya beans and tobacco; maize and tobacco and lastly maize and vegetables.

The generally low proportions of other crops are shown by the low percentages despite being combined with maize crop. In the questionnaire survey there was also evidence of those who did not engage in any cropping activities although they are urban residents in Banket. This group accounted for a fairly large proportion of the respondents coded by the term none in the results.

The urban farmers also rear a wide range of livestock within and at the peripheries of the town of Banket. The livestock kept include cattle, chicken, goats, sheep, pigs and rabbits. Chicken dominate animal farming in urban agriculture as shown by its individual amount of 11.6 percent of the entire animal activities done by the respondents. Cattle and goats

combined accounted for 6.9 percent of the livestock kept followed by the combination of cattle, goats and sheep making 4.0 percent. Rabbits alone have represented 1.8% Of the total animals kept in urban farming.

Cattle on their own had 1.5% while chicken and cattle together accounted for 1.1%. It is important to note that despite their individual prominence chicken, cattle and goats feature in all other animal combinations exhibited in the questionnaire responses on livestock kept. The rest of the animal groups each have netted responses below 1% of the total. Those respondents who indicated that they do not engage in any animal rearing activities despite being urban residents of Banket accounted for a huge proportion of 49.8% of the total. Those who received the questionnaires but did not answer and return their responses represented 12.7% recorded as missing. The overall response rate was however high for this component of the questionnaire survey up to 87.3%.

3.3. Duties of School Children in Urban Agriculture

Children play an active role in the practice of urban agriculture. They engage in a variety of activities linked to urban farming both at home and school. A fairly large proportion of the respondents have partaken in any one of watering (8.7%), helping (6.2%), weeding (5.1%), planting (3.6%) and feeding (3.3%) activities to give a total of 26.9%. Watering and feeding as combined activities, have accounted for 4.0% of the respondents on the role of children, while learning had 1.8%.

Weeding and harvesting activities combined have had 3.3% of the responses. Planting and weeding and cultivating and herding together also accounted for 1.8% each pair of the total responses.

Herding, cooking, digging, cultivating, and selling, planting-watering, weeding-feeding all had 1.5% each of the whole population sample. Spraying and managing as well as watering-weeding have accounted for just 1.1% each. The rest of the activities had less than 1% each to contribute to total response rate. All these have been bagged into the group identified in the graph as other since they account for values less than 2% of each category. The respondents who indicated that they do not take part in any urban agricultural activities totalled 14.9%; while those who did not answer (not done) to this question accounted for 5.8%. The respondents who chose not to answer and return the questionnaires represent 12.7% shown by missing. Overall the response rate was high pegged at 87.3% for this question in the research.

School children do take part in activities of urban agriculture even when at school. Children participate in urban farming activities as alluded to in the questionnaire survey as part of life skills development. The activities are however timed by the school administration (maximum time is one hour) outside the normal learning timetable.

3.4. The Impact of Urban Agriculture on Livelihoods of School Children

Several aspects of school children's livelihoods have been selected and integrated in the questionnaire to get a fuller picture of the impact of urban farming. These include: diets, health, pocket money, clothing, communication skills, and contribution to family income, attendance at school, attitude towards learning, performance at school, fees payment, interaction with others (peers, teachers and adults), level of responsibility, environmental awareness and standard of living. The results from interviews of the key informants have also been added to each corresponding aspect of livelihood to complement the findings from questionnaires.

3.5. Impact on School Children's Diet

The questionnaire survey results show that urban farming impacts positively on the diet of school children. This is revealed by a high proportion of the respondents who concurred that its practice improves their dietary needs accounting for 78.9%. Respondents who showed that urban agriculture did not change their diet are represented by 5.8% of the total. Negative impact (got poor) of urban farming on food only accounted for a very small proportion of the whole totalling 0.4%. Those who chose not to answer the question on the impact on diet have represented 2.2% while the group that never submitted their responses has accounted for 12.7%.

Key informant 4 interviewed said "Urban agriculture has changed children's livelihoods in that children now have food before they go to school like sweet potatoes, nuts and even carry some to school to eat at break time." In agreement with this view, key informant 1 commented that the lives of school children orphaned by HIV/AIDS have improved slightly as they are able to have food for subsistence.

