Science Education Policy for Emergency, Conflict, and Post-Conflict: An Analysis of Trends and Implications for the Science Education Program in Uganda

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SCIENCE EDUCATION POLICY FOR EMERGENCY, CONFLICT, AND POST-CONFLICT: AN ANALYSIS OF TRENDS AND IMPLICATIONS FOR THE SCIENCE EDUCATION PROGRAM IN UGANDA

by

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This study analyzes the impact of armed conflicts on the development of education policy and particularly science education program in Uganda. Since independence from the British colonial rule, Uganda has experienced a series of armed conflicts, with the most devastating being the 21 years of conflict in Northern Uganda.

The research study was guided by the following questions: (1) What is the level of government funding towards improving science education program in Uganda? (2) Have recent initiatives, such as free Primary and Secondary education, compulsory science, and 75% sponsorship for science-based courses, had a measurable impact on the proportion of students from the conflict-affected regions who enter tertiary institutions to pursue science and technology programs? (3) To what extent do the Ugandan Education Policy and, in particular, the Science Education Policy effectively address the educational needs of students affected by armed conflicts?

The study employed a mixed method design where both quantitative and qualitative data were collected and analyzed. Quantitative data were obtained from a comprehensive search of policy documents and content analysis of literature on education policy, science education programs, and impact of conflicts on educational
delivery. Qualitative data were obtained from surveys and interviews distributed to policy makers, central government and the local government officials, teachers, and students from the war-ravaged Northern Uganda.

Analysis of policy documents and respondents' views revealed that Uganda does not have a science education policy, and the present education policy does not fully address the educational needs of students studying in conflict-affected regions. It was further observed that fewer students from the conflict-affected regions qualify for government scholarship to study science courses in higher institutions of learning.

The study recommended the following policy interventions: (a) affirmative admission in higher institutions of learning, (b) curriculum reform, (c) professional development of teachers, (d) school security and safety, (e) science and technology education, and (f) increased funding for emergency education.

The study proposes a model of “Schools as Islands of Peace and Hope” with science education as the tool for post-conflict economic recovery, as a blue print for emergency education policy framework.
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I dedicate this dissertation to my parents, Andrea Pacutho and Sara Anyaliel Pacutho, who are not here to celebrate with me this great achievement. My father told me that education was my first husband, and my mother taught me to pray without ceasing and believe that with God all things are possible. To God be Glory and Honor!
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CHAPTER I

INTRODUCTION

Background

Armed conflict affects an estimated 30 countries, and 80% of the world’s wars are in Africa and Asia. Destruction of educational infrastructure represents one of the most serious developmental setbacks for countries engaged in armed conflict (UNESCO, 2003).

Uganda has experienced a series of armed conflicts over the past 40 years, but the most devastating has been the 21 years of armed conflict between the Ugandan government and the Lord’s Resistance Army (LRA) in Northern Uganda. During the last two decades there was a complete breakdown in public and social services, such as education, health, agriculture, security, transport, and communication.

There have been various theories and views on the root cause of armed conflicts in Uganda. This research study has focused on how historical developments in education and armed conflicts have shaped the Ugandan education policy and especially the science education program. Particularly, the research study focused on the 21 years of armed conflict in the northern region and its implication on educational delivery and the development of the science education program in Uganda.

The researcher studied the various episodes of armed conflicts from the time Uganda obtained independence in 1962 to 2008. The government of Uganda and the
Lord’s Resistance Army (LRA) signed a temporary cessation of hostility in August 2006 that led to the initiation of the Peace Talks in Juba, Southern Sudan under the mediation of the Southern Sudan government. The Peace Talks collapsed towards the end of 2008 after the rebel leader, Joseph Kony, failed twice to sign the Comprehensive Peace Package (Mukasa & Baguma, 2008). At the time of the conclusion of this study in March 2009, there was renewed fighting between the LRA and a combined military force from Uganda, Sudan, and the Democratic Republic of Congo (DRC) in the Garamba National Park in DRC where the LRA rebels had assembled during the period of the peace talks.

The researcher’s main argument in this research study is that education should be a priority during any humanitarian crisis. Schools can be “Islands of Peace and Hope” during emergencies and conflict and science education should be the “tool” for post-conflict recovery, rehabilitation, and reconstruction of the affected societies.

This research study was motivated by my personal experience as a child growing up in the conflict-affected region of Northern Uganda. The first chapter includes the account of my personal story as a victim and survivor of armed conflict. My near-death experience as a victim of war, coupled with the resulting trauma and the pain of dropping out of a school was the turning point in my life and has since influenced my entire career path. I decided to become a science educator and a legislator in order to fight for the rights of women and children traumatized by wars and armed conflicts. Education was the most important thing that kept my hope alive. Ultimately, my desire is to advocate for the kind of education that mitigates the effects of humanitarian crisis and is a tool for conflict resolution, promotion of peaceful coexistence, while providing healing and hope.
Most countries of the world have experienced several kinds of humanitarian crises including, armed conflicts, emergencies, disasters, both natural and man-made. Among the most recent disasters are the 2005 Hurricane Katrina, which devastated the lives of over 25,000 people in New Orleans in the United States (CBC, 2005) and the cyclone in Burma where, according to the Associated Press (AP, 2008), an estimated 78,000 people were feared dead. In China, an estimated 130,000 were reported missing and estimated 10,000 people died of an earthquake that toppled offices, factories, and buried students in school buildings (Hooker & Yardley, 2008).

Natural disasters such as earthquakes, cyclones, hurricanes, tsunami, floods, and man-made disasters such as terrorist attacks, armed conflicts (both internal and external) occur with some regularity on Earth. The impacts of such humanitarian crisis situations are loss of lives, properties and displacements within local communities with most affected persons being women and children also, among those affected are students, teachers' administrators and other public service workers. The consequence is often the interruption of social services such as schooling, shortage of health care facilities, communication breakdown, poor shelter and sanitation, lack of food and clean water, which result in more deaths due to outbreaks of communicable diseases perpetuated by the poor living conditions.

Education can be the single most important factor for disaster mitigation because it provides knowledge and skills for dealing with adversity. According to Nsibambi (2008), education has a critical role to play in efforts to restore peace in conflict situations. He further observed that education is a continuous creative process that can develop the capacities latent in human nature for the enrichment and progress of society.
A friend once remarked that “Education is the key that unlocks the door to unlimited possibility” (Clark, 2003). Violent conflicts, wars and insurgencies deny children the right to education moreover the lack of education makes children even more vulnerable to many other vices.

The 21 years of conflict in Northern Uganda was the longest ever in the history of Uganda where the LRA rebels inflicted abominable atrocities and caused great suffering to the people of northern and eastern Uganda. A top official described the rebel war in Northern Uganda as the worst forgotten humanitarian crisis on earth. “The conflict in Northern Uganda is the biggest forgotten, neglected humanitarian emergency in the world today,” Jan Egland, UN Undersecretary General for humanitarian affairs and emergency relief coordinator, told a news conference in Nairobi after a two-day visit to Northern Uganda (Egland, 2003). Furthermore, the prolonged conflict raised numerous questions as to why it persisted for so long. Could there have been a conspiracy of silence?

The education sector suffered the most during this conflict because while school was expected to provide protection and safety for the pupils and students, it turned out to be the recruiting ground for the rebel militants. Schools were raided and students and teachers were abducted and forcefully conscripted into the rebel army. The conflict led to the closure and displacement of most of the schools in Northern Uganda. Some school were transferred to the Internally Displaced Peoples camps (IDPs) so that they could be given protection by the military, while others schools were either hosted or absorbed by the schools in relatively safer areas. For example, during the insurgency in Northern Uganda, Gulu High School hosted Keyo and Koch Goma secondary schools.
According to a UNICEF (2005) report, approximately 25,000 children were abducted by the LRA during the course of the war and over 10,000 children remain unaccounted. It is estimated that more than 1,000 children have been born in LRA captivity to girls abducted by the rebel army. The UNICEF (2005) report further confirmed that 63% of the primary schools in Gulu, Kitgum, Pader, Lira, and Apac districts of Northern Uganda were non-functional due to forced displacement.

The purpose of the research study was to examine the relationship between the prolonged armed conflicts and delivery of educational services in Northern Uganda. The study critically analyzed the Ugandan education policy and, in particular, the science education program and evaluated the extent to which the policies addressed the educational needs of children studying in war-affected regions. This entailed a critical analysis of the historical development of education and of the science education program in Uganda from pre-colonial era, colonial, and post-independence to date since the connections through time appeared to the researcher to be a critical factor.

The research study further analyzed the impact of prolonged armed conflict on the quality of education and access to higher education especially in science-based courses for students from Northern Uganda. Furthermore, the study evaluated the science education program in Uganda and assessed its impact on human resource development in critical courses such as science, technology, medicine, and engineering that are key ingredients for national development.

For lack of a better term, I classified this research study as a “proactive policy prognosis” because the main goal is to contribute towards future reforms in education
policy for emergency, conflict, and post-conflict communities based on lessons learned from the past and the present.

In this research study, I define Proactive Policy Prognosis as “a forecast of the probable course and outcome of action or plan, that can be adopted and pursued by a government or an administrative body based on the past in order to prepare for, intervene in, or control an expected occurrence or situation, especially a negative or difficult one, in the future.”

Research has shown that the common practice in policy formulation process is a reactionary one and in most cases, the policy analysis is a diagnosis and a post mortem of a failed policy. Considering that emergencies, disasters and armed conflicts occur with regularity, the best action is to be proactive and put in place policies geared towards solving or mitigating the effects of recurrent problems based on past challenges, experiences and lessons learned.

What kind of education policy and in particular, science education policy can address the educational challenges faced by children studying in conflict-affected areas? This was the major question that propelled the current research study. The specific research questions that guided this study were:

1. What are the levels of government funding towards improving the science education program in Uganda and in the armed conflict-affected areas?
2. Have recent initiatives by the government, such as free primary and secondary education, compulsory science, and 75% sponsorship for science-based courses, had a measurable impact on the proportion of students from the
northern region who enter tertiary institutions to pursue science and technology programs?

3. To what extent do the Ugandan Education Policy and, in particular, the Science Education Policy effectively address the educational needs of students studying in armed conflict-affected areas?

In order to answer these questions, the research study examined the overall education policy in Uganda and in particular, those policy statements that specifically addressed the plight of children with interrupted academic study in conflict-affected areas of Northern Uganda. The effort by the government to promote the teaching and learning of science especially in secondary schools during the period of the conflict was of particular attention. Interviews were completed with Members of Parliament, local government officials, teachers, students, and community leaders on various aspects of the Ugandan education policy and on its benefit to the children affected by the armed conflict.

The specific education policies that were critically examined included:
(a) Universal Primary Education (UPE), (b) Universal Secondary Education (USE),
(c) Compulsory Science Policy, (d) 75% government sponsorship to science-based courses, (e) affirmative action provisions, (f) teacher re-training program, (g) curriculum and textbook review and update, and (h) school safety and security.

The key performance indicators related to access, equity, and quality were examined to determine the impact of the war on education in the northern region included students’ enrollment, progression and completion rates for both primary and secondary schools in the four regions of Uganda. Other indicators included the Pupil Teachers Ratio
(PTR), Pupil Classroom Ratio (PCR), and the Pupil and Textbook Ratio (PTR).

Furthermore, the study analyzed the access indicators such as the Gross Intake Ratios (GIR), Net Enrollment Ratios (NER) and Gross Enrollment Ratios (GER), the latter of which measures the proportion of pupil attending school compared to the total school going age children in the population.

Investment in education and especially science education and technology programs was critically examined. Government support to science education program was evaluated based on the budgetary allocation for acquisition of science facilities, such as science textbooks, construction and equipping of laboratories, training of science teachers and financial support to science students at tertiary institutions and public universities.

Furthermore, the researcher analyzed the list of government-sponsored students to various science-based courses at universities and institutions of higher learning to determine the spatial distribution of students by region as a percentage of the national total. The purpose was to determine where the majority of the students originated and whether the armed conflict was a significant factor in determining the number and origin of students that qualified from the northern region. The research study further analyzed other factors, such as historical marginalization, lack of qualified teachers and instruction materials to determine how they contributed to the lack of access to higher education among the students from the northern region.

The outcome of this study is a conceptual model of education as an “Island of Peace and Hope” during conflict with “Science Education as a tool for post-emergency and post-conflict recovery, rehabilitation, and reconstruction.” The conceptual model shall contribute towards a framework on which to build educational policies and in
particular, science education policy for emergency, conflict, and post-conflict. The model proposes five scenarios for the development of an emergency education policy, particularly involving science education programs. They include:

1. Peace time
2. Temporary peace or cessation of hostility (Peace Talks)
3. Isolated peace and conflict
4. Armed conflict and war
5. Post-conflict situations

The underlying assumptions of the model are that: (a) schools should exist as "island of peace and hope" even during emergencies and conflict situations, (b) an effective education policy should produce good results regardless of emergency and conflict situations, and (c) science education should provide the necessary knowledge and skills for survival and development during and after a crisis.

The model will propose structural adjustments and curriculum reform with reference to Uganda. It emphasizes improving school infrastructure to provide physical protection for children during conflicts and emergencies such as "safe zones," and continuing schooling undisturbed even amidst emergencies or crises near those zones. Furthermore, it proposes a "multi-pronged" accelerated learner-centered, inquiry-based science curriculum, and technical education program in addition to the established national school curriculum that is based on the urgent needs of the affected communities. The benefit of the multi-pronged curricula is that the students can put the knowledge and skills acquired in school during the emergency or conflict situation to immediate use for survival and reconstruction.
The proposed model incorporates best practices drawn from other "emergency education models," such as those models that have already been applied to emergency and post-conflict situations elsewhere. The model presented in this research is similar to the "Blue Print" for post-conflict education under the Peace, Recovery and Development Plan (PRDP) for Northern Uganda framework. It involves the participation of the local community, local government officials, policy-makers, school administrators and teachers, students from the 40 conflict-affected districts of Northern Uganda. The Island of Peace and Hope model of education, like the "Blue Print" was designed to meet the specific education needs of war-traumatized children and their communities.

The field testing, piloting and refining of the proposed model for inclusion into a national policy for implementation was beyond the scope of this study, but I hope that the recommendation of this study shall lay the foundation for further work and reform in science education as a tool for national development during post-conflict situations. Hopefully, this model would be implemented as part of the Millennium Village Project (MVP) that is currently being piloted in ten African countries, including Uganda (Sachs, 2005).

The Millennium Villages concept was developed by scientists at the Earth Institute at Columbia University and the United Nations Millennium Project, under the leadership of Dr. Jeffrey Sachs (UN Millennium Project, 2006). It is an integrated, community-level development strategy to end extreme rural poverty based on the Millennium Development Goals (MDGs). The Millennium Village Project works directly with communities, non-governmental organizations, and national governments. It utilizes targeted and comprehensive investments to address each of the MDGs using proven
methodologies. The Millennium Village Project aims to establish a "proof of concept" for broad-based, community-led development strategies, and to show how rural African communities can lift themselves out of poverty and achieve the Millennium Development Goals, in a way that is sustainable and scalable (Sachs, 2005).

The overall study was based on a comprehensive review of the historical developments in education from the pre-colonial, colonial, post independence to the present and a critical analysis of Uganda’s national education policies and in particular science education policy over the last 20 years. Secondary data on the state of science education in Uganda were obtained from the review of documents and reports. Primary data were obtained from interviews with the government officials from the ministries and departments and from district officials, school administrators, teachers, students, and community leaders in the conflict-affected area.

Overview of Armed Conflicts in Uganda

Uganda has experienced a series of violent conflicts since its independence in 1962, with each successive regime facing a wide range of dissident groups fighting to rule the country. The first episode began with the overthrow of the first President, Edward Mutesa, in 1966 by Milton Obote. Thereafter, Obote was deposed by General Idi Amin in 1971 who was later removed from power in 1979 by a pro-Obote rebel group supported by the Tanzanian army. General Tito Okello toppled the Obote regime for the second time in 1985. General Museveni and his National Resistance Army (NRA) removed General Tito Okello from power in 1986.
The NRA like the LRA were a dissident group that took up arms and went to the bush under the leadership of Yoweri Museveni Kaguta to fight Milton Obote’s second regime which they claimed rigged the 1980 election.

Since the first military coup in 1966, Uganda has been through waves of armed conflicts in various regions of the country, most prominently in the central, western and the greater north, including some parts of eastern Uganda and the Karamoja region in the northeast. These periods of political instability were turbulent and resulted in nine changes in government over a short period of time. The situation has been worse for Northern Uganda where the conflict between the government of Uganda and the LRA rebels led by Joseph Kony has persisted since 1987.

All these armed conflicts resulted in bloodshed, widespread human rights violations and economic depression. During these conflicts, there was total breakdown in key social services such as communications, healthcare, and education, especially in those parts of the country where the conflicts were prolonged, such as in the Luwero Triangle in the central region where the NRA fought with the Uganda Army (UA) for five years and in Kasese and Bundibugyo in western Uganda where the Allied Democratic Front (ADF) fought with the Uganda Defense Forces (UPDF) for another five years. The most devastating of all was the fighting between government of Uganda and the LRA rebels in Northern Uganda, which lasted for two decades resulting in indescribable suffering and humanitarian crises.

I was a victim and a survivor during one of the violent conflicts in the history of Uganda. Therefore, in the next section, I present a brief account of my first-hand experiences in a battlefield that transformed my entire life and career. I hope that my story
will help emphasize the importance, significance and implication of similar research studies and provide impetus to those who strive and work hard towards making this world a peaceful and safe place to live.

A Victim and Survivor of Armed Conflict—My Story

My life changing experience began on October 9, 1980. At that time, I was a student in lower secondary in a remote school called War Girls Secondary School in Nebbi District. The school administration allowed us to go home to celebrate Independence Day with our families. We were all very excited to be home. The celebration was to take place one and half kilometers away from our home village in the small town called Arua. It is located in the northwestern part of Uganda commonly referred to as the West Nile region.

As we prepared to leave home for the celebration, we suddenly heard sounds of gunshots, bomb blasts, missiles exploding in mid-air, and bullets whizzing over our heads. We were perplexed and confused wondering exactly what was happening. Suddenly we saw the town at a distance engulfed in thick dark smoke and people running in disarray. The fleeing people informed us that an armed rebel group from the Democratic Republic of Congo (DRC) formerly known as Zaire had invaded and captured the town. This rebel group was the remnant of the defeated Uganda Army who served under the former dictator Idi Amin Dada.

We attempted to flee into Zaire (DRC), the neighboring country, for safety but we were informed that the rebels were carrying out ethnic cleansing of the Luo ethnic group whom they considered traitors and collaborators with the Ugandan government soldiers.
Unfortunately for us, we belonged to the same Luo ethnic group with the Acholi and Langi soldiers that the rebels were hunting down. We decided to return home and wait for our fate.

The one week under the rebel rule was the most horrifying and terrifying experience of my life. I recall one evening when the rebels invaded our home. They demanded that we produce all the Acholi government soldiers that had taken refuge in our home. Our plea of innocence was ignored as they ransacked our house. Unfortunately for us, they found a photograph of my late brother who had served in the military. They threatened to kill the whole family, accusing us of being liars and traitors. Even though we explained that he had died many years earlier, they did not believe us, so one of the rebels pulled out his machete and threatened to kill me as a punishment for lying to them. I recall he put the machete on my neck to chop off my head. I do not remember what happened next because I probably passed out or fainted.

Luckily, after some time, I regained my consciousness and I realized that I was still alive. When I inquired what had happened, someone informed that one of the young boys who accompanied the rebels pleaded for my life. I will never know who he was, but I am grateful and thankful to God to be alive to tell the story.

In the days to come, I witnessed many atrocities against children and women committed by both rebel and government soldiers. A week after the rebels had fled, the re-enforcement army composed of the Uganda National Liberation Army (UNLA) and the Tanzanian army re-captured Arua. We later learned that the command was to destroy all living creatures four miles from Arua to the border with Sudan. Unfortunately for us, our home was within the four-mile zone and definitely in the battlefield.
On the morning when the government soldiers entered the town, we woke up to the sounds of gunshots, rocket propelled grenades, ballistic missiles, bomb blasts, and sounds of armored vehicles. Thick smoke filled the air once again and we could hear people screaming as fire consumed them. We later learned that the soldiers captured the people, put them in the grass-thatched houses, and burned them to death. We were very lucky that on that fateful day the infantry missed our home by a few meters. We learned on the following day how fortunate we were that they did not reach our home, where over 108 people had taken refuge. We learned that the previous day the military killed everyone they found in their path. I recall one soldier asking my father, “What charm did you use to send us away?” He told them it was “prayers” and the soldier said, “Cling to your God; you will never die of bullets.” What an assurance from the enemy! Thank God, we all survived.

Many of our close friends were tortured and some lost their lives during this war. My father escaped death narrowly, when our house was bombed and all our property destroyed. The military, rebels, and the local people looted and destroyed the schools, hospitals, and homes. Our school was among those looted and destroyed. After the insurgency, I stayed home for a full year, unable to go back to school.

When I returned to school a year later, I decided to study science, even though the laboratory in our school was not functional. I persisted regardless of the poor learning conditions and excelled in the ordinary level national examination with distinctions. I qualified to join Gayaza High School located in Kampala in the central region, which is one of the best girls’ schools in the country with the best learning facilities. I studied advanced biology, chemistry, and physics, but I had serious difficulties understanding the
science subjects. I was not familiar with most of the science equipment since I had come from a rural, poorly equipped school. To make matters worse for me, one of the teachers discouraged me from continuing to study science. She advised me to shift to art class because of my poor performances in the science subjects. I persisted regardless of the discouragement, and fortunately, I barely passed the national examination, but was lucky to qualify for admission to Makerere University to pursue a Bachelor of Science in botany and zoology. A year later, I obtained a scholarship to go and study at Dar-es Salaam University where I graduated with a Bachelor of Education in Science after four years.

Graduating from college was the beginning of my dream to make my contribution to the community. I taught at the Department of Science and Technical Education (DOSATE) at Makerere University, Kampala for eight years. While at Makerere University, I noticed that very few students from the northern region were applying to the University. Our department, which trained science teachers, admitted only one or two students from the northern region annually to the Bachelor of Science in education program. I was concerned about the few science teachers from the northern region and realized the serious implication that the lack of science teachers could have on human resource development and the overall economic development of the region. I did not know how best to address the problem. There were elements of disparity in education that needed a political solution. I decided to join politics in order to influence policy and to bridge the gap between the academia and policy. I got elected to the Ugandan Parliament in 2001 as a District Woman Member of Parliament representing Nebbi District in the northwestern part of Uganda. The constitution of Uganda provided for the election of a Woman Member of Parliament per district.
While in Parliament, I served on the Parliamentary Committee for Defense and Internal Affairs as the Vice Chairperson. My primary goal was to work closely with the army to end the war in Northern Uganda because it directly affected my constituency and the people I represented. I worked closely with the Ministry of Defense to produce the Defense White Paper to professionalize the armed forces. I contributed towards the Anti-terrorism and Amnesty Law, which provided for voluntary surrender and pardon for those individuals who abandoned rebel activities. Furthermore, I helped in the formulation of the UPDF law ensuring that it was fair and gender sensitive.

All the above experiences transformed my life, paved my career path, and gave purpose in my life. My goal is to be a voice for the voiceless and strength for the weak whenever I have the opportunity. It was against this background that I was motivated to pursue this research study.

I have learned from this research study that telling my story was in itself a powerful therapy for personal healing from my traumatic past. During this research study, I experienced a sense of peace and tranquility as I wrote down my story. Post-conflict education policies should provide all children and teachers who have been traumatized by wars and violent conflicts the opportunity to tell their stories. I think this could be a powerful therapeutic tool that can be incorporated in a “peace education” syllabus so that children can either tell their stories verbally, written or in pictorial form.

The next section presents some highlights on some of the presumed causes and consequences of the prolonged war in Northern Uganda. It is through understanding the root causes and the consequences of this conflict that one can appreciate its complexity and the reason it took such a long time to end it. I hope that the lessons learned from the
past will deter perpetrators of violent conflict from pursuing similar incidents in the future.

*Causes of the Lord's Resistance Army War in Northern Uganda*

Many different groups made diagnoses of the root causes of the conflict in the northern region. According to a baseline study by the Education Working Group which is composed of various non-governmental organizations (NGOs) working together in Northern Uganda, there are key structural factors that explain the causes of conflict, across the sub-regions and in particular Northern Uganda. These key factors are political, historical, socio-economic, structural and security-related (PRDP, 2006).

There is general agreement that the main cause of conflict in Uganda was political and historical. This includes poor representation in key government offices, marginalization of the region’s population, regional divide between north and south, divisive past colonial policies and corrupt leadership. Other factors included human rights abuse and criminalization by the warring parties. There was the serious problem of the proliferation of small arms and weak border controls that fueled the conflict.

Furthermore, there is evidence of socio-economic imbalances between the different regions in terms of public investments and fiscal transfers, economic development, weak social service provision, competition over scarce resources, land disputes and the political and economic gains of certain individuals. All these factors put together led to a state of despondency and bitterness among the northerners to the extent that they felt like the only solution was to fight for freedom and democracy through the barrel of the gun.
The residual colonial model of educational system shares blame for the conflict in Northern Uganda because it divided Uganda into the elite south and illiterate north. While all the best schools were in the south, the colonial administration used the north to provide labor for the plantations in the south and for service in the armed forces, police and prisons. The disparity in access to educational opportunities brought about by the colonial government created hatred between the northerners and the southerners. Evidence of such disparities began at independence when the elite southerners took up the "white collar" jobs left behind by the colonial administration and the illiterate and semi-illiterate northerners continued to serve in the plantations and the armed forces. As time passed, the majority of the northerners saw no value in education because they realized that there was more power in the "gun" than in the "pen." They soon realized that they could acquire wealth more easily with the gun than with formal education. Consequently, the struggle for power through the barrel of the gun resulted into coups and counter-coups, protracted guerilla wars, rebel activities and conflicts including the most recent armed conflict in Northern Uganda, which spread to southern Sudan and eastern Democratic Republic of Congo.

Some scholars have described the conflict in Northern Uganda as a "conspiracy of genocide" or "ethnocide" by the Ugandan government against the Acholi (Luo) ethnic group (Ottuno, 2006). While others like Kabwegyere (1974) observed that the conflict is rooted in the "educational apartheid" that is residual from British colonial rule and the religious dicotomy. This view is also supported by Otunnu (2002), who reported that the divide along the lines of religious affiliation, which can be traced back to the arrival of Islam, Protestantism and Catholicism in Buganda, resulted in a ferocious conflict for
dominance, and the Protestant faction emerged victorious after the Imperial British East Africa Company intervened in their favor.

The partition of the country into economic zones exacerbated the conflicts in the colonial states. For example, the colonial administration designated a large portion of the territory south of Lake Kyoga as cash crop growing and industrial zones and the territory north of Lake Kyoga as a labor reserve. This partition led to economic disparities between the south and the north.

According to Hoppe (1997) the designation of the northern region as reserve area was not politically motivated but was because of the increasing death caused by the sleeping sickness epidemic in the northern region. Most northerners, however, do not support this explanation. Otunnu (2002) asserted that the fragmentation of the society by the colonial administration and the indirect rule, which left the civil service largely in the hands of the educated Baganda and the army largely in the hands of the Luo and Sudanic northern ethnic groups, was deliberate. These policies widened the gulf between the socio-political south and the socio-political north because the administrative policy relied on the Baganda elites as colonial agents in other parts of the country.

A lucrative war economy was also sighted as key factor in support of the conflict as there were accusations and evidence that some army officers and commanders enriched themselves during the war by creating “ghost soldiers” and pocketing extra salaries. Regardless of the causes and the justifications of this senseless war, there are serious consequences that will have lasting effects on the population in Northern Uganda.

There is a general belief that the cause of conflict between the north and the south was rooted in educational disparity and access to quality education could resolve the
The militarization of politics is a key factor behind these violent conflicts especially where governments believe in the power of the gun and not in democracy.

In this study, I explore the chronological development of education from pre-colonial to the present and highlight the disparities in access to quality education and the resultant impact on human resource and economic development of the region.

**Key Consequences of the Conflicts**

The impact of the various armed conflicts upon the population and socio-economic infrastructure in the sub-region depended upon the longevity and intensity of the respective conflicts. The 21 years of insurgency in the Northern Ugandan districts of Gulu, Kitgum, and Pader caused the greatest humanitarian suffering and material damage in the history of Uganda.

Loss of lives and infrastructure has been a major consequence of this war. According to the Peace Recovery and Development Plan for Northern Uganda (PRDP, 2006), the conflict has taken a tremendous toll on people’s lives, causing mortality rates to increase. The atrocities committed during the violent conflict in the north included the abduction of up to 60,000 children with an estimated 12,000 abducted in 2004. Tens of thousands of people have been tortured, maimed, mutilated, and killed, and properties including livestock destroyed or looted. A recent report put the death toll at 10,000 deaths due to the “Acholi wars” (PRDP, 2006).

According to Businge (2008), Northern Uganda has one of the world’s highest rates of a mental illness resulting from horrific experiences, during the two decades of armed conflicts and civil unrest. A survey, conducted by a team of British and Uganda
psychiatrists provided the evidence for the high prevalence of post-traumatic disorder in Northern Uganda. They established that the prevalence of post-traumatic stress disorder in Northern Uganda is higher than ever recorded anywhere in the world. They reported that out of over 1,200 adults assessed by the psychiatrists in Gulu and Amuru districts in 2006, 54% were suffering from post-traumatic stress disorder (PTSD) and 67% of the individuals had signs of depression. Comparatively, the rate of PTSD recorded among refugees in other regions was 11.8% in Guatemala, 38% in Mexico, 4.6% in the Thai-Burma border area, 5.6% in Croatia, and 20-24% in Afghanistan.

The symptoms of the illness include a feeling of being scared, having bad dreams, flashbacks of past horrible events, worries, sleeplessness, and angry outbursts. In extreme cases, the victims, both males and females see objects that do not exist, which they refer to as ghosts while for others the symptoms included feeling irritable, persistent sadness, unnecessarily tiredness, anxiety, helplessness, guilt, worthlessness, and sleeplessness. Some of the victims displayed lose of interest in pleasurable activities including sex and their appetite for food may rise or decline. In some cases, they may fail to concentrate on tasks and usually have problems remembering details.

The study further revealed that the people suffering from the resultant stress and depression usually do not have access to mental health care. Those circumstances require an educational policy that can provide the knowledge and skills necessary for teaching war traumatized children. The above signs of PTDS have serious consequences for post-conflict education and social recovery in the northern region.

The displacement of the population and forced living in the camps has brought much misery to the people of Northern Uganda. According to the UNICEF (2005) report,
an estimated 1.8 to 2 million persons (about 25% of the region) were internally displaced in the Northern Uganda districts of Gulu, Kitgum, and Pader during the 21 years of armed conflict. There were a total of 218 displaced people’s camps (IDPs) with up to 60,000 inhabitants (UNICEF, 2005).

Throughout this conflict, there were food shortages because the camp communities could not produce their own food for fear of the rebels who killed those who tried to go back to the villages to farm. This resulted in a food shortage because 78% of the displaced population had limited access to land, due to the insecurity and was dependent on external food aid from the World Food Program. The result of the population displacement was a dramatic loss of food production at the local level and in turn high levels of chronic and acute malnutrition. In 2004 at the peak of the armed conflict, UNICEF (2005) reported that 1000 children died every week due to malnutrition and lack of primary health care in the camps.

Consequently, the major consequence of the war has been the chronic poverty, underdevelopment, high rates of illiteracy, lack of human capital, diseases, marginalization, anger and violence. The north remains the poorest region with 61% of its population living below the poverty line, and it lags behind the rest of the country in all socio-economic indicators. The region has the highest number of people with life expectancy of less than to 40 years of age. Furthermore, the northern region has the worst nutrition status reported in 2003 with 25% of the children underweight as compared with 20% for central region. The northern region has the poorest indices of human development of 0.418 as compared to 0.547 for the central region (PRDP, 2006). Consequently, the conflict resulted in the impoverishment of the internally displaced
persons who practically lost everything. Orphan-hood increased from 25% to 28%, as did the levels of child-headed households and widowhood.

Because of the prolonged conflict, there was a general loss of economic productivity. There was deterioration in infrastructure including roads and bridges and the subsequent loss of access to markets. Furthermore, agricultural production declined due to population displacement, landmines, and insecurity. Although the north is the largest region in the country representing 35% of the total land area, large tracts of land remain unused or underutilized, resulting in an enormous loss of economic potential.

The estimated economic loss of production capacity in Northern Uganda due to the conflict is $100 million U.S. annually (PRDP, 2006). There was also an unreported loss of regional opportunity and trade because of lack of comprehensive analysis on the impact of the war upon regional trade. However, with peace and stability in Southern Sudan, it is clear that the war in the north had an impact on Ugandan trade and investment opportunities in the region. The potential for commerce in the region has improved because of the apparent peace resulting from the peace negotiations.

The consequences of the conflict have been at three different levels: (a) political, (b) administrative, and (c) poor management of law and order at the local level. The perception of the people from the north is that there was a deliberate marginalization of the region by the National Resistance Movement (NRM) government. For many years, the main interaction between north and south has been with the military and not the civilian population.

Government institutions have remained weak, understaffed, and under-resourced, resulting in very weak provision of basic social services coupled with poor management
of law and order in the conflict-affected areas. In addition, there was a prevalence of 
vio\-lence in the community because of an influx of small and light weapons from the 
neighboring countries of Sudan, the Democratic Republic of Congo, Rwanda, and Somalia, which exacerbated the impact of the conflict. The laying of land mines by the 
rebels affected social service as well as agricultural productivity and transportation especially in the districts of Lira, Soroti, Kitgum, Pader, and Gulu.

Overall, the conflict disrupted basic social service delivery. This was due in part 
to the removal of populations and their relocation to the displaced people’s camps. Those 
concentrations resulted in overcrowding and poor hygiene.

Children were the principal victims of this brutal war. There was rampant child 
abuse in the camps. It was a challenge to maintain the children’s rights to family, parental 
support, education and health services at an acceptable level. The constant abduction of children by the rebels led to the phenomenon known as “night commuting,” whereby tens of thousands of children trekked into urban areas to sleep on the verandahs of shops at night for protection from the rebels. With the initiation of peace talks in July 2006 between the LRA and the Uganda government under the leadership of the Vice President of the Southern Sudan government, Riek Machar, and Joachim Chisano, the UN envoy to Africa, apparent security returned to Northern Uganda.
Historical Development of Education in Uganda

African Traditional Education

African societies had a traditional or indigenous form of informal education that was holistic, lifelong, and utilitarian and kept the societies in harmony. Adeyemi and Adenyika (2003) observed that indigenous African education is as old as humanity itself and it involved all members of the community and prepared individuals for life in the villages most particularly communal life. Traditional African culture is endowed with a non-formal education where learning occurred by imitation. The girls learned agricultural practices, food gathering, preservation, and home chores by working closely with their mothers. The boys, on the other hand, learned the skills for hunting, fishing, building houses and defending the community from their fathers, uncles, and significant elders.

In the context of the African traditional system, education is the process of transmitting cultural knowledge, norms and values from generation to generation. The elders passed on the cherished knowledge for life-long learning and survival to the children and teenagers at the “fire place” classrooms. They taught them the practical skills curriculum in real life laboratories, in the fields, the forests, and the wild.

Early Formal Education

In order to appreciate the dynamics of the current educational system, it is important to put into perspective the historical development of formal education in Uganda. The educational challenges we observe today are a result of the educational system handed over to Ugandans by the British colonial government at the time of
independence. Evidently, some of the underlying problems of educational disparity and marginalization in Uganda dates back to the pre-colonial and colonial era.

*Missionary Education*

The missionaries from the Church Missionary Society (CMS) and the Catholic White Fathers built the first schools and technical colleges in Uganda. The CMS came to Uganda in 1877 and White Fathers followed two years later in 1879. These two missionary groups played a crucial role in the development of education in Uganda during the pre-colonial period. Eventually, the colonial government took over the administration of the missionary schools.

As observed by Kabwegyere (1974), a rivalry and competition developed among the two missionary groups. This resulted in an educational dichotomy, also considered as the genesis of sectarianism and separatism in the present Ugandan educational system where nearly all the best performing schools are located within the central region and some of the worst performing schools are in the northern and eastern region.

The educational dichotomy is the course of the north-south divide, as evident in the unequal distribution of national resources and infrastructure such as electricity, roads, communications, schools, hospitals and lack of well-trained human resources that are the engine of development.

*Colonial Educational Policy*

During the colonial era, while the rest of the country had registered progress in economic growth and development, Northern Uganda lagged behind. The marginalization
of Northern Uganda in terms of access to education dates back to the 1900 period when Uganda became a British Protectorate.

In 1906-1907 the total enrolment of students was 31,865 and 77.9% of the students were from central region and 6.7% of the students were from eastern region. Due to the insignificant statistics, the north and the west were combined together to give a total enrolment of 15.4% (Kabwegyere, 1974).

In 1920, the number of schools built per region was 386 (80.4%) in the central region, 46 (10%) in the eastern region, and 44 (9.6%) in the western region. Neither the missionaries nor the colonial government built schools in Northern Uganda during this period (Kabwegyere, 1974).

Kabwegyere (1974) noted that separating the western region from that of the northern region, the Northern Province would most likely have no students attending school because neither the colonial government nor the missionaries had established schools in the northern region, because of its remoteness.

Teachers are vital in any educational development program, without them there can be no schooling. During the colonial era, the Teacher Training Colleges (TTCs) were unevenly distributed. For instance in 1942, of the eight teacher raining colleges established, six were in the central region, one in the eastern region and none in the north. Ironically, despite the unequal distribution of the educational opportunities, the Central administration continued to spend more money supporting schools in the south at the expense of the north. Furthermore, international educational opportunities were the luxury of the central, western and eastern provinces. There were 91 Ugandans pursuing
higher education from the Central region between 1926 and 1931 and 5 were from the eastern region, 3 from the western region and none from the northern region.

Colonial Educational Curriculum

The colonial government's educational curriculum did not focus on providing skills and knowledge for self-reliance to the local population. The missionary schools emphasized a broad general education coupled with a strong religious element, culminating in an elite system of boarding schools for secondary education. The government, on the other hand, established few technical, vocational, and agricultural training schools and provided grants to aid the mission schools.

The colonial administration designed the educational system to provide clerks and lower level civil servants for the British colonial administration. Although it was evident that there was an uneven distribution of missionary schools in other regions of Uganda, there was no intention to equalize educational opportunities because the existing schools adequately met the need for clerks and lower civil servants. There was no need to spend money on building more schools in other parts of the country. Unfortunately, the type of education provided was specifically Western and British. The curriculum was theory based and emphasized memorizations and drills. The British colonial government designed the education system to inculcate the values of the colonial masters and not for the benefit of all Ugandans.

Unfortunately, the theory based and examination driven curriculum with little or no hands-on activities in the science subjects continues to dominate the Ugandan Science curriculum. According to the Uganda Education Policy Review Commission Report
(Kajubi, 1989), the Uganda education system was found to be examination driven to the extent that any subject which is not examinable by the Uganda National Examination Board (UNEB) would not be given the instructional attention it deserves. This has resulted in the widespread practice of drilling, coaching and private tuition, aimed at passing examinations (UNEB, 1995).

Post Independence Education

**Educational Policy During the Obote I Regime**

Uganda gained independence from British rule in 1962 and the first Prime Minister was Dr. Apollo Milton Obote. At that time there was an urgent need for trained personnel to take up the administrative jobs left behind by the colonial masters. According to Odaet (1990), the main problem during the early years of independence was the acute shortage of qualified and skilled persons, particularly for professional and technical posts which had been held by expatriates. Consequently, in the late 1960s the main emphasis was on secondary education.

By 1965, the national primary educational syllabus underwent a major revision to make it more African in approach, with the necessary re-training and in-service courses provided for teachers. The revisions brought in more mathematics, agriculture and domestic science. The education policy of the first Obote regime attracted some degree of praise even though it was lopsided.

By the early 1970s, through aggressive expansion of primary, secondary, and tertiary education, as well as international training, Uganda’s overall capacity in every
field was well above the sub-Saharan average. As a result, the number of students at Makerere University College grew from 1,500 students in 1966-67 to 3,427 in 1972-1973. This was a remarkable rate of expansion, although most of the students were in the arts or social science faculties. This meant that by 1972 many graduates were looking for white-collar jobs.

The first five year education plan which was referred to as *Uganda Development Plan for Education, 1964/65 to 1970*. Castle (1963) proposed a slight increase in the percentage of children in primary school, and proposed that numbers in secondary schools should be tripled. In the second five-year plan, *Work for Progress*, government's priority was to expand secondary education. The aim was to change the existing ratio of science to arts, which was then 50:50, to a ratio of 60:40 in favor of science. It is apparent that immediately after independence, the government of Uganda recognized the role of science as the engine for development.

Although the *Uganda's Development Plan for Education, 1964/65 to 1970* called for only a slight increase in the percentage of children in primary school, it urged that primary school expansion be related to economic growth and educational opportunity (Castle, 1963). During this period, government increased funding to teacher training colleges in order to increase the number of trained teachers to match the expansion of both primary and secondary education.

It is important to note that early in the post independence period, Makerere University taught only a postgraduate Diploma in Education course. By 1963-1964, Makerere University began to offer the Bachelor of Education degree. There were fewer students taking higher diploma in education by 1970-1971. However, to increase the
production of graduate teachers, government introduced the Bachelor of Arts with Education and the Bachelor of Science with Education.

This period marked the climax of the post independence educational development and the introduction of Science Education at the University level. In addition to this effort, there were many calls for more technical, agricultural and vocational training at all levels, both to correct the bias and to supply the types of workforce needed to replace the expatriates. Thus, government introduced technical subjects such as agriculture, woodwork, metalwork, technical drawing, industrial art, and commercial subjects into all secondary schools.

*Education Policy During Idi Amin’s Regime*

General Idi Amin over threw the post-independence government of Milton Obote in a military coup in 1971. This marked the beginning of the “reign of terror.” Being a university graduate or professor during this reign was almost a crime. Higher education was not considered a priority since the president who was the epitome of power was himself semi-illiterate. He ridiculed the educated as being corrupt and “proud for nothing.”

The Idi Amin’s regime was a period notorious for political and economic mismanagement leading to severe economic decline, political instability, and increased violence. The regime radically reversed the economic and social progress attained after independence, and the ensuing civil strife resulted in tremendous loss of human life. This was the genesis of the unrest and instability in the Ugandan politics.
During this period, there was no emphasis on education and government policy was to equip the army with weapons rather than the nation with brains. The Ugandan economy collapsed. Idi Amin expelled the Asians who were running the economy as if an economic war or ethnic cleansing were the goal. He gave the Asians 72 hours to leave Uganda and later distributed their wealth to his army officers and some of his civilian supporters who had no entrepreneurship skills.

The expulsion of the Asians had a negative impact on both the economy and education. Moreover, the Asians operated some of the best performing primary schools such as Madhivani Primary School, Norman Gordino, and Aghakan. Inevitably, these schools collapsed never to regain their lost glories. Idi Amin’s government viewed the educated populace as a threat, and hunted down and killed a number of prominent people including some university professors. These barbaric actions against the educated population created fear and many escaped into exile resulting in a massive brain drain leading to the collapse of the educational system. The resultant effect was a Ugandan population of uneducated, ruthless rich men referred to as Mafuta Mingi, literally translated as Fat Stomachs.