The main benefit of school gardens is that children learn how to grow healthy food and how to use it for better nutrition. (www.fao.org/newsroom).

The researcher observed that from the layers project carried out at the visited household at least 2 crates of eggs are picked daily.

These are sold but at most half a dozen is set aside for consumption by the family members. This has been viewed as contributing to improved nutrition for the family in general and their two school going children.

3.6. Impact on Children's Health

On the impact of urban agriculture on children's health the research shows that a huge number of respondents of up to 74.9% acknowledged the positive effects on their health. A sizeable part of the respondents amounting to 10.5% indicated that their health did not change owing to urban farming while a paltry 0.4% indicated a negative impact that their health got

poor instead. Of the total questionnaires administered 12.7% did not answer and remit their responses while 1.5% of those who answered and returned the questionnaires did not respond to the issue on health.

One interviewee (key informant 2) pointed that urban agriculture produces a variety of crops that help to improve children's diets as well as their health status. This was also supported by key informant 3 that it has afforded children healthy and balanced diets reducing cases of kwashiorkor and other related diseases.

3.7. Impact on School Children's Access to Pocket Money

The involvement of school children in the practice of urban agriculture has positively impacted on their access to pocket money. This is evident in the high proportion of respondents who indicated that access to pocket money improved accounted for 64.0% of the total. Respondents whose access to pocket money never changed despite their participation in urban farming activities represented 19.6%.

The negative impact on pocket money accounted for a small part (2.5%) of the whole sample population. Those who did not answer the question on access to pocket money represent 0.4% while 0.7% spoiled the answer by ticking two options instead of one. In the final analysis a sizeable number of potential respondents chose not to answer the questionnaires completely to account for 12.7%.

Key informant 3 affirmed that urban agriculture has been an important source of pocket money for the school children hailing from families that practice it (Research interviews, 2014)

3.8. Impact on Children's Clothing

Urban farming has impacted on the clothing situation of school children in the town of Barket. This is evident in the high proportion of those who indicated that their access to clothing improved accounting for 68.0%. There was another group (18.9%) that also indicated that urban agriculture did not cause a change on their clothing situation. Only a small part of the respondents (0.4%) chose not to answer this question during the questionnaire survey. The non-responses accounted for 12.7% of the total sample population. On the whole, the response rate for this question was high 87.3%.

The effect of urban farming activities on clothing has been exposed in the interview of key informant 3 who stated that: "families that engage in urban agriculture in Barket afford to sell part of their produce and buy necessities for their children. They manage to pay school fees and buy school uniforms for their children."

3.9. Impact on Communication Skills

School children's communication skills have also been impacted on by the practice of urban farming. The respondents who have indicated that school children's communication skills improved accounted for 53.8%. A fairly high proportion (31.6%) of the respondents noted that no changes occurred to children's communication skills. Only 1.1% of the respondents opted not to do this question on effects of urban agriculture on children's communication skills. Negative effects on communication skills were low represented by only 0.7% of the total population.

However, some chosen respondents preferred not answer and return the questionnaires entirely to account for 12.7%.

One of the key informants (1) noted during the interview that the way in which schoolchildren use language to communicate has been impacted on by their engaging in urban agriculture. This was due to the fact that while working as a family or even a group at school there are stories told and current issues discussed thereby enriching children's language and communication skills.

The assertion by McCarty (in Bidwell, 2014) provides valuable evidence of the impact that urban farming activities have on children. McCarty (quoted by Bidwell, 2014) asserted that while science is an obvious application for gardens, teachers have also found the spaces useful for teaching math and language. It's a great place for language acquisition, for descriptive writing. All kids are learning and practicing in these earlier years, the garden is a place to actually learn new words, to actually write about things they care about and they're inspired by.

3.10. Impact on Family Income

The questionnaire survey results show that urban agriculture affects school children's family income. A positive impact has been noted by a high number of respondents who indicated that the family income improved accounting for 70.5% of the total. Only 0.7% showed that the income for the family dwindled as a result of practicing urban farming.

The respondents who indicated that there was no change in the inflow of income into the family represent 12.8% of the whole sample population. Those who ignored the question (not done) during the questionnaire survey constitute 2.9% while only 0.4% got the question spoiled rendering it invalid. The missing respondents' category accounted for 12.7% of the total sample population.

The four key informants interviewed concurred that urban agriculture impacts on family incomes by asserting that nowadays some people are getting money through farming which they are using to support their families. This is made explicit in the assertion by key informant 3 that the small extra amounts of money generated from urban agriculture have enabled an

improvement on fees payment and therefore fewer disturbances of children being sent to collect fees. Improved diet also means improved lesson participation and concentration.

Farming in urban environments has been found to benefit poor households through direct saving on food purchases, income generation through sale of produce and provision of a varied range of nutritious food (Kekana, 2006). This assertion has been confirmed by the research findings afore stated.

3.11. Effect on Children's Fees Payment

Results of the questionnaire show the various percentages of response rates on the effect of urban agriculture on children's rate of paying school fees. A large proportion (59.3%) of the respondents indicated that school fees payment improved upon practicing urban farming. Respondents who showed that there was no impact on the rate of school fees payment constituted 23.6% while those who did not attempt (not done) the question totalled 2.9%.

Just a small proportion (1.5%) acknowledged that urban agriculture had a negative effect (got poor) on their fees payment. The group of potential respondents who chose not to answer the questionnaire entirely made up 12.7% of the total questionnaires administered during the survey.

The impact of urban agriculture on children's rate of fees payment as asserted in concurrence by three key informants that parents are now able to send their children to school through the income generated from urban farming. Key informant 2, however, noted with concern that Banket being an agricultural town and urban farming is a major source of livelihood; some parents have shown a negative attitude towards fees payment for their kids at school. This is regardless of the fact that some reasonable income is earned from urban farming activities.

3.12. Impact on Children's Attendance at School

The impact of urban agriculture on school children's attendance at school has been analysed. The responses which show that participating in urban farming activities has improved children's attendance at school account for 50.9% of the total questionnaires administered during the survey. The negative impact of urban agriculture was also evident in the questionnaire survey answers with 4.4% of the respondents showing that children's attendance at school actual got poor as they engaged in the practice.

A considerable proportion of the sample population also indicated that partaking in urban farming did not change the rate of attending school represented by 30.9% of the entire population. Only a small part (1.1%) of the respondents decided not to take the question on the impact of urban farming activities on attendance at school. However, 12.7% of those targeted for the questionnaire survey opted not to answer and submit their responses so these were coded as missing in the table.

3.13. Effects on Children's Attitude towards Learning

Urban farming activities have affected school children's attitude towards learning. The indication that children's attitude to learning improved is supported by 55.3% of the respondents. Those children whose attitudes did not change despite engaging in urban agriculture accounted for 28.4% of the total respondents. A small part of the respondents (2.9%) indicated a negative impact of urban farming on attitudes towards learning. Only 0.7% of the respondents chose not to respond to this particular survey question while those who completely failed to answer and submit their questionnaires constituted 12.7%.

With regard to urban agriculture's impact on children's attitudes towards learning key Informant 1 commented during the research interview that it has changed the children's way of life and attitude towards learning. Some are dropping out of school claiming to be farmers and they will be growing cash crops which earn them quick money. Key informant 4, however, had a different perspective to the issue by alluding to the fact that pupils and their parents seem to participate and concentrate more on farming more than the school work activities. They fight to raise money more than anything else.

3.14. Urban Farming Impacts on School Children's Performance at School

Respondents who asserted that it affects children's performance at school have constituted 53.1% of the total valid questionnaire responses. The respondents who indicated that the children's performance got poor as a result of urban agriculture practice accounted for 6.2%.

The no change response had a tally of 26.2% of the attempts made to the question. Only 1.8% of the respondents opted not to answer the question on the impact on children's performance at school. Of the whole lot of questionnaires administered 12.7% of the respondents decided not to answer and return the questionnaires coded as missing in the table.

Despite acknowledging the positive effect of urban agriculture on the performance of children at school key informant 1 commented that the practice has reduced children's time to do school work. Performance has not changed in some school children because of the negative attitude they have demonstrated towards their school work. Key informant 3 cited that participating in urban farming activities has enhanced schoolchildren's skills in subjects such as Agriculture, Science and Geography.