An estimated 500,000 people might have lost their lives during Idi Amin’s eight years of dictatorship. One million people internally displaced from their homes and farms and as many as 200,000 Ugandans fled the country to exile. Unspecified numbers of missing persons are still unaccounted for, including the author’s brother who served in the military during the Obote and Amin regimes.
Education Policy During the Obote II Regime

Milton Obote was re-elected as the President of the Republic of Uganda a second time in 1980. At this time, Idi Amin had escaped into exile in Saudi Arabia where he died in August 2003. The Obote II regime was a period of partial stabilization after Amin's reign of terror. The Obote government embarked on a recovery program. There was a relatively successful stabilization and revitalization of the economy in the early 1980s, but the recovery faced issues related to structural problems inherited from Amin's regime. Competition among the many exiles who participated in the overthrow of Idi Amin in 1979 characterized the Obote II regime.

The political strife failed to bring the cohesiveness and political unity needed to support the reconstruction of a shattered economy and society. The controversies surrounding the 1980 elections in which the government of Obote was accused of rigging the elections further exacerbated the situation. Consequently, this accusation resulted in the protracted "bush war" led by General Yoweri Kaguta Museveni and the National Resistance Army (NRA) in the "Luwero Triangle" on the outskirts of Kampala and the neighboring districts of Luwero, Kiboga, Mityana, Nakasongola, Mubende, Mukono, Wakiso and Masindi.

In spite of these problems, the government sought to ensure a system of rehabilitation, recovery, reconstruction and development (Odaet, 1990). There was an emphasis on making the educational curriculum more practical and technically oriented. According to Odaet (1990), the Ten-Year Development Plan (1981-1990) provided for upgrading the basic level of teacher education, promoting day schools rather than
boarding schools and decentralizing the educational administration. There was a plan to
diversifying the curricula. The overthrow of President Obote’s government by General
Tito Okello, the army commander in Obote’s government in 1985 interrupted the ten-year
educational development plan.

*Education Policy During the NRM Government (1985-2005)*

The National Resistance Army under the command of General Museveni defeated
the army of Tito Okello and captured Kampala in January 1986 and formed the National
Resistant Movement (NRM) government. The declining economic trends, which had
begun in the late 1970s, continued at an accelerated rate. The first order of business of the
new government was, therefore, to establish and maintain security for the citizens and
property by establishing and maintaining order and security as a fundamental prerequisite
for capacity building in the post-conflict Uganda.

*The Ten-Point Program*

The National Resistance Movement (NRM) “Ten-Point Program for Minimum
Recovery” outlined the vision and mission of the first phase of the NRM government
(Museveni, 1985). During the inauguration speech, President Museveni said, it was not
just a change of guard but a fundamental change. The Ten-Point Program sought to usher
in a *fundamental change* in the socio-economic fabric of Uganda and thus *fundamental
change* became the campaign slogan for the NRM government.

The Ten-Point Program stated that the post independence Ugandan political rulers
had greatly exacerbated the problems of economic distortion introduced by British
colonial rule. Therefore, the solution to these problems required a new political and economic strategy that included ten points, as summarized below:

1. Real democracy had to be organized at all levels of elections and to be carried out from the village to parliament.

2. Insecurity in Uganda had been largely the result of state-inspired violence and could be eliminated through local democracy, a politicized army and police, and the absence of corruption at the top.

3. The removal of politics based on religious, linguistic, and ethnic factional issues can promote national unity and eliminate sectarianism.

4. Government needs to stop interference of foreign interests in Uganda's domestic concerns and the leadership must develop independent priorities based on Ugandan interests.

5. Government must develop an independent, integrated, and self-sustaining national economy that stops the leakage of Uganda's wealth abroad.

6. Restoration of the basic social services such as clean water, health dispensaries, housing and educational services particularly in the areas ravaged by the wars that ended the regimes of Amin and Obote.

7. Workers and public servants must receive salaries that would allow them to meet the cost of living and corruption, particularly in the public service must stop.

8. Land has to be returned to thousands of people displaced by mistaken development projects and land seizures. For example, the Karamojong nomads are to be settled by providing adequate water and living conditions.
9. Cooperation with other African countries, particularly its neighbors is required, in order to create larger markets and a more rational use of resources. Uganda should also defend democratic and human rights of African people against dictators who suppressed them.

10. Emphasis on a mixed economy, which combines both capitalist and socialist methods with small businesses in the hands of private entrepreneurs, with import-export licensing, monetary policy, ownership of heavy industry, and construction of schools and hospitals under the control of the state.

Therefore, the government emphasized Universal Primary Education (UPE) because there are more returns on investment in primary education in terms of poverty reduction and improving the lives of the rural poor population in higher education. The above position is supported by Bloom, Canning, and Chan (2006), who reported that there are more returns on investment in primary and secondary education in terms of poverty reduction than in tertiary education.

The second document that was produced to carry on the vision and mission of the NRM government was the 1995 Constitution of the Republic of Uganda (The Constitution of the Republic of Uganda, 1995). The promulgation of the new constitution took place in 1995 after Idi Amin retracted the 1962 constitution in 1971. The educational policies in the new constitution were:

1. The State shall promote free and compulsory basic education (UPE);

2. The State shall take appropriate measures to afford every citizen equal opportunity to attain the highest educational standard possible. (The Constitution of the Republic of Uganda, 1995)
The third important document was the Poverty Eradication Action Plan (PEAP, 1997) and until recently, it was Uganda's national planning framework. It emphasized Universal Primary Education (UPE), Universal Secondary Education (USE), vocational education, technology and research (Kassami, 2002).

The Education Sector Strategic Plan (ESSP) 2004-2015 became the new national planning framework. The present education system in Uganda is a product of the pre-colonial, colonial and immediate post-independent educational systems.

*The Peace Agreement between Tito Okello and Yoweri Museveni*

In July 1985, the Obote II regime was overthrown by a military coup and Obote fled to exile in Zambia. General Tito Okello formed a government and opened negotiations with Museveni's insurgent forces and pledged to improve respect for human rights, end tribal rivalry, and conduct free and fair elections. Negotiations between the Okello's government and the NRA were conducted in Nairobi under the mediation of the former Kenyan President Daniel Arap Moi. Although a peace agreement was signed in December 1985, the NRA continued fighting, and seized Kampala in January 1986, forcing Okello's forces to flee north into Sudan.

While the NRM government was trying to restore normalcy in Uganda during the early days of its rule, the defeated armies of Obote and Tito Okello who fled to Southern Sudan re-grouped to form a rebel group called the Uganda People's Defense Army (UPDA). This group gave birth to the current Lord's Resistance Army (LRA), the rebel group that has been fighting with the Ugandan government for over 20 years since 1986.
For the last two decades, Northern Uganda has been under siege of insurgency and armed conflict.

This study focused on government policies that were implemented to mitigate the impact of armed conflict on education and human resource development in Northern Uganda. Since education is considered the engine of social transformation and economic development, the presence or absence of schools is an indicator of social economic development or underdevelopment. This is reflected in the number of people who live below the poverty line.

The root cause of the conflict in Northern Uganda was the unequal access to quality educational. The northern region has persistently lagged behind in development due to lack of qualified human resource personnel and a lack of access to quality education that resulted from the many wars and armed conflicts during the past 35 years. According to Jalobo (2007), there has been an intentional educational apartheid against the northern region since the colonial era. Therefore, the genesis of the armed conflict in Northern Uganda is an element of historical marginalization resulting from the educational disparity. However, quality education for all can provide the solution.

In addition, the militarization of politics where the under educated population have been used by political opposition as mercenaries to overthrow subsequent governments in Uganda since the first regime of Milton Obote was cited as a major cause of the armed conflict in Northern Uganda by Omara-Otunnu (2008).
Recent Patterns of Educational Services by Region

There has been an overall increase in enrollment in both primary and secondary schools since 2000. The greatest enrollment has been at the primary level after the introduction of Universal Primary Education (UPE) in 1997, and most recently, there has been a remarkable increase in enrollment in the secondary sector following the introduction of Universal Secondary Education (USE) in 2006.

Uganda is composed of 4 regions and 80 districts. In spite of the general increase in enrollment at all levels, Northern Uganda still lags behind all the other regions. For example, in 2005 the total enrollment of student at secondary school level stood at 728,393 and this was distributed regionally as follows: 14.4% from the northern region; 23.2% from the western region; 29.8% from the central region; and 34.3%, the highest enrollment, from the eastern region (Lubanga, 2005).

Patterns of Enrollment, Examination Scores and Admission to Higher Education

Although the percentage gap between the regions has narrowed, it does not reflect an increase in the quality of education as reflected by the performance on the national examinations. Over time, the percentage enrollment for the central region has decreased, while the performance on national examination has been the highest. Students from the central region qualifying for government sponsorship, especially in science-based courses at tertiary level and other government institutions of higher learning, dominate nationally.

For instance, in 2007, among the top 100 best performing schools in the ordinary level examination, 57% of the schools were from the central region, 21% from the eastern
region, 19% from the western region, and 3% from the northern region. Among the bottom 100 worst performing schools, 36% were from the northern region, 28% and 27% were from the eastern and the western regions, respectively, and 9% of the worst performing schools were from the central region.

Consequently, in the academic year 2007-2008, the government sponsorship scheme was dominated by schools in the central region. Of the 13 schools that dominated the list of government sponsorship, 11 were from the central region, 1 from the eastern region, 1 from the western region, and none from the northern region.

Under the new government sponsorship scheme, Makerere University admits 1,800 government-sponsored students: Kyambogo, 700; Mbarara University of Science and Technology, 300; Gulu University, 200; and Busitema, 100. The remaining 800 are admitted under the district-quota system, introduced two years ago, under which each of the 80 districts is allocated 10 slots.

Schools within the central region dominate the admission list. For example, in the academic year 2008-2009 the central region sent a total of 1,110 (47.4%) students to Makerere University under the government sponsorship scheme, followed by the western region with 620 (26.5%) students, the eastern region with 407 (17.4%), and Northern Uganda sent a total of 204 (8.7%).

According to Zziwa (2008), the universities have admitted 2,608 students, mainly to science courses, constituting 75% of the government sponsorships awarded on academic merit. The district quota accounts for the remaining 25%. The same schools above have also dominated admissions to public universities in other science-oriented faculties, like engineering and agriculture. Therefore, in terms of regional distribution, the
west and central regions continue to provide the highest number of government-sponsored students.

*Critical Analysis of Patterns*

The 2007-2008 list of government sponsorship students to science-based courses in medicine, engineering agriculture and science education at institutions of higher learning was analyzed for comparison purposes. It revealed a similar trend except that the percentage of students who benefited from the government sponsorship scheme from the central region was greater. The western region remained relatively constant, the eastern region increased slightly and the northern region dropped by almost half. The statistics revealed that 40% of the students who obtained government sponsorship in 2007-2008 were from the central region, 26.7% from were from the western region, 20% were from the eastern region, and 14.3% of the students were from the northern region.

Although all the districts had representation of students to the six public universities, two districts from the northern region had no students qualifying for government scholarships and another two districts had only one student each. One district in the eastern region had no students who qualified for the government sponsorship to the government institutions of higher learning (Zziwa, 2008).

The general belief that since the cause of conflict between the north and the south is rooted in the education disparity, the spatial analysis of access to higher education through government sponsorship suggests a distinct disadvantage for Northern Uganda.
The overall disparity in education especially for the northern region calls for immediate action. Even with action it could take many years for the northern region to attain the same level of educational development as the rest of Uganda.

The educational apartheid is perceived as the root cause of the armed-conflict among the Acholi ethnic group. Rehabilitation and reconstruction policies and procedures have failed in the past. There is a need for a quantum leap in educational services to attain the same level of development as the rest of the country. This, in my view, would take a concerted effort by all stakeholders including people within the northern region and the diaspora. The following discussion provides a brief overview of the socio-economic development in Uganda over the past 20 years of the National Resistance Movement government.

Geographical and Socio-Economic Attribute for Uganda

Geographical and Demographic Context

Uganda is a landlocked country bordered by Sudan to the north, the Democratic Republic of Congo to the west, Rwanda and Tanzania to the south, and Kenya to the east. The population is 25,827,000, and is ranked as 40th among 193 nations of the world with 2% of the population over 65 years of age and 51% of the population under the age of 15 years (UN, 2003). Approximately 14% of the population lives in urban areas and 86% live in rural areas.

The climate and vegetation are tropical and the climate is generally rainy with two dry seasons from the months of December to February and June to August. It has vast rich
farmland and a small semi-arid area in the northeast that is less suitable for farming. The vegetation is diverse due to the different microclimates and the rest of the country is mostly a plateau, with numerous small hills and valleys and extensive savanna plains. The total surface area is 236,040 sq. km. of which 36,330 sq. km. is comprised of swamps or water, and 199,710 sq. km. is arable land.

Winston Churchill referred to Uganda as “truly the Pearl of Africa” (Winston, 1908) because of its beautiful scenery, climate, and the warm and friendly people. Today one would describe Uganda as the “Bloody Pearl of Africa” because of the bloodshed, suffering, and misery due to the numerous wars and armed conflicts.

Despite the challenges that Uganda has faced during the past two decades, it has had one of the most successful economies in Africa, with high growth rate and low inflation. The growth domestic product (GDP) was estimated at 5.8 % in the 2004-2005 and in the 2007-2008 fiscal year, real GDP growth was estimated at 6.5% (Suruma, 2007). This strong economic performance was attributed to the prudent macroeconomic management and bold structural reforms, which were supported by large inflows of overseas development assistance.

However, unsettling political developments in 2006 have led a number of international donors to reassess their support to the Ugandan government. For example, the shift in support to the National Resistance Movement government was a concern because of the “third term” phenomena where the standing government changed the constitution and removed term limits so that President Museveni could run for office for the third time and perhaps for life. This was viewed by most donors as undemocratic, dictatorial, and oppressive, especially when it led to the opposition leader Dr. Besigye
being sent to prison prior to the 2006 election. In addition there were widespread incidences of corruption and mismanagement of donor funds by government officials. The most serious of them all was the embezzlement of the global funds for vaccines and the fight against HIV/AIDS and tuberculosis (Businge, 2008).

The above challenges notwithstanding, the government has made important progress towards liberalising markets and reducing poverty. Under President Yoweri Museveni’s leadership, Uganda has been progressive in moving towards deregulation, and privatisation of companies and decentralisation of government, with the goal of enabling the private sector to become the major engine of growth.

The government has implemented reforms such as improved infrastructure and has assisted small and medium enterprises through microfinance and funding from private sector foundation. These economic reforms along with efforts to boost education and health services under the Poverty Eradication Action Plan (PEAP) have been rewarded with sharply falling poverty rates, increased life expectancy, higher literacy rates and better health services, including a substantial reduction in HIV/AIDS infection rates (Kassami, 2002). Remarkable achievement was made in HIV/AIDS care with over 70,000 people receiving free Antiretroviral Treatment (ART) including over 1,000 children (Ssendaula, 2006).

There have been several developments in the politico-economic dynamics of the education system in Uganda. One example is the liberalization policies leading to the introduction of privately sponsored students in public universities starting with Makerere University in the early 1990s. Others include the proliferation of privately owned primary and secondary schools as well as universities and tertiary institutions. The introduction of
UPE in 1997 and USE in 2007 and the increase in government-sponsored students at public universities are key developments in the education sector (Bitamazire, 2007). Furthermore, there has been an increase in the number of public universities from one in 1986 to five at present. All these developments in education in Uganda have produced greater access for the population.

Critics of the government, however, claim that the Ugandan success story is exaggerated and inaccurate because it does not take into account the data from the northern region affected by over 20 years of armed conflict. There are also contradictions on the actual figure for the average real growth domestic product (GDP) rates. While the projection for the growth rate was set at 7%, Uganda was one of the African countries whose economic growth did not improve in 2006, according to a new report by the World Bank. The 2007 edition of the Economic Report on Africa compiled by the United Nations Economic Commission for Africa, showed that Uganda’s GDP remained at 5.0% behind Kenya’s 5.5% and Tanzania’s 5.8%.

Although Uganda had the best performing economy in the sub-region in the previous two years, the East African region experienced a slight decline in growth rate in 2006 according to the report (World Bank, 2006). Only four countries had an average real GDP growth rate of 7% or more during 1998-2006. It appears that few African countries are positioned to achieve the Millennium Development Goals (MDGs) by 2015 (Toure & Ssendaula, 2003).

The Ugandan economy grew by 6.2% in 2007, which is less than the sub-Saharan Africa average of 6.7%, and skewed upwards by oil producing countries such as Angola and Nigeria. Uganda’s economy exceeded the average growth rate of 5.2% among non-oil
producing countries despite underperforming in the critical areas of exports, domestic savings and revenue collections as a percentage of GDP. Only eight African countries surpassed the 7% growth rate in 2006, the level at which UN reports poverty is reduced (World Bank, 2006). Despite the global financial crisis, in 2008 the IMF mission team noted that Uganda’s economy continued to perform strongly in 2007-2008. Economic growth reached 7.5% (at market prices), fuelled by a robust expansion of the construction and services sector (Oketch, 2008).

According to the Ministry of Energy and National Resources Report (Migereko, 2008), Uganda will be joining the oil producing countries by the year 2010. The export-led growth model that Uganda is pursuing presupposes that in developing countries local demand is low because of widespread poverty. Therefore, there is the need to find markets abroad. Thus, political stability and science and technology education are key factors in producing the skilled workforce to increase economic productivity. Faced with corruption and mismanagement in many other countries, will the exploration of oil in Uganda bring economic growth or will it instead fuel more conflict in the region like the case of Nigeria in the 1960s and Iraq in the 2000s? These are concerns that government must address. The prospect of oil resources has already led to clashes between Ugandan military forces and the Congolese army.

Focus on Social Policy

Since this is a critical policy analysis study, I shall briefly discuss some perspectives on social policy and in particular national and educational policies as they
relate to policy formulation process in Uganda. Social policy is diverse and defined as a philosophical concept, a product, process or a framework for action.

As discussed by Gil (1992), social policies and the process of policy development usually emerge from socially constructed rules in pursuit of survival by a specific group of people within a particular environment. He argues that the drive to satisfy innate and socially shaped needs seem to be the motivating source for policy development. Thus, social policies and social orders emerge through trial and errors and choices of people struggling to master survival in the context of real and perceived scarcities and dangers. In this study, social policy is defined as proposed programs and plan of action by the government (Gil, 1992).

Social policies vary in content, scope and objectives. It is important to specify the policy provisions before a given social policy is analyzed. For example, if a policy is already enacted into law, then administrative regulations and judicial decisions concerning it would need to be taken into consideration along with the intent and interpretation of the law. However, if a proposed policy rather than an enacted policy is to be analyzed, then it would be important to consider the operational aspects or implementation strategies of the proposed policy than the judiciary.

The educational policy in Uganda was drafted and implemented during the 19th century and has since undergone several revisions. The research adopted the evaluative policy analysis procedure where the outcome of the policy was judged based on the stated objectives in the policy documents (Patton & Sawicki, 1986).
*Policy Formulation Process in Uganda*

The policy making process in Uganda refers to the stages a policy proposal goes through before enacted into laws or implemented as governmental programs. The five stages that the policy goes through include: (a) Policy Formulation, (b) Policy Analysis, (c) Policy Approval, (d) Policy Implementation, and (e) Policy Evaluation and Audit. To serve the interest of all Ugandans, the NRM government introduced a decentralized system of governance to take services closer to the people. Under the decentralized system of government, the country is divided into smaller administrative units such as villages, parishes, sub-counties, counties, and the districts. The smallest administrative unit is the Local Council One (LC1), which is composed of 10 households. The administrative structure begins at the village levels and groups of villages form a parish. A number of parishes form sub-counties, which further constitute a county. A specific number of counties form a district depending on the population and sizes of the counties. At each level of the hierarchy, is a council that is headed by the chairperson, and composed of the deputy chairperson, secretary, treasurer, a woman representative, and committee members.

*Decentralization System*

Figure 1 represents the structure of the decentralized system of governance and policy formulation process in Uganda. Ideally, government policies follow a bottom-top approach whereby policies originate from the “grass roots,” and debated at the lowest
level first before sending the resolution or proposal to the District Council for further debates.

Figure 1. Decentralized System of Governance in Uganda

Once the council members pass the resolutions at the lower levels, the Chairperson sends the proposal to the district council for further debate. Based on inputs
from the sub-county councils, a district development plan is produced which is sent to the central government or the aligned ministries. The aligned ministries then extract the proposals that are relevant to them for ministerial policy statements.

Based on the policy proposals from the district councils, each ministry prepares policy statements. The executive arm of government further discusses those proposals. The executive comprises the Prime Minister and the Cabinet Ministers and the chair is the Vice President. After the executive approve the ministerial proposals, they become part of the overall government policy. The minister in charge of a particular policy can then present it to Parliament in the form of either a White Paper or a bill.

The speaker then refers the policy proposals to the appropriate Parliamentary committees for scrutiny. The committee is required to access the impact of the policy on national development and the affected groups of individuals. The policy approval stage follows after the committee writes a report and presents it to a plenary session of the Parliament for further discussion and adoption as law.

After Parliament approves the new policy, if the President is satisfied with the provisions, he assents to it before it becomes the Law of the Republic of Uganda. Thereafter, the government agencies undertake the implementation of the policy by securing the funds and preparing the program of action. During the implementation stage of government programs, Parliament plays an oversight role. It is the duty of the Parliamentary committees to monitor the performance of the ministry implementing the policy. Parliamentarians may make field trips to access the impact of the policy at the local level, especially in the legislators’ districts and the affected constituents.
The final stage of the policy formulation process is policy evaluation and audit. This occurs following the implementation. The relevant committees of Parliament summon the ministers and their permanent secretaries to account for the success or failures of the government programs and provide account for the expenditure of funds. If the committee is satisfied with the performance it is likely that they shall easily approve future budgets. If there are queries, the committee chair summons the minister in charge to explain the anomalies. In the event that there was gross, mismanagement of funds and abuse of office, the committee may defer the case to the Speaker of Parliament who would institute a select committee to investigate the issue and report to Parliament before taking punitive action. The education policy formulation follows the same procedure, although government has implemented some policies in the past without following the protocol. This was either because they were politically motivated or due to urgency.

The Educational System in Uganda

The current educational system in Uganda consists of seven years of primary education, followed by four years of lower secondary or ordinary level (O’ level), two years of advanced secondary (A’ level), and 3 to 5 years at universities or other institutions of higher learning (Figure 2).

At the end of the primary education cycle, the age 12 (Primary Seven) candidates take the Primary Leaving Examination (PLE) in four core subjects; English, Mathematics, Science and Social Studies. After a successful completion of the primary level education, the students receive the Primary Leaving Examination (PLE) Certificate and may qualify to continue in one of the following: secondary level, technical and farm school, or
polytechnic. Those who follow the secondary school route take the Ordinary (O’ level) examination at the end of the four years leading to the Uganda Ordinary Certificate of Education (UCE). Those students who successfully complete the O’ level and pass the examination, have an option of proceeding to high school, also known as advanced (A’ level) secondary which takes a minimum of two years leading to the award of the Uganda Advanced Certificate of Education (UACE).

Students who complete the O’ Level Examination with a pass have several options other their A’ level study. They may enroll in lower-level tertiary colleges or institutions for various courses lasting between one to three years. These are mainly vocational, including technical and engineering trainings, primary school teacher training,
secretarial and business studies, nursing, tailoring, computer training, and theological studies, as well as numerous others.

For those students who continued to advance level and successfully pass the A' Level Examination, they can either enroll in universities or other institutions of higher learning to obtain advanced diplomas and degrees. Students with a polytechnics education can proceed to technical institutes to pursue diploma courses and can later join the university to pursue degree courses. The post-O' Level options enable students to enter the university. The minimum requirement for enrolling in the university is holding an advanced level certificate or its equivalent with principal passes in at least two major subjects.

The equivalent options are two mainly a two-year training program leading to a certificate such as primary school teacher training, followed by two-year ordinary diploma. The diploma qualifies a student for entry to the university.

The second option is obtaining a certificate available by sitting and the mature age entry examination administered by Makerere University. This option is for those who are of advanced age, and are interested in pursuing university degree, but dropped out at the O' or A' levels. School leavers withdraw for many reason, among them lack of school fees, marriage and childbearing, pursuit of other short courses as entry to the job market. After passing the mature age entry examination they are eligible to pursue a university degree.

The next section of this study reviews the education policy and explores the commitment in providing quality education for all school-age children including the educationally disadvantaged, the marginalized and those affected by conflicts.
Overview of Education Policy

When the NRM government took power in 1986, they appointed an education review commission to study the educational problems in Uganda and make recommendations following the collapse of the education system during the past regimes. The first education policy of the NRM government was contained in the Education Review Commission Report, which formed the basis of the Government White Paper on Education, commonly known as the Kajubi Report (1989).

The Government White Paper (Government of Uganda, 1992) was the document that spearheaded reforms in the Ugandan educational system. Its major provision was the "vocationalization" of education with emphasis placed on technical education. Unfortunately, almost 20 years later government has not achieved much in the implementation of this policy, which it is now outdated and needs revamping because it no longer meets Uganda’s plans to become a modern and industrialized country.

According to the strategic framework for national long-term development, also referred to as Vision, 2025, Uganda’s education system has undergone tremendous changes since 1979 following the Idi Amin regime that had resulted in the collapse of most institutions. This was confirmed by the Parliamentary Research Service Report (Bulemezi, 2003) which stated that in the 1980s emphasis was mainly on the rehabilitation and expansion of schools albeit without proper planning. Consequently, between 1980 and 1985, education accounted for just 15.6% of recurrent government expenditure.
The current Uganda educational policy is contained in the Poverty Eradication Action Plan (PEAP), which is Uganda’s national planning framework, first drafted in 1997 and then revised in 2000. The main objective behind the PEAP was to transform Uganda into a middle-income country by strengthening the agricultural and manufacturing sector. It provided the overall goals for government policy and programs and established the principles to guide investment plans and the management of the economy. Through annual and medium term planning and budget processes, the principles translate into specific spending and action. The PEAP is a framework with detailed plans of actions.

The framework includes economic management, production, security, governance, and human development. The roles of vocational education, research, and technology development are contained within the economic empowerment component and education policy is within human development. The implementation of the human development is contained in the Education Strategic Investment Plan (ESIP) 1998-2003. The plan committed the government to allocate at least one quarter of public expenditure to the education sector. The broad objective of ESIP was to improve quality of life through human resource development. The chief priority of government under this provision is to ensure that all children enroll in primary education under the UPE program.

Since 1986 when the NRM government took power, the government expenditure on education has risen steadily. By the year 2000, education expenditure accounted for a third of the total government discretionary recurrent budget. Moreover, between 1986 and 1996, primary enrollment rose from 2.2 million to 3.1 million students. However, with
the introduction of UPE in 1997, enrollment jumped to 5.3 million by 1999, and by 2006, the number had risen to 7.4 million. The introduction of UPE is the single most important success story in the history of the education sector in Uganda in the last decade. According to the World Bank (2004) report, Uganda was the most successful country in the region in implementing Universal Primary Education.

*Education Sector Strategic Plan (ESSP) 2004-2015*

The formulation and implemented of the education policy in Uganda was contained in the Education Strategic Investment Plan (ESIP) of 1998-2003. Currently the implementation of education and sports policies are within the Education Sector Strategic Plan (ESSP) 2004-2015. Under the new education sector strategic plan (ESSP), the broad priority objectives of the Ministry of Education and Sports (MoES) are:

1. To make significant and permanent gains in achieving equitable access to education at all levels.

2. To improve the quality of education at the primary level.

3. To enhance the management of education and sports services delivery at all level particularly in the districts.

4. To develop the capacity of the ministry to plan programs and manage an investment portfolio that will effectively and efficiently support the education and sports sector. (Bitamazire, 2004)

The vision of the Ministry of Education and Sports is to provide quality education and sports for all. The mission is to provide for, support, guide, coordinate, regulate, and promote quality education and sports to all persons in Uganda for national integration, individual and national development. The mission reflects the objectives of the Education Strategic Investment Plan (ESIP) framework, which are consistent with the Constitution
of the Republic of Uganda (1995), the Local Governments Act (1997), Uganda Vision 2025, Poverty Eradication Action Plan (PEAP), the Movement 15 point program, the President’s Manifesto, the Millennium Development Goals (MDGs), and Education for All (EFA) goals.

The mission of the education policy in Uganda is to meet the goals imbedded in the above documents and plans of action. Therefore, in order to achieve the goals and targets set above, the ministry is committed to key areas listed below:

1. Formulation, monitoring, analyzing, and reviewing national educational policies.
2. Planning for and provision of technical guidance and co-ordination of the sector’s development.
3. Setting of national education standards and examination and the inspection of schools and enforcement of national regulations.
4. Monitoring and evaluating of education and sports programs and mentoring of school management teams and administrators.

Consequently, the mandate of the Ministry of Education and Sports (MoES) is to provide technical, material and financial support for the delivery of education services and to provide the mechanisms and framework for admission of students to educational institutions. It is also responsible for offering Career Guidance and Counseling to educational institutions and coordinating training programs for teachers and tutors. The ministry of education also collects and processes relevant and timely information and data for educational planning. In addition, it administers national and international scholarships and bursaries (Bitamazire, 2007).
The Ministry of Education and Sports is responsible for the formulation and review of the ESIP and the developing of an input and outcome-based annual Sector Medium Term Budget Framework. The MoES in conjunction with the Uganda National Examination Board (UNEB) is responsible for the setting, administering, and marking of the national examinations. It is also the duty of the Ministry of Education to appoint and sensitize the Boards of Governors of educational institutions as well as to appoint, deploy, promote, and discipline teachers in Post-Primary Institutions.

Equitable Access to Education

To achieve the above objectives of equitable access to education, the government planned to ensure universal and equitable access to quality basic education for all children up to 8 years through the Early Childhood Care and Development Program (ECCDP) and the Universal Primary Education (UPE) for children from 6 years to 12 years. Furthermore, the government planned to provide education for disadvantaged children from 6 years to 18 years and further implement the Universal Secondary Education beginning 2007. Therefore, according to Bitamazire (2007), to ensure the attainment of equitable access to education at all levels, government is committed to various initiatives and actions listed below:

1. Construction of primary schools, seed schools (Day Secondary Schools per sub-county) and granting aid for community schools.

2. The expansion of training facilities in Primary Teacher’s Colleges (PTCs) through the construction and/or rehabilitation of infrastructure.
3. The promotion of sanitation and hygiene in schools especially for female students as part of “Child Friendly Basic Education and Learning” program.

4. The introduction of Pupil Identification Numbers (PIN) in order to enforce the maintenance of attendance registers in primary schools.

5. Expansion and or construction of facilities in educational institutions for science and vocational education and adequately furnishing them.

6. Instituting initiatives that enhance inclusive education, gender parity and special focus on children in disadvantaged areas.

7. Upholding the bursary scheme for needy, but bright children, and children whose parents live in Internally Displaced People’s Camps (IDPs) such as in Northern Uganda.

8. Initiating the school feeding program for children in selected areas.

9. Implementing the District Quota admission system, for special needs students and those with special talents, and administering Carnegie Scholarships to support the bright, but poor girls in higher education.

Other initiatives and policies that have been put in place to improve the quality of education and training include the reviewing of the primary curriculum and implementing a thematic curriculum. The thematic curriculum emphasizes the use of local languages as a medium of instruction in lower primary. This will enhance learning of competencies in literacy, arithmetic and life skills.

Government plans further emphasized the promotion of competencies and enhanced the relevance and quality of education by teaching and learning of subjects relevant to the economic and technological development of the country. Most important is
the effort to improve the teaching and learning of science and technology which government considers essential to the development of the Ugandan economy. This has resulted in the construction of laboratories and libraries, and improved supplies of science equipment in schools and colleges. Included also was the provision for education to mitigate the occurrence and the impact of HIV/AIDS. Government planned to improve quality of education through the capacity building of education managers. It was planned to provide training to improve knowledge, skills, and attitudes necessary to efficiently plan, monitor, account, and perform managerial functions in the districts.

Efficiency Indicators

The efficiency indicators emphasized in the ESSP (2004-2015) to assess the overall educational performance include Pupil Teacher Ratio (PTR), Pupil Classroom Ratio (PCR) and Pupil Textbook Ratio (PBR). The efficiency indicators give a picture of what the teaching and learning environment looks like in terms of overcrowding, pupil teacher contact, and availability of teaching and learning materials. For all the indicators, a lower value implies a better learning condition.

Between 2000 and 2006, there was a steady reduction in the efficiency indicators, which included an improvement in the efficiency of the education system. A lower value, for example, indicates that teachers have sufficient time to check class work and homework and give guidance and support to each student. The national PTR target for the year 2006 was 1:46.

According to a survey by the Ministry of Education Sports, the actual value for government and private schools were 1:52 and 1:48, respectively (Byamugisha, 2006).
On the other hand, the PTR at district levels varied from 1:28 to 1:91. Kampala in the central region had the lowest value of 1:28. Kitgum and Pader districts in the northern region had the highest PTR value of 1:91. The high PTR was probably due to the insecurity caused by the prolonged rebel activity that deterred teachers from accepting appointments in those northern districts, as well as the pattern of less spending on education in the region.

In 2006, the PCR ranged from 1:28 to 1:156. Government schools had an average of 1:78 and private schools an average of 1:72. Kampala had a PCR of 1:55 and Wakiso 1:50, respectively. They were among the 50 districts with PCR less than 100. However, the districts from northern and eastern Uganda had PCRs ranging between 102 and 156.

Consequences of Policies: The Status of Education

Primary Education

Enrollment in Government Primary Schools

The enrollment pattern in government primary schools is presented in Figure 3. Between 1986 and 1996, the enrollment at primary school was constant and fluctuated within a narrow margin. With the introduction of UPE in 1997, enrollment increased sharply. It continued to increase steadily between 1997 and 2003 when it reached the peak (Figure 3). A slight decline in enrollment occurred between 2004 and 2005, but in 2006, there was another slight increase in enrollment from the prior year.

Although enrollment at the primary level has increased in the past 20 years, the impact on secondary school education is less. For example, of 2,159,850 pupils who
enrolled in primary one (grade 1) in 1997, approximately (33%) reached primary six (grade 6) by 2002 and only (22%) reached primary seven (grade 7) in 2003. It was reported that of the 1999 cohort in primary one, only (30%) reached primary seven in 2005 (Appendix D). Although the number of pupils reaching primary seven had slightly increased, 70% of the pupils who started primary one did not complete the primary grades.

Table 1 presents the attrition rates between primary one and two (P1-P2) and primary six and seven (P6-P7). There was a big drop of more than 30% between primary one and primary two enrollments for all the years; moreover, out of a total of 1,637,651 pupils who enrolled in primary one in 2000, only (35%) of the cohorts reached P6 by 2005 and only (28%) reached P7 in 2006. The average attrition rate for primary one and
two was 32% for the period from 1997 when UPE was introduced implying that only (68%) of the pupils did progress from primary one to primary two every year. There was a remarkable improvement between the years 1998 to 2001 and less than 30% attrition rates were registered. Unfortunately, this trend reversed thereafter and therefore negating the success and benefits of the UPE program.

Table 1

*Attrition Rates Between P1-P2*

<table>
<thead>
<tr>
<th>School Year</th>
<th>P1-P2</th>
<th>P6-P7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997-1998</td>
<td>39%</td>
<td>12%</td>
</tr>
<tr>
<td>1998-1999</td>
<td>27%</td>
<td>16%</td>
</tr>
<tr>
<td>1999-2000</td>
<td>28%</td>
<td>25%</td>
</tr>
<tr>
<td>2000-2001</td>
<td>29%</td>
<td>25%</td>
</tr>
<tr>
<td>2001-2002</td>
<td>29%</td>
<td>25%</td>
</tr>
<tr>
<td>2002-2003</td>
<td>33%</td>
<td>31%</td>
</tr>
<tr>
<td>2003-2004</td>
<td>38%</td>
<td>38%</td>
</tr>
<tr>
<td>2004-2005</td>
<td>36%</td>
<td>36%</td>
</tr>
<tr>
<td>2005-2006</td>
<td>33%</td>
<td>40%</td>
</tr>
</tbody>
</table>

Periodical Average 32% 28%

(Source: EMIS, Ministry of Education and Sports, 2008)

The introduction of UPE in 1997 skyrocketed enrollment in primary schools. Ugandan schools enrolled 3,068,625 pupils in primary education in 1996 and the number
increased to 7,633,314 by 2003. The increase in primary school enrollment led to an increase in secondary school enrollment and with introduction of Universal Secondary Education in 2007. The government policy on primary and secondary education was founded on the philosophy of education for all; the idea is to have all school age pupils and students in school. The policy has also attracted individuals older than the expected age bracket who had enrolled into either primary or secondary schools to benefit from the free education.

*Primary Leaving Examination (PLE)*

The primary leaving examination is one of the key transition points at the end of the primary school. The Statistical Abstracts (2001-2005) and PLE registration of candidates by UNEB indicate approximately 20% of a cohort of children who started grade 1, completed grade 7. What is most striking is that although the number of PLE candidates was to increase, a decreasing trend occurred instead (Table 2).

A revealing comparison that reflects on the UPE policy is the number of primary seven pupils and the number of Primary Leaving Examination (PLE) registered candidates from 2001 to 2005. The 1999 UPE cohort sat for Primary Leaving Examination in 2005. The total number of candidates for 2005 was 410,363. The following year the total number of candidates was 392,173. These figures indicate a decline in the number of students taking the PLE examination and a problem for the UPE policy.

There is evidence that the number of pupils who enrolled in P7 is sometimes different from those who register for PLE, which means that every year at least 34,000
Table 2

*P7 Enrolled Pupils and PLE Candidates 2001-2005*

<table>
<thead>
<tr>
<th>Year</th>
<th>P7 Pupils</th>
<th>Registered Candidates</th>
<th>Loss Between P7 Candidacy</th>
<th>Candidates Sitting Exams</th>
<th>Number of Students Passing</th>
<th>Percentage of Students Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>428,004</td>
<td>349,413</td>
<td>78,591</td>
<td>326,771</td>
<td>257,595</td>
<td>79</td>
</tr>
<tr>
<td>2002</td>
<td>460,109</td>
<td>408,547</td>
<td>51,562</td>
<td>365,891</td>
<td>273,379</td>
<td>75</td>
</tr>
<tr>
<td>2003</td>
<td>485,703</td>
<td>405,998</td>
<td>79,705</td>
<td>373,664</td>
<td>301,546</td>
<td>81</td>
</tr>
<tr>
<td>2004</td>
<td>473,482</td>
<td>433,518</td>
<td>39,964</td>
<td>401,936</td>
<td>320,543</td>
<td>80</td>
</tr>
<tr>
<td>2005</td>
<td>479,951</td>
<td>445,615</td>
<td>34,336</td>
<td>410,363</td>
<td>347,833</td>
<td>85</td>
</tr>
</tbody>
</table>

(Sources: EMIS, 2006 and UNEB, 2006)

pupils do not sit for the national examination and yet they are in P7. This is partly the consequence of the forced repetition policy where the schools do not allow students with poor performance to take the examination because it would make the scores for the schools low.

In 2005, for example, out of 445,615 candidates who registered, only 410,363 (92%) sat for PLE. This means that 35,252 (8%) of the registered pupils did not sit for the examination and were forced to repeat the class. Furthermore, in 2006 an estimated 484,554 pupils enrolled in P7 but only 434,580 registered for the PLE. This meant that 49,974 (10%) of the pupils did not register for the PLE in 2006. The data reveal that there is a failure in the education system, especially from P6 to P7 and among pupils who are already enrolled in P7. The UNEB (2006) results indicate that (80%) of the pupils who sit
for the PLE passed. That means they obtained aggregates scores from 4 to 32 according to UNEB standards and may enroll at the secondary school level.

Students' performance in the PLE is a determinant factor for entry to secondary schools. Performances vary greatly by school and by district. Overall, urban-based elite primary schools and traditional, well-established, boarding primary schools dominate top performance. It is worth noting that most of these top performing primary schools are not UPE schools.

According to the UNEB results males generally perform better than females and there is a great deal of variation by district on the overall pass rate, ranging from 52.2% to 97.6%. School districts in large urban centers tend to perform better than students in rural districts.

According to Byamugisha (2006), although government policy assumes the automatic promotion in the school system based on competencies, promotion to the next grade level after P5 is rigorous and includes assessments of all children as they enter their final years of primary school. Some districts use school tests and mock practice examinations for the P6 pre-PLE students. Those students found to be less able academically either are made to repeat P5 and P6 or are sent to join other schools and some students drop out entirely.

The quest for the best performance in individual schools and districts has sparked off undesirable behaviors linking head teachers' competency to overall performance of his or her school's candidates on the PLE. Some head teachers have suffered demotion or transfers because of poor student performances on the PLE. Consequently, to be on the safe side, the head teachers prefer a smaller candidate class that will reflect a high
percentage of passing score. In spite of the automatic promotion policy, the repetition rate for grades 6 and 7 are high. The effects of repetition in earlier grades limit an enrollment trend that would have produced an increase in P7 student test scores.

According to the Ministry of Education the Education Management Information Systems (EMIS, 2005) performance report, the decline in primary school enrollments and low completion rates from 1997 to 2005 are due to high dropout rates.

Repetition rates and dropout rates for primary schools together explain a large percentage of the students who do not sit for the Primary Leaving Examination. Both retention and dropout rates have been relatively stable indicating that not much has been done to reduce them (Figure 4). The retention rate needs urgent attention because it has shown only a slight increase beginning 2002.


*Figure 4. Repetition and Dropout Rates for Primary Schools*
Causes of High School Dropout

According to a report by the Ministry of Education and Sports (Byamugisha, 2008), dropout occurs when a child who has been in school leaves school never to return. There are various reasons why students dropout of school. Several major reasons reported by the Ministry of Education included the child’s behavior and the nature and status of the household from which the child comes.

Others reasons range from harsh school administration towards students to lack of motivation and poor training of the teachers in the schools. The nature and behavior of the community from which the child comes, as well as the nature and behavior of the community surrounding the school is also a contributing factor in explaining school dropout rates. Long distances from school whereby the children cannot go back home for lunch and the daily commute to school, such as awakening before 6:00 a.m. and walking to school in order to arrive by 8:00 a.m. are a hindrance to attendance.

Imposition of extra fees by schools for uniforms, classroom materials, lunch fees, salaries for teachers who are not on the government payroll, and building funds also discourage parents and children, especially orphans and those from poorer families, from attending primary school.

Lack of parental support for education and negative parental attitudes towards education due to illiteracy, over drinking and pre-occupation with domestic chores and livelihood activities stopped children from attending school. Early pregnancy or early marriage especially for girls, peer pressure, tribalism, and discrimination are important factors that cause girls to dropout of school.
In some cases seasonal and geographical barriers such as swamps, flooding during rainy seasons, drought and excessive heat during dry seasons and crossing open water in island communities also discourage children from attending school. Peer ridicule, inadequate special needs facilities, and insecurity also stopped children from attending school. Chronic illness and failure to pass examinations or repetition of grades is another contributing factor to high dropout rates.

In some instances, parents remove children from school to work in the fields or at home, pursue outside employment to earn cash income, to help care for the ill or to look after siblings when parents are away. In conflict-affected areas, some orphaned children have become family heads so they have to stay at home to take care of their younger siblings.

The most serious reason for dropping out of school in the northern region has been the armed conflicts where children have been injured, killed, and abducted. Those who return to school, particularly girls, find it difficult to integrate because they are often over-aged and traumatized. Sadly, some of the girls return infected with HIV/AIDS because they served as sex slaves to the rebel commanders and militias. Some of the girls returned with HIV/AIDS infected babies. Those young people have lost hope, suffered from helplessness, and do not comprehend the value in education.