3.15. *Impact on Children's Interaction with Other People*

Urban agriculture impacts on children's interaction with others (learners, teachers, and adults). A total of 49.5% of the respondents indicated that children's interaction with others improved as a result of indulging in urban agriculture activities. A fairly high proportion of the respondents (33.5%) also showed that there was no change to the children's level of interaction with other people.

A small proportion of those who answered this question indicated that urban farming impacted negatively on children's interaction with others accounting for 2.5%. Only 1.8% of the respondents decided not to answer this part of the questionnaire. The missing questionnaires constituted 12.7% of the total administered as these were not returned upon completion.

Key informant 2 stressed that when children work in the fields or attend to the livestock under urban farming they socialize with both peers and adults. This way the children develop a sense of belonging as well as getting their identity within the community.

The results on interaction with others are supported by Ginsberg (2000) who pointed out that urban agriculture from the children's perspective provides: -a possibility to meet friends and have social contacts; the wish and need for diverse and stimulating play environments; the importance of nature experiences such as child-animal interaction and the significance of learning about the adult world outside school, family and television shows.

The assertion Sizer (quoted by Fang, 2008) further illustrates how activities in urban agriculture facilitate and nurture sound interactions amongst children and adults.

Cooperation is certainly necessary for a successful garden or urban agricultural activity and the value of team works has been noted by many educational reformers. The real world demands collaboration, the collective solving of problems, ... learning to get along, to function effectively in a group is essential ...the act of sharing ideas, of having to put one's own views clearly to others, of finding defensible compromises and conclusions (Sizer quoted by Fang, 2008).

3.16. *Impact on Children's Level of Responsibility*

The level of responsibility of school children has been impacted on by engaging in urban agricultural activities. A tally of 69.5% of the respondents indicated that children's level of responsibility got better with their involvement in urban farming. A fairly small percentage (12.4%) of the respondents asserted that participating in urban agriculture by school children did not alter their level of responsibility.

However, 3.3% of the respondents indicated that the level got poor due to taking part in urban farming. A small fraction (2.2%) of the respondents omitted the question indicated as not done in the table. Those who chose not to respond to the whole questionnaire regardless of the fact that they had received it constitute 12.5% of the total questionnaires administered.

In line with level of responsibility, key informant 1 had this to say: "School children must be educated more on agricultural issues as our nation is backed by agriculture, everyone must be exposed to agricultural activities for the country's economic growth".

In the same vein, key informant 4 put it that engaging children in urban farming activities has made them aware of their source of livelihood including employment thereby inculcating a sense of responsibility in them.

Supporting the views of the other informants, key informant 2 stated that children who participated in urban farming activities augmented their level responsibility in that they gained life skills which also included going on to take farming as a business after school.

The practice of urban agriculture by school children enhances their community values.

This is evident in Karneal Thomas' (quoted in Fang, 2008) remarks that it has to do with the self-confidence and pride of kids ...they now feel 'we are worthy of this beautiful area across the street'...not just a vacant lot where people deal in drugs.

Gardening can be a transforming activity for young and old. It can move us from ignorance to understanding and appreciation, from passivity to action, from consumption to production, from silence to dialogue and perhaps most importantly from a state of dependence to one of independence with nature and others in our community (Pennington, 2008). The above assertion also affirms the important and positive impact that urban farming has on children's level of responsibility.

3.17. *Impact on Children's Environmental Awareness*

A large fraction of the respondents making up 58.9% has noted an improvement in school children's environmental awareness. Only 4.4% of the respondents indicated a negative impact as their awareness got poor. However, a fair share of respondents saw no change in the children's environmental awareness accounting for 20.7%. Those who chose not to answer this particular question in the survey constituted 3.3% of the total sample population, while the remaining 12.7% accounted for those who never answered and returned the whole questionnaire.

Key informant 2 commented that urban farming has brought more good than harm, as students have become more aware of the importance of the environment. This view was not shared by key informant 4 who pointed out that the practice which involves the clearing on land is contributing serious deforestation and eventually soil erosion.

Impact on children's standard of living

The impact of urban agriculture on children's standard of living is illustrated in the table. The majority of respondents acknowledged that participating in urban farming activities by school children improved their standard of living as illustrated by 74.5% of the responses on this option. A very small fraction (0.4%) of the respondents noted negative effect on the practice on children's standard of living. Those who indicated a non-alteration to the standard of living of school children accounted for 10.2% of the whole sample population. Only 2.2% of the respondents omitted the question on standard of living while the remainder 12.7% constituted those who were given questionnaires but chose not to answer them completely.

All the four key informants interviewed unanimously agreed and confirmed that despite a few setbacks, urban agriculture has contributed to better standards of living of the majority of school children hailing from households that engage in the practice. This has been emphasized by key informant 1 who asserted that urban agriculture has formed a very important component to the community of Banket as it increased environmental awareness, diets as well as social well-being of both parents and students).

Emphasizing the survey results is the comment made by Veenhuizen (2007) on the contribution of urban farming to improved standard of living of urbanites in general and children in particular. Urban agriculture may function as an important strategy for poverty alleviation and social integration of disadvantaged groups (e.g. HIV/AIDS-affected households, disabled people, and female-headed households with children, elderly people without pensions, jobless youth, or even child-headed families), with the aim to integrate them more strongly into the urban network, provide them with a decent livelihood, and prevent social problems such as drugs and crime as Veenhuizen (2007) cited (Garnett 2000; Gonzalez Novo and Murphy, 2000).

This further enhances the impact that involvement in urban farming has on the standard of living. Urban and peri-urban farms may also assume an important role by providing recreational and educational activities to urban citizens or in landscape and biodiversity management and community building (Smit and Bailkey, 2006).

Key informant 3 also opined that apart from the positive impact already being enjoyed by most families in Banket there was need to allocate more land to the urban farmers.

This was meant to raise the level of contribution of urban agriculture to the livelihoods of families in general and school children in particular.

4. Conclusions

The data thereafter presented, interpreted, analysed and discussed, led to the following main conclusions according to the aspects numbered below:

4.1. Demographic Characteristics of the Respondents

In an effort to guarantee that the sample population was as representative enough of the entire Banket community, the researcher has managed to capture the students, teachers and residents during the study. There has been a fair representation of the three groups of respondents in terms of gender. With the exception of the teachers' sample, students and residents have had slightly more female respondents than male which is a real reflection of the scenario obtaining in the town of Banket. For the teachers, however, slightly more males responded than females as is the actual staffing situation at Kuwadzana High and Sacred Heart High schools. Both institutions have slightly more male teachers than their female counterparts.

A wide spectrum of respondents was captured age wise during the study spanning from 13 years to 67 years which also points towards fair balance of sample population. The study included all levels of education for the respondents, that is, those with primary, secondary or tertiary education were taken as sources of data during the survey. The study however deliberately excluded the pupils of the three local primary schools on the grounds of time. Resident respondents who had attained primary level education were included in the study. On the basis of employment, the study was indiscriminate as respondents who were not employed, self-employed, casual workers, permanently employed artisans and professionals were all roped in particularly for the questionnaire survey.

4.2. Characteristics of Urban Agriculture

The study has come to the conclusion that urban agriculture is a main stay activity of the Banket community transcending history. This has been irrespective of the fact that a notable portion of the respondents indicated that they do not engage in any form of urban farming. The scale urban farming activities noted was subsistence, commercial and both. It has also been confirmed that a sizeable proportion of the respondents in the sample population did not participate in any of the three options of urban agriculture.

The researcher has also safely concluded that a wide range of food and cash crops are grown under urban agriculture in the town of Banket.

The main thrust of the study has been to establish and ascertain the impact of urban agriculture on the livelihoods of school children in Banket. The study has, therefore, ascertained that children actually participate in a diverse range of urban agricultural activities. They are mainly involved in activities such as ploughing/digging, planting, weeding, watering, feeding, herding and helping when at home or at school.

It has also been noted that apart from taking these activities as survival strategies students have embraced them as forms of learning and acquiring life skills. Others have taken urban agriculture to a level of being a source employment. As evident in the study results a notable percentage of the respondents indicated that there are children who do not partake in any form of urban agriculture activity. The findings tally well with the proportions of those who neither grow crops nor kept any livestock in the town of Banket.