*Causes of High Repetition Rates*

Results from the Education Annual School Census and a study on the attendance patterns and causes of leaving primary school in Uganda, by Lubanga (2002) revealed that the major causes of grade repetition were: (a) rampant absenteeism, (b) poor
academic performance, (c) lack of scholastic materials, and (d) lack of interest in and value for education. Some children repeat classes because they are slow learners, and often over-burdened with domestic work. Others students display delinquent behavior, and may be less interested in education due to adolescent sexual distractions. Some children have bias for or against subjects such as mathematics and English; others may be disadvantaged due to physical and mental disabilities, including hearing and visual impairments.

To enhance the students' completion of primary level education, the government instituted school management teams that comprise of members of the community. The intent is to increase their participation in the management of schools. Government is implementing school feeding programs in areas that have chronic food shortage in the belief it will enhance attendance and retention of children in schools. Teachers attend in-service training in handling and management of large classes and schools are more child-friendly, especially for girls and those with special needs. Parents and communities are encouraged to supervise pupils' school and homework. The government is also promoting guidance and counseling in schools to help children make good career choices for the future.

Secondary Education

Enrollment Trends

As a result of the massive enrollment into primary schools, enrollment in secondary schools has increased. The introduction of UPE coincided with increased
private entrepreneurial interest in the education sector, especially secondary school education. Government policy of market liberalization and privatization increased interest in secondary education as a business enterprise (Ssendaula, 2006).

The tremendous increase in secondary school enrollment fueled by the private sector investment in education has not solved the dropout problem. Rates remain high and are most prominent following the ordinary level examinations. Enrollment trends in secondary schools by gender between 1986 and 1992 were constant with a slight drop in 1993 (Figure 5) and constant between 1994 and 1999. However, in 2000 there was a sharp increase in enrollment, and thereafter, there was a steady increase until 2006. The gender imbalance in enrollment has continued to be in favor of boys. However, with the introduction of Universal Secondary Education (USE), it is expected that enrollment at secondary school level will increase tremendously and possibly the gender gap will soon be closed.

In 2007, after the introduction of USE, total enrollment was 814,087 with a gender imbalance of 55.5% in favor of boys (Lubanga, 2006). As in the primary schools, there is higher population of students at the earlier grades at secondary level than at the higher grades. Dropout rates are also higher in the lower grades. It was observed that in 2006, 29% of the students dropped out in secondary year one, another 29% dropped out in secondary year two, 24% dropped out in secondary year three, 19% in secondary year four, 3% in senior year five, and 3% in senior year six. Most of the 62% of the students who dropped out of secondary schools did so from lack of school fees. Other causes were pregnancies and early marriages which accounted for 11% of the dropouts (Lubanga, 2006).
Figure 5. Enrollment in Secondary Schools from S1-S6: 1986-2006

University Education

An educated society is the engine for national development. University education is the source for the much-needed intellectual capital that brings about economic transformation and modernization. University education is vital for economic empowerment of the individuals, the family, and the society. Attainment of a university degree, however, has always been the luxury of the privileged.

The Ugandan government has invested resources to boost university education because of the role it will play in bringing about rural transformation and modernization. This quest for modernization is well highlighted in the Presidential Manifesto (Museveni,
2005). While government emphasizes access to higher education especially in science-based courses, not all students who qualify actually gain entrance into the university owing to limited scholarships and lack of funds for private sponsorship. Therefore, it was important to review how students access and graduate from universities and higher institutions of learning at the various levels especially in professional science courses.

University Admissions

The number of students eligible for admission to universities in Uganda based on an A' Level qualification grew from 7,947 in 1983 to 22,021 in 2001 (Figure 6). The proportion that entered university grew in absolute from 3,361 to 15,645, and proportionally from 42.3% of the eligible candidates in 1983 to 71% in 2001. The bulk of this growth came from private admissions, which rose from 1000 students in 1993-1994 to 11,643 in 2001 (Academic Registrar, Makerere University, 2008).

Enrollment into University Education

Since the inception of Makerere University every student receives full funding from government. Nevertheless, with the introduction of the private sponsorship programs in 1991, the number of privately sponsored students overtook that of government-sponsored students.

Admission to Makerere University between 1983 and 2001 for both government and private sponsorships began to increase in 1994 (Figure 7). Unlike government sponsorship that remained static throughout the years, students on the private sponsorship
programs continued to rise through 1998. In contrast, government funding for students did not change over the years.

![Graph](image)

(Source: Joint Admission Board, Ministry of Education and Sports, 2007)

*Figure 6. A Level Candidate’s Versa Eligibility for Admission to University*  

![Graph](image)

(Source: Academic Registrar, Makerere University, 2006)

*Figure 7. Admissions to Makerere University*
The introduction of private sponsorship programs at Makerere University seemed a very important intervention, but it presented several logistical challenges. As the numbers of students grew from slightly over 2000 admitted annually in the early 1990s to over 15,000 admitted in the year 2001, logistical inadequacies of lecture space and students to lecturer ratios increased. The ever-increasing demand for university education in Uganda meant that Makerere University had to satisfy the expectation of the public yet the institution was not restructuring its capacity to accommodate the demands.

In order to cope with increasing student enrollment and assure quality control, Makerere University decentralized planning to departmental units with substantial autonomy in securing lecture space and recruiting part-time lecturers. Unfortunately, many of the measures that the university undertook were crisis driven, ad-hoc, short-term and lacked a systematic, long-term framework.

The problems of congestion in lecture rooms and understaffing at the university continued unabated (Lebeau, 2008). The semi-autonomous status of the university academic units created more problems as different faculties, institutes, and schools scrambled for and fought over attracting privately sponsored students to their units because the financial resources were more substantial than those from government sponsored students.

At the macro level of policy, one of the strategies adopted by the government to reduce the pressure on Makerere University was the creation of three new public Universities, beginning with Kyambogo University. Kyambogo incorporated several tertiary institutions, including the Institute of Teachers’ Education and Uganda National Polytechnic. Kyambogo University is earmarked for vocational and technical training. In
addition to Kyambogo, there were two other science and technology universities established and they are Gulu University in Northern Uganda and Busitema University in eastern Uganda.

As the increase in number of students enrolled at Makerere University presented an institutional crisis, the government founded Mbarara University of Science and Technology (MUST) in Western Uganda in the 1989. In terms of regional balance in the distribution of universities, the government made sure each region had at least one university. The biggest challenge, however, was the fairness in admission of students in these five government universities under the government sponsorship scheme.

*University Graduations*

Between 1995 and 2001 the number of students awarded diplomas from Makerere University was stable (Figure 8). The number increased following academic years 2001 and 2002 and by 2005, the number nearly doubled. This was probably due to the introduction of private sponsorship programs and the increased access to A' Level by students from the increasing number of secondary schools.

The trend for completion of diplomas by female students also changed (Figure 8). More females were gaining entrance into Makerere University and graduating. The gender gap narrowed beginning 2001. For example, during the academic years 2003 and 2004, there were approximately equal numbers of male and females graduating with diplomas at Makerere University.
The number of female students graduating between 1995 and 2000 academic years was less than males but between 2001 and 2005, the proportion of females to males was improved. The gender gap remains an issue despite the various initiatives and policies, such as the affirmative extra 1.5 points for poor but needy girls and the Carnegie Scholarships that were introduced to increase access to university for disadvantaged girls (Kasente, 2003; Muhwezi, 2003).

The graduate education record at Makerere is quite different from the undergraduate diploma where the number of students who graduated with post-graduate diplomas and master’s degree between 1996 and 2005 were relatively constant until 2002 (Figures 8 and 9). During that period, more students graduated with diplomas than with master’s degrees. Beginning with 2003 there was an increase in the number of students
graduating with master’s degrees as compared to the prior years. While the numbers of female students graduating at both the diploma and master’s degree levels has increased, they continue to receive fewer advanced degrees.

(Source: Academic Registrar, Makerere University, 2006)

*Figure 9. Postgraduate Diplomas and Master’s Graduates, Makerere University*

The number of males and females graduating with Ph.D. at Makerere University over the past 10 years has steadily increased. However, fewer females graduate with PhDs compared to the males. The increase in the number of Ph.D. graduates at Makerere University may be the result of a minimum of a Ph.D. requirement for faculty hire. Those who had not completed higher degrees were encouraged by staff development program to pursue a Ph.D. This initiative increased the number of Ph.D. holders at the Makerere University (Figure 10).
Although the number of females graduating with a Ph.D. has increased, the number is still low. In order to have a significant impact on human resource development in the country, a greater proportion of women will need to earn the highest degrees. Women are responsible for family commitments and may lack support from spouses. Male-female roles may be affected by educational attainment and result in conflicts in the family.

The State of Science Education in Uganda

Uganda considers science and technology as the backbone of economic and social development. The government, through the Ministry of Education and Sports, gives priority to science teaching at the various levels of the educational system. Currently, there is no national science education policy or implementation framework. Therefore,
investment and implementation of science education programs at primary, secondary, and tertiary levels over the last 20 years have been ad hoc and centered mainly on political statements made by President Museveni and the Ministry of Education and Sports officials.

The Mission of the current ruling National Resistance Movement (NRM) is to:

Transform Uganda from a poor peasant society into a modern, industrial, united and prosperous skilled working and middle class society... to: Apply science and technology in all aspects of development for the transformation of society; undertake exploitation of natural resources for the good of the people and to preserve, protect and manage the environment to ensure sustainable development. (Museveni, 2005)

According to Muhumuza, Daly, Farley, and Crawford (2005), few science degree programs exist at the tertiary level and enrollments in basic science-based courses are minimal. The secondary-level science education is constrained by lack of laboratories and equipment, obsolete curriculum, and inadequate supply of trained science teachers. The primary curriculum was last revised 10 years ago but the secondary science curriculum is 20 years old and needs revision. These conditions, along with disincentives built into the pre-university examination and admissions process have led to widespread “science avoidance” mentality among students (Muhumuza et al., 2005).

The Uganda National Examination Board (UNEB) and the National Assessment and Progress in Education (NAPE) examination (UNEB & NAPE, 2000), reported that between 2000 and 2005, performance in science and social science at the primary level deteriorated drastically and the scores in science decreased from 35% to 27% proficient during the period students passed from primary grade three to six.
The current state of science education in Uganda and especially in Northern Uganda is appalling even though the Uganda government considers Science, Technology and Information Communications as key ingredients for the development and modernization of the economy.

In an attempt to boost science education, the government announced that effective 2005 school year, all science subjects were to become compulsory for secondary students and that science students would receive 75% of all government scholarships to universities and other tertiary education institutions (Bitamazire, 2005).

Unfortunately, students from Northern Uganda will not benefit from government scholarships or other incentives in education because of the negative impact of the armed conflict between the government and the Lord’s Resistance Army (LRA).

Science Education Policy in Uganda

Background

The White Paper on Education (Government of Uganda, 1992) concurred with the Education Policy Review Commission (Kajubi, 1989) and its analysis of the problems confronting education in Uganda. The Commission reported that the curricula, both in primary and secondary schools, did not adequately meet the social and economic needs of the country. Schools were not adequately equipping individuals to become productive and self-reliant and higher education had become isolated from the socio-economic realities of life in Uganda.
The government endorsed national education goals and objectives that would create national wealth. Education was to promote scientific, technical and cultural knowledge and the skills and attitudes required for national development. The building of an integrated, self-sustaining and independent national economy was the major concern. Tied to the above requirement was the desire on the part of government to ensure that education and training had real and tangible impacts on the lives of Ugandans and their families.

Graduates of the education system at all levels were to be able to live productively, earn an income, be competitive on an international scale and contribute to sustainable economic development. From this vision, the government arrived at a clear plan to enhance education and training in those fields directly related to the social and economic development of the country. This has translated into various interventions and initiatives at several educational levels.

Since Uganda is largely an agricultural economy, the government’s priority was to modernize agriculture and encourage farmers to engage in large-scale mechanized farming to increase productivity as compared to the traditional subsistence farming. The Plan for Modernization of Agriculture (PMA) and the National Agricultural Advisory Development (NAAD) were launched to spearhead agricultural productivity and promote processing of agricultural products as a means to increase their values for export abroad (Kassami, 2002).

The overall aim of the science education program in Uganda was to propel the country towards industrialization and modernization. Uganda will achieve the above aims only through investing in a scientific and technical workforce. The problem is that
Uganda does not have a viable science education policy per se. The purported science policies are derived from the White Paper on Education (Government of Uganda, 1992) under the section of "Technical and Vocational Education" and the Kajubi (1989) report which proposed the integration of academic learning and productivity at all levels of Uganda's general education.

The White Paper on Education (Government of Uganda, 1992) provide for a policy for developing a firm national technological and technical base. It emphasizes the need to strengthen the teaching of mathematics and physics in the technical institutes. This will enable graduates of these institutions to pursue ordinary diplomas in technical colleges. Furthermore, the White Paper urged the government to deal with the challenges posed by rapid scientific and technological changes. This will require adequate skilled workforce higher agricultural productivity, diversification of the economy and industrialization of the production system.

The aims and objectives of technical and vocational education are to stimulate intellectual and technical growth of students as productive members of the community. Uganda needs artisans, technicians and other skilled workforce members to satisfy the demands of industry, agriculture and commerce in the future.

The Science Education Program in Uganda

Primary Science Education Mission

The aims and objectives of primary science education in Uganda are:

(a) acquisition of science and technology related knowledge, skills, and attitudes;
(b) promoting understanding of and appreciation for the protection and utilization of the natural environment using scientific and technological knowledge and skills; and 
(c) acquiring a variety of practical skills necessary for living.

Curricula in Science Education

Government established the National Curriculum Development Centre as a corporate body by an Act of Parliament (NCDC, 2000). The Act bestows upon the Centre the mandate to develop curriculum and instructional materials as well as offering a broad spectrum of associated services.

The current primary education curriculum was revised in 1997 and the Teachers' Guides to the Uganda Primary School Curriculum were developed in 1999 and 2001. The core subjects in the primary curriculum are English, mathematics, integrated science, and social studies. Recently the NCDC added two languages in addition to English (Mother Tongue and Kiswahili), religious education, primary art and technology, music, dance and drama, physical education, business entrepreneurship education, and agriculture.

Assessment of Education Learning

At every educational level, the students take a national examination for selection to the next educational level. The Uganda National Examinations Board (UNEB) is the main primary level and post-primary level examinations body. It conducts regular national assessments of student performance. The main assessments are the Primary Leaving Examination (PLE) and the surveys carried out by the National Assessment and Progress in Education (NAPE) examination, which target primary grade levels three and
six (P1 and P6). The PLE result is also a selection criterion to determine if a school pupil should advance to secondary level education. NAPE focuses on monitoring the performance of a system or sub-system as reflected by the proficiency levels of the pupils. Its assessments focus on English, science, mathematics and social studies.

Educational Standard

The Education Standards Agency (ESA) conducted the first National Inspection Program (NIP) in 2002-2003. The main observations were: (a) lack of variety in teaching methods and overuse of teacher-centered methods, (b) lack of use of teaching/learning aids, and (c) little involvement of students in practical problem solving applications and higher order thinking skills. Teaching depended on memorization at an estimated rate of 70% as opposed to 30% for student-centered approaches (Muhumuza et al., 2005). Stakeholders and key informants attributed poor teaching practices to lack of mastery of the science curriculum content by teachers who prefer to teach only the four subjects examinable by UNEB as opposed to the full curriculum.

Teaching Material

It is the responsibility of government to procure textbooks for both students and teachers. Most textbook are produced and published locally in accordance with the recommendation and guidelines of the National Curriculum Development Centre to ensure quality (NDCD, 2000). Teaching materials are more available at the upper end of primary level compared to early primary grades. The quality of teaching materials is the same in all schools but inadequate in the rural and conflict-affected schools. Student to
textbook ratio in science classes is 5:7 in lower primary and 1:1 at upper primary level (NDCD, 2000). The consequence of textbook shortages has been the over reliance on memorization of facts since most of the examination questions are obtained directly from the textbooks.

**Teacher Preparation**

Primary teachers are trained either through pre-service training in the Primary Teacher Colleges (PTCs) or in-service training organized during the school holidays. During the pre-service training, candidates are required to have an O’ level Certificate. Criteria for the O’ level are at least an equivalent of C grade in English, a pass in mathematics, and four other passes in any other subjects. The pre-service training lasts for two years after which the trained teachers are sent for a one-month school practice training before they are posted to schools as qualified classroom teachers. The in-service training lasts three years and involves teacher professional development while on the job.

**Secondary Science Education**

Secondary education coverage is expanding in Uganda, putting pressure on already stretched budgets. The official age cohort for secondary school is 13-16 years for O’ level and 17-19 years for A-level. However, the delay by parents in sending children to primary schools is passed on to the secondary education such that the upper limits of the age cohort can be extended by two years. Unlike the case of primary education, there was a continuous decline in enrollment rates during the 1990-1992 across the different levels with the rate declining faster for females (Kasente, 2003; Muhwezi, 2003). With
the exception of 1993, enrollment in secondary schools increased rising from 151,029 in 1993 to 593,303 in 2003.

The enrollment at secondary level increased to 667,385 after the introduction of policy of Universal Secondary Education 2007 (Bitamazire, 2007). Unfortunately, transition rates from primary to secondary school have continued to be low. High secondary dropout rates have combined to produce low overall enrollment. Moreover, dropout rates have been higher in the rural areas for females, especially in the non-government aided schools.

**Science Curricula**

The secondary science curriculum is comprised of physics, chemistry, biology, agriculture, and mathematics. Officially, the curriculum needs revision every five years, but there is evidence that there has been no revision of the secondary science curriculum over the last 20 years (Muhumuza et al., 2005). The O’ level science curriculum currently in use was introduced in 1983. Consequently, teachers have resorted to using the UNEB guidelines, which is the examination-based syllabus to guide their teaching resulting into examination-driven teaching as opposed to a broader teaching based on the entire curriculum. Inevitably, the teaching is tailored toward passing examinations. This practice leads to teachers not finishing even the narrowly focused UNEB syllabus. This scenario accounts for the 30-40% student-centered learning and 60-70% of the memorization or rote learning that takes place in the secondary schools.

Students in secondary schools simply read to pass examinations and not to understand concepts and acquire new knowledge and skills. Unfortunately, the curriculum
is over loaded such that students in the lower secondary school level study 14 to 17 subjects. In the upper secondary level, the students study 8 to 11 subjects (Black et al., 1998).

Moreover, in an attempt to further boost science education the government announced that effective with the 2005 school year, all science subjects must be compulsory at the secondary school level. This puts a greater burden on the students who are already enrolled in too many subjects and are intellectually anxious about the science subjects. Admissions to A’ level are based on performance in the best eight subjects on the O’ level national examinations, which must include the compulsory science subjects. This requirement and the policy of compulsory science put students under pressure to take more than eight subjects to improve on their chances of passing at least a minimum of eight subjects. Success at A’ level is necessary for entry to the universities and higher institutions of learning. Unfortunately, the policy of compulsory science has caused more problems than it has solved. Making science compulsory and forcing children to learn science cannot solve the problem of poor performance and poor quality of science teaching because some schools lack science facilities as well as highly trained science teachers. In fact, the policy could instead lead to resentment and science avoidance.

Uganda needs students who are intellectually active, innovative, and creative and are critical thinkers. Although most students believe that science is hard, perhaps the teachers make science difficult for them because of the non-motivating way they teach the subjects. Therefore, it is either the teachers or the training they received that is responsible for the lack of interest in science subjects that is observed among most students especially females in the secondary schools (Mulemwa, 2005).
Assessment of Learning

Assessment of students’ learning is based on national examinations taken at the end of senior four and senior six. Success on the examination results in the awarding of the Uganda Certificate of Education (UCE) for O’ level and the Uganda Advanced Certificate of Education (UACE) for A’ level. According to UCE results for the year 2000, successful performance as measured by the percentage of the students, passing O’ level is particularly low for mathematics, rated at 47.5%, compared to physics 71%, chemistry 54%, and biology 64%. Similarly, there were fewer students obtaining Distinction One and Two on the examination in sciences compared to the humanities and social sciences (UNEB & NAPE, 2000).

Teacher Training and Remunerations

Selection of teachers for secondary schools is based on the UACE (A’ levels) examination results as an entry-level requirement. Some teachers train for two years in National Teacher Colleges (NTCs) where they obtain a diploma, while others take a three-year course leading to a university degree. Teachers who obtain only a diploma are limited to teaching O’ level, while those with a degree can teach both O’ level and A’ level students. Whatever the level of training, every teacher specializes in three subjects: two as majors and one as a minor. In addition, teachers are trained in methodology, curriculum and school administration.

Every secondary-teacher training institution offers science subjects as part of its syllabus. Secondary school science coursework grades and examination results are used
as prerequisites to enroll at the tertiary level of education. About 30% of secondary school teachers have a degree from an institution of higher education (Muhumuza et al., 2005).

Teacher remuneration is not commensurate with the enormous work they perform. The secondary school teacher’s monthly salaries range from an equivalent of $150-$300 U.S. In some schools, under the Parents Teachers’ Association (PTA), parents contribute additional money outside the official school fees to supplement the teachers’ salaries. However, there are wide variations between the salaries of teachers in private and public schools and between urban and rural schools. This has affected the equitable distribution of science teachers nationally. Most teachers prefer the urban centers to rural schools because of the poor pay and less desirable working conditions in the rural areas (Muhumuza et al., 2005).

*Laboratories and Teaching Materials*

Many science teachers endure poor facilities and poor working conditions. In most cases, there are inadequate teaching and learning materials, poorly equipped laboratories and libraries, coupled with limited incentives for career development, which had led to some teachers abandoning the profession. Inadequate laboratories at secondary schools is the norm in Uganda and it is estimated that only 1% to 5% of all secondary schools have decent laboratories and materials (Muhumuza et al., 2005).

Although government provides funds for textbooks through grants, parents buy some of the required books. Both government and private schools levy additional fees on students to buy textbooks. Instruction materials are partly the responsibility of the parents
and partly the responsibility of government. Quite often, schools put insufficient reference copies of textbooks in the library. In practice, the purchase of laboratory equipments is by contributions from parents, since the government contributions are usually inadequate.

Unfortunately, in spite of the good intention government has in improving the quality of science teaching in schools, there is neither a framework nor adequate budgetary allocation. The programs needing science was impossible to attain because government directed it expenditure towards the military operations and the conflict in Northern Uganda in the past two decades.

Uganda needs evidence-based science education policy and practice to improve the quality of science teaching and to provide relevant science education program for immediate rehabilitation and reconstruction of conflict and post-conflict affected areas in Uganda. This requires urgent government investment in science education reform in the key areas of school infrastructure, teacher education and re-training, curriculum redesign and modern laboratory equipment, supplies, and technologies.

There is need to update the instructional materials to make them relevant. To prepare students for competition in the global economy, Uganda needs advancement in information technology and requires modern tools for monitoring, evaluating and assessing the complex learning needs of war-traumatized children. Consequently, if the government does not pay attention to the educational needs of children in conflict areas, it shall not meet the Millennium Development Goals and the Education for All targets of 2015.
Emergency, Conflict and Post-Conflict Education

Emergency Education

During emergencies and conflict situations, the immediate response by the international agencies is to provide food, shelter, clothes, and clean water. Relief agencies do not consider the provision of education as an emergency relief program. Moreover, the displaced communities are normally composed of schoolchildren who need education and teachers, administrators and other civil servants who could provide some form of education even during such difficult times. Education during emergency, according to Sommers (1998), can provide a sense of normalcy and science education can provide the scientific and technical knowledge and skills that would be required for survival, recovery and reconstruction during and after the crisis situations. Therefore, education and in particular science education could form part of emergency relief program together with food, shelter, and clothing, and clean water during emergencies and conflicts situations.

The impact of armed conflict on children and the benefits of education was recognized by Machel (1996), the United Nations Secretary-General’s expert on this subject and a former Minister for Education in Mozambique, in her report to the 51st session of the United Nation General Assembly as stated below:

Education is vital during armed conflicts, offering a sense of community and stability for children and for the whole community. Education gives shape and structure to children’s lives. When everything around is chaos, schools can be a haven of security that is vital to the well-being of war-affected children and their communities. (Machel, 1996)

Ten years after Machel’s report, the provision of education in conflict situation has either been completely neglected by some international agencies or given a very low
priority in humanitarian responses to emergencies. Furthermore, at the 60th Session of UN General Assembly, the former President of the UN lamented that:

Children cannot wait for conflict to end before we begin to address their educational needs. It is shameful that, in 2006, there are still 115 million children around the world who are denied their right to primary education. It is even more disturbing that one-third of these children are being kept out of school because of the effects of conflict. Without education and without protection, they are being denied both their childhood and hope for the future. (Eliasson & Al-Khalifa, 2006)

Planning for education during conflict situation might seem at first sight illogical. Bensalah (2002) argued that planning for education in situations of emergency and crisis should be a priority in all national and regional programs if the Millennium Development Goals (MDGs) and the “Education for All” target adopted by the World Education Forum in Dakar 2000 are to be met (UNESCO, 2000).

Bensalah (2002) argued that the provision of education is both a right and a basic need and is central to the overall framework of the MDGs, because emergencies caused by chronic crises and natural disasters are major constraints to the achievement of “Education for All” by 2015 target. Therefore, the provision of education during emergencies and conflicts can no longer be considered only as a post-emergency or conflict developmental program, but needs to constitute an emergency relief program during humanitarian crisis situations (Bensalah, 2002).

Although the term emergency has a negative and alarming connotation in ordinary life because it is associated with “life and death” situations, the term emergency education as used during humanitarian crisis situations implies that education is a “life saving” intervention just as the provision of food, shelter, clothing, and clean water. Unfortunately, this definition is not yet accepted by all international relief agencies
because education during humanitarian crisis is still viewed by most international relief agencies as a developmental program that does not require emergency response (Sommers, 1998). Arguments are that education is a long-term and life-long developmental investment that can only be possible when situations are calm and peaceful.

However, on a positive note, some international organizations such as Save the Children, UNICEF, and UNESCO have begun to appreciate the need to provide education both during and after emergency and conflict situations. Save the Children (2002) observed that during times of conflict, education programs provided security and a sense of normalcy to children and that for children in war-torn countries, schooling was an essential psychological intervention. The UNESCO (2003) report stated that a strong educational system helps countries during conflict to establish foundations upon which post-conflict governments can be constructed. Smith (2003) observed that education is an integral part of humanitarian responses to emergencies. Education can be a “life-saving” and “life-sustaining” activity that instills hope, dignity, and a sense of purpose for the future.

The current debate on the provision of education as a relief program during emergency and conflict situations, and the challenge of meeting the MDGs targets, resulted in the establishment of the Interagency Network for Education in Emergencies (INEE) in 2000. The role of INEE is to formulate guidelines and policies for education during emergencies and co-ordinate activities (Bensalah, 2002). In response to the MDG challenge, the Inter-agency co-operation developed the “Teacher Emergency Package” (TEP) also referred to as “school-in-a-box” to support education in emergency situation
(UNESCO, 1994). The TEP Kit contains all the supplies for a teacher and a class of 40 or 50 students. UNESCO also designed a “Program of Education for Emergencies and Reconstruction” (PEER) and has put together an Education Peace Pack (UNESCO, 1999). Similarly, UNICEF developed the concepts of “Safe Places” for children and mothers and “child friendly” primary school class skit with supplies for life skills and coping skills education (UNICEF, 2002).

Since education for emergency and conflict situations are not peculiar to developing countries alone and the fact that conflicts and disasters (natural and man-made) are bound to happen, governments, international, and local communities must be prepared to respond to such situations by putting in place proactive policies that can adequately address these crisis situations whenever they arise. Drawing from previous humanitarian crisis one could ask, how governments, administrators, teachers, students, and the local communities were prepared to respond to the disaster situations caused by Hurricane Katrina in New Orleans and the tsunami in Indonesia in 2005. The current challenge of war in Iraq raises the question of how to protect schools and how to prepare and empowered teachers to provide relevant education during this period of war and its aftermath of personal and social trauma. Another concern is how teachers in public schools in the United State are prepared to meet the unique educational and psychosocial needs of refugees, immigrants, and asylum seekers currently in their schools.

The above questions may sound “far-fetched” and perhaps irrelevant for now, but they “cry-out” for proactive emergency-prepared and conflict-prepared policies. They require educational policies that consider education as “an emergency relief or a conflict-resolution tool” that could provide the relevant knowledge and skills for recovery,
rehabilitation and reconstruction of the individuals, the environment and the society as a whole after a humanitarian crisis has ended.
CHAPTER II

REVIEW OF LITERATURE

Emergency, Conflict and Post-Conflict Education

This chapter describes literature that is relevant to the purpose of this research study. This chapter is divided into two main parts: (1) education in emergency and conflict situations, and (2) science education programs and global trends. The first part is further divided into four subsections: (a) benefit of education during emergency and conflict situations, (b) emergency education models, (c) the role of teachers and community during emergency and conflict situations, and (d) the role of International Agencies and Non-Governmental Organizations (NGOs).

The second part is subdivided into four major sections: (a) overview of science education program, (b) global trends in science education, (c) comparative analysis of science education program in selected countries, and (d) new trends in science education.

Since empirical studies on education in emergency and conflict are few, the review mainly reports from international agencies working in humanitarian crises.

UNESCO (2003) reported that armed conflict affected an estimated 30 countries, and 80% of the regional conflicts are in Africa and Asia. It further stated that destruction of educational infrastructure represented one of the greatest developmental setbacks for countries in conflict zones because during armed conflicts, government resources are diverted for military purposes instead of social services like education and healthcare.
According to Smith (2003), conflict is an aspect of human relations. It is often the prelude to debate and resolution and ultimately progress towards formal cessation of conflicts. He argued that while violence should be avoided, if possible, in many situations a level of conflict may be an inevitable part of social change. He further argued that if conflict is perceived as transformation, and education is also a transforming process, then the two processes are related and interact at all levels and stages. This implies that education during conflicts is a necessity and should be treated as part of relief aid (Smith, 2003).

*Benefit of Education During Emergency and Conflict*

According to a Save the Children report by Eliasson and Al-Khalifa (2006), a well-designed education program can protect children cognitively, psychologically, socially, and physically as well as promoting conflict resolution, tolerance, human rights, and citizenship. The report indicated that preliminary results from a study in Nepal found that children who had received quality education in schools supported by Save the Children during crisis had lower levels of stress and had higher levels of learning than children had in other schools. It was asserted that children who were kept in school as the situation moved from crisis to stability were more likely to play a constructive role in rebuilding communities and keeping their countries from dropping back into conflict. This assertion, however, would need to be confirmed with further long-term studies.

Education during emergencies was also supported by Sinclair (2001), who stated that in conflict and post-conflict situations, schools can be a refuge and offer a degree of normality in an otherwise chaotic world. He further argued that the provision of quality
education could help protect children from physical harm, exploitation and violence, and from abuses related to forced displacement. Schools and other places of learning can provide psychological support and healing for internally displaced persons (IDPs) and education can restore a sense of structure and organization; transmit survival messages and life skills, which can contribute to the social and economic development of the displaced community. This is especially important when displaced populations return home, because they would take the knowledge, skills and values acquired while in the displacement camps back with them to rebuild their lives.

A study by Pirisi (2001) demonstrated that psychosocial interventions in educational settings dramatically improved the lives and educational potential of children affected by wars. This was observed in an educational program in Sierra Leone where children showed a 70% improvement in concentration at school after four weeks of a school-based program that integrated educational and emotional needs, using storytelling, drawing, drama, writing, music, and games. Pirisi also highlighted the significance of intervening as early as possible in a traumatized child's life, because it enhances the chances of their recovery from trauma associated with conflict, displacement, and loss of family and community support.

Thus providing education during the emergency or acute phase of conflict could help to establish a long-term framework that can be implemented in post-conflict educational systems because it would increase the human capital of the returned displaced community and the conflict-affected population, enabling them to be productive during and after conflict and contribute more fully to national reconciliation and reconstruction. Education can also act both as a conflict prevention and reconciliation measure, and can
act as a bridge from emergency to development leading to reconstruction in a post-conflict situation to restore confidence and hope for the war-affected populations.

_Emergency, Conflict, and Post-Conflict Education Models_

There are a number of emergency education models developed in the recent past to mitigate the effects of a humanitarian crisis. Moreover, governments are somewhat better prepared to handle humanitarian crises.

Sommers (2002) reported that there was a simplified emergency education model that is achieving growing acceptance especially among emergency educators and non-governmental organizations (NGOs) and UN agencies. The model addresses the challenge of establishing an education system when surrounded by chaotic situations. This usually applied in refugee camps and at times in IDP camp settings. The Framework for Education Programs in Emergencies consists of three phases. Phase I is safe spaces and recreational activities, phase II is non-formal education, and phase III is the formal education. While this model looks reasonable, in the researchers view it falls short of meeting the objectives of emergency educational needs during and after conflict because phases are very complex. The "phaseological" approach presupposes that all the children would be of the same age and level and can go through the "above phases," which may not be the case. Therefore, it is necessary to re-design the strategy to make it more age-specific and tailor-made to meet the various education needs of the different age groups. After a careful needs and trauma assessment such a phase models may be judged appropriate and adopted.
Other international organizations that have produced educational models for emergency situations include the Inter-Agency Co-operation, which developed the “Teacher Emergency Package” (TEP) also referred to as “school in a box” (UNESCO, 1994). The TEP contains all the supplies for a teacher and a class of 40 or 50 students. UNESCO’s Program of Education for Emergencies and Reconstruction (PEER) has put together an Education Peace Pack (UNESCO, 2006) and UNICEF has developed the concepts of “Safe Places” for children and mothers and “child friendly” primary school class with supplies in kits for life skills and coping skills education (UNICEF, 2002). While these models may serve the purpose of a rapid response, the main challenge is that the materials are procured from outside the countries where they are used making them more expensive and in addition this may pose storage and delivery problems. Local or regional procurement or assembling of these kits would benefit both the schools and the local producers and ensure continuity of the educational materials even after the emergency is over.

Local participation in conflict and post-conflict education or people-driven interventions recommended because they may work better and have a more positive impact than programs conceived and executed by outside experts. Examples of such local initiative include the mobile education system in Darfur in Western Sudan as cited by Sherwin and Browne (2005). Another example of a local initiative is the Healing Classroom Initiative (HCL) for “night commuters” in Northern Uganda as reported by Strecker (2005). Night commuters refer to children who walk 15 to 30 kilometers from the villages’ everyday to sleep on the verandahs of shops in the towns of Gulu, Pader, and Kitgum to avoid rebel abductions. The HCL developed as an action research program to
identify alternative delivery system to provide better psychological training and support for teachers and students. I hope that such initiatives shall begin to bear fruit in spite of the enormous challenges facing this war-ravaged region.

The Role of Teachers and Community

It is widely recognized that good school-community communications and cooperation result in better education program. According to Sommers (2002), in emergency and post-conflict situations, there are additional challenges that confront even experienced teachers, such as re-establishing schools, and meeting the needs of traumatized children. Often the situation is made more difficult by the absence of sufficiently trained or experienced teachers, meaning that anyone with sufficient education is asked to take up teaching for the first time under these difficult conditions. Teacher training is a vital undertaking during emergency and conflict situations. Furthermore, Smith (2003) recommends that teachers working with emergency-affected children need training to understand the effects of trauma on children. They need training in how to cope with their needs in the classroom, and how to recognize traumatized children who need referral for more specialized help. The teachers themselves often need to assess their own trauma and seek help to be in position to help their students. Unfortunately, most psychosocial and trauma programs and services are available to the students and not the teachers.

A field study by Sommers (1998) revealed that the first emergency educators during humanitarian crisis were not the international education experts, but rather members of the forced migrant communities. These local experts needed to be consulted
and supported by educational service providers during emergencies because they carry with them the experience, skills, knowledge and expertise of the educational system. This was demonstrated among the Burundian refugees in Tanzania where teachers had to recall the national curriculum from memory for use in the refugees' schools. The main challenge teachers' face during emergencies is lack of salaries and this is usually because they cannot access the government system. Community contributions to facilitate teachers have been reported among some displaced communities although governments and humanitarian agencies could do more in motivating teachers by paying them a special or hardship allowance.

**Role of International and Relief Agencies**

Education plays a vital role in nurturing future generations by enabling personal growth, which in turn contributes to economic and social development. Planning for education during conflict situations might seem at first sight illogical. Bensalah (2002) argues that planning for education in situations of emergency and crisis should become part of all national and regional planning programs. Planning is essential if the Millennium Development Goals and the “Education for All” by the year 2025 target to be met.

Accordingly, international organizations such as UNICEF, Save the Children and UNESCO have in the recent past the role of education during conflict situation to include post-conflict recovery. According to a Save the Children report (2002), the traditional response from the international community is to initiate an emergency response, focusing on emergency aid such as shelter, food, water, sanitation, and healthcare. Education is
often ignored as an emergency response and yet during times of conflict, educational programs provide security and a sense of normalcy to children. Moreover, for children in war-torn countries, school can be an essential psychological intervention and a critical step on the road to recovery. Unfortunately, it is only when signs of normality return that the international agencies start to focus on longer-term development and education as a priority and key component in helping a country return to stability.

According to UNESCO (2003) report, a strong educational system helps countries build foundations upon which post-conflict governments can be constructed. It recognized education as a lifesaving and life-sustaining activity that instills hope, dignity, and a sense of purpose for the future because well-designed programs introduce new survival skills. Teachers can conduct lessons on how to avoid land mines, prevent sexual abuses, deal with anger, and resolve interpersonal conflicts non-violently.

Science Education Programs and Global Trends

Overview of Global Science Education Program

The inclusion of science as a subject in school curriculum across the world is relatively recent, notably after the Second World War (Rosier & Keeves, 1991). By the 1980s, it was recognized that there were new demands on science teaching, thus science education needed to respond to the everyday challenge of the rapid technological advancement which science educators seemed not prepared to incorporate in the curriculum.
According to Mathews (1994), since the 1950s there have been three competing traditions in science education programs. They are: (a) the theoretical, stressing the structure of the discipline; (b) the applied, stressing the science and working of everyday things; and (c) the liberal or contextual, stressing the historical development and cultural implications of science. Notably these three competing traditions of science education curriculum still form the basis of science education programs worldwide.

Today, educators face the challenge of providing access to quality education and in particular, science and technology to all children in emergency, conflict and conflict prone environments and post-conflict situations if all nations are to meet the Millennium Development Goals (MDGs) and the Dakar Declaration of “Education for All” by the year 2015. This is a tremendous challenge that calls for concerted efforts.

Global Trends in Science Education

Learning Theories and Science Education

Behaviorists such as Thorndike (1913), Watson (1913), and Skinner (1950) viewed the process of learning as a change in behavior resulting from stimuli in the external environment. Cognitive psychologists such as Piaget (1929), Ausubel (1963), and Bruner (1966) viewed learning as being related to an internal mental process, which included insights, information processing, memory, and perception. On the other hand, humanists like Rogers (1969) viewed learning as a personal act to fulfill potential, which include both the affective and cognitive needs. Social and situational theorists such as
Bandura (1977), Lave (1988), and Salomon (1979) emphasized social interaction and viewed learning in terms of relationship between people and the environment.

Today, cognitive researchers work directly with teachers and students in testing and refining theories in real classroom situations to address questions, such as how do different settings and classroom interactions influence learning. There have been many research approaches and techniques developed over time that have resulted in theories about how people learn. Most of these research studies focused on learning with understanding, the influence of pre-existing knowledge on learning and the process of active learning. The fundamental questions about learning that have dominated research studies include:

1. What is actually involved in the process of thinking and learning both at the molecular and behavioral level?
2. What is the biochemical, neurological, and physiological process that takes place during the process of learning?
3. How do individuals develop competence?

Rosier and Keeves (1991) observed that between 1950s and mid 1980s, many countries made substantial investments in science education, but unfortunately the impacts seemed negligible. Similarly, the aim of the second International Education Achievement (IEA) study (Rosier & Keeves, 1991) was to describe and examine the science curricula at the primary and secondary school levels across 23 countries and to collect data from these countries in order to analyze science education and its outcomes.

The key areas of government investment in education identified for the IEA study were: (a) in-service training for teachers, (b) development of new curriculum,
(c) construction of new laboratories, and (d) purchase of new equipment. Although there are new demands on science teaching due to technological development, the belief is that science educators were neither responding effectively nor recognizing the need to respond to the new challenges in science teaching.

The section below examines science education globally. The world is becoming more and more connected and "flat" through the advancement in technology. Friedman (2005) suggests that the world is "flat" in the sense that globalization has leveled the competitive playing fields between industrial and emerging market countries. In his opinion, this flattening is a product of a convergence of personal computer with fiber-optic micro cable.

Learning taking place in a classroom or laboratory called the "cyber space" is an important topic in educational research (Palloff & Pratt, 2001). The advent of online courses has resulted in global classrooms where students from around the world can interact as they learn, and "My Space" and "Facebook" are internet communities where students exchange ideas and learn from one another (Cain, 2008).

The Content of Science Education

The International Science Committee identified 53 content topics within the major field of science education that included earth science, biology, chemistry, and physics. Over time the science curricula has expanded and presently there are 57 topics that constitute the core of the science curriculum worldwide (Rosier & Keeves, 1991). In addition to content objectives, science education has process objectives. The process objectives during this period included: (a) obtaining scientific information,
(b) interpreting scientific information, (c) theorizing construction, (d) theorizing utilization, (e) comprehension, (f) application of scientific knowledge, (g) personal and social objectives, and (h) philosophical aspects of science.

The 1966 process objectives for science education were later revised by Klofer (1971) and the IEA-National Science Committee in the United States. The revised process objectives formed the basis for the science education curricula globally and were based on Bloom’s taxonomy (Bloom, 1956). The process objectives include:
(a) knowledge and understanding; (b) observation; (c) measurement; (d) problem solving; (e) interpretation of data; (f) formulation of generalizations; (g) model building; (h) application of science; (i) attitude, interest, and values; and (j) limitation of science and scientific methods. The Nature of Science (NOS) was another development in theory that was assimilated by the science curricula (Schwab & Brandwein, 1964).

The other content areas added to the science curriculum included: (a) the history and philosophy of science, (b) environmental science, (c) technical and engineering science, (d) health science, (e) rural science, and (f) the nature of science. Those changes in science education program would prove to be important during and after a conflict or humanitarian crisis, such as experienced by Uganda.

*Science Education Curricula and Conflict Crisis Situations*

There is a need for dynamic science curricula in order to meet the ever-changing demands of the modern society and the challenges of providing effective and relevant science education during crises. Who determines and initiates changes, and what changes need to be made? Is it the individual science teacher; school board; or regional, local, and
central government? What role is required during each of the emergency, conflict, and post-conflict situations? These are the questions that our science education programs need to address in order to make them relevant and yet malleable to the changing needs of the local and global society.

In Uganda, textbooks and examinations influence the teaching and learning in science classrooms. The need for students to acquire knowledge and skills to function successfully in the global economy and global crisis is not a priority. Children in crisis do not have access to same resources as those in peaceful situations. Re-thinking science education programs for crises is necessary.

Under normal, peaceful situations, these are the four main domains for science education curricula:

1. The definition of the intended curriculum;
2. Time allocated for teaching the science subjects;
3. Selection of textbooks and other instructional materials;
4. Formative and summative assessment procedure used in measuring student learning and the evaluation of the effectiveness of the teaching procedures employed in the schools.