4.3. *The Impact of Urban Agriculture on School Children's Livelihoods*

The researcher has arrived at the conclusion that urban agriculture does impact on the livelihoods of school children in Banket on the basis of the research findings already exposed. The effects have been reflected on the children's diet, health, clothing, access to pocket money, communication skills, attendance at school, fees payment, attitude towards learning, performance at school, interaction with others, level of responsibility, environmental awareness and above all the standard of living. Concise conclusions are made by the researcher on the impact urban farming has had on each of the attributes of school children's livelihoods.

5. Recommendations

On the basis of the above said conclusions, the researcher subsequently proposes the following recommendations and suggestions:

- The proposals are stakeholder biased and the researcher's hopes that they will transcend educational, social, economic, political and environmental frontiers towards integrating urban agriculture not only into urban planning but also as a livelihood strategy, a life skill, a source of employment and more importantly a practical extension of the school curriculum.
- It is the researcher's view that school children should be accorded time both at home and school to participate in urban farming activities in order to afford them a wholesome and sustainable personal growth from a tender age. Participating in urban agriculture provides children with a host of advantages
- The researcher also proposes that teachers should take advantage of the collective and interactive nature offered by urban farming to nurture the various life skills into the classes they teach. Teachers being mostly academics should not stigmatize or rather look down upon children who show stronger passion for urban farming. Instead, they should grab the opportunity to let the children see the variety of merits the practice offers at both school and after-school lives.
- Urban agriculture is an important livelihood strategy not only for the school children but for entire community. To this end the researcher recommends that the community should assist school children to appreciate the diversity of urban farming activities as a way of contributing to food security at both household and community levels. The community should take advantage of urban farming to foster stronger community ties and values as most of the activities are done in groups or as families.
- It is the researcher's proposal that members of the community should inculcate into the school children the correct ideals of sustainable urban agriculture practices since they are the future custodians and beneficiaries. The researcher also suggests the community should not use urban agriculture as a form of child abuse or child labour that may promote school drop outs but rather a vital social skill and stimulant towards learning.
- Local authorities, especially urban councils should promote urban strategic plans that cater for the ever-rising demand for space for urban agriculture. This might encourage the urban farmers to take full responsibility and accountability over the sustainable utilization of the land availed to them for urban farming activities. Those spaces that are still lying idle should be offered to urban farmers who should work on them productively while waiting for planned and feasible development to take effect. It is the researcher's humble view that such a move can help address the problems of food shortage, unemployment and poverty as well as crime associated with such areas when not in use.

6. References

- i. Beall K. & Haifley D. (2014) *Leave no child inside*, Santa Cruz California
- ii. Bhargava S. (2014) *Parents worldwide agree: Our kids need more nature*
- iii. Chadyiwanembwa T. (2012) *An investigation into the socio-economic factors that promote urban agriculture in Zimbabwe: The case of residents of Sakubva, Chisamba Singles in Mutare city*, University of Zimbabwe, Zimbabwe
- iv. DataStep Development (2004) –SPSS Step by step tutorial: Part 1
- v. Fang W. (2008) *The Case for more high school gardens- City Farmer*, Canada
- vi. Ginsberg O. (2000) *Sustainability from the children's perspective-A journey through the landscape of German children's city farms*, Research paper, University of Nottingham
- vii. Government of Zimbabwe (2013) *Zimbabwe Agenda for Sustainable Socio-Economic Transformation (Zim-asset) "Towards an empowered society and a growing economy"* Oct 2013-Dec 2018
- viii. Kekana D.S (2006) –*A socio-economic analysis of urban agriculture: The Soshanguve project case study*, University of Pretoria