In situations of emergency, conflict, or post-conflict in order to meet the need of the prevailing situation, the intended curriculum must be re-defined. Time allocation, textbooks, instructional materials, and the assessment and evaluation procedures cannot be meaningfully and successfully implemented under the context of conflict due to the disruptions to individuals and society.
Science Education Program in Four Selected Countries

A Review of Case Studies of England and Wales, United States of America, China, and Nigeria

This section provides an overview of trends in science education programs in four countries selected from the 23 countries that participated in the IEA study between 1983 and 1984. The main aim of the study was to describe science education in the participating countries. The countries selected for this research study are United Kingdom (UK), United States of America (USA), the People’s Republic of China (PRC), and Nigeria. Each country selected had a unique relationship to the research study. The UK science education program influenced the current Uganda educational system. The USA has spearheaded a number of reforms in science education that have influenced science education reforms worldwide. The U.S. educational system greatly influenced the researcher’s view of scientific inquiry and nature of science. The People’s Republic of China (PRC) was chosen because it has an excellent record in science and technology and it has greatly influenced the global economy through job outsourcing. Nigeria is an oil rich country that has greatly excelled in educational development in past years among the African countries.

The purpose of the case studies of science education programs is to examine if the successes are directly related to their science education program or policy. Each country’s science education programs shall be examined under the nine themes outlined below: (1) Administration and Funding, (2) National Plans and Policies, (3) Aims and Objectives of Science Education, (4) Curriculum Development and Content, (5) Teacher Education,
National Science Education Programs and Content

1. Administration and Funding. In England and Wales, administration and funding of science education is the responsibility of the Secretary of State together with the local educational authorities. While in the United States of America (USA), the administration of public schools is the responsibility of each state and the local school districts. Most of the funds for public education come from taxation of properties by the local districts and the majority of funds for non-public education come from tuition fees paid by parents. The federal government helps to support special programs, such as projects for improvement of education through grants.

In the People’s Republic of China, there are three levels of educational administration. At the central government level is the State Commission of Education (formerly Ministry of Education) which is responsible for making educational policies,
developing educational plans, planning enrollment and distribution of graduates, and managing key universities. At the regional government, levels are the Provincial Departments of Education, in charge of provinces and municipalities, and the County Bureau of Education, in charge of the managements of local schools.

Nigeria is a federation of 36 states. In Nigeria, the management of schools is the responsibility of District School Boards of Management. The coordination, planning, financing, and direction of the total educational effort within each state are the responsibilities of the State Ministry, Department or Directorate of Education. The Federal Ministry of Education in Nigeria is guided by the deliberations of two important bodies: the National Council of Education (NCE) and the Joint Consultative Committee on Education (JCC). Both share the responsibility for preparing the educational development plans, taking into account the social, economic, and other needs of the society.

2. National Plans and Policies. In England and Wales, there was no overall national plan for education until 1984-1985 when the government issued a number of guidelines and policy statements. The two government White Papers issued were Teaching Quality of 1984 and Better Schools of 1985 (Keys, 1987). These two documents formed the government's educational policy replacing the earlier White Paper, The School Curriculum (1981). In the latter government directed that each school should develop their own written aims and guidance for each area of the curriculum (Keys, 1987).
The United States does not have a national educational curriculum. Federal policies are the responsibility the states for implementation. Non-governmental organizations receive federal funding to research and develop curriculum. An example is the *Scientific Literacy for all Americans: Project 2061* (Roseman, 2003). The *No Child Left Behind Act* represents national policy presented as its national goals. The No Child Left Behind Act (NCLB) of 2001 was signed into law on January 8, 2002 by President Bush. The Act represents the education reform plan and contains the most changes to the Elementary and Secondary Education Act (ESEA) since the enactment in 1965. NCLB changes the federal government’s role in K-12 education by focusing on school success as measured by student achievement.

The National Science Education Standards were designed to provide the individual states with a roadmap for achieving scientific literacy (Bybee, 1996). The challenge is the scientific substance of the literacy. Who should decide the specific knowledge and skills? Can science literacy be achieved nationwide? Those implementation issues are faced when policies and curriculum are merged in the United States.

In the People’s Republic of China, the central government has an integral part of the national program for economic and social development. Education is to serve economic reconstruction and schools need to be accessible to workers and peasants. The government runs and fosters the provision of various types of educational institutions. These include full-time schools, part-study or part-work schools, spare-time schools, with adult education and literacy programs provided also by provincial and regional governments.
The philosophy of education in Nigeria is built upon the development of the individual into a sound and effective citizen. The provision of educational opportunities for all citizens of the nation (primary, secondary, and tertiary levels) is for political socialization and the development of a national identity. This policy involves the aims and objectives of forming a national consciousness and national unity among students: (a) inculcating appropriate values and attitudes for survival; (b) educating the mind through an understanding of the surrounding world; and (c) developing both physical and mental competencies, skills, and abilities.

3. Aims and Objectives of Science Education. The government policy for science education in England and Wales is that science should have a place in the curriculum for all students of compulsory school age, whether or not they are planning to follow a career in science and technology. The main aim of science education is to prepare students for life and for employment in a technological society. Priority is given to the process of science such as observing and identifying patterns, suggesting explanations, designing experiments, communicating, problem solving, and development of manual skills. Emphasis is on content that is broad, balanced, and relevant to everyday experiences.

The goal of science education in the United States is on making all students scientifically literate. The curricula emphasize (a) academic knowledge of science and technology, (b) practice and application of science process skills, and (c) application of knowledge and skill in daily life and society.

In the PRC, the aims and objectives of science education are set out in the official syllabus for each school science subject. The overall purpose of school is to relate science
concepts to observed phenomena. Science must also serve the needs of society. In general, the aims include: (a) acquisition of laboratory skills, (b) development of competence in analyzing and solving problems, (c) cultivating scientific attitudes and interests, and (d) building up a dialectical materialistic world outlook. Dialectical materialism is the philosophy of Karl Marx (1818-1883) that views matter as the sole subject of change and all change as the product of a constant conflict between opposites arising from the internal contradictions inherent in all events, ideas, and movements (Berkerman, 1983).

The aims and objectives of science education programs in Nigeria vary with the different levels of schooling. At the primary school level, science aims at three broad goals: (a) providing intellectual growth, (b) providing the capacity for self-directed growth, and (c) promoting healthy social interaction.

At junior school level in Nigeria, the aims and objectives include:

1. Being actively involved in the learning process;
2. Developing the motivation and ability to work and think independently
3. Recalling information and experiences;
4. Devising schemes for solving problems
5. Applying previous knowledge to new situations
6. Interpreting information showing evidence of judgment and assessment
7. Communicating selectively and effectively.

The aims and objectives of science education at the senior level in Nigeria also vary with the science subjects. In biology, the emphasis is on laboratory work, field and scientific skills, and in chemistry, the emphasis is on stimulating interest in science and
the inter-relationship among the scientific discipline. A main goal is to show how chemistry can relate to everyday life. Physics aims at training students to acquire a proper understanding of basic principles and the application of physics to everyday life.

4. Curriculum Development and Content. In England and Wales, there is neither a set pattern for curriculum development nor a national curriculum for any subject. Local educational authorities issue guidelines. However, the secondary level curriculum is strongly influenced by external examination syllabi.

The United States has a decentralized school system where there is no standard method for developing science curriculum. Several approaches are employed. The National Research Council has developed National Science Education Standards (Bybee, 1996) a framework that identifies the important science content for teaching, learning and classroom assessments. The curriculum and the curriculum materials used are the responsibility of each school district. The content is comprised of elementary school science, life science, earth and space science, physical science, general or integrated science, chemistry, biology, and physics.

In the PRC, the Ministry of Education decrees the teaching program, the syllabuses and the number of required teaching hours. The curriculum content for science education is set out in the official syllabus for each school science subject. For primary education, it is the syllabus of nature and for secondary education; there are syllabuses for physics, chemistry and biology. Standard textbooks for both primary and secondary education are prepared under the supervision of the Ministry of Education.
In Nigeria, the primary school science content is based upon simple phenomena that students will encounter in everyday life, such as air, domestic and farm animals, bulbs, batteries, heat, energy and temperature, soap and alkali. How the body works and how life begins are included. At the junior secondary level, children study the relationship between themselves and living and non-living things as well as energy and the environment. At the secondary level, the students study in depth the content of agriculture, biology, chemistry, physics, and health science.

In order to improve the quality of science teaching the government established science and mathematics centers and professional development workshops to act as foci for designing of experiments and equipment. These centers also serve as meeting places for teachers and for in service training for teachers and laboratory assistance.

5. Teacher Education. The Department of Education and Science (DES) approve all teachers in the England and Wales as “qualified” after taking a recognized course of teacher training. There is no formal distinction between qualifications required for primary or secondary schools. In practice most teachers teach the grade level for which they prepared. Local authorities have the responsibility for providing in service training. Science teaching is one of the government’s priority areas for professional development.

In the United States, each of the states establishes teacher certification guidelines for teachers. Separate courses of collegiate study are prescribed for elementary school and secondary school certification. Pre-service teacher education is offered at colleges, universities and branch campuses across the nation. In service, education may be initiated by individual teachers or organized by the local school authorities. The National Science
Foundation or other professional and scholarly associations that promote professional
development of science teachers can provide In-service training.

In China, teachers of primary schools are trained for three years in the secondary
normal schools. The teachers for lower secondary schools train for two to three years in
higher teacher training schools. Teachers for upper secondary schools study for 4 years at
universities and colleges. There is an Institute of Education in each province, municipality
and autonomous region, which is responsible for the professional development of
secondary school teachers. To supplement this effort, some universities also conduct in-
service science education programs for science teachers (Shiqing, 1988).

The Nigerian government gives teacher education major priority in educational
planning as evident by the number of institutions and colleges that share this
responsibility. Professional teacher education programs are designed to prepare teachers
for proficiency in their duties and the institutions that are charged with the responsibility
of training teachers are the Grade II Teacher Colleges, Advanced Teacher Colleges,
Colleges of Education, Institutes of Education, National Teacher Institutes and Teachers
Centers (Bajah & Mordi, 1985).

6. Science Teaching. In England and Wales at the upper primary level, science
content is taught as a separate subject or as part of a broader topic such as environmental
science. At the upper and the lower secondary level science is normally taught by
specialist science teachers although science teachers may teach science subjects which are
outside their own areas of training. For example, a teacher trained in biology may be
required to teach physics or chemistry. Practical work at the lower and upper secondary
levels form a major part of the science lessons and fieldwork in biology and geography is frequently used (Keys, 1987).

In the United States, the teaching and learning practices that are common in science classrooms in both elementary and secondary school levels include inquiry-based teaching and learning, and hands-on and minds on activities. Textbooks continue to occupy a central role in science instruction. Lectures and discussions are also prominent in science classes. Library work, projects, field trips and guest speakers also supplement instruction in the United States. Computer-based learning, films and videos, slides and television have influenced science instruction at different periods in the past half century (Jacobson & Doran, 1988).

In China, more importance is attached to the role of scientific experiments in science teaching at all levels. There are many demonstrations and student experiments in the textbooks are used throughout the country. Scientific and technical work-study and extra curricula activities are emphasized and students are encouraged to take part in activities according to their interests. Field visits to factories, research institutes, museums and zoo are provided to students (Shiqing, 1988).

In Nigeria, the integrated science course at the upper primary level is essentially child-centered, activity-based, and taught through guided discovery method using basic scientific apparatus. However, in practice most teachers still concentrate on the teaching of facts mainly due to inadequate science teaching equipment (Bajah & Mordi, 1985).

7. Laboratories/Equipment and Supplies. In England and Wales, most primary schools do not have laboratories but they may have rooms or resource areas for science
teaching. Each school procures equipment and supplies depending on the available budget. Some school personnel, including teachers, make their own basic equipment for teaching and laboratory experiments (Keys, 1987).

Most of elementary schools in the United States did not have laboratory facilities at the time the IEA study was carried out (1983-1984), only 9% of the elementary sciences in Grade 4 to 6 are conducted in laboratories and special rooms (Jacobson & Doran, 1988). Science was either taught in special science rooms or science resource areas with portable science materials. There is, however, greater emphasis on laboratory work at the upper secondary school level. Similarly, each school procures their equipment and supplies depending on the availability of funds in the school budget (Jacobson & Doran, 1988).

In China, there are fewer laboratories in the primary schools and usually one laboratory for all the science subjects. However, upper secondary schools usually have separate laboratories for each of the core science subjects. An agency of the State Commission of Education is responsible for developing all equipment for science teaching in the country (Shiqing, 1988).

Laboratories are non-existent in primary schools in Nigeria. A few laboratories at the junior secondary level exist where emphasis is on integrated science. However, senior secondary schools have laboratories for chemistry, physics and biology. Science equipment and supplies in schools are usually inadequate due to large number of schools and budget constraints. The government thus encourages science educators to teach science using low cost science equipment and local supplies (Bajah & Mordi, 1985).
8. Assessment. Assessing the scientific knowledge and skills of 10-year-olds in England and Wales is not systematic, but depends on the school and the participation of the teacher. Secondary school students undergo regular assessment of their progress using objective tests set by the class teacher and by National Examinations at the A' level the Oxford and Cambridge examination have a long history in assessment of knowledge and admission to university (Keys, 1987).

In the United States, there are no national examinations administered to every student. There is the National Assessment of Educational Progress in science and that samples students’ performance in a nationally developed assessment. In addition, there are nationally norm-referenced tests such as the Iowa Test of Basic Skills developed in 1935 by the University of Iowa, College of Education and the Metropolitan Achievement Test (2000). Students can also take the American College Test (ACT). The ACT is a standardized achievement examination for college admission in the United States produced by ACT, Inc. This test was administered first in 1959 by Everett Franklin Lindquist was a competitor to the College Boards’ Scholastic Aptitude Test, now the SAT Reasoning Test but was later bought out by College Board. The Scholastic Aptitude Test (SAT, 2005) is administered by the Education Testing Services (ETS) and its purpose is to assess high school students' general educational development and their ability to complete college-level work.

The multiple-choice segments of those tests cover four skill areas: English, mathematics, reading, and science. The Writing Test is optional and measures skill in planning and writing a short essay. Each State or school districts may also administer external examinations based on their standards and grade level content expectations. In
Michigan, for example, the Michigan Educational Assessment Program (MEAP) administered by the Michigan Department of Education assesses students' proficiency in science as expected in standards. Schools and teachers additionally have the major responsibility for developing an appropriate assessment plan for their school level to assess student proficiency in science beyond what the state or national testing organizations provide.

In China, students take district or village external entrance exams at lower and upper secondary school for selection into lower and upper levels. Entrance exams for higher education are set nationally and the purpose is to select students for higher education. At the school level students' proficiency in science are measured by quizzes, tests, mid-terms and terminal examinations. The items for examinations are prepared within each school by subject teachers (Shiqing, 1988).

In Nigeria, students take both external and internal examinations. Either the State Ministries of Education or the West African Examination Council (WAEC) sets the external examinations. The purposes of these examinations are for certificates of achievement and selection to higher levels of education. Students are generally assessed using paper and pencil tests based on the memorization of facts. Increasingly there is greater attention to problem solving, creativity and scientific thinking (Bajah & Mordi, 1985).

9. Out-of-School Science. In England and Wales there is a range of out-of school science activities ranging from Science Fairs for primary students to inter-county science competition for O' level and A' level students. Although these activities may not be
linked to the curriculum, they have been observed to increase interest towards science especially for those students that are involved in the activities (Keys, 1987).

In the United States opportunities to pursue science, interests outside the classroom are widely available for both elementary and secondary school students. Most Universities, museums, planetariums, zoos, botanical gardens, and science academies sponsor programs that students can attend during weekends or vacations. There are also statewide and nationwide competitions where children report outcomes of science research projects and winners receive college scholarships. Private sector institutions also initiate programs, donate money, equipment, personnel, and facilities to nurture science interest in the talented school-age populations. Internships and mentorship are often established with laboratories and hospitals on a volunteer basis (Jacobson & Doran, 1988).

In China, the out-of school activities are provided mainly by secondary schools. Students take part in activities such as those involving radios, photography and making models (Shiqing, 1988). In Nigeria, science clubs are organized and sponsored by both schools and the government. Local and state government sometimes organizes Science quizzes. The television authorities for the country add public participation through live and taped broadcasts. These competitions begin at the local levels and the winners compete at the national level. Science fairs are also organized regularly by the Science Teacher Association of Nigeria (Bajah & Mordi, 1985).

The details of the science education program in Uganda are presented in the later chapters. To meet the ever-changing needs of the modern society, most countries are
pursuing new trends for science teaching. The next section presents an overview of new
trends in science education globally.

*New Trends in Science Education*

Current studies in psychology and brain neurophysiology (Buzan, 1976) have led
to many new and renewed theories of learning (Bransford, Brown, & Cocking, 2000).
According to Osborne and Wittrock (1985), the brain is not a passive consumer of
information but rather actively constructs its own interpretation of information and draws
inferences from them. Thus, the inquiry-based curriculum and teaching techniques have
emerged from a combination of several theories including, constructivism, and Bloom’s
taxonomy of learning, multiple intelligence and whole language. Those theories and
associated teaching strategies have formed the basis of new trends in science education
(Duit & Treagust, 2003).

The development of curriculum and instructional models are to meet the
challenges of the modern society. The new curriculum and instructional models most
specific to science education include outcome-based learning, context-based learning,
accelerated learning, technical preparation, multiple intelligence, mastery learning, co-
operative learning, thematic instruction, whole brain teaching, school to work, and youth
apprenticeship (Gray, 1992).

The researcher reviewed a number of selected learning and instructional theories
and curriculum models that could be relevant for teaching science to war-traumatized
children in emergency and conflict situations as a proposed “emergency science education
curriculum.” The curriculum and learning models that the researcher judges as relevant
Constructivism and Inquiry

Constructivist Learning. The constructivist view of learning dates back to the work of Jean Piaget and more recently to the personal construct psychology of Kelly (1955) and to the work of Pope and Keen (1981) in science education. The constructivist approach to learning has its root in the long-standing epistemology of the interpretative tradition (Weber, 1949), which has at its center the importance of meaning as constructed by individuals in their attempt to make sense of the world. Thus, according to Driver and Oldham (1986), the sense made of any event is seen to be dependent not only on the situation itself but also on the individual’s purposes and active construction of meaning. Ausbel’s (1963) theory of meaningful learning was as a forerunner in this field. He suggested that for a new piece of information or concept to be integrated or subsumed into existing cognitive structure an advance organizer into which new ideas can be transferred to the long-term memory is needed. At the core of constructivism is the belief that learners create perturbations in their thinking, this arises from their attempts to give meaning to particular experiences through the imaginative use of existing knowledge (Tobin & Tippins, 1993). One implication of this for the constructivist teacher is their “mediation” of the learning of students where the focus must be on the learner rather than the discipline.
Constructive reflection is today an important ingredient in the professional
development of teachers because it stimulates significant change in approaches to
classroom practice and the general provision of science education (Watts, Gould,
& Walsh, 1997). The purpose of this provoked reflection is to prompt teachers into
deliberating upon and modifying their approaches to many aspects of their professional
responsibilities especially in the case of their relationship with the subject disciplines of
science and their practice within their science classrooms.

According to the constructivist view discussed by Driver and Oldham (1986),
learning is a conceptual change. This implies that an individual’s knowledge is not a set
of discrete “bits,” but rather a series of structures and learning involves the development
and change of those structures. Recent research in science education show that students
develop their conceptual understanding and learn more about scientific inquiry provided
there is sufficient opportunity for and support for reflection (Hodson, 1992). Teachers
should therefore encourage students to make their own ideas explicit, present students
with events which challenge these ideas, encourage the generation of alternative
interpretive models, and provide opportunities for students to use new ideas in a range of
situations (Driver & Bell, 1986).

According to the constructivism-based teaching, students learn science
meaningfully when they activate their existing knowledge, relate it to educational
experiences and construct new knowledge in the form of conceptual models.

The major challenge to educators is to initiate meaningful changes to occur in a
learner. While the learning of scientific facts and procedure is important, the construction
of valid conceptual models is a hallmark of students’ achievement in the science subjects.
When students construct scientific models, they are making sense out of their conceptual frameworks and thus they are constructing meaning.

*Inquiry Learning.* Inquiry-based learning, constructivism and multiple-intelligence are the new trends in science education with overlaps in the learning and instructional theories and curriculum models that constitute them. Discovery learning and inquiry-based learning date back to the early days of the Greek scholar Socrates. According to Llewellyn (2002), the progressive education reformer John Dewey is one of the first American educators to stress the importance of discovery learning and inquiry. Bonnstetter (1998) underscored the importance of inquiry learning when he asserted that inquiry-learning and inquiry-oriented teachings are not new concepts in science education. What is new is the prominence that inquiry has within the National Science Educational Standards. It is a common belief among most science educators that learning through inquiry empowers students with the skills and knowledge to become independent lifelong learners. This view is also shared by Llewellyn (2002), who asserts that through finding solutions to problems, students would gain an appreciation for the discovery process (Roseman, 2003).

Inquiry is an approach to teaching that involves exploring the natural or material world beginning with questions and making discoveries in search of new knowledge. The inquiry process is driven by one’s own curiosity, wonder, interest or passion to understand an observation or solve a problem. According to Llewellyn (2002), teaching science through inquiry requires a fundamental re-examination of the relationship between the teacher and the learner, whereby the teacher becomes a facilitator or guide.
for the learner's own process of discovery and creating understanding of the world. It is necessary that teachers are prepared to teach science to the war-traumatized children by inquiry so as to facilitate scientific thinking and enhance problem-solving skills.

The proposed curriculum for war-traumatized children shall emphasize the teaching of science by an inquiry and constructivist approach. Ethno-science could be an important component of the science curriculum. The emphasis on ethno science could enable children to bring their experiences from the war into the science classroom to enhance the learning of scientific concepts and at the same time bridge the gap between home and school science. For example, while in captivity, these children learned how to identify edible leaves and roots and medicinal plants. Such experiences could enhance their ability to classify plants.

Former abductees and child soldiers learned how to make and use weapons while they were in the bush. Using a constructivist approach to teaching and learning to elicit ideas they acquired while in the bush will enhance their ability to learn faster about machines. Moreover, this could enhance their understanding of concepts in physics such as projectiles, momentum, velocity and acceleration that are closely related to their past experiences. This approach can only be beneficial if the teachers are trained on how to draw prior knowledge into the science education context.

A preliminary result of a study by Perrier and Nsengiyumva (2003) in Rwanda indicated that constructivist, hands-on, inquiry-based, science activities may have a curative potential that could be valuable in a psychological assistance program for child victims of violence and war. The preliminary findings showed that a sound communication developed among all students. This included the young adults who at the
beginning were not enthusiastic as the children. Furthermore, some children who were originally isolated, silent and sad displayed a high degree of happiness during the activities, and an overall increasing positive change in attitude. In addition, they applied principles of experimental science. This suggested that a joint development of science literacy and happiness may be an interesting approach, both in education and therapy (Perrier & Nsengiyumva, 2003).

Curriculum Theories and Models

Curriculum can be defined as a product, process, practice or a social enterprise. Curriculum literally means “a course” and it refers to all the learning, which is planned and guided by the school (Kelly, 1983, 1999). To some educators, curriculum is synonymous with a course syllabus.

This section briefly explores the four perspectives on curriculum as discussed by Smith (1996, 2000).

1. Curriculum as a product assumes that knowledge is like a manufactured good. A series of steps are required to obtain the final product and for this reason curriculum must be designed through diagnosis of needs, formulation of objectives, selection and organization of content, selection and organization of experience and the determination of what should be evaluated. The main problem with the product model of curriculum approach is that it is not learner-centered and because of the pre-specified plan or program. It tends to direct attention to teaching and not learning. Thus, the focus is on how information is given and not how information is constructed.
2. Curriculum as a "process" emphasizes the interaction of teachers, students and knowledge and it include what actually happens in the classroom. This approach emphasizes the development of meaning and thinking at its core. However, its major weakness is that it treats learners as subjects and does not take into consideration prior knowledge that learners bring into the learning situation. The success of this model lies in the quality of the teachers who, according to Radford (1998), are expected to be well-versed and experienced in pedagogical content knowledge.

3. Curriculum as practice focuses on application of knowledge to everyday life. It emphasizes how knowledge translates into practice, this approach pays more attention to the ways in which individuals, and groups create understanding and how practice as well as meaning influence human well-being.

4. Curriculum as a social enterprise is a curriculum for social change. This type of curriculum emphasizes the role learning environment and social interactions in influencing learning.

The last two perspectives are the most appropriate for post-conflict Uganda because they emphasize the application of knowledge to everyday life and view curriculum as tool for social change.

*The Nature and Definition of Science Curriculum.* Whitefield (1971) defined science curriculum as "All experiences for learning that are planned and organized by the school and that are related to the teaching of science." These experiences are considered in terms of two interrelated aspects. One is the content area included in the science
curriculum. The second is the process of science, which is considered to influence the methods of teaching, and learning that occurs in the science classroom.

The science curriculum is more than the knowledge associated with the science content taught in schools. The curriculum includes cognition, psychomotor skills, and hands-on experiences, attitudes, intents, and values associated with science. Some researchers contend that there are three levels of curriculum defined as: (a) the intended, (b) the implemented, and (c) the achieved (Rosier & Keeves, 1991).

**Outcome-Based Learning.** In outcome-based learning, all school programs and instructional efforts are designed to produce specific, lasting results in students by the time they leave school. This is an example of intended curriculum. A principle of outcome-based learning is clarity of focus. This includes anticipatory future conditions, deriving exit outcomes, developing performance indicators, designing learning experiences, determining instructional strategies, delivering instruction, documenting results, and determining advancement. This kind of curriculum model seems highly relevant to the initial phase of post-conflict education. This seems especially the case if there is need for acquisition of specific technical skill for immediate rehabilitation and reconstruction of the war-ravaged economy. By determining future needs, the outcome-based curriculum provides the basic knowledge and skills for post-conflict national and regional reconstruction (Gray, 1992).

**Context-Based Curriculum.** Context-based curriculum views learning as a social enterprise and the common belief is that people learn best in context. The main argument of this approach is that facts and skills learned in isolation are hard to absorb and quick to
evaporate. Therefore, the most enduring learning comes from doing the work itself in a continual process of "real-world" immersion, feedback, reflection, evaluation, and re-immersion. The above curriculum model can be relevant in the initial phase of post-conflict education where emphasis is on recovery, reconciliation, reconstruction, rehabilitation. During this post-conflict period, peace education and land mine education are very vital since they affect the communities directly.

*Multiple Intelligence.* Multiple intelligence was first introduced by Gardner (1983) when he thought that diverse modes of thinking require a variety of intelligences. He argued that although problem solving is an important aspects of human intelligence, the ability to compose music, write poetry or develop a painting reflect diverse intelligences. His philosophy defines the capacity to solve problems or to fashion products that are valuable in one or more cultural setting. He proposed a model that included linguistic, logical mathematical, spatial, kinesthetic, musical, interpersonal, and intrapersonal intelligences (Gardner, 1993).

These multiple intelligences are not isolated from the activities of a particular culture. The theory of "multiple intelligence" is conceptualized and assessed as cultural manifestation within specific domains. Former abducted children may think differently using different intelligences as a result of their experiences.

*Accelerated Learning.* Accelerated learning aims to create school success for all students by closing the achievement gap between at-risk and mainstream children. The Stanford University developed accelerated learning as a systematic approach to learning, based on the brain research. According to Hopfenberg and Levin (1990), it seems to
increase learning effectiveness and save time and money in the process. What makes accelerated learning so effective is the fact that it is brain-based premises incorporates ways people naturally learn.

The accelerated learning model may be suitable as the basis for a “multi-pronged” science education curriculum for post-conflict education policy and practice in Northern Uganda. A “multi-pronged” science education program would be comprised of a number of teaching and learning strategies tailor-made to close the educational gap and meet the complex needs of post-conflict education. Accelerated learning is best suited for this purpose because the theory assumes that at-risk students demonstrate “learning gaps” in areas valued by schools and mainstream economic and social institutions. The program also assumes that remedial approaches fail to close these gaps because they neither build on the students’ strengths nor tap into the resources of teachers, parents, and the community (Hopfenberg & Levin, 1990). The current study identifies at-risk students as those in the war-traumatized population of Northern Uganda.

The accelerated learning model proposes radically changing individual schools by redesigning and integrating curricular, instructional, and organizational practices. In doing so, they provide enrichment as well as remediation for at-risk students. This model is most appropriate for post-conflict education in Northern Uganda because it emphasizes total learner involvement and children learn best when they are actively involved in a positive learning environment.

Research studies have shown that children learn best in a positive physical, emotional, and social environment that is both relaxed and stimulating. A sense of wholeness, safety, interest, and enjoyment is essential for optimizing learning. Children in
emergency and conflict situations need this type of learning environment to learn effectively. Since accelerated learning also emphasizes collaboration among learners and advocates a variety of learning styles, it therefore can unlock potentials which are largely untapped by most conventional learning methods. It does this by actively involving the whole person, using physical activity, creativity, music, images, color, and methods designed to get people deeply involved in their own learning.

The Northern Uganda Girls Education Network (NUGEN) is a non profit organization founded by the author in partnership with University of Tennessee “Jazz for Justice” project. This project uses music therapy as holistic approach for post-trauma healing as advocated by (Feng, 2005). It runs “music clinics” for psychosocial healing in schools in Northern Uganda under the theme “Rhythms of reconciliation.”

This is both a therapy and a form of accelerated learning in that as the students compose music and poems about their experience during the war, they can improve their oral and written skills in the English and Literature classroom. Language skills are vital for understanding other subjects and contribute towards good academic performance (Buzan, 1976; Schuster & Vincent, 1980).

_School-to-Work Transition_. School-to-work transition programs provide ways for students to enter the formal economy, through paid employment with a business or self-employment. Numerous studies reveal that, upon high school graduation, many students who are not college-bound are neither prepared for nor connected to employment opportunities (Lewis, 1994). This model seems adaptable for post-conflict education because some of the children in the conflict areas are orphans and may head families.
They need to earn income to support their siblings. The transition from school to work opportunity could empower them economically. For example, if students can go to work with bicycle repairers after school, he can earn some money while putting into use the knowledge and skills learned in physics classes. This experience transitions into a practical work curriculum.

*Vocational and Technical Education.* According to UNESCO (2002) vocational and technical training geared towards economic development can promote skills for survival, adaptability and creativity, anchored in the post-conflict economy. The skills imparted and developed can be valuable to local businesses and artisans and linked to income, economic survival and immediate solution of needs and problems of post-conflict. Depending however on the local realities prevailing in the country or district with regard to the availability of vocational training centers, the market demands and the profile of trainees, local centers can organize formal vocational training.

A program such as this would be successful only if the schools in the war-ravaged areas oriented youth towards hard work, helped them explore different types of employment, provided guidance about career paths, and assisted them in finding work relevant to their needs and interests. Through employment-related experiences and on-the-job learning, students could receive significant exposure to the workforce and be prepared for their future work environment.

*Youth Apprenticeship.* This learning system prepares students for work. It is a combination of classroom instruction and paid on-the-job training. This model can be incorporated in the proposed emergency education curriculum. In this education model,
students obtain a set of well-defined occupational abilities by learning concepts in the classroom and applying in a work setting. The skills that would be most relevant in the post-conflict reconstruction include carpentry, brick laying, metal fabrication, masonry and joinery, fabric design, food processing and agro-business.

According to UNESCO (2002) the most adapted form of learning for post-conflict reconstruction would be non-formal basic education because it is likely to provide children, young people and adults with immediate tools, knowledge, skills, and attitudes directly related to the world of production. This form of functional literacy and numeric has greater meaning and empowers illiterate people to build on their increasing capabilities through mixing literacy and numeric training with production-based, income generative activities, and basic needs. However, education or training alone does not necessarily guarantee sustainability or self-employment. A holistic intervention, providing a combination of training, non-formal education and credit, can be most successful in addressing the needs of ex-combatants and former abductees.

Statement of the Problem

The 21 years of armed conflict in Northern Uganda has had a devastating effect on the people. Approximately 30,000 children were abducted by the Lord’s Resistant Army (LRA) during the course of the war. An estimated 1,000 children have been born in LRA captivity to girls abducted by the rebel army and 10,000 abducted children are unaccounted for during the conflict. The conflict has caused a complete breakdown of social services, including education, health, agricultural, security, transport, and communication.
The education sector has suffered considerably during this conflict. Schools expected to provide protection and security for the pupils and students turned out to be the recruiting ground for rebels. The rebels raided schools and abducted students and teachers whom they later conscripted into the rebel army. The conflict led to the closure and displacement of most schools in Northern Uganda.

According to UNICEF (2005) report, 60% of the primary schools in Gulu, Kitgum, Pader, Lira, and Apace districts were non-functional due to forced displacement and only 25% of all the displaced primary school children were currently in school. As many as 25,000 school age children in Northern Uganda were out of school. Despite the introduction of special programs like Universal Primary Education, school bursaries and school feeding programs, the dropout rate stands at 31%. This is high compared to the national rate of about 10%. Unfortunately, the most affected youth are girls whom parents force to marry at an early age to avoid abduction. Some of the girls are family heads so they stay at home to do domestic chores and take care of their siblings.

At the primary level, Pupil Teacher Ratio and Pupil Class Ratios are three times higher than the national standard, which are 45 students per classroom per teacher. The highest PTR of 400:1 was observed in Kitgum followed by 300:1 in Pader during the peak of the conflict where children studied in temporary make shift classroom in the camp according to a report by the Women’s Commission for Refugee Women and Children (Heninger, 2005).

Figure 11 is an example of a classroom in Northern Uganda showing the overcrowding of children in a primary classroom. This was a common site in most of the classroom in the northern region during the armed conflict.
With such overcrowding and lack of desks and chairs in the classrooms, teaching and learning is a challenge. Children cannot effectively study particularly science subjects, which require drawing and measurements on flat surfaces, without desks and chairs. Therefore, a poor foundation in science subjects at the primary school levels has resulted in a lack of interest and poor academic performances at the secondary school levels. As a result, there are also serious concerns about the lack of access to secondary schooling.

In Kitgum district, for example, only about 2,000 children enter secondary school annually, a number roughly equivalent to just 1.5% of all those who attended primary school. The Internally Displaced Persons (IDPs) in Kitgum indicated that the main
obstacle blocking access to secondary education was lack of income resulting from forced
displacement due to the war (Nannyonjo, 2004).

The number of teachers in the secondary schools in Northern Uganda has been
inadequate. Nevertheless, government placed a ban on the recruitment of new teachers
because it could not afford to pay salaries for more teachers. Such a policy hurts Northern
Uganda the most given its overwhelming needs. For example in 2003, Kitgum needed
265 teachers, but had only 145 teachers. The gap of 123 teachers had to be filled by hiring
non-qualified local persons. This too compounded the problems of poor performance
because the unlicensed teachers did not have the appropriate knowledge and skills for
teaching and especially the teaching of war-traumatized children.

Most schools in Northern Uganda either do not have science teaching laboratories
and the few that have laboratories, are not adequately equipped. For example, some
schools use “charcoal stoves” instead of Bunsen burners. Others use “dropper method”
where they count drops of acids and multiplying by 0.05 cc to measure the volume
instead of using burettes and pipettes during the titration experiment in chemistry. In
some instances, students travel over 50 km to other secondary schools looking for
functional laboratories. This has resulted into students not taking science subjects
seriously since they do not have the opportunity to study practical science courses in
school.

According to Ekwang, Businge, and Ogwal (2003), of the 15 secondary schools in
Gulu, only 4 had adequately stocked laboratories and another 2 were inadequately stocked
and the rest did not have a laboratory. In Kitgum, out of a total of 8 schools, only 2 had
laboratories and both were poorly equipped. The district of Pader had a total of 9 schools
and none had a laboratory. Figure 12 is an example of a poorly stocked science laboratory in a secondary school in Northern Uganda.

Figure 12. A Laboratory at Gulu High School in Northern Uganda (2007)

Education in emergencies provides structure and stability for children and adults traumatized by conflict and displacement. Attending school lessens the chance that children will be abducted, recruited into a rebel army or sexually abused and exploited, as was the case in Northern Uganda. If governments could invest in providing protection and security during emergency, conflict or war situations, schools can become “Islands of Peace and Oases of Hope and Healing.”

Peace talks were held in Southern Sudan to restore peace to Northern Uganda because the LRA rebels relocated to Garamba National Park at the boarder of Democratic Republic of Congo and Southern Sudan. Rebel leaders often refuse to sign peace agreements citing threats by government to kill or hand them over to the International
Criminal Court (ICC). The rebel leader Joseph Kony refused to sign the comprehensive peace talks in 2008, citing the same reason (Mukasa & Baguma, 2008).

When post-conflict recovery and reconstruction finally begins, the greatest priority should be the hundreds of thousands of young people who grew up in the camps receiving little formal education. The role they will play when the peace talks are eventually successful, the Internally Displaced Peoples camps are closed, and residents have to return to their villages should be addressed before they depart. Many will be too old to resume primary education, and yet lack both the traditional skills for cultivating the land, and the formal skills acquired in school. The people of Northern Uganda need a plan and an educational policy that can address this educational gap.

Purpose of the Study

The purpose of this research is to examine the educational policy and, in particular, science education policy in Uganda and propose a new model of education for emergency, conflict, and post-conflict communities such as Northern Uganda. The proposed model regards schools as “Islands of Peace and Hope” during emergencies and conflict with science education as a tool for national development during post-conflict recovery and reconstruction.

The proposed model was developed based on a comprehensive review of the historical developments in education from colonial era to date and a critical analysis of Uganda’s national education policies and in particular science education policy during the last 21 years.
Research Questions

1. What are the levels of government funding towards improving the science education program in Uganda and in the armed conflict-affected areas?

2. Have recent initiatives by the government, such as free primary education, free secondary education, compulsory science, and 75% sponsorship for science-based courses, had a measurable impact on the proportion of students from the northern region who enter tertiary institutions to pursue science and technology programs?

3. To what extent do the Ugandan Education Policy and, in particular, the Science Education Policy effectively address the educational needs of students studying in armed conflict-affected areas?

Significance of the Study

The main contribution of this study is establishing ground rules for a “blue print” for education in emergency and conflict. The study will establish a conceptual model of Schools as Islands of Peace and Hope during emergencies and conflict with Science Education as the tool for post-conflict rehabilitation and reconstruction.

The findings of this study are significant for education in emergency, conflict, and post-conflict situations because it has implications for the professional development of teachers and curriculum reforms. The number of traumatized children worldwide is on the increase because of terrorism attacks, armed-conflicts, wars, and crimes. Armed conflicts create the need to retrain and retool teachers with the knowledge and skill to
teach traumatized children. This includes the psychosocial support for disadvantaged and disaffected children so that they too can learn effectively.

It is not clear when this war will end despite the Peace Talks in southern Sudan. To wait to restore peace first before proposing an educational reform would delay the whole process of recovery, rehabilitation and reconstruction of the northern region. The findings of this study will contribute towards science educational reform programs for post-conflict recovery and reconstruction. Furthermore, schools will provide safety for children during crises because they will be emergency and conflict-prepared.
CHAPTER III

RESEARCH METHODOLOGY

Mixed Methods Research Design

This research study employed a mixed method design recommended by Marshall and Rossman (1999) where both quantitative and qualitative data were collected and analyzed. In the mixed method procedure, both quantitative data and qualitative data were collected and analyzed. At the end, both sets of data were merged to address the research questions. Quantitative data were obtained from a comprehensive search of policy documents and content analysis of literature on education and in particular science education programs in Uganda with special focus on conflict and post-conflict situations. Qualitative data were obtained from surveys and interviews.

Data Collection

The researcher collected data on enrollment, dropout rates, teacher qualifications, and teacher-to-classroom ratio and the availability of science textbooks, laboratories, and supplies. The Uganda National Examination Board and the Ministry of Education database provided data on performance of students in science subjects on the national examinations by regions over the past years. Online newspapers provided data on academic performance, government sponsorship and admissions to higher institutions of learning. The list of students destined for enrollment to science courses at the government
higher institutes of learning were analyzed to determine the regional distribution. The data was presented as percentages and proportions to show the trends in the different regions of the country. The observed trends were used to corroborate the findings from the interviews and the surveys.

Qualitative data were obtained from interviews with policy makers, central government and local government officials. The categories of government officials who were interviewed and those who responded to the surveys in Kampala included Members of Parliament, Cabinet Ministers, and journalists. Others participants included the Gulu District officials, school administrators, teachers, students, parents, and community and government leaders from Northern and Eastern Uganda.

The researcher interviewed representatives of international organizations and Non-Governmental Organization (NGOs) operating in the northern region regarding their role in providing education during the 21 years of conflict. Some members of local and international NGOs and representative of diplomatic communities also responded to the surveys. The local NGO that participated in this research study was the Pincer Group International that is currently implementing a USAID program called REPLICA in Northern Uganda. REPLICA stands for Revitalizing Education Participation and Learning in Conflict Areas.

Sources of Data

The education policy in Uganda that specifically addressed the plight of children studying in conflict areas was a main source of information. The policies related to government investment in education and in particular, the science education and
technology program in Uganda was obtained from the national budget. The funding for
the acquisition of science materials, facilities such as science textbooks, and the
constructions and equipping of laboratories, training of science teachers and financial
support to science students at tertiary institutions were considered by the research.

The list of government sponsored student cohorts admitted to various science-
based courses at universities and institutions of higher learning were analyzed for their
numbers and regional representation. The purpose was to find out where the majority of
these students come from and if there were any positive or negative trends attributed to
the war in Northern Uganda.

The research analyzed the distribution of science teachers per district and region
and their qualifications. A relationship between poor performances in science subjects
and the qualification and distribution of science teachers was of interest to the researcher.
The analysis of the qualifications and distribution of science teachers was to provide
insights and explanations about students admitted to science-based programs under
government sponsorship in universities and higher institutions of learning as compared to
those offering art and humanity subjects.

Research Instruments

Surveys and interview guides were used for collecting responses from Members
of Parliaments, teachers, students, district councilors and journalists. The construction of
the survey was based on the objectives of the Ugandan National Education Policy and the
guidelines for emergency and post-conflict education provided by UNESCO. The survey
was pilot tested three times with 25 Members of Parliament and parliamentary staff before producing the final version for distribution.

The survey included 18 questions about educational policy. The 18 items were categorized into four major areas: (a) general views on the overall Uganda education policy, (b) views on affirmative action and affirmative opportunities, (c) views on emergency education policy, and (d) views on school safety.

The first item on the survey questioned respondents on the education policy outlined by the Ministry of Education and Sports. The purpose was to determine if respondents thought the educational policy equally and adequately addressed the plight of children affected by emergency and conflict situations. The responses of the Members of Parliament were particularly important because they are the policy makers. It was necessary to determine if policy makers believe that the education policy is serving the purpose for which it was enacted. It was also important to examine the views of the district officials and teachers who are implementing the government policies and the students affected by the policies. The specific education policies that I examined during this study were:

1. The Universal Primary Education (UPE) policy
2. The Universal Secondary Education (USE) policy
3. Day Secondary School (Seed Schools) per sub-county
4. The policy of Compulsory Science subjects
5. The policy of 75% government sponsorship for science-based courses at universities and tertiary institutions.
The respondents were to express their opinion on whether they thought that the policies equally benefit children studying in conflict-affected areas such as Northern Uganda. They respondents were to rank their views as (1) Strongly Agree, (2) Agree, (3) Disagree, and (4) Strongly Disagree. The views of respondents on the provision of affirmative action and affirmative opportunity for children were collected. The affirmative action provisions included:

1. Views on whether there was need for “special examinations” for children affected by emergency and conflict situations
2. Lowering the cut-off points for admissions into universities and institutions of higher learning for children from conflict-affected regions.

In addition, the responses of policy makers on curriculum reform, teacher training, and welfare polices were obtained. The areas that were of particular interest included:

1. Provision of accelerated education programs for children studying in emergency, conflict, and post-conflict situations
2. Curriculum and textbook updates
3. Teacher retraining and re-tooling to meet the special needs of traumatized children
4. Special allowance for teachers serving in emergency and conflict situations.

Since the implementation of any government policy requires a budget, the policy makers were surveyed about the emergency policy with a specific budget. Such a budget would provide for a “fast responder” mechanism. The respondents where further asked whether they thought there was need for an education emergency policy and an
emergency education budget to address the unique needs of schoolchildren during situations of emergencies and armed conflicts.

School safety is a prerequisite for post-trauma healing. Closely related to the emergency education policy was the issue of school safety. The researcher asked the respondents whether there was a need to build fences around schools as a physical barrier to protect students from future attacks and abduction by rebels or armed militias. They were also asked whether students should be re-located to safer areas during emergencies and conflict situations.

The respondents were further asked whether the day school facilities should be transformed into boarding facilities to provide safe sanctuary for schoolchildren during emergencies and armed conflict situations.

Population Sample

Ugandan Parliament

An online survey was sent out to all the 332 members of the 8th Parliament through their parliamentary email addresses. Although they acknowledged the receipt of the survey, most of them had difficulty completing the surveys online. As a result, I sent 132 hard copies to those who expressed a continued willingness to fill them out. Twenty surveys were distributed to members of the 7th Parliament who were not re-elected to the 8th Parliament. The respondents returned the completed surveys to the parliamentary receptionist or handed them directly to me.
Gulu and Amuru District Data Collection

Two hundred surveys were distributed to the district councilors and officials of Gulu and Amuru districts, lecturers from Gulu University and teachers and students from six secondary schools within Gulu town. The schools included were Gulu High School, Keyo secondary and Koch Goma. Gulu High School served as refuge for students from Koch Goma and Keyo Secondary, which were schools, displaced by war (Internally Displaced Schools). These three schools are co-educational. The other schools I visited were Sacred Heart Girls’ Secondary School and Layibi College Boy’s Secondary School.

Nebbi District

Nebbi District is located in northwestern Uganda and is adjacent to Amuru district in Northern Uganda. People from Nebbi also suffered road side attacks from the LRA rebels for over 21 years. During the insurgency, Nebbi district acted as a host for students from the IDP camps and for Sudanese refugees who relocated to the West Nile region. The displaced students were distributed to various schools in the district and Nebbi Standard Academy was one of the schools that hosted the IDP students.

Nebbi Standard Academy is a private secondary school built by Hon. Betty Udongo who served in the Ugandan Parliament from 2001-2006. She is also the researcher for this dissertation. Schools in Northern Uganda had various traumatic experiences, whereby students and teachers were abducted, maimed, or killed by the LRA rebels. Some of the students at Nebbi Standard Academy were former abductees who spent some years in the bush as child soldiers under the command of the Lord’s Resistant
Army. Some may have participated in the abductions and horrific killings during the war and education is the only hope for their future.

Surveys Completed and Returned

A total of 742 surveys were distributed and 432 completed and returned over the two years of research. Of the 352 surveys distributed to Members of Parliament, 101 were completed and returned. Important individuals that responded to the survey included the Speaker and the Deputy Speaker of the Ugandan Parliament. The opposition party leader and the Chief Whip of the Forum for Democratic Change (FDC) political party completed the survey. Cabinet Ministers also completed the surveys.

During the second year of research, 200 surveys were distributed to district leaders from 40 districts in Northern Uganda and a total of 148 were completed and returned.

Among the surveys distributed to the schools, 27 were returned from Gulu High Secondary School, 22 from Keyo Secondary School, 23 from Koch Goma Secondary School, 34 from Sacred Heart Secondary School, 29 from Layibi College, and 10 from Nebbi Standard Academy. Thirty-two surveys from Gulu and Amuru district officials, including the faculty members of Gulu University and 8 surveys from the parliamentary journalists were completed and returned.

Local Government Responses from the PRDP Region

The Peace, Recovery and Development Plan (PRDP) region includes of West Nile, Acholi (Northern Uganda), Lango (Northern Uganda), Teso (Eastern), Elgon (North Eastern), and the North Bunyoro (Northwestern) regions.
The same survey that was administered to Members of Parliament, district officials, teachers, and students from Gulu districts was administered one year later to local government leaders from 40 districts in Northern Uganda. The survey was administered in June 2008 at the “Education Renaissance Leaders’ Summit” for the northern region under the Peace Recovery and Development Plan (PRDP) framework. Over 350 government officials including Members of Parliament from the PRDP region, members of the diplomatic communities, and representatives from local and international NGOs attended the summit. The President of the Republic of Uganda, H.E Yoweri Museveni launched the “Blue Print” for post-conflict education and the “Education Charter” produced at the summit. I distributed 200 surveys randomly to the participants and 148 surveys were completed and returned.

Sample Distribution and Demography

There were 286 respondents to the survey in the first year of the research study. Of the total, 101 (35.3%) were Members of Parliament, 32 (11.2%) were district officials and staff of Gulu University, 73 (25.5%) were teachers, 72 (25.2%) were students and 8 (2.8%) were journalists. The gender distribution was 65.1% males and 34.9% females. For age distribution, 27.3% of the respondents were 24 years and younger, 21.3 % were within the age group of 25-35 years, 25.9% were in the age bracket of 36 to 45 years, 19.2% were in the age bracket of 46-55 years, and 6.3% were older than 55 years of age.
Coding of the Data

The responses to the surveys were coded as (1) Strongly Agree, (2) Agree, (3) Disagree, and 4) Strongly Disagree. A code book was prepared using the SPSS Statistical Package (Cronk, 1999). The frequencies of the responses were analyzed and reported as percentages. The responses from each set of data were analyzed to determine means and standard deviations and then aggregated to determine the overall response patterns. The frequency distribution was used to measure the tendency to agree or disagree with the policies. The data collected were normative and ordinal. The chi square test was used to examine the difference between the expected response patterns of the sample from the observed response pattern. Chi square and one-way ANOVA were chosen because the data collected satisfied the conditions below:

1. One or more variables in the data set, including the dependent variables are nominal or ordinal.
2. One or more variables in the data set, including the dependent variable, violate the normality assumption.
3. The sample size was small for most of the categories but more than five in each category.

Primary and secondary data from four general categories of documents were reviewed in search for policy-relevant information and secondary data. They were: (a) journal articles, books, and dissertations; (b) publications and reports of interest groups, consultants, and think tanks; (c) government publications and research documents, and (d) popular Ugandan online newspapers.
Review of Documents

Journal Articles, Books, and Dissertations

I carried out a comprehensive online search of journal articles, books and dissertations on education policy, science education policy and programs for emergency, conflict, and post-conflict education.

Government Publications and Research Documents

Government publications including Uganda Ministry of Education policy statements, budget framework, PEAP (Poverty Eradication Action Plan), budget speeches, State of Nation addresses, the Presidential manifesto, consultancy reports, master plan for post-conflict recovery of Northern Uganda, and other government publications were thoroughly reviewed. Access to these documents was achieved by visits to the Ministry of Education Statistics Department and the Parliamentary library. Other publications were available online on the official website and accessed through Google Scholar search.

The following performance reports focusing on Northern Uganda were also reviewed and analyzed. They included the district status reports, Northern Uganda Social Action Fund (NUSAF) performance reports, and the status report from Ministry in charge of Northern Uganda and Disaster Preparedness.
Publications and Reports of Interest Groups

Publication and reports of Non-Governmental Organizations, international organizations, interest groups, and consultants working in Northern Uganda were reviewed. Such reports were more balanced, neutral, and credible than the government reports especially in the events of humanitarian crisis. I carried out a comprehensive review of these publications to supplement the government documents and collected views from the interviews and surveys. Access to the documents in this review was obtained by visiting the offices of the NGOs and accessing their reports online.

Newspaper Articles

Newspaper reports, both online and in print, were reviewed and analyzed over the period of the research since they seemed to announce new policies forthcoming and gave the population the opportunity to voice their concerns. Newspapers are often faster in reporting incidences of insecurity, conflict, and war. They also help inform the public about humanitarian crisis taking place in other parts of the country or the globe. Newspaper articles are a rich source of information because of their network of sources. Articles for review were downloaded from online sources.

All documents were critically analyzed and evaluated to ascertain the educational gap and poor state of science education in Northern Uganda over the past 21 years.
Policy Analysis Framework

Unlike other policy studies, the present study adopted the descriptive and evaluative method of policy analysis as the above documents were reviewed and evaluated if the policies met the set goals and to the extent the goals was a primary concern were fulfilled. The indicators that formed critical inputs were grade levels, academic performances, admission to higher learning, teacher training, assessment, implementation, and budget support for science education and curriculum reform.

Limitation of the Study

Few empirical studies have addressed education in conflict and post-conflict situations. This observation extends to the available literature on science education policy in conflict and post-conflict settings. The most pertinent literature on emergency, conflict and post-conflict situations were contained in reports of international relief agencies working in conflict areas. Independent research studies are a secondary source and reports on relief usually addressed aids such as, food, shelter, clothing, clean water, sanitation, with little mention of education and less on science education.

The second limitation was the coverage of the current study. It was only possible to visit one district and few schools in the Northern Uganda in 2007 for data collection. Moreover, it was not clear in the beginning if data collection could cover the three areas of emergency, conflict and post-conflict situations. The research study focused on the three conditions during the course of the research study.
The political and conflict conditions in Northern Uganda have been changed during the course of the study. In March 2006, the conflict escalated and then peace negotiations were initiated in July 2006 and a cease-fire was later signed. The signing of the truce and the cessation of hostility enabled the researcher to travel to Gulu in Northern Uganda in June 2007. This is the location where I completed most of the fieldwork. During this period, the LRA militants retreated to the Garamba forest in the Democratic Republic of Congo. I was able to return to Gulu in June 2008 to collect more data. During the same period, the people in the camps began to go back to their villages and government launched the Peace Recovery and Development Plan (PRDP) framework, which is the plan for post-conflict recovery.

Flooding in the northern and eastern region occurred during the period of 2007 when data collection was underway. Moreover, the flooding occurred during the national examination period. This occurrence provided the opportunity to examine the Uganda disaster preparedness policy. Consequently, the situation made government eager to listen to my concern about “emergency education” and “disaster policy” which had been neglected. One year after interaction with the Ministry of Disaster Preparedness, the government established an emergency fund in the 2008-2009 national budget to mitigate the effects of any emergencies that may arise.

Another limitation of this study was its subjectivity. The researcher was a victim and participant observer and that was a motivation to pursue this study. Moreover, it was a healing process because of my painful experience during the war and my traumatic past.

Finally, I had anticipated inaccessibility to information because of the political sensitivity and the nature of the research study. I was surprised at the willingness of
everybody including top government officials to divulge information. Some information could not be included in the report because of national security. The timing of the study and the good will made it possible to obtain all the necessary information I needed for this research and I am so thankful to all and most of all to God.
CHAPTER IV

ANALYSIS AND RESULTS

The research questions that guided the study are:

1. What are the levels of government funding towards improving the science education program in Uganda and in the armed conflict-affected areas?

2. Have recent initiatives by the government, such as free primary and secondary education, compulsory science, and 75% sponsorship for science-based courses, had a measurable impact on the proportion of students from the northern region who enter tertiary institutions to pursue science and technology programs?

3. To what extent do the Ugandan Education Policy and, in particular, the Science Education Policy effectively address the educational needs of students studying in armed conflict-affected areas?

The research study adopted an evaluative, descriptive, predictive approach to policy analysis procedures as discussed by Dunn (1981). The research study employed a mixed method design recommended by Marshall and Rossman (1999) where both quantitative and qualitative data have been collected and analyzed. Quantitative and qualitative data were collected concurrently and later analyzed (Patten, 2000). The data collected were merged to address the research questions.
The first question examined specifically the budget allocation for the education sector and in particular budget support towards science programs. The question focused on evaluating the impact of government investments in science programs on academic performances and enrollment into science-based courses at higher institutions of learning.

The second question aimed at critically analyzing the new policies and initiatives that were specifically addressing the educational needs of war-traumatized children from Northern Uganda. The policies aimed at post-conflict recovery, rehabilitation, and reconstruction were of principle concern.

The third research question aimed at obtaining responses on the effectiveness and efficiency of the Ugandan Education policy and particularly the science education program. It focused on policies implemented by government to provide equitable access to quality education for all children including those affected by the armed conflict in Northern Uganda.

The educational needs of children affected by the armed conflict were identified as school security and safety, availability of classrooms, desks, textbooks, school fees, school uniforms, food, accommodation, and sufficient numbers of professionally trained teachers (Byamughisha, 2008).

**Government Funding for Education**

The government of Uganda through the Ministry of Education and Sports has the mission to provide quality education for all Ugandans. This mandate can be fulfilled only through adequate funding towards the education sector. The first research question in this study examines the level of government funding towards the education sector and in
particular towards improving science education programs in Uganda. The researcher analyzed the Ministry of Education and Sports policy statements for the past 20 years.

The Ministry of Education and Sports adopted the Sector Wide Approach (SWAP) in 1997. This enabled the synchronization of all activities of government and the donor communities known as the Education Funding Agency Group (EFAG) and other stakeholders including NGOs, local authorities, and the private sector. The Education Strategic Investment Plan (ESIP) 1998-2003 was the framework for implementation of the SWAP.

The current Education Strategic Investment Plan is contained in (ESIP 11- 2005-2015). The plan shifted government priority toward post-primary education but without losing sight of the achievement of the UPE program. The Post-Primary Policy framework was approved to adequately enable government to holistically address the issue of expanding facilities and opportunities for education and training at post-primary level to absorb the UPE candidates.

**Budget Allocations to the Education Sector**

The guiding principle is that government will provide quality education to all children through financial support to the education sector. It was reported that there has been a steady increase in the education budget since 1999 (Makubuya, 2003). The summary of budget allocations for the education sector for financial years 1995 to 2008 is presented in Table 3.

Overall, there has been a steady increase in the funding for the education sector. This has mainly been in response to fulfilling the Millennium Development Goals
(MDGs) and the Dakar declaration of Education for All (EFA) targets by the year 2015. Government increased spending towards the implementation of the Universal Primary Education (UPE) and recently towards the implementation of the Universal Secondary Education (USE) program.

Table 3

*Summary of Government Funding to the Education Sector: (1995-2008)*

<table>
<thead>
<tr>
<th>Financial Year</th>
<th>Amount in Uganda Shillings (Billions)</th>
<th>Equivalent in U.S. Dollars (Millions)</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-1996</td>
<td>189.947</td>
<td>94.974</td>
<td>—</td>
</tr>
<tr>
<td>2001-2002</td>
<td>505.17</td>
<td>257.58</td>
<td>31</td>
</tr>
<tr>
<td>2002-2003</td>
<td>490.18</td>
<td>245.09</td>
<td>—2.97*</td>
</tr>
<tr>
<td>2003-2004</td>
<td>587.31</td>
<td>293.66</td>
<td>19.82</td>
</tr>
<tr>
<td>2004-2005</td>
<td>619.93</td>
<td>309.97</td>
<td>5.55</td>
</tr>
<tr>
<td>2005-2006</td>
<td>633.43</td>
<td>316.72</td>
<td>2.18</td>
</tr>
<tr>
<td>2006-2007</td>
<td>629.97</td>
<td>314.99</td>
<td>—0.55*</td>
</tr>
<tr>
<td>2007-2008</td>
<td>690.51</td>
<td>345.26</td>
<td>9.6</td>
</tr>
</tbody>
</table>

* Denotes a negative percent increase rate: 1 U.S. dollar = Uganda shillings 2,000/-

(Source: Ministry of Education and Sports, 2008)

The annual percent increase was minimal and dropped to the negative for the financial years 2002-2003 and 2006-2007. In the financial year 1995, government
allocated 189.947 billion Uganda shillings (equivalent to 94.97 million U.S. dollars) to the education sector.

During the financial year 1999-2000, the education budget was increased to 384.681 billion Uganda shillings (equivalent to 192.34 million U.S. dollars) and this represented a percentage increase of 28.7% within a period of five years. The budget for education was further increased to 505.17 billion Uganda shillings (equivalent to 257.58 million U.S. dollars) in the financial year 2002 and this represented a share of 32% of the total national budget (Makubuya, 2003).

There was a slight drop in funding during the 2002-2003 financial year where the education sector was allocated 490.18 billion Uganda shillings (equivalent to 245 million U.S. dollars). The following financial year 2003-2004, the budget allocation was increased to 587.31 billion Uganda shillings (equivalent to 293.66 million U.S. dollars) and to 619.93 billion Uganda shillings in the financial year 2004-2005. Furthermore, in the financial year 2005-2006, the education budget was increased to 633.43 billion Uganda shillings (equivalent to 316.72 million U.S. dollars) and in the financial year 2006-2007 it dropped to 629.97 billion Uganda shillings (equivalent to 314.99 million U.S. dollars) and then increased again to 690.51 billion Uganda shillings (equivalent to 345.2 million U.S. dollars) in the financial year 2007-2008.

The highest percent increase of 102% was observed between the financial years 1995 to 2000 and this coincided with the introduction and implementation of the Universal Primary Education program. Between the financial years 2000 and 2005 the education budget increased by 61%. This confirms government's support to the education sector.
The education sector continued to be a priority to government as evident by the 2008-2009 budget speech where it was ranked second to the road sector (Suruma, 2007). The emphasis in resources allocation continued to be placed on primary education (65%) with equally significant allocations in other areas including paying allowances to teachers in “Hard-to-Reach Areas” and teachers engaged in Double Shift teaching. Government continued to provide funds for the Bursary Scheme at sub-county level to support secondary education and increased funding for sponsorship at Makerere University.

According to the budget speech, the implementation of the UPE and USE programs will continue to be government priority to meet the target of universal completion of secondary schooling (Suruma, 2007). Government is committed to improving the efficiency and the quality of UPE and USE by strengthening the Education Standards Agency (ESA) to undertake the inspection function and remove wastage and misuse of resources (Bitamazire, 2007). Other areas of priorities include implementing policy actions to promote girls education at all levels of education and improve access to education for poor and needy children by focusing especially on children from disaster and conflict-affected areas.

**Government Funding Towards Science Education Programs**

The level of government investment in improving science education was determined by the allocation of funds towards the provision of science infrastructure and facilities in the schools. In the 2008-2009 budget, government was committed to promoting science and technology by ensuring that adequate resources are provided for science, technical and vocational education programs. Those commitments are being
realized through reforms in science and technical vocational education to meet the
growing demand for technical skills in the labor market. An example is the establishment
of the Uganda Vocational Qualifications Framework (UVQF) to standardize and
rationalize vocational training as a basis for assessment of skills and competency levels
(Bitamazire, 2007).

The first cohorts of students were admitted into the 16 Community Polytechnics
(CPS) countrywide in 2003 and 17 newly designated secondary schools were selected by
the Ministry of Public Service to increase the recruitment of new teachers. Consequently,
seven instructors per polytechnic on average were appointed, 21 designated secondary
schools have been constructed, and more sites have been identified.

There are plans to make all community polytechnics operational and to establish
them in all sub-counties. The funding in the amount of 59 billion Uganda shillings
(equivalent to $34.7 million, U.S) was provided to support UPE, USE, Business
Technical and Vocational Education and Training (BTVET). The commitment of funds
also honors the presidential pledges to the education sector outlined in the 2001 and 2005
Presidential Manifestos.

Government established the National Council for Science and Technology in 1990
to spearhead the promotion of science and technology, research and industrialization in
Uganda. In 2005, the Ministry of Education and Sports (MoES), with technical assistance
from the government of Japan also established the Secondary Science and Mathematics
Teacher’s (SESEMAT) program to enhance the quality of teaching and learning of
Science and Mathematics through In-service Education Training (INSET) Secondary
School level.
Funding for building and renovation of laboratories, supplies and equipment, chemicals, science kits and textbooks was increased. The Ministry of Education and Sports embarked on recruitment of more science teachers by removing the cap that has been imposed on the recruitment of teachers. Teacher Resource Centers (TRC) were built in all districts to support the teaching of science and computer science and ICT skills for both teacher and students have been introduced in pilot schools under the Uganda School Net program.

The current government policy to improve science and technology for economic development, called for improvement of classroom practices in the teaching and learning of Science and Mathematics. Consequently, government introduced a policy where science subjects are compulsory for all students at secondary school level. In addition, government shifted its priority from humanity subjects in support of science-based courses at the university level by allocating 75% of government sponsorship toward science courses and 25% to the arts and humanity courses.

In spite of the increased funding and government effort to promote the teaching and learning of science in secondary schools, academic achievement in science subjects has remained low. The teaching of science has continued to be poor as reflected in the poor academic performance in science and mathematics at all levels.

**Government Initiatives to Increase Access to Education**

The second research question examined various government initiatives and policies that were implemented to increase access to quality education especially among students from the conflict-affected northern region. The policy objective of the Ministry
of Education and Sports is access to quality education at all levels. The government of Uganda in conjunction with international development partners undertook several initiatives aimed at increasing enrollment, access and progression through the educational system.

Most of the initiatives targeted uplifting the social status of the poor and the marginalized sections of the Ugandan society. The initiatives ranged from affirmative action interventions to specific policies such as the Universal Primary Education (UPE) program, the Universal Secondary Education (USE), district bursaries and district quota schemes. Other initiatives included affirmative selection of girls to university, government scholarships and university loans.

*Universal Primary Education (UPE)*

The biggest initiative undertaken by the government of Uganda with support from the World Bank and other development partners was the introduction of Universal Primary Education (UPE) in 1997. UPE is assumed to provide access to primary education to all school-going children regardless of their socio-economic status and gender. The program was expected to automatically benefit the marginalized sections of the society who were denied access to primary education due to problems of affordability or armed conflicts. The UPE program has been successful because it has caused a significant increase in students’ enrollment at the primary school level for both boys and girls. For example, the introduction of UPE caused girls’ enrollment in primary school level to increase from 1,420,883 in the mid 1990s to close to 4,000,000 in mid 2000s representing an over (150%) increase over a period of one decade.
Universal Secondary Education (USE)

As a result of the inevitable surge in the population of students joining secondary education because of the introduction of UPE, government came up with a policy on post-primary education and training. The policy outlined strategies and priorities to expand and improve education services at the post-primary level including expansion of secondary schools, introduction of Universal Secondary Education (USE) and increase in vocational schools with 16 pilot community based polytechnics.

In 2007, the government of Uganda introduced the Universal Secondary Education (USE) to absorb the UPE graduates. Furthermore, government began a project of constructing a technical and vocational institute in each sub-county throughout country as part of government’s strategic plan for the education sector for the years 2006-2011. The implementation of the USE has been a challenge due to lack of funding from government and therefore only a few schools are participating in the program.

Policy for Educationally Disadvantaged Children

In 2006, government introduced a policy for educationally disadvantaged children to address the educational needs of children affected by the armed conflicts in the northern and western regions. This policy is consistent with the Government White Paper (Government of Uganda, 1992) and Article 30 of the Constitution of the Republic of Uganda, which provides that

All persons have a right to education . . . that a child is entitled to basic education . . . that the state shall take action in favor of groups, which are marginalized on the basis of gender, age, and disability or for any other historical or traditional reason. (The Constitution of the Republic of Uganda, 1995)
According to the Ugandan Constitution, the government is responsible to provide education for all its citizens. Therefore, the UPE policy was introduced to fulfill a constitutional mandate. A principal feature of the UPE policy was to eliminate tuition fees initially for four children per family and later it was extended to all children of school age. In addition, the Parents Teachers Association (PTA) fee that parents used to pay per child was discontinued. The resultant action was a massive increase in the enrollment of students in the primary schools, moving the country closer to realizing its goal of education for all. This is in line with the Education for All targets of 2015 and the strategies laid down in the Education Sector Investment Plan (ESIP), which are geared towards achieving equity and access to education for all children.

University Education Initiatives

Government Sponsorship at Public Universities

Government increased spending towards higher education by sponsoring a total of 4,000 bright and needy students every academic year. Since the sponsorship to higher institutions of learning is pegged on letter grades obtained at the advance secondary school level (A’ level), the researcher examined some of the government policies that were implemented to increase access to higher education during the past 20 years. The purpose was to particularly access the impact of these policies on educational delivery in the conflict-affected Northern Uganda.
Government implemented affirmative action for admission of girls into the university. Since affirmative action is a tool for change instituted to assist disadvantaged groups whether based on race, gender, age, geographical location, religion or disability, its main purpose was to provide additional opportunities to individuals in those groups to minimize existing disparities and correct historical imbalances.

Affirmative Allocation of 1.5 Points to Female Students

One of the most popular and historic affirmative action initiatives was the allocation of an extra 1.5 points to female students to increase their chances of qualifying for admissions into professional causes at the university. This policy was initiated in 1990 when Makerere University Senate realized that the number of females accessing university education was low when compared to the male students. Furthermore, it was within the broader affirmative action policy of government and a constitutional right to provide opportunities to marginalized groups to achieve equitable access to education.

The implementation of 1.5 additional or equalization points for female students has been successful in increasing female enrollment figures from 29% in the late 1990-1991 to 45.8% in the mid 2005 (Griffin, 2007). It is estimated that more than 3,000 students have been admitted to Makerere University and other public universities as a direct result of the affirmative action provision (Kasente, 2003).

Nonetheless, the ever-increasing university cut-off points especially for government sponsorship indicated that many more female students are still left out of university education. Unfortunately, it is the girls from the best performing girls’ schools in the urban centers who benefit from the 1.5 extra points at the expense of the girls from
the disadvantaged schools in the rural areas and especially in the northern and eastern regions. The points are awarded to girls who scored the minimum points for admission into the university, thus it does not benefit the girls who need it most.

**Female Scholarship Program**

The female scholarship program is run by Makerere University with support from the Carnegie Cooperation of New York. This scholarship targets students who are admitted to Makerere University under the private sponsorship scheme but are unable to meet the financial costs of the studies. The objective of this scholarship is to increase enrollment, retention and academic performance in science course and it targets girls from disadvantaged backgrounds and under-represented geographical areas of Uganda.

The program provides beneficiaries with tuition fees, faculty allowance, fund for research, teaching practice and field training as well as stipend for essential basic needs. The program has not significantly increased the number of girls gaining entry into Makerere University especially in competitive professional science programs such as Human Medicine, Pharmacy and Technology. The program has also been criticized for having flawed selection processes, casting doubt on the extent to which the poorest of the poor particularly those from geographically under-represented areas such as the northern region actually benefited.

**Bursary Scheme**

For the first time in 2003-2004, the government proposed a “Student Loan Scheme” in higher and tertiary education. A bursary scheme to support two children per
sub-country was launched. In 2004, a national total of 1,820 students received scholarships for one academic year.

Peace, Recovery and Development Plan (PRDP) 2006-2010

The emergency and conflict policies that were implemented during the conflict and those that are being implemented during the post-conflict recovery, rehabilitation and reconstruction were revisited and reviewed. Most prominently were the policy documents, ministerial statements, state of nation addresses, national budget speeches, reports, newspaper articles, research publications and the PRDP (Peace, Recovery and Development Plan) framework. The PRDP is a framework introduced by the government of Uganda to address the unique challenges of a post-conflict society (PRDP, 2006).

The researcher discovered that no specific program was implemented to specifically address the educational needs of children in conflict areas during the earlier 16 years of the insurgency. The first time that the government provided for a specific program for children living in the Internally Displaced People (IDP) camps in war-ravaged Northern Uganda was in 2003. A support scheme was introduced to support 2,338 students in post-primary schools during the financial year 2004-2005. The funding was long overdue and came too late because the war had been raging for 20 years and two generations of children had already lost their educational opportunities.

While the government provided money to pay allowances for teachers in hard-to-reach areas and double shift teaching in 2002-2003, the northern region was not included in this budget. It was the peak of the conflict and the north was a difficult region to reach but government refused to declare the northern region as a disaster area so that it could
attract international assistance. Eventually, the “Invisible Children” a film on the plight of the children in northern was shown in the United States. It exposed the international community to the negative consequences of the conflict especially on children. Several legislative acts were passed through the United States congress that put pressure on the government of Uganda and the rebel group to end the conflict.

I am proud to have been among the people who openly urged the Government of Uganda to engage in Peace Talks with the rebels. This was during a live interview on British Broadcasting Corporation (BBC) Africa program in June 2006. It was bold for me to exert pressure on the government because I had served as the Vice Chairperson for the Parliamentary Committee of Defense and Internal Affairs. My first-hand experience had informed me of the dynamics of the situation. I was thrilled when a week later His Excellency Yoweri Kaguta Museveni of the Republic of Uganda appeared on the same BBC program and declared unconditional amnesty for the rebel leaders and expressed the willingness to talk peace. The peace process was initiated and a cease-fire agreement was signed in August 2006. The final peace agreement had not been signed by the time this research study was concluded however; the northern region has been relatively peaceful since 2006.

The first comprehensive peace and development program for Northern Uganda was launched in 2007 after the war had subsided. The peace negotiations were underway in the town of Juba in Southern Sudan. The government launched the Peace Recovery and Development Plan (PRDP) for Northern Uganda to eradicate poverty and improve the welfare of the populace. Due to the peaceful developments, a number of Internally Displaced Persons (IDPs) have either returned home or are in transition camps. The main
The objective of the PRDP is to consolidate state authority, rebuild and empower communities that have suffered from the negative impact of the armed conflict, revitalize the economy and promote peace building and reconciliation. Critics say that the PRDP is a plan for militarization of the north because there is very little emphasis on education and too much attention on policing.

The PRDP is the first comprehensive post-conflict program. The first year of its implementation was to start in 2008-2009. The government provided Uganda shillings 51.68bn (equivalent to $30.4 million) for the initial implementation of the program but the program was suspend in the beginning of 2009 because of the global financial crisis that affected the donor countries like the United States of America, United Kingdom and the European Union who were expected to fund the program.

Although the education sector did not feature prominently in the PRDP, the emphasis by the local government leaders in the region is on the revitalization of education. Local people realize that education is the key for social and economic development of the Northern Region.

There is a general belief that the cause of conflict in the northern region is rooted in the education disparity. Post-conflict relief programs must provide equitable access to quality education and in particular science education. This could resolve the long-standing conflict between the North and the South. The overall implication of such disparity in education on the development of the northern region calls for immediate action. There is a need for a quantum leap into the future if the northern region is to attain the same level of development as the rest of the country within the next 10 years.
Admission to Science Courses at Government Universities

The minimum academic requirement for admission to universities is two principle passes in the major four subjects studied at the A’ level secondary school. There is always a high competition for the few slots especially in science departments. An analysis of the 2007-2008 list of government sponsorship to science-based courses such as medicine, engineering and agriculture at government universities showed a disparity among the regions. The central region contributed 40% of the students on government sponsorship, the western region contributed 26.7%, the eastern region contributed 20% and the northern region contributed 14.3%. The disparity can be explained by both academic performance and financial affordability of the parents and guidance. Most students who go to the best performing secondary schools also come from financially stable households that can afford to pay for university education.

During the recent selection process under the government sponsorship scheme for the academic year 2008-2009, Makerere University admitted 1,800 students on government sponsorship, Kyambogo University admitted 700 students, Mbarara University of Science and Technology admitted 300 students, Gulu University admitted 200 students and Busitema University admitted 100 students. The remaining 800 students were admitted under the district-quota system, introduced two years earlier, whereby each district is allocated 10 slots. Again, the admission list was still dominated by top schools, mainly within the central region. Among the top 13 schools that dominated the government-sponsored list, eleven were from the central, one from eastern region and one from western region and none from the northern region.
A total of 2,608 students were admitted under the government sponsorship scheme to study science courses during the academic year 2008-2009. This constituted 75% of the government sponsorships awarded on academic merit and 25% awarded as district quotas (Zziwa, 2008).

A similar trend was observed where the central region sent a total of 1,110 (47.4%) students, followed by 620 (26.5%) from the western region, 407 (17.4%), from the eastern and northern region sent 204 (8.7%). The above statistics revealed that while the central region had a percentage increase in the number of students obtaining government sponsorship, the number went down for the eastern and northern region while the western region remained almost constant. The number of students qualifying for government sponsorship from the northern region reduced significantly from the previous year.

Government Sponsorship for Medical Courses at Public Universities

The regional distribution of government-sponsored students in the medical field is presented in Table 4. The table presents the number of students from the four regions who were sponsored by government to pursue Bachelor of Medicine and Surgery, Bachelor of Pharmacy and Dental Surgery at the three major government universities namely; Makerere University, Mbarara University for Science and Technology, and Gulu University in the academic year 2007-2008.

Out the 158 students admitted for various courses in medicine and pharmacy at the three government universities, 11% were from the northern region, 14% were from the eastern region, 22% from western region, and 47% were from the central region.
Table 4

Government Sponsorship for Science-Based Medical Courses at Government Universities 2007-2008

<table>
<thead>
<tr>
<th>Courses</th>
<th>Institution</th>
<th>Northern</th>
<th>Eastern</th>
<th>Central</th>
<th>Western</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Medic &amp; Surgery</td>
<td>Makerere</td>
<td>9 (10.9%)</td>
<td>6 (7.3%)</td>
<td>55 (67.0%)</td>
<td>12 (14.6%)</td>
<td>82</td>
</tr>
<tr>
<td>B. Medic &amp; Surgery</td>
<td>Mbarara</td>
<td>3 (7.9%)</td>
<td>7 (18.4%)</td>
<td>15 (39.5%)</td>
<td>13 (34.2%)</td>
<td>38</td>
</tr>
<tr>
<td>B. Medic &amp; Surgery</td>
<td>Gulu</td>
<td>2 (13.3%)</td>
<td>4 (26.7%)</td>
<td>6 (40.0%)</td>
<td>3 (20.0%)</td>
<td>15</td>
</tr>
<tr>
<td>B. Pharmacy</td>
<td>Makerere</td>
<td>1 (5.6%)</td>
<td>4 (22.2%)</td>
<td>8 (44.4%)</td>
<td>5 (27.8%)</td>
<td>18</td>
</tr>
<tr>
<td>B. Pharmacy</td>
<td>Mbarara</td>
<td>2 (40.0%)</td>
<td>1 (20.0%)</td>
<td>0 (0%)</td>
<td>2 (40.0%)</td>
<td>5</td>
</tr>
<tr>
<td>B. Dental Surgery</td>
<td>Makerere</td>
<td>0 (0.0%)</td>
<td>3 (37.5%)</td>
<td>4 (50.0%)</td>
<td>1 (12.5%)</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>17</td>
<td>22</td>
<td>74</td>
<td>35</td>
<td>158</td>
</tr>
</tbody>
</table>

A further analysis showed that out of the 82 students who were admitted for Bachelor of Medicine and Surgery at Makerere University, 67.0% were from the central region, 14.6% were from the western region, 10.9% from the northern region, and 7.3% from the eastern region. Furthermore, of the 38 students who were admitted for Bachelor of Medicine and Surgery at Mbarara University, 39.5% of the students were from the central region, 34.2% from the western region, 18.4% from the eastern region, and 7.9% of the students were from the northern region. At Gulu University, which is in northern region, out of 15 students admitted for Bachelor of Medicine and Surgery, 39.5% were
from the central region, 26.7% from the eastern region, 20.0% from western region, and 13.3% of them were from the northern region.

It should be noted that Bachelor of Pharmacy is only offered at Makerere and Mbarara University. Makerere University admitted 18 students and Mbarara University admitted 5 students. Of the 18 students admitted to Makerere University, 8 (44.4%) were from the western region, 5 (27.8%) from the central region, 4 (22.2%) were from the eastern region, and 1 student (5.6%) qualified from the northern region.

At Mbarara University, out of the 5 students admitted for Bachelor of Pharmacy 2 were from the northern region, another 2 from the eastern region, and 1 student was from the western region. Surprisingly no student was admitted for Bachelor of Pharmacy from the central region. Four of the 8 students that were admitted for Bachelor of Dental Surgery at Makerere University were from the central region; 3 were from the eastern region, 1 from the western region, and none from the northern region. Over all, the northern region sent fewer students to the universities to study medical courses.

Government Sponsorship for Engineering Courses at Makerere University

The regional distribution of government sponsored students to major engineering courses at Makerere University is presented in Table 5. It was reported that 42.9% of the students were from the central region, 30.2% of the students were from the western region, 15.3% from the eastern region, and 8.5% from the northern region.

A critical analysis of the distribution of students per course revealed that there was five or less number of students from the northern region studying engineering courses at any given time and there was no student admitted for information technology in the whole
### Table 5

**Government Sponsorship for Engineering Courses at Makerere University 2007-2008**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Northern</th>
<th>Eastern</th>
<th>Central</th>
<th>Western</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc Civil Eng</td>
<td>2 (5.6%)</td>
<td>3 (8.3%)</td>
<td>18 (50%)</td>
<td>13 (36.1%)</td>
<td>36</td>
</tr>
<tr>
<td>BSc. Mech Eng</td>
<td>2 (7.1%)</td>
<td>4 (14.3%)</td>
<td>16 (57.1%)</td>
<td>6 (21.4%)</td>
<td>28</td>
</tr>
<tr>
<td>BSc Electrical Eng</td>
<td>5 (16.1%)</td>
<td>5 (16.1%)</td>
<td>11 (35.5%)</td>
<td>10 (32.3%)</td>
<td>31</td>
</tr>
<tr>
<td>B. Architect</td>
<td>2 (10.0%)</td>
<td>1 (5.0%)</td>
<td>7 (35.0%)</td>
<td>10 (50.0%)</td>
<td>20</td>
</tr>
<tr>
<td>B. Quantity Survey</td>
<td>0 (0%)</td>
<td>4 (22.2%)</td>
<td>10 (55.6%)</td>
<td>4 (22.2%)</td>
<td>18</td>
</tr>
<tr>
<td>BSc. Const &amp; Mgt</td>
<td>3 (16.7%)</td>
<td>2 (11.1%)</td>
<td>8 (14.4%)</td>
<td>5 (27.8%)</td>
<td>18</td>
</tr>
<tr>
<td>BSc Telecom Eng</td>
<td>2 (7.1%)</td>
<td>7 (25.0%)</td>
<td>12 (42.9%)</td>
<td>7 (25.0%)</td>
<td>28</td>
</tr>
<tr>
<td>BSc ICT &amp; Computing</td>
<td>0 (0%)</td>
<td>3 (30.0%)</td>
<td>5 (50.0%)</td>
<td>2 (20.0%)</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>29</strong></td>
<td><strong>87</strong></td>
<td><strong>57</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

of northern region. The few that qualified for government sponsorship to study engineering are usually those whose parents are wealthy and can afford to send them to the best schools in the city. The eastern region had a fair representation in all the engineering courses compared to the northern region except for the Bachelor of Architect where they had one student admitted from the whole region.
Government Sponsorship for Engineering at Kyambogo University

The regional distribution of government-sponsored students in engineering at Kyambogo University during the academic year 2007-2008 is presented in Table 6.

Table 6

Government Sponsorship for Engineering Courses at Kyambogo University

<table>
<thead>
<tr>
<th>Courses</th>
<th>Northern</th>
<th>Eastern</th>
<th>Central</th>
<th>Western</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc Civil Eng</td>
<td>1 (6.6%)</td>
<td>3 (20.0%)</td>
<td>4 (26.7%)</td>
<td>7 (46.7%)</td>
<td>15</td>
</tr>
<tr>
<td>B. Quantity Survey</td>
<td>3 (20.0%)</td>
<td>5 (33.3%)</td>
<td>2 (13.3%)</td>
<td>5 (33.3%)</td>
<td>15</td>
</tr>
<tr>
<td>B.Eng &amp; Mech Mft</td>
<td>0 (0.0%)</td>
<td>2 (13.3%)</td>
<td>7 (46.7%)</td>
<td>6 (40.0%)</td>
<td>15</td>
</tr>
<tr>
<td>BSc. Building Econ</td>
<td>2 (13.3%)</td>
<td>2 (13.3%)</td>
<td>8 (53.3%)</td>
<td>3 (20.0%)</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6 (10.0%)</td>
<td>12 (20.0%)</td>
<td>21 (35%)</td>
<td>21 (35%)</td>
<td>60</td>
</tr>
</tbody>
</table>

Out of 60 students admitted to the engineering faculty, 35% were from the western region, 18% from the central region, 20% from the eastern region, and 10% from the northern region. There was no student from the northern region who qualified for Bachelor of Engineering and Mechanical Manufacturing.

It has been reported that completion rates are lower among the students from the northern region who are admitted through private sponsorship because some of the
students dropout prematurely without obtaining their degrees due to poverty and lack of tuition fees.

Agriculture in Uganda is the backbone of the economy because 90% of the population is employed in agricultural production (Lugoloobi, 2008). The Plan for Modernization of Agriculture (PMA) and National Agricultural Advisory Services (NAADS) were initiated to modernize and promote agricultural production (Kassami, 2002). Although the government has been emphasizing modernizing agriculture, agricultural yields are among the lowest in spite of the favorable climatic conditions. According to the Vision 2035 projections, there are challenges of market research to inform farmers on what the market needs are. Other challenges include inadequate mechanization and technology, poor post-harvest handling techniques, disease and pets controls (Lugoloobi, 2008).

**Government Sponsorship for Agricultural Courses at Makerere University**

The above challenges call for more agricultural engineers and managers. One way government has contributed towards boosting the agricultural sector was to establish Gulu University for Science and Technology in Northern Uganda with a mission of rural transformation. The regional distribution of government-sponsored students admitted to study agricultural courses at Makerere University during the academic year 2007-2008 are presented in Table 7.

Although the north is basically an agricultural region, no student was admitted to the Bachelor of Science in Agricultural Engineering, Bachelor of Science in Agricultural Management and Bachelor of Science in Land Economics programs. Most of the students
Table 7

Government Sponsorship for Agricultural Courses at Makerere University, Academic Year 2007-2008

<table>
<thead>
<tr>
<th>Courses</th>
<th>Northern</th>
<th>Eastern</th>
<th>Central</th>
<th>Western</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc Land Econ</td>
<td>0 (0.0%)</td>
<td>4 (23.5%)</td>
<td>7 (41.2%)</td>
<td>6 (35.3%)</td>
<td>17</td>
</tr>
<tr>
<td>BSc Agric &amp; Mgt</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>5 (62.5%)</td>
<td>3 (37.5%)</td>
<td>8</td>
</tr>
<tr>
<td>BSc. Agric. Eng</td>
<td>0 (0.0%)</td>
<td>1 (5.9%)</td>
<td>12 (70.6%)</td>
<td>4 (23.5%)</td>
<td>17</td>
</tr>
<tr>
<td>BSc. Horticulture</td>
<td>2 (11.1%)</td>
<td>4 (22.2%)</td>
<td>5 (27.8%)</td>
<td>7 (38.9%)</td>
<td>18</td>
</tr>
<tr>
<td>BSc. Forestry</td>
<td>5 (17.9%)</td>
<td>5 (17.9%)</td>
<td>9 (32.1%)</td>
<td>9 (32.1%)</td>
<td>28</td>
</tr>
<tr>
<td>B. Envir /Tech &amp; Mgt</td>
<td>2 (13.3%)</td>
<td>1 (6.7%)</td>
<td>4 (26.7%)</td>
<td>8 (53.3%)</td>
<td>15</td>
</tr>
<tr>
<td>BSc Fisheries</td>
<td>2 (6.1%)</td>
<td>7 (21.2%)</td>
<td>16 (48.5%)</td>
<td>8 (24.2%)</td>
<td>33</td>
</tr>
<tr>
<td>B. Food Sc &amp; Tech</td>
<td>3 (11.1%)</td>
<td>4 (14.8%)</td>
<td>13 (48.1%)</td>
<td>7 (25.9%)</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>26</td>
<td>71</td>
<td>52</td>
<td>183</td>
</tr>
</tbody>
</table>

admitted in the agricultural courses were from the central region. Out of 163 students admitted for various agricultural courses, 43.6% were from the central region, 31.9% were from the western region, 16.0% from the eastern region, and 8.5% from the northern region.