- ix. Lohr V.& Pearson-Mims C.H.(2005) -Children's active and passive interactions with plants influence their attitudes and actions towards trees and gardening as adults, HortTechnology, USA
- x. McCaston K. M. (2005) –Tips for collecting, reviewing and analysing secondary data, PHLS Unit-CARE
- xi. Mougeot K.L.G (2000) –Urban agriculture: Definitions, presence, potentials and risks, Thematic Paper 1
- xii. Mudimu G.D (1996) –Urban agricultural activities and women's strategies in sustaining family livelihoods in Harare, Zimbabwe, Singapore Journal of Tropical Geography, Vol. 17, No. 2
- xiii. Pennington G. (2008) Education and the school gardens, City Farmer, Canada
- xiv. Robinson C.W & Zajicek J.M (2005) –Growing minds: The effects of a one year school garden programme on six constructs of life skills of elementary school children, HortTechnology USA
- xv. Smith L.L & Motsenbocker (2005) –Impact of hands-on Science through school gardening at Louisiana Public Elementary school, HortTechnology van Veenhuizen, R. (ed.) (2007) Cities Farming for the Future: Urban agriculture for green and productive cities, RUAF Foundation, IDRC and International Institute for Rural Reconstruction, Leusden, The Netherlands.
- xvi. Waliczek T.M & Zajicek J.M (1999) -School gardening: Improving environmental attitudes of children through hands-on learning, Journal of Environmental Horticulture Texas www.businessballs.com –Gardner's Multiple intelligences
- xvii. www.dissertationwriting.com-Writing chapter 4: The results of your research study
- xviii. www.thirteen.org –Constructivism as a paradigm for teaching and learning -Christie (2005)

Appendix

Questions Included in the Questionnaire for Students

Urban Agriculture

- What type of farming activities do you practice at home?
- What is the scale of your farming activities?
- What types of crops/animals do you cultivate/rear at your home?
- What is your family's reason(s) for cultivating/rearing these crops/animals?
- What are your duties as a child in the farming activities done at your home/school?
- Has urban farming changed your standard of living? If yes how?

Impact of urban agriculture on livelihoods of school children

- How has participating in urban farming activities affected your: diet, health, access to pocket money, clothing, communication skills, contribution to family income, attendance at school, attitude towards learning, school fees payment, performance at school, interaction with other students, level of responsibility, environmental awareness, standard of living?
- Do you have any other comments about these issues, the relationship between school children's livelihoods and urban agriculture in the Banket community?

Questions Included in the Questionnaire For Teachers

- What subject do you teach and at what level?
- Do you do any other work in addition to teaching? If yes what other?

Urban Agriculture

- What type of farming activities are you engaged in?
- What is the scale of your farming activities?
- What types of crops/animals do you cultivate/rear?
- Why do you engage in cultivating/rearing these crops/animals?
- Who provides labour in your urban farming activities?
- Who are the consumers of your urban agriculture products?

Impact of urban agriculture on livelihoods of school children

- How has children's participation in urban agriculture activities affected their: diet, health, access to pocket money, clothing, communication skills, attendance at school, attitudes towards learning, school fees payment, performance at school, interaction with other learners, interaction with teachers, level of responsibility, environment awareness, standard of living?
- Do you have any other comments about these issues, the relationship between school children's livelihoods and urban agriculture in the Banket community?

Questions Included in the Questionnaire for Banket Residents

- How many children do you have? If yes how many are going to school?

Urban agriculture

- What type of farming activities do you engage in at your home?
- What is the scale of your farming activities?
- What types of crops/animals do you cultivate/rear?

-Who provides labour for your urban farming activities?

-Do your children participate in the farming activities when at home? a. If yes what activities do they take part in?

Impact of Urban Agriculture on Livelihoods of School Children

-How has children's involvement in urban agriculture activities in your community affected their:

-diet, health, clothing, access to pocket money, communication skills, contribution to family income, attendance at school, attitudes towards learning, performance at school, school fees payment, interaction with adults, level of responsibility, environmental awareness, standard of living?

-Do you have any other comments about these issues, the relationship between school children's livelihoods and urban agriculture in the community of Barket?

Observation Schedule

- Area under urban farming

- Areas used for cropping activities

- Livestock activities

- Behaviour of children who participate in urban agriculture

- Behaviour of children who do not do urban farming

- Children's participation in urban agriculture activities

-State of school uniforms of children

-Level of interaction with others

Interview Guide for the Key Informants

- Whether the informant participates or not in urban agriculture

- Specific activities of urban agriculture practiced

- Purpose of engaging in urban farming activities

- Role that are played by the school children in urban farming

- Impact of urban agriculture on the livelihoods of school children