Government Sponsorship for Agricultural Courses at Gulu and Kyambogo Universities

The distribution of government sponsored students in agriculture-related courses at Gulu and Kyambogo Universities during the 2007-2008 academic year is presented in Table 8.
Table 8

_Government Sponsorship for Agricultural Courses at Gulu and Kyambogo Universities_

<table>
<thead>
<tr>
<th>Courses</th>
<th>University</th>
<th>Northern</th>
<th>Eastern</th>
<th>Central</th>
<th>Western</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc Agriculture</td>
<td>Gulu</td>
<td>12 (27.3%)</td>
<td>7 (15.9%)</td>
<td>7 (15.9%)</td>
<td>18 (40.9%)</td>
<td>44</td>
</tr>
<tr>
<td>B.Voc. Studies/</td>
<td>Kyambogo</td>
<td>0 (0%)</td>
<td>4 (40.0%)</td>
<td>3 (30.0%)</td>
<td>3 (30.0%)</td>
<td>10</td>
</tr>
<tr>
<td>Agric. Educ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSc Comm. Forest</td>
<td>Gulu</td>
<td>2 (11.1%)</td>
<td>5 (27.8%)</td>
<td>7 (38.9%)</td>
<td>4 (22.2%)</td>
<td>18</td>
</tr>
<tr>
<td>B. Food Sc &amp;</td>
<td>Kyambogo</td>
<td>0 (0%)</td>
<td>6 (42.9%)</td>
<td>3 (21.4%)</td>
<td>5 (35.7%)</td>
<td>14</td>
</tr>
<tr>
<td>Tech</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>14</td>
<td>22</td>
<td>20</td>
<td>13</td>
<td>86</td>
</tr>
</tbody>
</table>

Out of the 86 students admitted for agricultural courses at both universities, 35% of the students were from the western region, 26% from the eastern region, 23% from the central region, and 16% from the northern region. There were no students from the northern region admitted for Bachelor of Vocational Studies or Bachelor of Food Technology at Kyambogo University and only two students from Northern Uganda were admitted for Bachelor of Forestry.

The northern region used to be the food basket of Uganda. The absence of students from the northern region in key agricultural courses is a big challenge to the economic development of the region. As the people from the IDP camps go back to the villages after the 21 years of war, agriculture is their only hope for livelihood. It is at such a time that they need agricultural managers and engineers to guide them on proper land
use to maximize agricultural production. Unfortunately, no agricultural engineers and managers are being trained from the region to meet this urgent need.

Qualifications and Regional Distributions of Science Teachers in Uganda

The lack of science teachers emerged as one of the factors contributing to poor academic performance in science subjects at secondary school levels. In 2006, there were a total of 7,315 science teachers in Uganda and the regional distribution was 1,058 (14.5%) in the northern region, 2,024 (27.7%) in the eastern region, 2,451 (33.5%) in the central region, and 1,782 (24.4%) in the western region. Of the 7,315 science teachers, 334 (31.9%) were Biology teachers, 1,195 (16.3%) were Chemistry teachers, 1,940 (26.5%) were Physics teachers, 1,410 (19.3%) were Mathematics teachers, and 277 (3.8%) taught Agriculture and Technical Drawing.

The qualification of the science teachers were such that 310 (4.3%) were unlicensed, 372 (5.2%) were licensed, 568 (7.9%) were Grade V teachers, 3,150 (44.1%) were diploma holders, 2,345 (32.8%) were graduate teachers, and 402 (5.6%) were undefined. The impact of the quality of teachers and their regional distribution was of interest to this study because poor quality and the uneven distribution of science teachers nationally had been cited as contributory to the poor performance in science subject in the national examination at secondary school level.
Admission to Science Education Programs at Kyambogo and Makerere Universities

The regional distribution of government sponsored students to study various science courses and science education programs at Kyambogo University and Makerere University are presented in Table 9.

Table 9

*Data for Makerere University*

The table shows that 42.8% of the students were from central region, 29.3% from western region, 19.0% from the eastern, and 8.8% from the northern region. There were no students from the northern region admitted for Bachelor of Science in Conservation.
Biology or in Bachelor of Science in Biology. Out of 38 students admitted for Bachelor of Science in Education, 4 (10.5%) were from the northern region, 8 (21.1%) were from the eastern region, 12 (32.6%) were from the central region, and 24 (36.8%) were from the western region.

Furthermore, of the 48 students admitted for Bachelor of Education in Biology at Makerere University, 20 (42.5%) were from the eastern region, 17 (36.2%) were from the central region, 6 (12.8%) were from the western region, and 4 (8.5%) from the northern region. At both universities, the northern region sent fewer students to study science education courses. Thus, from the observed trends, it seems impossible to expect improvement in the quality of science education program if very few teachers are being trained and retained to serve in the northern region.

Admission to Science Education Programs at Gulu University

The national teachers’ colleges and universities train teachers for the Nation. However, it has been observed that teachers from other regions do not want to teach in schools in the northern region because of its remoteness and poor infrastructure resulting from the prolonged conflict. The regional distribution of students admitted to Bachelor of Science courses at Gulu University is presented in Table 10.

Since Gulu University is in Northern Uganda it would be expected that majority of the students admitted would come from the northern region. However, that has not been the case. The Bachelor of Science courses at Gulu University is dominated by students from the western region, who constituted 35% of the student population,
followed by the eastern region constituting 27.5%, the central region having 15.0% representation, and 7.5% of the students coming from the northern region.

Table 10

*Government Sponsorship for Science Education Courses at Gulu University*

<table>
<thead>
<tr>
<th>Courses</th>
<th>Northern</th>
<th>Eastern</th>
<th>Central</th>
<th>Western</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSc-General</td>
<td>0 (0.0%)</td>
<td>1 (16.7%)</td>
<td>2 (33.3%)</td>
<td>3 (50.0%)</td>
<td>6</td>
</tr>
<tr>
<td>B. Development</td>
<td>2 (22.2%)</td>
<td>0 (0%)</td>
<td>3 (33.3%)</td>
<td>4 (44.4%)</td>
<td>9</td>
</tr>
<tr>
<td>Studies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSc. Education</td>
<td>0 (0.0%)</td>
<td>3 (25.0%)</td>
<td>6 (50.0%)</td>
<td>3 (25.0%)</td>
<td>12</td>
</tr>
<tr>
<td>B.Sc. Education Biol</td>
<td>1 (11.0%)</td>
<td>4 (44.4%)</td>
<td>1 (11.0%)</td>
<td>3 (33.3%)</td>
<td>9</td>
</tr>
<tr>
<td>BSc. Educ</td>
<td>0 (0.0%)</td>
<td>3 (75.0%)</td>
<td>0 (0.0%)</td>
<td>1 (25.0%)</td>
<td>4</td>
</tr>
<tr>
<td>Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3</td>
<td>11</td>
<td>10</td>
<td>14</td>
<td>40</td>
</tr>
</tbody>
</table>

Of the 40 students admitted to various Bachelor of Science courses, three were from Northern Uganda. Bachelor of Education in Biology admitted only one student and the other two students were admitted for Development Studies, which is not a core science course. No student from the northern region qualified for Bachelor of Science General, Bachelor of Science Education, and Bachelor of Science Education Technology. Why, what is the explanation?
Educational Policy in Emergency and Conflict Situations

This section examines government policies that were implemented to provide equitable access to quality education for all children especially those affected by the armed conflict in Northern Uganda. The educational needs of children affected by the armed conflict were identified by stakeholders as school security and safety, availability of classrooms, desks, textbooks, school fees, uniforms, food, accommodation, and sufficient numbers of professionally trained teachers.

In order to substantiate the education policy provisions and the effects of the policies on the student population, it was necessary to analyze the science education program in conflict situations. The key policy areas were divided into five broad categories:

1. The National Education Policy and Science Education Policy
2. Professional Teacher Development and Curriculum Reform
3. Affirmative Action and Affirmative Opportunities
4. Emergency Education Policy and Budget
5. School Security and Safety

The Structure of the Survey and the Sample of Respondents

The first item in the survey sought responses regarding the overall objective of the education policy as presented by the Ministry of Education and Sports policy documents. The purpose of the survey questions was to reflect on the benefit of the Ugandan education policy and evaluate it in terms of success or failure. Respondents expressed
positions regarding the extent to which the policies equally and adequately addressed the plight of children affected by armed conflicts.

The views of the Members of Parliament were particularly important because they are the policy makers and it was interesting to establish whether they believed in the policy they had enacted. The views of the district officials and teachers who implement government policies were important. Comparing their responses with those of the students who are the recipients of government policies was intended to determine policy articulation at the school level.

The Members of Parliament were drawn from all constituencies and districts in Uganda. The other respondents included staff of Gulu University and district officials and councilors from Gulu and Amuru in Northern Uganda. They were most affected by the 21 years of armed conflict between the Lord's Resistance Army (LRA) the Uganda Peoples' Defense Forces (UPDF). The teachers were also included among the policy implementers.

Journalists reporting on parliament were included in the study because they represent apolitical, independent views of government policy. The parliamentary journalists were treated as a comparison group because of their investigative and reporting functions connected directly to the public. Their responses were collected and compared with those of the other respondents.

The key aspects of the education policy that were examined are (a) Universal Primary Education (UPE) policy, (b) Universal Secondary Education (USE) policy, (c) Day Secondary School (Seed Schools) per sub-county, (d) compulsory science subjects at secondary schools, and (e) 75% government sponsorship for science-based courses at universities and tertiary institutions.
The respondents were asked whether they considered these policies as being equally beneficial to children studying in conflict-affected areas such as Northern Uganda. The respondents were also asked about the need for affirmative action and affirmative opportunities for children affected by conflict in Northern Uganda. The affirmative actions that were considered included: (a) special examinations, and (b) lowering of the “cut-off points” for admissions into universities and institutions of higher learning.

On curriculum reform, the views of respondents were sought on: (a) accelerated education programs, (b) curriculum and textbook upgrade, (c) teacher re-training to meet the special needs of war-traumatized children, and (d) teacher welfare.

The survey data were analyzed using the SPSS statistical software and subjected to descriptive analysis. The chi-square test was used to establish the relationship between the responses of the different stalk-holders on the key policy issues. A one-way ANOVA was computed to determine the statistical significance of the findings and to compare the mean difference between the respondents. The data were further analyzed to establish whether the respondents’ responses were influenced by their demographic and professional backgrounds, such as profession, age, gender, political party affiliation, ethnicity, family status, or regional location within Uganda.

The purported success of UPE and its benefit to all Ugandan children, especially those studying in areas affected by armed conflicts and emergencies was a major focus of this study. It had been the subject of debate within Uganda for 10 years (1997-2007) at the time of the current study.
**Administering the Survey**

The survey was administered first in Kampala to collect responses of the Members of Parliament and journalists. The district officials, teachers, and students in Gulu district in Northern Uganda responded the same year. The following year the same survey was administered to a new population sample of local government officials from 40 districts in northern and eastern Uganda. Since Uganda had 80 districts at the time of the study, not all could be included in the collection of survey data.

**The Survey**

The survey was used to collect data regarding the Ugandan education policy and its success at equally and adequately addressing the plight of children studying in conflict-affected areas. These issues were incorporated in policy documents of the Ministry of Education and Sports. The survey further collected responses about Universal Primary Education Policy (UPE), the Day Secondary School Policy, and the Universal Secondary Education Policy (USE).
Overall Response Patterns by Professional Background, Political Party, Region of Origin, and Gender

The frequency distribution for responses regarding the Ugandan education policy’s intent to equally benefit children from conflict-affected areas is presented in Table 11. The question was: Does the Ugandan education policy equally and adequately benefit children studying in conflict-affected areas? When aggregated under agree and disagree responses, 64.6% of the respondents indicated that the education policy did not equally benefit children studying in conflict-affected areas.

Table 11

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>2 (2.0%)</td>
<td>37 (37.4%)</td>
<td>47 (47.5%)</td>
<td>13 (13.1%)</td>
<td>99</td>
</tr>
<tr>
<td>District Officials</td>
<td>3 (9.7%)</td>
<td>6 (19.4%)</td>
<td>14 (45.2%)</td>
<td>8 (25.8%)</td>
<td>31</td>
</tr>
<tr>
<td>Teachers</td>
<td>4 (5.6%)</td>
<td>17 (23.9%)</td>
<td>42 (59.2%)</td>
<td>8 (11.3%)</td>
<td>71</td>
</tr>
<tr>
<td>Students</td>
<td>12 (17.6%)</td>
<td>15 (22.1%)</td>
<td>11 (16.2%)</td>
<td>30 (44.1%)</td>
<td>68</td>
</tr>
<tr>
<td>Journalists</td>
<td>0 (0.0%)</td>
<td>2 (25.0%)</td>
<td>4 (50.0%)</td>
<td>2 (25.0%)</td>
<td>8</td>
</tr>
</tbody>
</table>

N = 277

21 (7.6%) 77 (27.8%) 118 (42.6%) 61 (22.0%) 277

Since over 60% of respondents indicated that the policy did not adequately address the plight of children affected by conflict, we can conclude that to a large extent...
the education policy in Uganda has failed. The policy falls short of meeting its objective of equal access as provide for in the Ministry of Education and Sports policy documents (Bitamazire, 2007).

The responses were further analyzed to determine if they were influenced by the position of the respondent as: (a) Member of Parliament, (b) District officials, (c) Teachers, (d) Students, and (e) Journalist, and by gender, political party affiliation, and region of origin. The expectation was that the parliamentarians would defend the national education policy because they enacted the policy and provide the oversight regarding implementation. It was also expected that members of the ruling National Resistance Movement (NRM) would defend the educational policy because of party loyalty and the opposition parties will oppose it. Furthermore, the expectation was that members from the conflict-affected northern region would disagree on the benefit of the education policy and those from the central and western region would defend it since it benefits mostly their children.

The district officials who represent the central government at the local level are expected to support government policies. The district officials indicated that the education policy did not meet its set objectives by a level of 71%. What is disturbing is the fact that they continued to support a policy that they did not believe was effective for the last 21 years to the detriment of the children studying in conflict-affected areas.

Teachers implement government policies through the curriculum and classroom. They responded that the government education policy was not beneficial to children studying in areas affected by conflicts by a level of 70.5%. The students are usually more concerned by what goes on in their schools such as food, accommodation, instructional
materials, good administrators and teachers rather than national policies. The students responded that their interest was not being catered for by the national education policy by 60.3% (Table 11).

The Ugandan journalists are critics of government although they are supposed to be neutral on national policy matters. As a group, they responded negatively about the effects of the education policy on children affected by the armed conflicts by a level of 75%.

*The Response Patterns Based on Profession*

To determine if the observed distribution of the responses to the survey (Table 11) were statistically different from the expected distribution for each of the categories of respondents, it was important to examine if the respondents' views were influence by their roles in the implementation of the education policy.

The relationship between the professional backgrounds of the respondents and the response patterns on the benefit of the educational policy for children affected by the conflict were analyzed using one-way ANOVA. Where a statistically significant results was found, a post-hoc Tukey and LSD analysis was computed to determine where the mean differences occurred. This was used to draw conclusions on the direction of the responses in terms of whether they tended to (1) Strongly agree, (2) Agree, (3) Disagree, or (4) Strongly disagree on the policy issues on the survey.

An independent *t* test was conducted to determine the relationship between respondents' gender and the response patterns. The summary of *P*-values for responses on
education policy based on professional background, political affiliation, region of origin and gender is presented in Table 12.

Table 12

*P-Values for Responses on the Education Policy*

<table>
<thead>
<tr>
<th>Education Policy Issues</th>
<th>Professional Background</th>
<th>Political Parties</th>
<th>Region of Origin</th>
<th>Gender t test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda Education Policy</td>
<td>0.745</td>
<td>0.277</td>
<td>0.034*</td>
<td>0.017*</td>
</tr>
<tr>
<td>Universal Primary Education</td>
<td>0.035*</td>
<td>0.062</td>
<td>0.386</td>
<td>0.002*</td>
</tr>
<tr>
<td>Universal Secondary Education</td>
<td>0.096</td>
<td>0.21*</td>
<td>0.227</td>
<td>0.150</td>
</tr>
<tr>
<td>Day Schools</td>
<td>0.380</td>
<td>0.678</td>
<td>0.324</td>
<td>0.990</td>
</tr>
<tr>
<td>Compulsory Science Subjects</td>
<td>0.888</td>
<td>0.505</td>
<td>0.098</td>
<td>0.463</td>
</tr>
<tr>
<td>Government Sponsorship</td>
<td>0.009*</td>
<td>0.005*</td>
<td>0.007*</td>
<td>0.047*</td>
</tr>
<tr>
<td>Affirmative Action</td>
<td>0.149</td>
<td>0.358</td>
<td>0.666</td>
<td>0.512</td>
</tr>
<tr>
<td>Accelerated Programs</td>
<td>0.411</td>
<td>0.873</td>
<td>0.723</td>
<td>0.112</td>
</tr>
<tr>
<td>Special Examinations</td>
<td>0.002*</td>
<td>0.444</td>
<td>0.243</td>
<td>0.008*</td>
</tr>
<tr>
<td>Cut-Off-Points (Scores)</td>
<td>0.000*</td>
<td>0.004*</td>
<td>0.001</td>
<td>0.126</td>
</tr>
<tr>
<td>Teacher Retraining</td>
<td>0.018*</td>
<td>0.121</td>
<td>0.133</td>
<td>0.605</td>
</tr>
<tr>
<td>Special Allowance</td>
<td>0.824</td>
<td>0.232</td>
<td>0.523</td>
<td>0.354</td>
</tr>
<tr>
<td>Emergency Education Policy</td>
<td>0.804</td>
<td>0.748</td>
<td>0.020</td>
<td>0.755</td>
</tr>
<tr>
<td>Education Emergency Budget</td>
<td>0.746</td>
<td>0.714</td>
<td>0.268</td>
<td>0.101</td>
</tr>
<tr>
<td>Boarding Facilities</td>
<td>0.047*</td>
<td>0.113</td>
<td>0.349</td>
<td>0.312</td>
</tr>
<tr>
<td>Relocation of Students</td>
<td>0.000*</td>
<td>0.198</td>
<td>0.672</td>
<td>0.000*</td>
</tr>
<tr>
<td>School Fencing</td>
<td>0.087</td>
<td>0.107</td>
<td>0.413</td>
<td>0.212</td>
</tr>
</tbody>
</table>

* Denotes statistically significant at $p = 0.05$. 
The differences in the means and the standard deviations for the responses on the education policy for significant $p$-values among the respondents are presented in Table 13.

<table>
<thead>
<tr>
<th>Policy Issues</th>
<th>Parliamentarians</th>
<th>District Councilors</th>
<th>Teachers</th>
<th>Students</th>
<th>Journalists</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
</tr>
<tr>
<td>Universal Primary Education</td>
<td>2.31 .751</td>
<td>2.28 .683</td>
<td>2.56</td>
<td>.879</td>
<td>2.11 1.042</td>
</tr>
<tr>
<td>Government Sponsorship</td>
<td>2.65 .943</td>
<td>3.03 .875</td>
<td>3.11</td>
<td>.868</td>
<td>3.00 1.069</td>
</tr>
<tr>
<td>Special Examination</td>
<td>2.11 .942</td>
<td>2.39 .882</td>
<td>2.62</td>
<td>1.049</td>
<td>2.09 1.103</td>
</tr>
<tr>
<td>Curriculum Update</td>
<td>1.97 .874</td>
<td>1.68 .653</td>
<td>2.17</td>
<td>.821</td>
<td>1.75 .852</td>
</tr>
<tr>
<td>Teacher Retraining</td>
<td>1.65 .672</td>
<td>1.72 .683</td>
<td>2.03</td>
<td>1.030</td>
<td>1.94 .977</td>
</tr>
<tr>
<td>Relocation of Students</td>
<td>1.76 .818</td>
<td>2.19 .998</td>
<td>2.35</td>
<td>1.007</td>
<td>1.54 .918</td>
</tr>
<tr>
<td>Boarding Facilities</td>
<td>1.98 .778</td>
<td>2.09 .856</td>
<td>2.27</td>
<td>.859</td>
<td>1.86 .066</td>
</tr>
</tbody>
</table>

The respondents surveyed tended to agree on the benefit of the Universal Primary Education policy to students studying in conflict-affected areas. The district officials, teachers and students tended to disagree with the benefit of the 75% government sponsorship for science-based courses to children affected by conflicts than the parliamentarians and the journalists. The policy of administering special examination was supported more by the journalist than the rest of the respondents.
The Members of Parliament, district officials, students and journalist supported the policy of curriculum reform. The teachers did not support the policy. Furthermore, the policy of retraining and retooling of teachers to meet the challenges of post-conflict education was supported by all the respondents except the district councilor.

The parliamentarians, students, and journalist tended to support the policy of relocation of students during humanitarian crises more than the teachers and district councilors did. The policy of transforming day schools into boarding schools was supported more by the students and Parliamentarians than the district councilors, teachers and journalists.

*The Response Pattern to Survey on Education Policy Based on Gender*

The response pattern regarding the effectiveness of the education policy based on gender is presented in Table 14. When aggregated under agree and disagree, 47.4% of the females agreed and 52.6% disagreed with effectiveness of the education policy to children affected by armed conflicts. Of the male gender, 29.9 % agreed and 70.1% disagreed that the education policy equally benefited children in conflict areas.

A chi-square test of independence was calculated comparing the views of the females and males respondents on the benefit of the education policy to children affected by conflict. A statistically significant difference ($\chi^2 (3, N = 270) = 8.109, p < 0.05$) in response was observed among the gender. The data seem to indicate that males are more likely to choose “disagree” and “strongly disagree” while females are more likely to choose “agree” and “strongly agree.” In other words, females appeared to have a more positive view of the policy than their male counterparts.
Table 14

Response Pattern on Education Policy Based on Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>10 (10.8%)</td>
<td>34 (36.6%)</td>
<td>31 (33.3%)</td>
<td>18 (19.3%)</td>
<td>93 (34.4%)</td>
</tr>
<tr>
<td>Male</td>
<td>11 (6.2%)</td>
<td>42 (23.7%)</td>
<td>81 (45.8%)</td>
<td>43 (24.3%)</td>
<td>177 (65.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>76</td>
<td>112</td>
<td>61</td>
<td>270</td>
</tr>
</tbody>
</table>

An independent t test comparing the mean score of the female and male respondents' gender was also calculated. A statistically significant difference in response was observed, $t(268) = 2.399, p < 0.05$, between the females ($M = 2.61, SD = .921$) and males ($M = 2.88, SD = .848$) on the benefit of the education policy for students studying in conflict affected areas.

Furthermore, a statistically significant difference in response was observed on the benefit of the Universal Primary Education Policy, $t(277) = 3.156, p < 0.05$, between the females ($M = 2.10, SD = .825$) and males ($M = 2.45, SD = .875$).

A statistically significance difference in response was also observed on the policy of government sponsorship for science-based courses, $t(268) = 1.997, p < 0.05$, between the females ($M = 2.75, SD = 1.062$) and males ($M = 2.97, SD = .922$).

There was a statistically significance difference in response on the policy of administering special examination for students affected by conflict, $t(269) = 2.653, p < 0.05$, between the females ($M = 2.02, SD = .716$) and males ($M = 2.36, SD = .715$).
Furthermore, a statistically significance difference in response was observed between on the policy of relocation of students during crises situations, $t(273) = 2.791$, $p < 0.05)$, between the females ($M = 1.52$, $SD = .740$) and males ($M = 2.08$, $SD = 1.003$).

The Response Pattern to Survey Based on Political Parties

In Uganda, political party loyalty is highly emphasized above everything else. It was projected that the members of the NRM party would express strong views in support of the educational policy, especially since the party was in power and support was a sign of loyalty. In general, the expectation was that Members of Parliament would be biased by their party affiliation.

The members of the ruling National Resistance Movement (NRM) party are expected to defend government policies even if they did not fully agree with them. This is practiced to demonstrate cohesion in the party. Meanwhile the members of the opposition party and other minority parties oppose any government policies regardless of its merit. The response pattern on the survey based on party affiliation for all the respondents is presented in Table 15.

Of the ruling NRM political party, 46.5% responded that the education policy equally and effectively addresses the educational needs of children studying in conflict-affected areas and 53.6% disagreed. Moreover, 32.5% of the respondents belonging to the main opposition FDC political party agreed that the education policy equally benefit children studying in conflict-affected areas and 67.5% disagreed. Among the independent respondents, 30.5% agreed that the education policy is beneficial to students studying in
conflict areas and 69.5% disagreed and 23.8% of the minority parties agreed on the benefit of the education policy to children studying in conflict areas and 73.1% disagreed.

Table 15

Response Pattern on Education Policy Based on Party Affiliation

<table>
<thead>
<tr>
<th>Party</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>5 (6.1%)</td>
<td>20 (24.4%)</td>
<td>40 (48.8%)</td>
<td>17 (20.8%)</td>
<td>82 (30.1%)</td>
</tr>
<tr>
<td>NRM</td>
<td>3 (3.6%)</td>
<td>36 (42.9%)</td>
<td>33 (39.3%)</td>
<td>12 (14.3%)</td>
<td>84 (30.9%)</td>
</tr>
<tr>
<td>FDC</td>
<td>12 (15.0%)</td>
<td>14 (17.5%)</td>
<td>29 (36.3%)</td>
<td>25 (31.3%)</td>
<td>80 (29.4%)</td>
</tr>
<tr>
<td>Others</td>
<td>1 (3.8%)</td>
<td>6 (23.0%)</td>
<td>12 (46.2%)</td>
<td>7 (26.9%)</td>
<td>26 (9.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>76</td>
<td>114</td>
<td>61</td>
<td>272</td>
</tr>
</tbody>
</table>

To establish if the views of the respondents were in anyway influenced by their party affiliations, a further analysis was carried out. A one-way ANOVA comparing the mean difference in response among the representative of the political parties on the Ugandan education policy was computed. The result revealed no significant difference in mean response between the political parties ($F(3, 271) = .187, p > 0.05$) on the benefit of the education policy to students studying in conflict affected areas.

The data revealed a significant difference in mean response between the political parties on the policy of USE ($F(3, 271) = 3.301, p < 0.05$). A post-hoc Tukey's HSD and LSD were computed to determine the nature of the differences among the political parties. The analysis revealed that there was a significant difference in response between
the NRM ($M = 2.24, SD = .781$) and FDC ($M = 2.64, SD = .641$) on the benefit of the Universal Secondary Education to children studying in conflict. The main opposition party (FDC) tended to disagree more on the benefit of the USE policy to children studying in conflict-affected areas than the NRM did.

The results also revealed a significant difference in mean response between the political parties on the benefit of the 75% government sponsorship for science courses at higher institutions of learning ($F(3,269) = 4.000, p < 0.05$). A post-hoc Tukey’s HSD and LSD were computed to determine the nature of the differences among the political parties. The analysis revealed that there was a significant difference in response between the NRM ($M = 2.24, SD = .781$) and FDC ($M = 2.64, SD = .641$) and the independents ($M = 2.41, .860$) on the 75% sponsorship for science courses at higher institutions for children studying in conflict areas. The independents and the members of the main opposition party (FDC) tended to disagree more on the benefit of the government sponsorship policy than the NRM did.

Furthermore, the results also revealed a significant difference in mean response between the political parties on the policy of lowering the cut-off-points ($F(3,268) = 4.564, p < 0.05$). A post-hoc Tukey’s HSD and LSD were computed to determine the nature of the differences among the political parties. The analysis revealed that there was a significant difference in response between the NRM ($M = 2.24, SD = .781$) and FDC ($M = 2.64, SD = .641$) and the independents ($M = 2.41, .860$) on the lowering of cut-off-points for children studying in conflict areas. The independents and the members of the main opposition party (FDC) tended to disagree more on the benefit of the USE policy than the NRM did.
The response pattern to the survey on the education policy by members of Parliament belonging to different political parties is presented in Table 16. An analysis of the responses of the Members of Parliament from the various political parties revealed that 38.9% of the independent Members of Parliament agreed that the education policy equally benefited children studying in conflict-affected areas and 61.1% disagreed. Among the NRM Parliamentarians, 46.6% agreed and 53.2% disagreed with the benefit of the education policy to students studying in conflict-affected areas. Among the major opposition party, FDC, 15.5% agreed and 84.6% disagreed with the benefit of the education policy. Of the smaller parties, 16.6% agreed and 83.4% disagreed with the benefit of the education policy to children studying in conflict-affected areas.

Table 16

Response Pattern on the Education Policy Among Parliamentarians Belonging to Different Political Parties

<table>
<thead>
<tr>
<th>Party</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>0 (0.0%)</td>
<td>7 (38.9%)</td>
<td>8 (44.4%)</td>
<td>3 (16.7%)</td>
<td>18 (18.2%)</td>
</tr>
<tr>
<td>NRM</td>
<td>1 (1.6%)</td>
<td>28 (45.2%)</td>
<td>27 (43.5%)</td>
<td>6 (9.7%)</td>
<td>62 (62.6%)</td>
</tr>
<tr>
<td>FDC</td>
<td>1 (7.7%)</td>
<td>1 (7.7%)</td>
<td>8 (61.5%)</td>
<td>3 (23.1%)</td>
<td>13 (13.1%)</td>
</tr>
<tr>
<td>Others</td>
<td>0 (0.0%)</td>
<td>1 (16.6%)</td>
<td>4 (66.8%)</td>
<td>1 (16.6%)</td>
<td>6 (6.1%)</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>37</td>
<td>47</td>
<td>13</td>
<td>99</td>
</tr>
</tbody>
</table>
A one-way ANOVA was computed to compare the difference in mean responses of Members of Parliament based on their political party affiliation. No statistically significant difference in response pattern was observed among the parliamentarians belonging to the different political parties. The response pattern indicated that political party affiliation had no influence on the responses of the parliamentarians regarding the education policy and educational recovery for children in conflict regions ($F(95, 98) = 1.497, p > 0.05$).

The data thus suggest that the responses were not directly influenced by party affiliation. Therefore, since over 60% of the Parliamentarians indicated that the education policy did not equally and adequately benefit the children studying in areas affected by armed conflict, the researcher concludes that there is agreement across political party lines that the Ugandan education policy is not beneficial to children studying in conflict-affected areas.

*The Response Pattern to the Survey on Education Policy by Region of Origin*

In Ugandan history, ethnicity has played a critical role in many political decisions including supporting government policies. This normally depends on whether one belongs to the ruling party or not. There have been accusations and counter accusations about sectarianism and marginalization of the northern and eastern regions of Uganda due to their political past.

There are claims that many Ugandans from other parts of the country, especially the southerners and westerners lost their lives under the dictatorship of Idi Amin and Milton Obote regimes. Both rulers were northerners. Therefore, many people from the
Central region believed that the 21 years of insurgency in the north was a punishment from God for their evil past because the northerners are considered ruthless killers. With this background in mind, it was important to examine whether the views of the parliamentarians on various policy issues were influenced by their ethnicity or region of origin.

The response pattern to the survey by region of origin revealed a difference among the regions. It was observed that over 70% of the Members of Parliament from the northern and eastern regions either disagreed or strongly disagreed that the education policy provided equal benefits for children affected by armed conflicts (Table 17).

Table 17

*Percentage Distribution of the Response Pattern of Parliamentarians by Region of Origin*

<table>
<thead>
<tr>
<th>Education Policy</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern</td>
<td>1 (3.4%)</td>
<td>7 (24.1%)</td>
<td>14 (48.4%)</td>
<td>7 (24.1%)</td>
<td>29 (29.3%)</td>
</tr>
<tr>
<td>Eastern</td>
<td>0 (0.0%)</td>
<td>6 (27.3%)</td>
<td>13 (59.1%)</td>
<td>3 (13.6%)</td>
<td>22 (22.2%)</td>
</tr>
<tr>
<td>Central</td>
<td>0 (0.0%)</td>
<td>10 (55.6%)</td>
<td>6 (33.3%)</td>
<td>2 (11.1%)</td>
<td>18 (18.2%)</td>
</tr>
<tr>
<td>Western</td>
<td>1 (3.3%)</td>
<td>14 (46.7%)</td>
<td>14 (46.7%)</td>
<td>1 (3.3%)</td>
<td>30 (30.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>37</td>
<td>47</td>
<td>13</td>
<td>99</td>
</tr>
</tbody>
</table>

The parliamentarians from the central region responded by a slight majority that the policy was beneficial. Members of Parliament from the western region were divided
in the response pattern. The ruling government comes from the Western region and some parts of the Western region suffered armed conflict under the Allied Democratic Front (ADF) rebel groups.

While half of the Members of Parliament from Western Uganda indicated that the policy equally benefited children affected by war, half of them disagreed. This is contrary to what was expected since the parliamentarians from the west were either member of or considered sympathetic to the ruling government. This trend could be due to the fact that Western Uganda also has experienced its share of armed conflict between the rebels of the Allied Democratic Force (ADF) operating from the Democratic Republic of Congo and the government of Uganda. In the early 1990s, the remnants of the ADF rebel group attacked the region periodically.

A one-way ANOVA was computed to compare the difference in mean responses of members of parliament based on their regions of origin. No statistically significant difference was observed among the four regions ($F(95, 98) = 2.514, p > 0.05$). However, a post-hoc LSD analysis revealed that there was a significant difference in the mean response between the Members of Parliament from the northern region of 0.67 and 4.31 for the western region.

These data suggest that the respondents did not base their support for government policy on their region of origin. The data did not confirm the sectarian belief that the people in the northern and eastern regions feel neglected and marginalized by those from the central and western region. If that were the case then a statistically significant response pattern would have been observed because such tendencies usually influence views of individual towards government policies. The popular notion of the “North and
South divide" whereby the northerners and easterners feel they have been marginalized by the NRM government is not substantiated by the data. That being said, however, there was a clear difference in the mean response pattern between the Members of Parliament from the northern region and those from the western region. Members of Parliament from the central region indicated that the education policy was beneficial to all children including those from conflict areas.

This difference in the response pattern was consistence with the data on ethnicity. In Uganda there are four ethnic groups also corresponding to the regions and they are Nilotics, Bantus, Hamites, and the Nilo-Hamites. It must be noted that in Uganda the ethnicity and region of origin are often the same, which explain the significant relationship of both.

A one-way ANOVA was computed to compare the difference in mean responses of Members of Parliament based on their ethnicity. A statistically significant difference was observed among the ethnic groups \((F(95, 98) = 4.481, p<0.05)\).

A post-hoc Tukey's HSD and LSD were computed to determine the nature of the differences among the groups. The analysis revealed that there was a significant difference in response between the Nilotics \((M = 3.18, SD = .664)\) and the Bantus \((M = 2.57, SD = .673)\) on the benefit of the Universal Primary Education. The Members of Parliament belonging to the Nilotic ethnic group tended to disagree on the benefit of the education policy to students studying in conflict-affected areas than those belonging to the Bantu ethnic group.

A one-way ANOVA was also computed to compare the difference in mean responses on the 75% government sponsorship for science courses policy among
Members of Parliament based on their ethnicity. A statistically significant difference was observed among the ethnic groups ($F(3, 96) = 2.603, p < 0.05$).

A post-hoc Tukey’s HSD and LSD were computed to determine the nature of the differences among the groups. The analysis revealed that there was a significant difference in response between the Nilotics ($M = 3.09, SD = .811$) and the Bantus ($M = 2.56, SD = .876$) and the Sudanic ($M = 2.00, SD = 1.55$). The Members of Parliament belonging to the Nilotic ethnic group disagreed with the benefit of the policy of 75% government sponsorship for science courses at institutions of higher learning policy to students studying in conflict-affected areas. The Members of Parliament from the Bantu ethnic group also tended to disagree more on the benefit of the government sponsorship for science courses than the parliamentarians belonging to the Sudanic ethnic group.

Overall, the findings seem to indicate that the views of the respondents were influenced by their profession and background, gender and ethnicity. However, party affiliation seemed to have had no effect on the respondents’ responses. This indicated that the views expressed by each category of respondents were an honest assessment of each individual’s opinion and was not influenced by their party affiliation.

*Response Pattern Among District Officials Based on Political Parties*

The Gulu district chairman belongs to the Democratic Party (DP) and the majority of the district officials belonged to the Forum for Democratic Change (FDC), which is the main opposition party. The was need to establish if political affiliation was a factor in influencing the responses of the Gulu district officials on the benefit of the educational policy to children affected by the armed conflict was pursued.
The responses to the survey by the Gulu district officials was aggregated as agreed and disagreed and 29% of the district official agreed that the education policy equally benefit children studying in conflict areas and 71% disagreed.

A further analysis of the response to the survey by the officials from Gulu district revealed that political party affiliation played no part in influencing the responses on the survey even though 53.3% of the respondents belonged to the main opposition party. It was expected that since the majority of the Gulu district officials belonged to the opposition party, their party affiliation would influence their responses.

A one-way ANOVA was computed to compare the difference in the mean response patterns of the Gulu district officials based on their political party affiliations. No statistically significant difference was observed among the Gulu district officials belonging to the different political parties \( F(3, 27) = 1.637, p > 0.05 \) confirming that political party affiliation seemed not to have influenced the response patterns.

A statistical analysis using age, gender, family status, and district of origin were not significantly correlated with the response path of the district officials on the effectiveness and benefit of the education policy to children affected by conflict.

In summary, there are indicators within the survey data from the parliamentarian, the district officials, teachers, students and journalist that the education policy in Uganda does not equally and effectively address the educational needs of children studying in conflict areas. The above conclusion was also supported by the views expresses by the officials from Gulu district in Northern Uganda who were interviewed independently. The Local Council V (LCV) chairman of Gulu district had this to say about the education policy.
I can tell you that the policy of the government of Uganda does not benefit children affected by the war (Norbert Mao, Gulu, 2007).

The same sentiments were expressed by the former Permanent Secretary from the Ministry of Education and Sports (Otto, Gulu, 2007) who confirmed that there were no specific policies to improve education in the northern region except general policies like the introduction of the Universal Primary Education (UPE) in 1997 and the Universal Secondary Education (USE) in 2007.

Education Policy Analysis

*Universal Primary Education Policy*

In addition to the general education policy, survey questions specifically asked about the benefit of the Universal Primary Education (UPE). The UPE policy was introduced in 1997 in line with the Millennium Development Goals.

The respondents were asked if the UPE policy equally benefited children affected by armed conflict. The frequency distribution of the survey responses on the UPE policy is presented in Table 18.

Among the Members of Parliament, 63.6% responded that UPE equally benefited children affected by the armed conflict while 36.4% of them expressed the contrary. Among the district officials, 71.8% agreed that the UPE policy was beneficial to all children and 28.3% disagreed. Teachers responded that the UPE policy equally benefited the children by a margin of 52.1% compared to 47.9% who indicated that it did not. Students also indicated that the UPE policy equally benefited children affected by the war
by a margin of 68.8% as compared to 32.2% who responded to the contrary. The responses by journalist were equally divided regarding the effects of the policy.

Table 18

Response Pattern Regarding Universal Primary Education (UPE) Policy

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>11 (11.1%)</td>
<td>52 (52.5%)</td>
<td>30 (30.3%)</td>
<td>6 (6.1%)</td>
<td>99</td>
</tr>
<tr>
<td>District Officials</td>
<td>2 (6.3%)</td>
<td>21 (65.5%)</td>
<td>7 (21.9%)</td>
<td>2 (6.3%)</td>
<td>32</td>
</tr>
<tr>
<td>Teachers</td>
<td>5 (6.8%)</td>
<td>33 (45.2%)</td>
<td>22 (30.1%)</td>
<td>13 (17.8%)</td>
<td>73</td>
</tr>
<tr>
<td>Students</td>
<td>25 (34.7%)</td>
<td>24 (33.3%)</td>
<td>13 (18.1%)</td>
<td>10 (13.9%)</td>
<td>72</td>
</tr>
<tr>
<td>Journalists</td>
<td>0 (0.0%)</td>
<td>4 (50.0%)</td>
<td>3 (37.5%)</td>
<td>1 (12.5%)</td>
<td>8</td>
</tr>
</tbody>
</table>

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on the benefit of the Universal Primary Education. A statistically significant difference was found among the group 

\[ F (4, 272) = 2.623, p < 0.05. \]

A post-hoc Tukey's HSD and LSD were computed to determine the nature of the differences among the groups. The analysis revealed that there was a significant difference in response between the students \( M = 2.11, SD = 1.04 \) and teachers \( M = 2.56, SD = .879 \) on the benefit of the universal primary education. The students tended to agree more on the benefit of the UPE program than the teachers did.
The overall response pattern suggests that the UPE program was beneficial to all Uganda children of elementary school age. However, at the implementation level, the children from the conflict areas have not benefited equally. They lived under severe conditions in the camps when compared to children from other parts of the country who studies under peaceful conditions.

The former permanent secretary Ministry of Education and Sports, however, expressed a different position regarding the benefits of UPE to children in the conflict region. He said:

Well, I think there are some benefits in the sense that they can go to school especially the primary schools scattered in the North. At least they can go to primary seven. However, for those who think UPE is free, it is not absolutely free, as parents have to make certain contribution like they are supposed to buy exercise books, transport the children to school; the schools may be far, like 4 kilometers away. They need money for transport, lunch, sometimes parents have to buy uniform. Our people are in the camps, they do not earn anything, and the World Food Program is feeding them. They cannot even buy a pencil. These are the things they have to look into. They are not really benefiting much. (Otto, Gulu 2007)

To further support the UPE program, the government of Uganda approved the Post Primary Education and Training (PPET) policy framework in 2000, to holistically address the issue of expanding facilities and opportunities for education and training at the post primary education level (Bitamazire, 2000). This was to absorb the big numbers of students completing primary school as a result of the policy shift from four children per family to all children benefiting from UPE. In an effort to expand facility for secondary education, government converted nine Primary Teachers Colleges (PTCs) into comprehensive secondary schools (Bitamazire, 2000).
Day School Policy

The Ministry of Education and Sports addressed the UPE to USE transition by constructing day secondary schools referred to as (Seed Schools) rather than boarding secondary high schools, which were considered expensive. While the government had good intentions, these schools exposed children to high risks of abduction, defilements and death especially during the daily commute to school for children studying in conflict-affected areas. While the day secondary schools were less expensive to run than the boarding schools, there were concerns that they exposed children in conflict areas to security risks. The respondents to the survey were asked to give their views on the benefit of the day secondary school as opposed to boarding schools. The response pattern reflecting the security risk of day secondary schools is presented in Table 19.

Table 19

Response Pattern Regarding the Risk of Day Secondary School Attendance

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>33 (33.3%)</td>
<td>45 (45.0%)</td>
<td>19 (19.0%)</td>
<td>3 (3.0%)</td>
<td>100</td>
</tr>
<tr>
<td>District Officials</td>
<td>2 (6.5%)</td>
<td>26 (83.9%)</td>
<td>2 (6.5%)</td>
<td>1 (3.2%)</td>
<td>31</td>
</tr>
<tr>
<td>Teachers</td>
<td>12 (16.9%)</td>
<td>36 (50.7%)</td>
<td>19 (26.8%)</td>
<td>4 (5.6%)</td>
<td>71</td>
</tr>
<tr>
<td>Students</td>
<td>25 (35.2%)</td>
<td>21 (29.6%)</td>
<td>16 (22.5%)</td>
<td>9 (12.7%)</td>
<td>71</td>
</tr>
<tr>
<td>Journalists</td>
<td>3 (37.5%)</td>
<td>3 (37.5%)</td>
<td>0 (0.0%)</td>
<td>2 (25.0%)</td>
<td>8</td>
</tr>
</tbody>
</table>

N = 281

75 (26.7%)  131(46.6%)  56 (19.9%)  19 (10.4%)  281
Among the respondents, 78.3% of the Members of Parliament, 90.4% of the district officials, 67.2% of the teachers, 64.8% of the students and 75% of the journalist agreed that the policy of day secondary schools put children at high risk of abduction and even death. Overall, 73.3% of the respondents indicated that it was a security risk for children to study in the day secondary schools in conflict zones. This was especially the case during armed conflicts where over 25,000 children were abducted from various schools over a 20-year period in Northern Uganda. Students responded in a more negative pattern to the question of day schools.

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on the risk of day-secondary school policy. No statistically significant difference was found among the group ($F (4, 270) = 1.054, p > 0.05$).

The Chairman of Gulu district from Northern Uganda did not agree with the governments’ position of supporting only day secondary schools at the expense of boarding schools. He expressed that

I think the government should not support only day schools but also boarding schools. What do you do to students who do not have homes? We need to have boarding schools. In addition, we may have schools that are very far from urban centers. The school culture is life-long culture, which students need to develop. You also want students to develop social skills outside the classroom. (Norbert Mao, Gulu 2007)

*Universal Secondary School Policy Analysis*

The USE education policy is considered universal and is expected to benefit all children in Uganda. The participants in this research study were asked if the USE
program equally benefited children from conflict-affected areas. The response pattern is presented in Table 20.

Table 20

*Response Pattern Regarding Universal Secondary Education (USE)*

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>16 (15.8%)</td>
<td>44 (43.6%)</td>
<td>37 (36.6%)</td>
<td>4 (4.0%)</td>
<td>101</td>
</tr>
<tr>
<td>District Officials</td>
<td>0 (0.0%)</td>
<td>23 (71.9%)</td>
<td>7 (21.9%)</td>
<td>2 (6.3%)</td>
<td>32</td>
</tr>
<tr>
<td>Teachers</td>
<td>5 (7.0%)</td>
<td>32 (45.1%)</td>
<td>25 (35.2%)</td>
<td>9 (12.7%)</td>
<td>71</td>
</tr>
<tr>
<td>Students</td>
<td>12 (17.4%)</td>
<td>17 (24.6%)</td>
<td>26 (37.7%)</td>
<td>14 (20.3%)</td>
<td>69</td>
</tr>
<tr>
<td>Journalists</td>
<td>0 (0.0%)</td>
<td>4 (50.0%)</td>
<td>2 (25.0%)</td>
<td>2 (25.0%)</td>
<td>8</td>
</tr>
</tbody>
</table>

*N* = 281

In general, the respondents expressed the position that the USE program was beneficial to children studying in conflict areas. Among the parliamentarians and district officials, 59.4% and 71.9%, respectively, responded that the policy of USE policy equally benefited the children affected by the armed conflict.

Among the students surveyed, 58% disagreed with the statement that the USE policy benefited them equally. The journalists were evenly divided on the question of equal benefit of the USE policy to the children studying in conflict-affected areas. Similarly, to journalists, teachers responded with nearly equal numbers in support of (52.1%) and in disagreement (47.9%) of the benefit of the USE program.
Although the policy makers responded that USE and the policy of day school over boarding schools equally benefited children in conflict-affected region, the students disagreed. Since Universal Secondary Education is a new policy, it is may be too early to draw conclusions regarding its benefit to all children.

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on the benefit of the Universal Secondary Education. No statistically significant difference was found among the group $(F(4, 269) = 1.999, p > 0.05)$.

### Science Education Policy

The policy of support for science education in Uganda by the government was a component of the research survey. The government of Uganda is committed to promoting science and technology in schools. It has favored this policy by allocating 75% of all scholarships to science-based courses at universities and higher institutions of learning. However, the government is considering eliminating the government science scholarship and instituting education loans. Government has already stopped providing free meals for government sponsored students beginning 2009-2010 academy year. These changes are occurring at a time when the students from Northern Uganda are recovering from the conflict and the need for government support is great.

This concern was expressed by the head teacher of a secondary school in Northern Uganda:

Gulu High School is one of the schools that have been affected by the insurgencies for a number of years and the laboratories where all damaged and looted and equipment destroyed. So most of the equipments, chemicals were not
available that is one of the challenges we had. Secondly, staffing was a problem. We did not have enough staffing especially for the Advanced levels. (Head Master, GHS, 2007)

Information about science education has been reported by other organizations and they reported serious deficiencies according to a report by Action Aid (Ekwang, 2003). Politicians from Northern Uganda have often argued that the science policy is an element of educational apartheid against the northern region. The students take the same national examination and are subjected to the same standards and cut-off-points in order to be admitted to universities under government sponsorship. Yet they study science without laboratories or science equipment and have few or no qualified science teachers. The concern with the science policy was expressed by the Gulu District Chairman:

No! Our students are way below the bar. The bar has been raised above them; there is no opportunity for them to compete because they cannot compete. It is like being locked out artificially. Actually, the government policy marginalizes our students. In addition, some of the schemes that government proposes are simply for engineering courses and yet most of the science courses are more than just engineering. There are courses like pharmacy, medicine many of them require more than engineers. We believe strongly that government has to emphasize some kind of affirmative action to accommodate students that have passed from the war affected areas. If marks are a measure of intelligence then that means the students in the war zones are more intelligent. If a student can get two principal passes or let's say 18 points from a school in Gulu, that student is equivalent to one who has got 25 points in a school in Kampala because the conditions under which these points were got were much harsher than those in Kampala. (Norbert Mao, Gulu, 2007)

*The Policy of Compulsory Science at Secondary School Level*

In order to research the policy and its acceptance, the survey asked the following question. Do the policies of compulsory science and the 75% sponsorship for science-based courses equally benefit children from conflicts areas? The responses to the survey
regarding the benefits of the compulsory science policy to students' in war-affected schools are presented in Table 21.

Table 21

*Response Pattern Regarding the Compulsory Science Policy*

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>28 (28.6%)</td>
<td>35 (35.7%)</td>
<td>27 (27.6%)</td>
<td>8 (8.2%)</td>
<td>98</td>
</tr>
<tr>
<td>District Official</td>
<td>9 (28.1%)</td>
<td>10 (31.3%)</td>
<td>6 (18.8%)</td>
<td>7 (21.9%)</td>
<td>32</td>
</tr>
<tr>
<td>Teachers</td>
<td>21 (28.8%)</td>
<td>27 (37.0%)</td>
<td>17 (23.3%)</td>
<td>8 (11.0%)</td>
<td>73</td>
</tr>
<tr>
<td>Students</td>
<td>28 (38.9%)</td>
<td>17 (23.6%)</td>
<td>15 (20.8%)</td>
<td>12 (16.7%)</td>
<td>72</td>
</tr>
<tr>
<td>Journalists</td>
<td>1 (14.3%)</td>
<td>5 (71.4%)</td>
<td>0 (0.0%)</td>
<td>1 (14.3%)</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>87 (30.7%)</td>
<td>94 (33.2%)</td>
<td>80 (28.3%)</td>
<td>36 (12.7%)</td>
<td>282</td>
</tr>
</tbody>
</table>

The response pattern revealed that 63.9% of the respondents indicated that the policy was not fair to children studying in conflict-affected areas. The data confirmed that the researchers’ supposition that most policy and non-policy makers who responded expressed displeasures with the policy. A head teacher in a prominent school in Gulu district was asked about the benefit of the science policy to students in Northern Uganda.

The teacher responded:

The policy is ok but only that it may not benefit us because you know with our situation we are not able to compete favorably with those in better areas. Therefore, it is for sure that most of our students are not going to be among the students who will benefit from the 75% sponsorship because it is already a disadvantage to them. (Head Teacher, Gulu High School)
A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on the benefit of compulsory science policy. No statistically significant difference was found among the group \((F(4, 271) = 0.284, p > 0.05)\).

75% Government Sponsorship for Science Courses at Higher Institutions of Learning

The government sponsorship of 75% towards science and 25% to arts in universities and institutions of learning was also a policy being researched. Although this was a welcome policy, the critics of government placed it in the context as a benefit to students already privileged because they are studying in well-equipped schools. Consequently, they performed better on the national examination, which was the main factor for the selection into university level studies.

The response pattern to the survey regarding the benefit of the policy of sponsorship at a level of 75% for science courses for children studying in conflict-affected areas are presented in Table 22.

Among the parliamentarians and district officials responding to the survey, 59.2% and 71%, respectively, disagreed on the benefit of the policy to children studying in conflict-affected areas. The other respondents to the survey generally agreed that the science preference policy did not equally benefit children studying in conflict-affected areas. In contrast to the general pattern, 57.2% of the journalist responded that that the policy was equally beneficial to all students.

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on the benefit of the 75%
Table 22

Response Pattern Regarding 75% Government Sponsorship for Sciences

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>13 (13.3%)</td>
<td>27 (27.6%)</td>
<td>39 (39.8%)</td>
<td>19 (19.4%)</td>
<td>98</td>
</tr>
<tr>
<td>District Official</td>
<td>1 (3.2%)</td>
<td>8 (25.8%)</td>
<td>11 (35.5%)</td>
<td>11 (35.5%)</td>
<td>31</td>
</tr>
<tr>
<td>Teachers</td>
<td>4 (5.6%)</td>
<td>9 (12.5%)</td>
<td>30 (41.7%)</td>
<td>29 (40.3%)</td>
<td>72</td>
</tr>
<tr>
<td>Students</td>
<td>9 (12.7%)</td>
<td>13 (18.3%)</td>
<td>18 (25.4%)</td>
<td>31 (43.7%)</td>
<td>71</td>
</tr>
<tr>
<td>Journalists</td>
<td>2 (28.6%)</td>
<td>2 (28.6%)</td>
<td>2 (28.6%)</td>
<td>1 (14.3%)</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>29 (10.4%)</strong></td>
<td><strong>59 (21.2%)</strong></td>
<td><strong>100 (35.8%)</strong></td>
<td><strong>91 (32.6%)</strong></td>
<td><strong>279</strong></td>
</tr>
</tbody>
</table>

government sponsorship towards science at higher institutions of learning. A statistically significant difference was found among the group ($F(4, 267) = 3.441, p < 0.05$).

A post-hoc Tukey’s HSD and LSD were used to determine the nature of the differences among the groups. The analysis revealed that there was a significant
difference in response between the students ($M = 3.00, SD = 1.069$), teachers ($M = 3.11, SD = 0.868$) and the parliamentarians ($M = 2.65, SD = 0.943$), and the journalists ($M = 2.29, SD = 1.113$) on the benefit of the 75% government sponsorship for science courses at the institutions for higher learning for students studying in conflict areas. The students and teachers tended to disagree on the benefit of government sponsorship for science-based courses to children affected by conflicts than the parliamentarians and the journalists.
Affirmative Action Policy

In order to enable disadvantaged children, especially those from the conflict-affected region of the north to benefit from the science polices, advocates have suggested implementation of affirmative action and opportunity for the northerners. An affirmative action policy could possibly bridge the educational gap created by two decades of armed conflict.

The Ugandan constitution currently provides affirmative action policy for disadvantaged groups such as women and people with disabilities. This provision is prominent in the political arena where one third of all elective posts are reserved for women. In education, there was need for affirmative policies to narrow the educational gaps between boys and girls in the higher institutions of learning. One of the most popular affirmative action policies was implemented in 1999. It provides an additional 1.5 points on the application and selection process for female students to enable them gain access into government universities or professional institutions. These include science-based courses (Griffin, 2007; Kasente, 2003).

The Government White Paper on Education (Government of Uganda, 1992) confirmed the commitment to basic education of all citizens and highlighted acceptance of the responsibility for education for disadvantaged persons. Strategies for achieving education for all have been realized through Universal Primary Education (UPE), which aimed at making schooling more affordable in the formal system and complementary non-formal basic education program for those who attend the regular government and private schools due to various barriers.
Governments' position on educationally disadvantaged children as highlighted in the Government White Paper (Government of Uganda, 1992) is consistent with Article 30 of the Constitution of the Republic of Uganda (1995), which provides that:

All persons have a right to education ... that a child is entitled to basic education..., and that the state shall take action in favor of groups which are marginalized on the basis of gender, age, and disability or for any other historical or traditional reason . . . (Constitution of the Republic of Uganda, 1995)

The government of Uganda acknowledged that basic educational services for disadvantaged children resulting from all causes will be achieved only through investment in education. Stakeholders at all levels must cooperate to implement the constitutional provisions. The mandate is to provide basic free education for all.

The constitutional commitment to education is interpreted to include (a) access to basic education, (b) strengthening linkages between formal and non-formal education delivery, (c) improving quality of delivery by ensuring appropriate infrastructure as well as curriculum content, (d) methodology and provision of appropriate learning materials, (e) eliminating disparities, and (f) ensuring retention of beneficiaries from dropping out. Minimizing the barriers to educational access and to optimal learning through community participation is a goal.

Implementation of the policy is believed to enhance opportunities for development in Uganda by building a literate and informed society, thus enabling good governance and resource development (Kassami, 2002) The policy supports the government commitment to provide basic “Education for All” by 2015 and encourages the participation and contribution of all Ugandans in the provision of education.
Children studying in war affected areas are considered disadvantaged and require special consideration and programs in order to bridge the educational gaps created by the insurgency (Bitamazire, 2006).

Responses were collected regarding specific affirmative actions or opportunities such as accelerated educational programs, special examinations, curriculum review, updating of textbooks, and lowering of the cut-off points for university admission. Those programs could bridge the educational gap between the children studying in conflict affect areas and those from the rest of the country and increase their chances of accessing higher education. Respondents to the survey expressed their position on affirmative action. Response pattern regarding the need for affirmative action policy for children affected by conflicts is presented in Table 23. More than 85% of the respondents agreed there was need for affirmative action for children studying in war-affected areas.

Table 23

Response Pattern Regarding Need for Affirmative Action Policy

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>64 (64.0%)</td>
<td>32 (32.0%)</td>
<td>0 (0.0%)</td>
<td>4 (4.0%)</td>
<td>100</td>
</tr>
<tr>
<td>District Official</td>
<td>21 (70.0%)</td>
<td>9 (30.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>30</td>
</tr>
<tr>
<td>Teachers</td>
<td>40 (57.1%)</td>
<td>26 (37.1%)</td>
<td>4 (5.7%)</td>
<td>0 (0.0%)</td>
<td>70</td>
</tr>
<tr>
<td>Students</td>
<td>38 (53.5%)</td>
<td>23 (32.4%)</td>
<td>6 (8.5%)</td>
<td>4 (5.6%)</td>
<td>71</td>
</tr>
<tr>
<td>Journalists</td>
<td>5 (62.5%)</td>
<td>2 (25.0%)</td>
<td>1 (12.5%)</td>
<td>0 (0.0%)</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>68 (60.2%)</td>
<td>92 (33%)</td>
<td>11 (3.9%)</td>
<td>8 (2.9%)</td>
<td>279</td>
</tr>
</tbody>
</table>
A one-way ANOVA was computed to compare the mean responses to the survey among the different groups of respondents on the need for Affirmative action for children studying in conflict-affected areas. No statistically significant difference was found among the group ($F(4, 268) = 1.705, p > 0.05$).

Tukey's HSD and LSD were used to determine the nature of the differences among the groups. The analysis revealed that there was a significant difference in mean response between the parliamentarians ($M = 1.44, SD = .701$), district councilors ($M = 1.30, SD = .466$) and the students ($M = 1.66, SD = .861$) on the need for affirmative action for children studying in conflict affected regions. The parliamentarians and district councilors tended to agree more strongly on the need for affirmative action followed by the students than the teachers and journalists.

With respect to affirmative action, the former Permanent Secretary Ministry of Education stressed that government would need to put in place special programs or special consideration for admission and sponsorship (Otto, Gulu, 2007). He argued that the biggest problem was that many of the students in the northern region are poor. Even if they were admitted, to higher institutions of learning they would still drop-out, because of lack of funds. This would be the case at Makerere University or in Gulu University. For example, in 2006 under the private admission program Gulu University admitted 1,950 students mostly from Northern Uganda. Of that number, 1,240 reported to the university and the remainder failed to report because they did not have adequate funding.

The academic registrar further argued that there was need for government intervention. He reflected on the situation by stating that:
I think government should think of special program for admission, special funds for education and a special fund like the Northern Uganda Social Action Fund (NUSAF). We want special fund for social development, but we should also have a special fund for education. At least for a limited period say 5 years, you know and that will really help. All those who qualified or got admission to higher institutions of learning should be given a bursary. That is the way I think things should be done because the situation is actually critical here in admissions into the university. (Lam Dogi, Gulu, 2007)

Curriculum Reform

Curriculum reform as an element of affirmative action was one of the critical issues that arose during this research study. Educators and other leaders from the region strongly proposed that the current curriculum needed to be updated to meet the unique challenges of post-conflict education. The key areas of concern were teacher retraining, curriculum and textbooks upgrade. Furthermore, there was need for special programs and incentives for teachers serving in emergency or conflict situations.

Since affirmative action was considered feasible in bridging the educational gap during post-conflict recovery, the views of respondents on specific priority areas for affirmative action were sought on the survey. The affirmative action under consideration included administering special examinations, upgrading the curriculum and textbooks and implementing accelerated learning programs.

The data suggest wide support for special affirmative action programs for children affected by the armed conflicts. Only the question of special examinations for children affected by armed-conflicts and emergencies received mixed responses.
Special Examinations

National examinations are a major gatekeeping control on admission. Parliamentarians, students, and journalists supported the idea of special examination in situation of conflicts and emergencies at the levels of 66%, 61.7%, and 87.5%, respectively, on the survey response (Table 24). Teachers and district officials opposed the idea of administering special examinations at the levels of 59.1% and 51.7%, respectively. They insisted that government should instead improve teacher welfare and provide security for schools and the students. Students from conflict-affected areas could then compete favorably with students from other regions.

Table 24

Response Pattern in Support of Special Examination

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>31 (31.0%)</td>
<td>35 (35.0%)</td>
<td>26 (26.0%)</td>
<td>8 (8.0%)</td>
<td>100</td>
</tr>
<tr>
<td>District Councilors</td>
<td>6 (19.4%)</td>
<td>9 (29.0%)</td>
<td>14 (45.2%)</td>
<td>2 (6.5%)</td>
<td>31</td>
</tr>
<tr>
<td>Teachers</td>
<td>13 (19.7%)</td>
<td>14 (21.2%)</td>
<td>24 (36.4%)</td>
<td>15 (22.7%)</td>
<td>66</td>
</tr>
<tr>
<td>Students</td>
<td>29 (42.6%)</td>
<td>13 (19.1%)</td>
<td>17 (25.0%)</td>
<td>9 (13.2%)</td>
<td>68</td>
</tr>
<tr>
<td>Journalists</td>
<td>5 (62.5%)</td>
<td>2 (25.0%)</td>
<td>1 (12.5%)</td>
<td>0 (0.0%)</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>84</td>
<td>73</td>
<td>82</td>
<td>34</td>
<td>273</td>
</tr>
</tbody>
</table>
A statistically significant difference in the mean responses was found among the respondents on special examination \((F(4, 268) = 4.472, p < 0.05)\). A post-hoc Tukey’s HSD and LSD were computed to determine the nature of the differences among the groups. The analysis revealed that there was a significant difference in response among the students \((M = 2.09, SD = 1.103)\), teachers \((M = 2.62, SD = 1.049)\), Members of Parliament \((M = 2.11, SD = .942)\) and the journalist \((M = 1.50, SD = .756)\) on the administration of special examination. The journalist tended to agree strongly with the administering of special examination for children studying in conflict than the rest of the respondents.

There was a strong feeling among educators and the district officials that there was no need to lower educational standards because of the conflict. Rather the standards of the disadvantaged schools should be improved to become equivalent to the rest of the country.

The former Permanent Secretary from the Ministry of Education and Sports also disagreed with the policy of setting special examinations for children affected by the insurgency. He argued that it was professionally wrong. It was further argued that the examinations can only be fair if the schools are equipped at the same level and the teachers are all trained at the same level. This suggestion was also made to plan the national examination such that it takes into consideration the problems of rural areas.

Singled out for attention was the social studies primary leaving examinations. Questions asked were “outrageous,” because children from the northern region do not watch television or read newspaper, and they are asked the names of prominent persons in Kampala. The examination was difficult and unfair for children in the rural or conflict-
affected areas and the examiners do not take into account the local conditions. It was noted that during the setting of the examinations the teachers from the north should be involved. This would ensure that the examinations were fair to all the children and does not favor the privileged students in Kampala.

Curriculum and Textbook Upgrades

The issue of curriculum reform such as accelerated learning programs and textbook updates was probed by the survey. The response pattern in support of curriculum and textbook upgrade is presented in Table 25.

Table 25

Response Pattern in Support of Curriculum and Textbook Upgrades

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>33 (34.6%)</td>
<td>42 (42.4%)</td>
<td>18 (18.2%)</td>
<td>6 (6.1%)</td>
<td>99</td>
</tr>
<tr>
<td>District Councilors</td>
<td>13 (41.9%)</td>
<td>15 (48.4%)</td>
<td>3 (9.7%)</td>
<td>0 (0.0%)</td>
<td>31</td>
</tr>
<tr>
<td>Teachers</td>
<td>13 (20.0%)</td>
<td>32 (49.2%)</td>
<td>16 (24.6%)</td>
<td>4 (6.2%)</td>
<td>65</td>
</tr>
<tr>
<td>Students</td>
<td>33 (45.8%)</td>
<td>28 (38.9%)</td>
<td>7 (9.7%)</td>
<td>4 (5.6%)</td>
<td>72</td>
</tr>
<tr>
<td>Journalists</td>
<td>4 (50.0%)</td>
<td>4 (50.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>96</strong></td>
<td><strong>121</strong></td>
<td><strong>44</strong></td>
<td><strong>14</strong></td>
<td><strong>275</strong></td>
</tr>
</tbody>
</table>
The data revealed that 100% of the journalists, 90.3% of district officials, 84.7%
of the students, 77% of the parliamentarians, and 69.2% of the teachers supported the
idea of revising the curriculum and updating the textbooks.

A one-way ANOVA was computed to compare the mean difference in response to
the survey among the different groups of respondents on the need for curriculum and
textbooks upgrades. A statistically significant difference in the mean responses was found
among the respondents on the issue of curriculum and textbook update \(F(4, 270) = 3.510, p < 0.05\).

A post-hoc Tukey’s HSD and LSD were computed to determine the nature of the
differences among the groups. The analysis revealed that there was a significant
difference in response between the teachers \((M = 2.17, SD = .874)\) and the students
\((M = .75, SD = .852)\), district councilors \((M = 1.68, SD = .653)\) and the journalist
\((M = 1.50, SD = .535)\) on curriculum and textbook upgrade. The teachers tended to
disagree more with upgrading of the curriculum and textbooks and the rest of the
respondents tended to support the policy.

*Accelerated Learning Program*

Closely related to curriculum and textbooks upgrade was the issue of introducing
accelerated learning programs to bridge the educational gap that was created by the
prolonged conflict. Some of the formerly abducted children who would like to go back to
school are older and do not feel comfortable in the same classroom with the younger
children in the same grade. The respondents were asked if there was need for accelerated
learning programs. The response pattern among the respondents is presented in Table 26.
Table 26

Response Pattern in Support of Accelerated Learning Programs

<table>
<thead>
<tr>
<th>Profession</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>65 (65.6%)</td>
<td>26 (26.3%)</td>
<td>7 (7.1%)</td>
<td>1 (1.0%)</td>
<td>99</td>
</tr>
<tr>
<td>District Councilors</td>
<td>19 (59.4%)</td>
<td>11 (34.4%)</td>
<td>0 (0.0%)</td>
<td>2 (6.3%)</td>
<td>32</td>
</tr>
<tr>
<td>Teachers</td>
<td>42 (63.6%)</td>
<td>18 (27.3%)</td>
<td>6 (9.1%)</td>
<td>0 (0.0%)</td>
<td>66</td>
</tr>
<tr>
<td>Students</td>
<td>55 (78.6%)</td>
<td>10 (14.3%)</td>
<td>5 (7.1%)</td>
<td>0 (0.0%)</td>
<td>70</td>
</tr>
<tr>
<td>Journalists</td>
<td>5 (62.5%)</td>
<td>3 (37.5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>186</td>
<td>68</td>
<td>18</td>
<td>3</td>
<td>275</td>
</tr>
</tbody>
</table>

The percentages of surveyed responses supporting accelerated learning include journalists (100%), students (98.6%), district officials (93.8%), parliamentarians (91.1%), and teachers (90.9%).

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on the need for curriculum and textbooks upgrades. No statistically significant difference in the mean responses was found among the respondents on the issue ($F(4, 270) = .995, p > 0.05$).

The complex needs of a post-conflict society require major injections of assistance. An interviewee in the field both argued for and agreed with the responses by those respondents surveyed.
First, I think we cannot continue with the curriculum as it has been because we have students who have experienced greater amount of trauma. We cannot continue to implement the kind of curriculum that is for normal children, that requires adjustment. Secondly, the skills these children need given the fact that they have been out of school for many years may differ. For instance what do you do with a child mother, what will she benefit from learning chemistry or the geography of North America? We would rather have the child mother learn how to sew curtains, clothes and learn some business skills. There is a strong case for curriculum reform as part of the post-conflict reconstruction. For example, we have a school here in Gulu known as the school for war affected children. For the first time we are having girls who are going to school with babies. That means we must have a provision for the mother and also for the child within the same confines of the same school. Therefore, the current curriculum is inadequate. In the reconstruction of Northern Uganda, we recommend curriculum reform. (Norbert Mao, Gulu, 2007)

The academic registrar of Gulu University reported that the university was considering a revision of the curriculum to meet the educational and development challenges caused by the prolonged insurgency. He remarked that:

We have requested faculties to look at their curriculum now and in light of new challenges and the faculty of science, which we are splitting from the faculty of science education to make pure science. We are now going to revise the curriculum for science. All these are supposes to address the new challenges in the post-conflict because our mission and vision here is “Rural Transformation” and that is what we are focused on. We are not looking at advanced technology that is not ours, our university is geared towards how we can bring about rural transformation and that is why we have established a centre for conflict management and peace study. It has been and it is now going to be upgraded to an Institute. It already operates post-graduate studies in conflict resolution and we are also conducting outreach programs. Actually we have trained those who were in the bush and have surrendered, we had training here for them. (Lam Dogi, Gulu, 2007)

Cut-Off Points for Admission to Universities and Higher Education

Lowering the requirements for admission to universities for marginalized and educationally disadvantaged children in the northern region, has been of concern to
educators, parents, and the community. The response pattern regarding support for lowering cut-off points is presented in Table 27.

Table 27

*Response Pattern Regarding the Need to Lower Cut-off Points for Admissions*

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>45 (45.0%)</td>
<td>36 (36.0%)</td>
<td>16 (16.0%)</td>
<td>3 (3.0%)</td>
<td>100</td>
</tr>
<tr>
<td>District Councilors</td>
<td>18 (64.3%)</td>
<td>6 (21.4%)</td>
<td>4 (14.3%)</td>
<td>0 (0.0%)</td>
<td>28</td>
</tr>
<tr>
<td>Teachers</td>
<td>36 (56.3%)</td>
<td>24 (37.5%)</td>
<td>2 (3.1%)</td>
<td>2 (3.1%)</td>
<td>64</td>
</tr>
<tr>
<td>Students</td>
<td>62 (87.3%)</td>
<td>8 (11.3%)</td>
<td>0 (0.0%)</td>
<td>1 (1.4%)</td>
<td>71</td>
</tr>
<tr>
<td>Journalists</td>
<td>6 (75.0%)</td>
<td>2 (25.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>8</td>
</tr>
</tbody>
</table>

\[N = 271\]

Few students from the northern region qualify for university education under the government sponsorship scheme. The percentages of surveyed responses supporting lower cut-off points for admission to universities include journalists (100%), students (98.6%), teachers (93.0%), district officials (85.7%), and parliamentarians (81.0%).

Interviews were also conducted on the need to lower admission points. Those interviewed included the Gulu District Chairman, the head teachers of Gulu High School, Sacred Heart Secondary School, the Vice Chancellor and the Academic Registrar of Gulu University. Others include the former Permanent Secretary from the Ministry of
Education and Sports. They argued that affirmative action was necessary to provide equality for university admission. They suggested that the students from Northern Uganda should be allowed to enter the university with lower points (grades) than their cohorts from the peaceful regions.

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on the lowering of cut-off points for admission to institutions of higher learning. A statistically significant difference in the mean responses was found among the respondents on cut-off point for admission to university \( F(4, 266) = 8.238, p < 0.05 \).

Tukey's HSD and LSD were used to determine the nature of the differences in mean response on the policy of lowering cut-off-points among the respondents. The analysis revealed that there was a significant difference in mean response between the parliamentarians \((M = 1.77, SD = .827)\), the students \((M = 1.15, SD = .467)\), the journalists \((M = 1.25, SD = .463)\) and the teachers \((M = 1.53, SD = .712)\).

Furthermore, there was a significant difference in mean response between the district officials \((M = 1.50, SD = .745)\) and the students \((M = 1.15, SD = .467)\). The students and the journalist tended to support the policy of lowering cut-off points more than the parliamentarians, district officials and teachers did.

University admission is based on point accumulation from letter grades from the advance secondary school level. For example, A = 6 points, B = 5 points, C = 4 points, D = 3 points, E = 2 points, and O = 1 point. The minimum letter grade point for admission into higher institution is calculated based on successfully passing three principal subjects. The points are multiplied by a factor and the total added to give the
final points. A higher point implies good performance and implies that a student is more likely to be admitted to higher institutions of learning or universities.

The argument presented is that the students from the Northern Uganda are not low achievers but they study in schools that are poorly equipped with inadequately trained teachers. That is why their academic performances are poor.

A former Permanent Secretary from the Ministry of Education and Sports (Otto, Gulu, 2007) argued that if the students from the north were given a chance to enter the medical school, for example, with 12 rather than 24 points, they would still perform academically well. This argument is based on experience gained from the chair of the Board of Directors of Bishop Nyangire Secondary School in Kampala. The school provides affirmative admission for students from the north who would not ordinarily qualify to join the best schools because of their low grades.

The school was founded by Father John, a Catholic priest. The goal of this school is to support students from the war-ravaged Northern Uganda. The students are admitted with grades of less than 14 points. Students from the central region are admitted with grades of less than 8 points.

It should be noted that the points for admission to secondary high schools are calculated differently from the points for admission to universities. For example, a distinction which is equivalent to (A-BA) is allocated 1-2 points, respectively, a credit pass (B-C) is allocated 3-5 points, a pass (D-E) is allocated 6-7 points, and failure is given 9 points (Lubanga, 2007). The lower the points obtained, the better the performance.
There is evidence that the Bishop Nyangire Secondary School has admitted students from the Northern Uganda with higher points, implying poor grades. It was observed that the students performed better in the national examination when compared to the students from the central region (Otto, Gulu, 2007).

This may be because, for the first time, those students from Northern Uganda have electricity and they can study for longer hours. In addition, the learning environment is peaceful. There are no gunshots or bomb blasts. There is no fear of being abducted or killed. There are well-qualified teachers and there are scholastic materials for the mind and a balance diet for the body. The observation provides insights into the facilities that are needed in the north to enhance academic performance during post-conflict recovery process. The situation calls for special attention from the government with an affirmative action plan aimed at improving the schools. The immediate goal is to improve the quality of education in the whole region.

The head teacher of Sacred Heart Girls' Secondary school in the Northern Uganda shared the similar sentiments. She reported:

I wish that students from this area who have tried to perform at a level, which can be considered for university admission, could be given some special consideration. Because a student who goes through difficult situations and is able to get 10 points is a student, whom you know can make it through a university education. Lowering the cut-off point for such students would be very important and they would notice a difference in the performance. We have seen students who did not get very high points but were admitted on private sponsorship, they went through their education without failing any papers and they were very successful. I think it is the poor conditions that make them not perform as well as they should. (Sr. Carla, Gulu, 2007)
Retraining and Retooling of Teachers

The respondents to the research survey were questioned about policies related to teacher retraining and retooling following a period of conflicts or emergencies. It was observed that the teachers are traumatized and need special programs to enable them overcome their traumatic experiences and obtain healing. In order to encourage teacher to remain and teach under difficult situations in conflict and post-conflict regions, there may be need for special monetary incentives. Otherwise, they may leave in search of jobs elsewhere. Many teachers leave the conflict areas and their departure diminishes educational opportunities in the regions affected by conflict.

A question was asked about the need for retraining and retooling of teachers and providing special hardship allowance for teachers serving in conflict-affected Northern Uganda. The summary of the research survey questions is presented in Table 28.

The response pattern suggested that teacher improvement is an important issue among the respondents. The respondents supported retraining of teachers at 75% level of agreement. They argued that the teachers needed new skills and tools to deal with their own traumas. They also needed to effectively teach and provide psychosocial support to children traumatized by the war.

While teachers from conflict free regions had opportunities for further studies, teachers from the conflict-affected regions seldom had such opportunities, except for the Teacher Development and Management Systems (TDMS) program under the Ministry of Education and Sports. This program was launched in 1995 and is implemented by USAID and the Ministry of Education and Sports (USAID, 2002).
Table 28

Response Pattern on Teacher Improvements

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>44 (44.0%)</td>
<td>49</td>
<td>5</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>District Councilors</td>
<td>13 (40.6%)</td>
<td>15</td>
<td>4</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>Teachers</td>
<td>24 (36.9%)</td>
<td>24</td>
<td>8</td>
<td>9</td>
<td>65</td>
</tr>
<tr>
<td>Students</td>
<td>28 (29.6%)</td>
<td>28</td>
<td>8</td>
<td>8</td>
<td>72</td>
</tr>
<tr>
<td>Journalists</td>
<td>5 (3.3%)</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>114</td>
<td>119</td>
<td>25</td>
<td>19</td>
<td>277</td>
</tr>
</tbody>
</table>

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on the retraining of teachers in conflict-affected areas. A statistically significant difference in the mean responses was found on the policy of retraining of teachers ($F(4, 277) = 3.041, p < 0.05$).

Tukey’s HSD and LSD were used to determine the nature of the differences among the groups. The analysis revealed that there was a significant difference in mean response between the teachers ($M = 2.03, SD = .672$) and students ($M = 1.93, SD = .977$), the Members of Parliament ($M = 1.65, SD = .672$), and the journalists ($M = 1.38, SD = .518$). The parliamentarians and the journalist tended to support the policy of teacher retraining more than the teachers and students.
District official sometimes expressed fear that re-training teachers would not solve the problem. Experience has shown that once the teachers received better training, there is a concern that they may abandon the teaching profession and use the acquired diplomas to get jobs in other fields, or transfer to urban schools where pay and working conditions are better. Therefore, the main challenge may not be the retraining of teachers but the retaining of the teachers in the northern region.

The same concern was expressed by the Gulu District Chairman. The idea of retraining teachers from the northern region to handle the new challenges of post-conflict recovery and reconstruction such as teaching war-traumatized children and also to embrace new technologies was welcome. However, the doubt was expressed regarding the retention of those teachers.

The District Chairman was cautious and hesitant in fully supporting the idea of incentives to teachers because he argued that the intentions could be abused by teachers. In reflecting about teachers, the chair remarked:

They are still teaching using the same old notes, they are using the same old methods and yet the world around has changed and the job market has changed. Therefore, the teachers need to be retrained. We also need better discipline. Some of the teachers may have all the incentives but may be indiscipline, they may be absent from the classrooms. The best way is to make sure the teachers are evaluated by the students so that they do not have their own way. A teacher should be evaluated in terms of mastery of knowledge and making learning fun, not in terms of popularity, like teachers who let students have their way. We need teachers who present the subject matter in the most interesting way and make learning fun. A teacher who makes learning a burden is a bad teacher. We need new skills; there are technologies like computers, power points presentation and overhead projectors. Our teachers are still stuck to the black board; it would be good for our teachers to know that there are power points, so you can plan your lesson in advance and go and impart knowledge using a black board that is colored which makes learning exciting and fun. I mean colorful, you can now have a blackboard that speaks. We must harness new technologies that make learning fun. (Norbert Mao, Gulu, 2007)
Other district leaders were skeptical too about the value of retraining teachers specifically for the northern region. One of them commented that the training of teachers should be national because even if they are trained specifically for the north they could still go down south where conditions are better. The response was:

When we retool or retrain them, they will go away. What we need is to be able to retrain and retain then in the local areas. I know the ministry of education for secondary education has come up with a policy of recruiting for specific schools attainable only in that school. If after being appointed you leave that school, you have to be removed from the payroll. If they emphasize that policy it would help, Retrain, Retool and Retain (3Ret). (Otto, Gulu, 2007)

One example that illustrates the point was a government program called (NITEP) National Integrated Teacher Education Program (Wrightson, 1998). This was an in-service teacher training program specifically for the Northern region under the Northern Uganda Reconstruction Program (NURP 1) (Aguti, 2002).

In this program, non-teachers with no teaching qualification or certification were trained under a special program to upgrade to a qualification and licensed to teach. Unfortunately, after the teachers had benefited from the program, they did not remain in the region to teach. Rather, they departed for other regions to look for jobs that are more lucrative. Ultimately, the program ended up improving the other regions rather than Northern Uganda.

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on providing special monetary allowance to teachers in conflict-affected areas. No statistically significant difference in the mean responses was found on the policy of retraining of teachers ($F(4, 264) = .378$, $p > 0.05$).
Special Allowance for Teachers

Providing special monetary allowance for teachers in conflict regions was top on the agenda of most of the community leaders. Respondents to the survey suggest a similar concern among the groups (Table 29).

Table 29
Response Pattern on Special Teacher Allowance

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>60 (59.4%)</td>
<td>37 (36.6%)</td>
<td>3 (3.0%)</td>
<td>1(1.0%)</td>
<td>101</td>
</tr>
<tr>
<td>District Councilors</td>
<td>15 (51.7%)</td>
<td>13 (44.8%)</td>
<td>1 (3.5%)</td>
<td>0 (0.0%)</td>
<td>29</td>
</tr>
<tr>
<td>Teachers</td>
<td>44 (72.1%)</td>
<td>14 (22.9%)</td>
<td>1 (1.6%)</td>
<td>2 (3.3%)</td>
<td>61</td>
</tr>
<tr>
<td>Students</td>
<td>46 (72.1%)</td>
<td>18 (25.7%)</td>
<td>6 (8.6%)</td>
<td>0 (0.0%)</td>
<td>70</td>
</tr>
<tr>
<td>Journalists</td>
<td>5 (62.5%)</td>
<td>3 (37.5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>8</td>
</tr>
</tbody>
</table>

\[N = 269\]

Special monetary allowance and accommodations allowance have thus been proposed. The response pattern revealed that 96% of the parliamentarians, 96.5% of the district officials, 95% of the teachers, 97.8% of the students, and 100% of the journalists supported the policy of providing special monetary allowance for teachers serving in conflict-affected areas as an incentive.
As encouragement for teachers in conflict zones to stay in the region, the government instituted a special allowance for teachers in “hard-to reach areas.” The respondents to the research survey overwhelmingly supported the idea of paying those teachers a special allowance. It was reported that the journalists, parliamentarians, the district officials, teachers, and students supported the policy at a high level of agreement.

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on providing special monetary allowance to teachers in conflict-affected areas. No statistically significant difference in the mean responses was found on the policy of retraining of teachers ($F(4, 264) = .378$, $p > 0.05$).

The persons interviewed on this issue responded that a special allowance or incentives policy should with few reservations be implemented. One respondent was not convinced of the incentive and argued:

First, if an allowance is to be given it should be tied to the work ethics, not on its own. The allowance should be given in relation to the hours actually taught. It cannot be said that this is an automatic allowance that is paid monthly. I will simply oppose such allowance being given to teachers. However, if a teacher knows that for every hour that I teach, I get additional shillings, then they would be more consistent. The monthly salary is guaranteed and the special allowance or incentive has to be tied to the lesson actually taught. Teaching is a calling, right now, many people join the teaching profession because they want a job and a salary, and obviously, they are the types who are more likely to abandon the teaching profession to join organizations that are going to pay them bigger salaries. They will probably go to driving schools and become drivers and so on. We need to start from how we prepare our teachers. If the teacher training colleges and institutions do not make them realize their calling so that they teach out of conviction, then there is something wrong. There must be something within the teacher to want to impart knowledge rather than the assurance of a pay rise.
(Norbert Mao, Gulu, 2007)
In spite of some doubts, most believe a special allowance would be a good motivate for teachers from the war-ravaged Northern Uganda to continue serving diligently in the region.

There are also examples where the government instituted what was known as “Karamoja allowance” implemented in the 1960s. The Karamoja region is one of the most remote areas in northeastern Uganda. The region is notorious for cattle rustling and petty crimes, so civil servants are reluctant to be assigned there to work. An interviewee when questioned about the special allowance responded:

Well, it is simply special allowance like the Karamoja allowance in the 1960s and 1970s. Government introduced Karamoja allowance because nobody wanted to go and work in Karamoja because of the hardship there. In the same way to attract teachers to the northern region, we need to introduce a special allowance. We are already doing it in the district here for the medical doctors who are prepared to go to work in hospitals in difficult areas through the Danish International Development Agency (DANIDA) who have agreed to assist the district. They pay some extra allowance to medical personnel and as a result, we have a few doctors who are working in some of these remote areas. Accordingly, for teachers in this difficult situation a special allowance or hardship allowance if implemented would encourage the teachers to stay. (Otto, Gulu, 2007)

Other respondents suggested that the incentives should not be only monetary, but should include accommodation for teachers so that they would be encouraged to stay within the school vicinity. Suggestions were offered such as:

The teachers’ need homes, many of our teachers particularly the female teachers have their husbands working in the towns; they cannot allow them to work in the villages. It is important that the teachers accept as a matter of principle that we are offering them housing and that these houses will be additional incentives to them. These houses will also enable them to save money. Other incentives are bicycles and providing refresher courses. (Norbert Mao, Gulu, 2007)

The head teacher of Gulu High School confirmed that a special allowance would encourage teachers to work under difficult circumstances. He had attracted graduate
teachers from Gulu University to teach at Gulu High School during the insurgency by giving them a special allowance. It was called an incentive allowance and a new teacher was given an equivalent of $100 to help them relocate near Gulu High School. In addition, the school was able to give the new teachers salaries, which were nearly equivalent to the government salary. They were paid an equivalent of $200 monthly, while the government was paying an equivalent of $260. Since the difference was small and there were other chances to make money, such as tutoring, the teachers were contented. There were also special allowances and remuneration for the extra activities such as remedial classes, supervising practical work, setting, and grading examinations.

In the year, 2002 government realized the importance of teacher motivation and retention. The introduction of special allowance for teachers in “hard-to-reach” areas occurred. In the 2002-2003 national budget, the government provided 0.866 billion Uganda shillings (equivalent of 541,250 U.S. dollars) for paying allowances to teachers in “hard-to-reach” areas and those engaged in “Double Shift” teaching (Makubuya, 2003). The continued payment of this special allowance by the Ministry of Education and Sports could produce a positive impact on the retention rates of teachers in the hard-to-reach areas.

Surprisingly, the “hard-to-reach areas” did not include the conflict areas of the Northern Uganda. According to the 2006-2007 Ministerial Policy Statement, government paid the “hard-to-reach” allowance to 332 teachers in Moroto district, 170 teachers in Nakapiripiriti district, 341 teachers in Abim district, 209 teachers in Kabongo district, 130 teachers in Kalangala district, and 66 to teachers in Kome Islands in Mukono district in the central region (Bitamazire, 2007). None of the districts is in the northern region.
At first review, it appears that the government was supporting the hard-to-reach areas of the conflict-affected Northern Uganda, but the reality was that the north was excluded from the list of the beneficiary districts. This was noted as a departure from the official policy.

*Education Emergency Policy and Budget*

Uganda has a Ministry of Disaster Preparedness under the Prime Ministers' office. The minister did not present a disaster management policy but suggested the ministry was working on a draft policy. A review of the draft policy revealed that there was no provision for “education in emergencies.” The respondents were asked if there was need for an emergency education policy. The response pattern in support of government formulating an emergency education policy is presented in Table 30.

Table 30

*Response Pattern in Support of Emergency Education Policy*

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>43 (43.0%)</td>
<td>49 (49.0%)</td>
<td>6 (6.0%)</td>
<td>2 (2.0%)</td>
<td>100</td>
</tr>
<tr>
<td>District Councilors</td>
<td>16 (50.0%)</td>
<td>13 (40.6%)</td>
<td>3 (9.4%)</td>
<td>0 (0.0%)</td>
<td>32</td>
</tr>
<tr>
<td>Teachers</td>
<td>24 (36.9%)</td>
<td>36 (55.4%)</td>
<td>3 (4.6%)</td>
<td>2 (3.1%)</td>
<td>65</td>
</tr>
<tr>
<td>Students</td>
<td>31 (43.1%)</td>
<td>33 (45.8%)</td>
<td>6 (8.3%)</td>
<td>2 (2.8%)</td>
<td>72</td>
</tr>
<tr>
<td>Journalists</td>
<td>4 (50.0%)</td>
<td>4 (50.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>118</td>
<td>135</td>
<td>18</td>
<td>6</td>
<td>277</td>
</tr>
</tbody>
</table>
The percentage response level in support for emergency education policy among the respondents was over 80% and it include journalists (100%) parliamentarians (92%), district officials (90.6%), teachers (92.3%), and students (88.9%).

Flooding in Northern and Eastern Uganda

While collecting data in the field in Uganda, there was a serious flood in the north and eastern regions. Students lost their scholastic materials during the national examination period due to the flooding (Figure 13). Students could not report to school because bridges were washed away. The army transported candidates by military helicopters to the examination centers. This was an emergency situation that needed government intervention.

Figure 13. Students Airlifted Following Flooding in 2007
Source: http://www.newvision.co.ug/PA/8/12/587770
The research survey asked the respondents about the need for emergency education policy and emergency budget. There was strong support for an "emergency education policy" and budget to be administered by the Ministry of Education and Sports. It was to include the challenges caused by armed conflicts and other emergencies such as floods.

The summary of the responses suggests generally strong support with over 85% of the respondents supporting introducing emergency education policy with budgetary provision (Table 31).

Table 31

*Response Pattern in Support of Emergency Education Budget*

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>47 (47.0%)</td>
<td>48 (48.0%)</td>
<td>4 (4.0%)</td>
<td>1 (1.0%)</td>
<td>100</td>
</tr>
<tr>
<td>District Councilors</td>
<td>19 (59.4%)</td>
<td>12 (37.5%)</td>
<td>1 (3.1%)</td>
<td>0 (0.0%)</td>
<td>32</td>
</tr>
<tr>
<td>Teachers</td>
<td>29 (45.3%)</td>
<td>30 (46.9%)</td>
<td>4 (6.25%)</td>
<td>1 (1.6%)</td>
<td>64</td>
</tr>
<tr>
<td>Students</td>
<td>40 (58.8%)</td>
<td>19 (27.9%)</td>
<td>6 (8.8%)</td>
<td>3 (4.4%)</td>
<td>68</td>
</tr>
<tr>
<td>Journalists</td>
<td>3 (37.5%)</td>
<td>5 (62.5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>8</td>
</tr>
</tbody>
</table>

N = 272

A one-way ANOVA was computed to compare the mean difference in response on implementing emergency education budget among the group surveyed. No statistically
significant difference in the mean responses was found on emergency budget, $F(4, 267) = .485, p > 0.05$.

School Safety and Security

Another area of concern in this research was the safety of the students during armed conflicts and subsequent emergencies. During an interview with one of the army commanders who served in the northern region. He remarked:

I regret that the military did not protect the schools from attack by the LRA rebels. This was because we were focusing more on pursuing the rebels and ending the war so as to bring peace in the whole region, and there were budgetary and logistical constraints. (Okello, Parliament, 2007)

He admitted that mistakes were made in the deployments of soldiers in the region and the slow military response to rebel attacks could have caused the abductions and the deaths of thousands of people that could have been avoided. Unfortunately, there was also mismanagement of the funds by some commanders who created “ghost soldiers” and made themselves rich with extra salaries. Those military commanders probably did not want the war to end. There was corruption in procurement of military equipment and payment for services provided to the army.

Those of us in parliament who hailed from the conflict-affected region provided support to the military by approving their budget requests. During the insurgency, the researcher served as the Vice Chairperson for the Committee of Defense and was responsible for approving the military budget. The military always needed more money than what government could provide. At one point, there was a budget cut of 23% from other expenditures to add to the defense budget in the hope of ending the war. In some
cases, the budgeted money was used for personal gain by the military personnel who probably did not want the war to end.

Three areas related to school safety and security was included in the research survey. The respondents were asked three questions on the survey: (1) Should the government implement a policy of fencing all schools? (2) Should students be relocated to safer places during emergencies and conflict situations? and (3) Should schools be turned into boarding facilities during violent conflicts to minimize the danger of children getting abducted or caught up in combat as they commute to school?

Relocation of Students to Safety During Crises Situations

The degree of security consciousness among the respondents and students' safety during military conflicts was measured using the survey. The response pattern in support of relocating students to safer places during emergencies and conflict is presented in Table 32.

The response pattern in support of relocation of students to safer places indicated a strong support level of 97.5% among students, 100% among the journalists, and 87% among the Members of Parliament. The support for relocation of students during crises situation was comparatively lower at a percent level of 65.5% among the teachers and 56.9% among the district officials.

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on relocation of students to safer places during emergencies and conflicts. A statistically significant difference in the mean responses was observed among the respondents ($F(4, 272) = 8.918, p < 0.05$).
Table 32

Response Pattern in Support of Student Relocation During Emergencies

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>43 (43.0%)</td>
<td>43 (43.0%)</td>
<td>9 (9.0%)</td>
<td>5 (5.0%)</td>
<td>100</td>
</tr>
<tr>
<td>District Councilors</td>
<td>9 (28.1%)</td>
<td>12 (37.5%)</td>
<td>7 (21.9%)</td>
<td>4 (12.5%)</td>
<td>32</td>
</tr>
<tr>
<td>Teachers</td>
<td>15 (23.1%)</td>
<td>22 (33.8%)</td>
<td>18 (27.7%)</td>
<td>10 (15.4%)</td>
<td>65</td>
</tr>
<tr>
<td>Students</td>
<td>48 (66.7%)</td>
<td>15 (20.8%)</td>
<td>3 (4.2%)</td>
<td>6 (8.3%)</td>
<td>72</td>
</tr>
<tr>
<td>Journalists</td>
<td>5 (62.5%)</td>
<td>3 (37.5%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>95</td>
<td>37</td>
<td>25</td>
<td>277</td>
</tr>
</tbody>
</table>

Tukey's HSD and LSD were used to determine the nature of the differences among the groups. The analysis revealed that there was a significant difference in mean response between the teachers (\(M = 2.35, SD = 1.007\)) and district councilors (\(M = 2.19, SD = .998\)) on the policy of relocation of students during crises and the Members of Parliament (\(M = 1.76, SD = .818\)), students (\(M = 1.54, SD = .918\)), and the journalists (\(M = 1.38, SD = .518\)).

The responses were generally positive towards the relocation question with the exception of teachers and district officials. The latter groups did not give overwhelming support to the relocation of students. This maybe because when such humanitarian crisis occurs, the burden would be on them to implement the policy while the students who supported the ideas are the beneficiaries of the policy.
School Fencing Policy

Some of the abductions that occurred in the schools during the insurgency could have been avoided if the schools had wall fences. The respondents were asked if there was need for fencing all schools as a safety measure. The response patterns are presented in Table 33.

Table 33

Response Pattern in Support of School Fencing Policy

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>32 (32.3%)</td>
<td>35 (35.4%)</td>
<td>26 (26.3%)</td>
<td>6 (6.1%)</td>
<td>99</td>
</tr>
<tr>
<td>District Councilors</td>
<td>9 (30.0%)</td>
<td>17 (56.7%)</td>
<td>3 (10.0%)</td>
<td>1 (3.3%)</td>
<td>30</td>
</tr>
<tr>
<td>Teachers</td>
<td>15 (23.8%)</td>
<td>32 (50.8%)</td>
<td>12 (19.0%)</td>
<td>4 (6.3%)</td>
<td>63</td>
</tr>
<tr>
<td>Students</td>
<td>36 (50.0%)</td>
<td>25 (34.7%)</td>
<td>6 (8.3%)</td>
<td>5 (6.9%)</td>
<td>72</td>
</tr>
<tr>
<td>Journalists</td>
<td>2 (25.0%)</td>
<td>5 (62.5%)</td>
<td>0 (0.0%)</td>
<td>1 (12.5%)</td>
<td>8</td>
</tr>
<tr>
<td><em>N</em> = 272</td>
<td>94</td>
<td>114</td>
<td>47</td>
<td>17</td>
<td>272</td>
</tr>
</tbody>
</table>

District officials (86.7%), students (84.7%), and the journalists (87.5%) supported the policy of fencing schools as a measure at a somewhat higher level than that of the parliamentarians (67.7%) and the teachers (75.7%).

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents on school safety and security. No
statistical significance in mean response was found on the policy of school fencing \((F(4, 267) = 2.056, p > 0.05)\).

In an interview, the district chair supported the fencing policy but argued that the fence should be for keeping intruders out of the school premises.

I believe a school fence should be double. There should be the outer perimeter, which should be like a wire mesh, with trees, and there should be a wall fence, as you get closer to the school. (Mao, Gulu, 2007)

A former Minister of State for Higher Education stressed that every school should have live fences composed of trees especially fruit trees like mangoes and oranges that can act both a boundary of the school and at the same time provide food for the students (Mayende, Kampala, 2007).

There were participants who felt that fencing schools would make them high security risk because during emergencies or violent conflicts it could be difficult for students to escape. Fencing must be accompanied by community involvement. The community as a whole must be involved in the safety of the school by meeting regularly with the teachers to discuss safety as well as academic issues. The safety of children at school was not entirely the responsibility of the government or law enforcement agencies. The police and army could provide training as preparation as well as to receive information about protecting the school. The community must play an important role in ensuring the security of the local areas including the schools. Both the teachers and parents have a role to play in providing security for their children in times of conflict and emergencies.

During the insurgency in Northern Uganda, the rebels abducted students and destroyed school with very little resistance from the community. Local people were not
well equipped to defend the schools. Even those who were involved in guarding schools used inferior weapons such as bows and arrows and could not resist the rebels who had better weapons.

Abduction of some students was a situation that could have been prevented by fencing. For example, students of Sacred Heart Secondary in Gulu were abducted three times during the insurgency because the school did not have a wall or fence. The headmistress reported:

The school does not have a fence; the rebels came through the opening from the school playground. They went and broke the dormitory door. That was around 3.am in the morning. They picked the students whom they were able to get and went with them; luckily, others managed to escape in the night. (Sr. Carla, Gulu, 2007)

A similar incident occurred in 1996 at St. Mary’s College Aboke in Lira where 149 girls were abducted by the Lord’s Resistance Army (LRA) rebels. Some of the girls were later released after Sr. Rachele Fassera an Italian Catholic nun who was the deputy headmistress at that time pursued the rebels into the bush and pleaded for their release. The rebels released the rest of the girls except for 30 girls and 4 of the girls were reported to have become wives to the rebel leader Joseph Kony. Over a period, some of the Aboke girls were rescued. Two of the four wives to the rebel leader died in captivity and the last of the Aboke girls who was also a wife to Joseph Kony finally returned home in March 2009.
**Schools as Boarding Facilities**

The probability that day schools could be transformed into residential boarding facilities during emergencies and conflict situations was supported by all participants (Table 34).

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parliamentarians</td>
<td>28 (29.7%)</td>
<td>49 (44.6%)</td>
<td>20 (17.4%)</td>
<td>3 (8.3%)</td>
<td>100</td>
</tr>
<tr>
<td>District Councilors</td>
<td>7 (9.5%)</td>
<td>18 (14.3%)</td>
<td>4 (5.6%)</td>
<td>3 (2.7%)</td>
<td>32</td>
</tr>
<tr>
<td>Teachers</td>
<td>11 (19.0%)</td>
<td>31 (28.5%)</td>
<td>16 (11.1%)</td>
<td>6 (5.3%)</td>
<td>64</td>
</tr>
<tr>
<td>Students</td>
<td>36 (21.4%)</td>
<td>20 (32.1%)</td>
<td>6 (12.5%)</td>
<td>10 (6.0%)</td>
<td>72</td>
</tr>
<tr>
<td>Journalists</td>
<td>0 (0.0%)</td>
<td>5 (3.6%)</td>
<td>2 (1.4%)</td>
<td>1 (0.7%)</td>
<td>8</td>
</tr>
<tr>
<td><strong>N=276</strong></td>
<td>82</td>
<td>123</td>
<td>48</td>
<td>23</td>
<td>276</td>
</tr>
</tbody>
</table>

The survey results indicated that day schools were judged as a risk by the Members of Parliament (78.3%), district officials (90.4%), teachers (67.2%), students (64.8%), and journalists (75%) and exposed children at risk of abduction and death especially during armed conflicts or war situations.

A one-way ANOVA was computed to compare the mean difference in response to the survey among the different groups of respondents in support of boarding facilities. A
A statistically significant difference was found among the group \( F(4, 272) = 3.041, p < 0.05 \).

A post-hoc Tukey's HSD and LSD were computed to determine the nature of the differences among the groups. The analysis revealed that there was a significant difference in response between the Members of Parliament \( (M = 1.65, SD = .672) \), teachers \( (M = 2.03, SD = 1.030) \), and students \( (M = 1.94, SD = .977) \). The parliamentarians tended to agree more on transforming day schools into boarding facilities during emergency and conflicts than the teachers and students did.

**Application of Data to Policy on Science Education**

In June 2008, local government leaders from 40 districts of Northern and Eastern Uganda congregated in Gulu at the Education Summit to discuss how to revitalize education in the northern region (Mutto, Piwang, Mukasa, Charlse, & Avasi, 2008). For the first time the leaders from the region put aside political differences and spoke about education recovery in Northern Uganda.

The responses of the district leaders were collected using the same survey that was administered in 2007 to parliamentarians, district officials, teachers, and students from Gulu and Amuru districts in Northern Uganda. It is important to note that the first time the survey was administered was in June and July of 2007 towards the end of the armed conflict and during the initiation of the peace talks in Juba, Southern Sudan.

The same survey was administered the second time in the month of June 2008, after the cessation of hostility between the LRA and the UPDF and the rebel leader was expected to sign the comprehensive peace agreement. The failure of the LRA leadership
to sign the peace agreement resulted in a military offensive code-named “Thunder Lightning” by a combined military force from the Democratic Republic of Congo, Southern Sudan and Uganda in December 2008 and ended in March 2009.

Comparison of Response Patterns Between 2007 and 2008 Respondents

The two groups of respondents (2007 and 2008) were grouped and identified as RV07 and RV08, respectively. The first group RV07 represents the responses of parliamentarians, journalists, Gulu district officials, students, and teachers from Northern Uganda who completed the survey in June 2007. The RV08 group represents the responses of district leaders from the 40 district in north and eastern Uganda and the participants who completed the same surveys in June 2008 at the Education Summit in Gulu, Northern Uganda.

The response pattern suggested that the majority of the respondents representing both years (64% and 66%, respectively) disagreed with the statement that the education policy equally benefited children studying in conflict-affected areas. Since the percentage difference between the two groups was small, the researcher concluded that the education policy does not equally and effectively address the educational needs of children affected by armed conflict.

There were consistent responses from both groups (63% and 67%, respectively) that Universal Primary Education benefited all children in Uganda including those in conflict areas. The survey results supported the notion that UPE policy was successful and beneficial to all Ugandan children.
On the issue of the risk of day secondary school verses the boarding schools, a greater percentage of the RV07 (73%) reported that day secondary schools were a high security risk for children commuting to and from school while a lesser percentage of the RV08 (59%) responded that day secondary schools were security risks. The second survey was administered two years after the signing of the truce or cessation of hostility in 2006, and there was relative peace in the region. The survey was also administered at a time when the Internally Displaced Peoples’ (IDP) camps were being dismantled.

The responses regarding the Universal Secondary Education policy reflected a lower percentage of the RV07 (54.9%) in support of the policy while a higher percentage of the RV08 (62.7%) agreed that the USE program was beneficial to all children. The observed low support of USE in 2007 could have resulted from the fact that the policy was newly enactment, there was no sufficient funding, and its implications were not fully realized. In 2008, there was money available for the program and the respondents rated it as a successful program.

On the two major science policies of compulsory science and 75% government sponsorship to science based courses at the universities, there were consistent response patterns. The RV07 and the RV08 response pattern suggested near agreement (64% and 67%, respectively) that the compulsory science policy was unfair to children studying in conflict-affected regions.

Affirmative action and accelerated program for children affected by the two decades of war both received positive responses of 92% and 94% for RV07 and RV08, respectively. On the policy of special examination, however, slightly more than half of the RV07 and RV08 respondents (57.6% and 57.4%, respectively) supported that idea of
administering special examination for children in conflict-affected areas. A notable difference was observed between the RV07 and RV08 respondents regarding curriculum review and textbook updates at levels of (79% and 90.3%, respectively) responding in agreement with the policy. The policy focus of district leaders especially had changed from conflict to post-conflict education during the period between the surveys.

Policy proposals affecting cut-off-points, special allowances, emergency education policy and emergency budgets received favorable response patterns. Respondents from RV07 and RV08 supported the implementation of those policies, probably because they addressed the core challenges of post-conflict education.

Both the RV07 and RV08 respondents supported the policy of relocating students to safer places during armed conflicts. The policy proposal for school fencing was supported by group RV08 (92.2%) to a greater degree than the RV07 (76.2%). The response pattern by the RV07 and RV08 groups (74% and 68.9%, respectively) supported the policy of converting day schools into boarding facilities when disasters or armed conflicts erupted. The research data confirmed that RV07 and RV08 groups were consistent in their need for educational policies that worked to provide post-conflict assistance to Northern Uganda.

An independent t test was conducted to compare the population means of the two groups of respondents. No statistically significant difference in response was found on the benefit of the Ugandan education policy for children studying in conflict affected region. However, a statistically significant difference in response was observed on the policy of day schools, \( t(414) = 2.679, p < 0.05 \), between RV07 (\( M = 2.00, SD = .879 \)) and RV08
The RV07 respondents tended to agree more on the risk of day
schools to children studying in conflict-affected areas than RV08 did.

An independent $t$ test was further conducted to compare means response the need
for an emergency budget between the two population samples. A statistically significant
difference in response between the two population was observed, $t(413) = 2.061, p <
0.05$, between RV07 ($M = 1.60, SD = .704$) and RV08 ($M = 1.46, SD = .605$). The RV08
tended to support the policy of government providing a budget for emergency more the
RV07 did. As a result of the interaction between the researcher and the government
officials, an emergency fund was provided in the 2008-2009 financial budget.

Finally, the data revealed that a statistically significant difference in response
pattern on the policy of school fencing, $t(412) = 3.927, p < 0.05$, between RV07 ($M =
2.00, SD = .919$) and RV08 ($M = 1.68, SD = .762$). The RV08 group supported the policy
for school fencing more than the RV07 did. This was probably because the majority of
the respondents in the RV08 group were district leader and they considered the safety and
security of schools and students a priority because during the insurgency, schools could
not protect the students from abduction by the rebel militias.

Overall, the issues identified in Table 35 serve as a basis for post-conflict
education policy. They are consistent with issues that have been identified by this
research as high priority policy areas for post-conflict educational recovery by and by
government and the Pincer Group International that is implementing the REPLICA
(Revitalizing Education Participation and Learning in Conflict Areas) program in
Northern Uganda.
Table 35

Comparison of Response Pattern on Key Education Policies in Uganda Between the 2007 and 2008 Respondents

<table>
<thead>
<tr>
<th>Policy Issues</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agree</td>
<td>Disagree</td>
</tr>
<tr>
<td>Education Policy</td>
<td>35%</td>
<td>64.3%</td>
</tr>
<tr>
<td>Universal Primary Education (UPE)</td>
<td>63.0%</td>
<td>37.1%</td>
</tr>
<tr>
<td>Day Secondary Schools</td>
<td>73.6%</td>
<td>26.4%</td>
</tr>
<tr>
<td>Universal Secondary Education (USE)</td>
<td>54.9%</td>
<td>45.1%</td>
</tr>
<tr>
<td>Compulsory Science Policy</td>
<td>64.6%</td>
<td>35.4%</td>
</tr>
<tr>
<td>75% Sponsorship for Science</td>
<td>32.2%</td>
<td>67.8%</td>
</tr>
<tr>
<td>Affirmative Action</td>
<td>93.0%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Accelerated Program</td>
<td>92.4%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Special Examination</td>
<td>57.6%</td>
<td>42.3%</td>
</tr>
<tr>
<td>Curriculum and Textbook Update</td>
<td>79.0%</td>
<td>21.0%</td>
</tr>
<tr>
<td>Cut-Off-Point</td>
<td>89.7%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Teacher Re-training Program</td>
<td>84.0%</td>
<td>22.8%</td>
</tr>
<tr>
<td>Special Allowance</td>
<td>94.8%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Emergency Education Policy</td>
<td>91.3%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Emergency Education Budget</td>
<td>92.7%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Relocation of Students</td>
<td>77.7%</td>
<td>22.3%</td>
</tr>
<tr>
<td>School Fencing Policy</td>
<td>76.2%</td>
<td>23.8%</td>
</tr>
<tr>
<td>Boarding Facilities</td>
<td>74.0%</td>
<td>26.0%</td>
</tr>
</tbody>
</table>
CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

The main purpose of this research study was to evaluate the extent to which the Uganda education policy and in particular science education policy equally and effectively addressed the educational needs of children studying in conflict-affected areas. To answer the research questions outlined at the beginning of the study, the researcher administered an 18-item survey and an interview guide that were developed for this research study (Appendix A). Government policy documents and other relevant literature on education and conflicts, including newspaper articles, were reviewed to gain in-depth knowledge of the issues related to education policy for emergency, conflict and post-conflict societies. The empirical data and response pattern were analyzed and summarized in Chapter IV of this document.

Government investment in education and especially science education was determined by looking at the budgetary provision for the education sector during the past 21 years. That period of time coincided with the conflict in Northern Uganda. Government policies and initiatives to promote science were evaluated to determine if they increased student access to the science and technology and produced a skilled workforce for the industrialization and modernization of the Ugandan economy.
Furthermore, the study critically analyzed regional access to education and in particular, access to higher education especially in the science related fields.

The discussion section will focus on the extent to which the research addressed the three questions posed and provide explanations for the observed trends. The state of the science education program in Uganda was determined from the evidences obtained in reports, policy statements and the responses from the research survey. Explanations are extended for the observed trends and their implication for human resource development in science education as discussed. The impact of the war on education was based on evidence obtained from the Ministry of Education and Sports, Parliament, the Gulu District Education Office, head teachers, classroom teachers, and students in Gulu district.

The research study enabled the researcher to develop a conceptual model for education in conflict zones known as “Schools as Island of Peace and Hope.” An Educational Summit on “Post-Conflict Education Recovery” in which the local government leaders from the greater north outlined their priorities for reform and recovery after the two decades of armed conflict was held during the fieldwork for the research study. A Blue Print for post-conflict education and the Education Charter were developed and launched at the summit.

A research survey was developed and administered twice. In 2007, the survey was administered to parliamentarians, district officials, teachers and students from Gulu and Amuru districts. The administration of the survey was near the end of the armed conflict and the initiation of the peace talks was anticipated. The second administration was in 2008 to the local government officials from 40 districts in the north and eastern Uganda.
who attended the Education Summit where the blue print was produced (Mutto et al., 2008). There was consistency in the views of the respondents regarding education policies being implemented by the government during the post-conflict period.

The key policy priority areas for post-conflict education about which there was consensus from all the stakeholders were: (a) school infrastructure; (b) curriculum reform and accelerated learning; (c) teacher incentives, training, and retaining; (d) policy reform; and (e) finance and budget.

To the contrary, affirmative action, psychosocial support, continuous assessment and evaluation of students were identified as priority areas by government and confirmed by this research. The issues regarding school standards and leadership development were identified as priorities by the Pincer Group and school safety emerged as a priority for post-conflict trauma healing. The Blue Print was influenced by the Ministry of Education and the Pincer Group, a consortium of NGOs operating in Northern Uganda. They were the major stakeholders in the post-conflict region.

The researcher learned that Uganda does not have a science policy, even though there have been extensive discussion about science and technology being the engine for national development. Furthermore, the overall educational policy does not address the needs of children studying in conflict-affected regions. The Universal Primary Education (UPE) policy was the only educational program that was considered beneficial to all children including those in conflict areas. The Universal Secondary Education (USE) policy to support day secondary schools rather than boarding schools was considered unfavorable to children in conflict zones.
Government pronouncement to make science subjects compulsory in all secondary schools and sponsorship of 75% of science courses at universities and higher institutions of learning were viewed as being unfair to children studying in conflict areas.

Science education in Uganda was reported as ineffective and undesirable to students. As an indication, performance in science subjects at secondary level has been poor and fewer students are gaining admission into science courses at universities and higher institutions of learning. Various reasons were advanced to explain the negative trends in science performance and they included lack of interest and motivation, poor methodology, poor teacher qualifications, lack of science facilities, and low teachers’ salaries and few incentives for teachers.

The research analyzed the level of government funding towards improving the science education program and found that the government is funding science but unfortunately, it lacks a science policy to back its effort. The research also analyzed the qualifications of science teachers and their regional distribution to determine the relationship between human resource development and the number of scientist and technicians being produced regionally.

The supplementary questions that guided this research included: (1) Is there a relationship between the numbers of doctors and engineers and the population of science teachers and science facilities in that region? (2) Was conflict a major factor in the educational disparity and lack of access to quality education and the resultant underdevelopment of Northern Uganda? (3) What is the consequence of lack of access for students to science-based courses at university level for human resource and economic development in the Northern Uganda?
To respond to the above questions, the research examined the distribution of science teachers per subjects regionally. Government sponsorship for science-based courses at tertiary institutions and universities and regions that have benefited most was identified. The study also collected views from policy makers, teachers, and students on the benefits of government policies to enhance science education programs.

Respondents indicated that there was need for affirmative action to bridge the educational gap between children studying in rural, poor, and war-ravaged schools and those from urban and well-facilitated schools. There were mixed responses regarding whether students from the war-affected areas should take special examination. While there were suggestions to administer special examination to students from conflict regions, most respondents disagreed with lowering the standards. Respondents supported affirmative action and access to higher education for children disadvantaged by the armed conflicts. This would be accompanied by lowering the cut-off point for admission to higher education and awarding 1.5 extra points toward admission of student studying in conflict-affected areas.

In the Presidential Manifestos of 2001 and 2005, there was emphasis on science and technology as the engine of economic development. In order to encourage and promote the development of science and technology in schools, government has implemented a policy of compulsory science subjects. With this new policy, every student is expected to study and pass all the science subjects at both the ordinary secondary level and the advanced secondary level of education. Successful completion will qualify students for government scholarship to science-based courses at university or other institutions of higher learning.
During the past 20 years, government has invested substantial resources toward
the improvement of science education. One of the key investments was the established of
the National Council for Science and Technology (NCTS) in 1990 to spearhead the
promotion of science and technology, research and industrialization in Uganda.
Unfortunately, without a science policy and specific outcome indicators the work of the
NCTS has been stifled and there little to show in terms of scientific progress.

The government of Uganda considers science and technology as the engine of
economic development. That is why 75% of government scholarships were allocated to
science courses as an incentive to students. Although this policy was initially warmly
welcomed, critics of government say it was meant to benefit students who were already
privileged and not those who were educationally disadvantaged. This is because the
privileged study in well-facilitated schools and are more likely to perform well on the
national examination, which is the determining factor for selection in the science-based
courses at universities.

Since the government sponsorship is pegged on passing science subjects at
advanced secondary level, it discriminates against schools in conflict areas that have no
functional laboratories and qualified science teachers. The policy cannot benefit them, but
instead widens the gap between the well-facilitated and the poorly-facilitated schools in
the rural and conflicted affected area. For example, schools in Pader district in Northern
Uganda had no functional laboratories and yet students from these districts sat the same
national examination as students in other parts of the country who lived in peaceful
communities with adequate science facilities.
Some politicians from Northern Uganda have argued that the science policy is an element of educational apartheid against the northerners. They ask why students from the northern region should take the same national examination and be subjected to the same cut-off-points to be admitted under government sponsorship, yet they neither study science in laboratories nor have science equipment and qualified science teacher?

Government has implemented initiatives to bridge the gap between the educationally disadvantaged and the educationally privileged. Consequently, on the issue of providing equitable access to quality education, especially for children studying in conflict-affected areas, the government implemented policies resulting in the UPE, USE, the district bursaries, quota system, scholarships, 1.5 extra point and university loans.

The biggest initiative undertaken by the government of Uganda, with support from the World Bank and other development partners, was the introduction of Universal Primary Education (UPE). The assumption was that implementing UPE program would provide access to primary education for all school-aged children; therefore, the program was expected to benefit automatically the marginalized sections of society including children in conflict areas who would not have access to primary education due to problems of affordability.

The introduction of UPE resulted in an increase in enrollment. This was especially the case of girls in primary schools whose enrollment increased from 1,420,883 in the mid 1990s to close to 4,000,000 in mid 2000s and represented a 150% increase over a period of one decade.

As a result of the increased student numbers continuing to secondary education, the government implemented a policy on post-primary education and training in 2002.
The policy expanded and improved education services at the post-primary level including expansion of secondary schools and community based polytechnics. Government also introduced a policy to remove the bias against children of different social economic backgrounds and provide equal access to quality education.

In order to increase access to higher education especially for girls, the university senate introduced a policy of affirmative action in 1990. Female students were given an extra 1.5 points to their application. The intent was to increase the number of female undergraduate entrants into the university. The goal was to minimize existing disparities and correct historical imbalances by providing additional opportunities to the educationally disadvantaged or marginalized groups. The affirmative action of 1.5 additional or equalization points for female students has been helpful in increasing female enrollment figures from about 19% in the late 1980s to about 45% in mid 2000s.

It is estimated that more than 3,000 students have been admitted to Makerere University and other public universities as a direct result of the 1.5 points. However, the high cut-off points, especially for government sponsorship, meant that more female students were still excluded. Unfortunately, it has been observed that the girls who benefit from the 1.5 extra points are those from the best performing girls' schools at the expense of those from disadvantaged schools in the rural areas especially northern and eastern Uganda.

The female scholarship program is run by Makerere University with support from the Carnegie Cooperation of New York. It assists students who are admitted to Makerere University under the private scheme but are unable to meet the financial costs of their studies. The objective of the scholarship is to increase enrollment, retention and academic
performance by targeting those students who are from disadvantaged backgrounds and underrepresented geographical areas of Uganda. Unfortunately, the program like the science scholarships has ended up benefiting the already privileged girls from rich families who can afford to study in the best schools around Kampala.

The program has been criticized for not bringing about a significant increase in access of economically disadvantaged girls to Makerere and particularly in the competitive professional science programs such as Human Medicine, Pharmacy and Technology. The program has also been criticized for having a flawed selection processes, casting doubt on the extent to which the poorest of the poor and particularly those from under-represented geographical areas such as the northern region, actually benefit from the program.

Impact of the War on Education in Northern Uganda

According to Mbabazi (2008), owing to the two decades of war, the northern region realized marginal gain from the national development program that resulted in retrogression in key welfare indices. For instance, while there was national reduction in abject poverty from 56% in 1992 to 38.4% in 2003 and to 31.3% in 2006, poverty level in the north has increased to 61%.

There was total an institutional breakdown over the past 21 years because of war-related decline in all performance indicators. The infrastructure, instructional materials and equipment were either destroyed or vandalized. Absenteeism, repetition, and dropping out became rampant. Teacher development and supplies declined and school activity supervisions virtually ceased because of the insecurity. While the percentage gap
in enrollment between the regions has narrowed over the past years, the overall percentage increase in enrollment is quantitative and does not reflect an improvement in the quality of education. Performance in the national examinations, especially in the northern region has remained poor.

The performance in Primary Leaving Examination (PLE) in Northern Uganda has generally remained poor for the past 20 years (1986-2006). The number of children obtaining a Division 1 pass increased marginally from 4% in 1989 to 5% in 2006. In contrast, the percentage number of students obtaining a Division 1 pass in the Uganda Certificate of Education has risen slightly in the recent past from 5% in 2000 to 24% in 2006.

Overtime, the percentage enrollment for the central region has decreased, indicating that they have lower Pupil Teacher Ratio (PTR). This has greatly improved the quality of education in the central region. Meanwhile, the Pupil Teacher Ratio (PTR) is still very high for schools in the northern region. The national Pupil Classroom Ratio (PCR) in government schools is one to seventy eight (1:78), the situation is appalling for schools in Northern Uganda where (PCR) ratios range between 1:100-156 as compared to schools in the central region where the average (PCR) is 1:50. Evidently, the academic performance in the central region has been highest and the number of students qualifying for government sponsorship, especially in science-based courses at government institutions of higher learning has been the greatest.

The best performing schools on the Primary Leaving Examination (PLE) and the ordinary level examinations are usually from the central and the western regions. The worst performing schools are normally from the north and eastern regions. Consequently,
the government sponsorship scheme is always dominated by schools in the central. Schools in the north in some years have not been able to send a single student to the university on government sponsorship.

A critical analysis of the 2007-2008 government sponsorship to science-based courses such as medicine, engineering, agriculture, and science education revealed that 40% of the students were from the central region, followed by 26.7% from the western region, 20% from the eastern region, and 14.3% from the northern region.

A similar pattern was observed in the academic year 2008-2009 when over 70% of the sponsorships went to students from the central and the western region. The statistics revealed that while the central region had a percentage increase in the number of students obtaining government sponsorship, the number declined for the eastern and northern region while the western region remained almost constant. The number of students qualifying for government sponsorship from the northern region was reduced by almost half as compared to the prior year.

*Admission in Science Courses at Government Universities*

The study analyzed the list of students that scored highly in science subjects and were admitted to study science-based courses under the government sponsorship program. The study further analyzed the list of the government-sponsored students to determine which region sent the most number of students to the four major government universities.

It was observed that the majority of the students were from the central and western region. There were courses such as agricultural engineering and management that
enrolled no qualified students from the north. Moreover, even in Gulu University, which is located in the northern region, the majority of the students were from the west and the central regions. For example, the analysis of students who obtained government sponsorship to study various engineering courses at Makerere University showed that the 42.9% came from the central region, 30.2% came from the western region, 15.3% were from the eastern region, and 8.5% were from the northern region.

A critical look at the distribution of students per course indicated that there were not more than five students from Northern Uganda enrolled in an engineering course. There were either two or three students per course except for electrical engineering. There were no students admitted for information technology from the northern region. Moreover, the few that were accepted on government sponsorship usually had parents, who were wealthy and who could afford to send their children to the best schools in Kampala. The eastern region had representation in all the engineering courses compared to the north, except for the Bachelor of Architect where the eastern region had only one student admitted.

No students from the north qualified for Bachelor of Engineering and Mechanical Manufacturing in the academic year 2007-2008. This situation presents a challenge to the modernization and industrialization of the northern region. The greatest challenge is that students admitted on private sponsorship from the north, have completion rates quite low. Students from poor families often dropped out prematurely without obtaining their degrees due to lack of school fees.

In Uganda, agriculture is the backbone of the economy and approximately 90% of the population is involved in agricultural production. Although the north is basically an
agricultural region, there were no students admitted for the major agricultural courses such as Bachelor of Science in Agricultural Engineering, Bachelor of Science in Agricultural Management, and Bachelor of Science in Land Economics at Kyambogo University and Makerere University.

The absence of students from the northern region in key agricultural courses is a challenge to the economic development of the region. As the internal refugees who have been living in the camps for over 21 years return to the villages and settle, agriculture is their only hope for livelihood as food aid dwindles. At such times, there is need for agricultural managers and engineers to guide the population on proper land use in order to maximize agricultural production. Agricultural engineers and managers need to be trained to meet this urgent need, since the northern region used to be the “food basket” of Uganda.

Government sponsorship in the Bachelor of Science courses was dominated by students from the central region (42.8%), followed by the western region (29.3%) and the east and north had 19.0% and 8.8%, respectively. There were no students from the north admitted for Bachelor of Science in Conservation Biology or in the Bachelor of Science in Biology. Although the lack of science teachers emerged as one of key causes of poor performance in science subjects at secondary school levels in northern region, a critical analysis of the government sponsored list revealed that fewer science teachers from the northern region were being trained. This is quite disturbing! How does government expect to improve education in the north when there are few teachers being trained and retained to serve in the region? One may argue that the national teachers’ colleges and
universities train teachers for the whole region, so it does not matter where the teachers come from.

On the contrary, it has been observed that teachers from other regions do not want to teach in the schools in Northern Uganda because of its remoteness coupled with poor infrastructure resulting from the prolonged conflict. Government will have to provide incentives to attract teachers to the northern region as was expressed by respondents to the research interviews.

Gulu University, which is in Northern Uganda, was established purposely to promote science and technology education for rural transformation. Naturally, it would be expected that the majority of the students admitted to the science related courses would hail from the north. However, that has not been the case. The Bachelor of Science courses at Gulu University are dominated by students from the western region who constituted 35%, followed by the eastern region with 27.5% and the central region with 15.0% during the academic year 2007-2008. Out of the 40 students admitted to various Bachelor of Science courses, only three (7.5%) came from Northern Uganda. In addition, out of the five science courses offered at Gulu University, only one student from the north was admitted for the Bachelor of Education in Biology and two additional students were admitted for development study, which is not a core science major course. No student from the north qualified for the major science courses: namely, the Bachelor of Science General, Bachelor of Science Education, and Bachelor of Science Education and Technology.
Implications for Human Resource Development

Due to the area and population size, Northern Uganda continues to face major challenges accessing quality education and opportunities for human resources development. These trends will have adverse implications for future development of the northern region and they also threaten the future of a united Uganda. If the education quality in the region is maintained at its current level, there will be adverse implications and consequences. Some of the immediate consequences would be failure by the local government to find and recruit local human resources such as district engineers, architects, doctors, health professionals, surveyors and planners.

There will also be fewer girls and women from the region accessing post primary and tertiary education, especially in science, math and technology, which will lead to an increased gender gap. This will hinder the goal of meeting the Third Millennium Development Goals. With the prospects of oil in the northern region, there will be few graduates from the north in science and technology and petroleum engineering to hold high-level jobs in the oil, gas, petroleum and mining industries in the region.

If the current trend in enrollment in science-based courses continues, it could take Northern Uganda another 45 to 50 years to attain the same level of education and development as the other parts of the country. While education is considered a social transformation factor in development, the state of education in Northern Uganda over the past 21 years indicates that it has not participated fully. Even though science and technology are considered as the key to economic development, Northern Uganda has
lagged behind in all performance indicators including enrollment in science courses at universities and higher institutions of learning over the last two decades.

The economic wealth of Northern Uganda lies in its vast fertile land, a strong and hardworking people. The economic development of Uganda is anchored on science, technology and industrialization. However, considering the number of students from Northern Uganda that have been admitted to science-based courses such as Medicine, Agricultural Engineering and Management, Quantity survey, Food and Technology, Finance and Management, it is unlikely that Northern Uganda shall be on the road to recovery soon and contribute to national development.

Since admission is based on academic performance and Northern Uganda has been disadvantaged by the war for the last 21 years, the only way to increase the number of students accessing the medical fields and other science-based courses is for government to institute a policy of affirmative action. This can be accomplished by either allocating 1.5 extra points or lowering cut-off points for students from Northern Uganda.

In spite of the difficult conditions that students from the north study under, quite a big number qualify for admission to higher institutions of learning, but because of the high cut-off points for government sponsorship they end up not being admitted. A few who apply for professional courses under the private sponsorship sometimes dropout before completing the courses due to lack of fees while others who have qualified to join the university end up taking courses in other disciplines or profession. The only solution for the above problem is for government to establish a ‘Northern Uganda Education Fund’ to provide sponsorship to those students who may qualify under the private sponsorship and do not have the funds.
The government would like to stop sponsoring students at the university, but instead give students loan. A loan policy will hurt the students in the northern region this time when the northern region is in recovery and looking to education as a main hope for social and economic development. One wonders what the government's intention is but the reality is that the timing is unfortunate and the policy is not necessary because it will not benefit children affected by the military conflict.

Post-Conflict Education

Why is education crucial in emergencies, conflict and post-conflict reconstruction? This question is the justification for advocating for education policy for societies affected by emergencies and violent conflicts. Schools can serve as a fundamental place of protection for the most vulnerable children and moreover schools can be a place to address the psychosocial needs of communities and children affected by humanitarian crisis and displacement. School can be a place to communicate essential messages about communicable diseases and their prevention, peace and conflict resolution, health and safety. Moreover, education is a Right, and it is essential for economic and social recovery after emergency and conflict situations.

Education has a key role in both preventing conflict and rebuilding fractured post-conflict societies. It presents the only community resource to return children to school after armed conflict and produces an early dividend cementing support for peace (World Bank, 2006).

As was anticipated, post-conflict education needs in the northern region are numerous and variable. This is against a background of severe resource constraints in the
country. The implication of this is that there is an urgent need to mobilize additional resources and to institute efficiency measures in the use of available resources. In addition, the effective participation of stakeholder groups, particularly the end beneficiaries of education provision need to be widened and strengthened to enhance transparency and accountability. Above all, the mobilization of such colossal resource requirements will require concerted efforts from all stakeholders and educational service providers.

According to the Ministry of Education and Sports needs assessment report (Byamugisha, 2008), the short-term measures that are to be implemented within the next three years include the immediate provision of (a) instructional materials, (b) teachers' houses, (c) classrooms for primary schools, (d) latrine, (e) furniture, and (f) water and energy supplies.

Government proposed that emphasis should be on the construction of low-cost houses for teachers, latrines, and classrooms including renovation of the existing buildings and erecting temporary structures such as tents. This is a short-term measure to expand the physical capacity of the educational institutions to meet the pressing need of increasing enrollment during post-conflict educational recovery period.

With the temporary lifting of the ban on recruitment of teachers, government intends to restrict the hiring of secondary school teachers to only those handling subjects that are on demand such as the sciences and mathematics and making it mandatory for each secondary school teacher to be proficient in two curricula subjects instead of one. Government also plans to provide accelerated learning opportunities for older youth and adults in IDP camps and broaden the coverage of psychosocial support programs for
teachers, parents, and community leaders. Accelerated learning was one of the top policy priorities that received an overwhelming support from the respondents in this research study.

As a medium term initiatives to be implemented within the next five years, government proposed the creation of a work-friendly environment for the educational managers, administrators and teachers by re-tooling and construction of staff rooms.

A gender sensitive economic incentive aimed at increasing the secondary school enrollment of girls is needed. The abolition of secondary school tuition fees for the students from the northern region and promoting girls’ education awareness programs, such as providing specially targeted incentives including food for girls are needed. The current scholarship scheme to cover all needy secondary school students from Northern Uganda including HIV/AIDS orphans is necessary. It is also necessary to develop a redistribution formula for the allocation of capital grants to schools so that the poor schools receive higher allocations on a per capita basis. Funding to provide toolkits and apprenticeship opportunities for vocational and polytechnic are also needed.

Furthermore, as a long-term measure, government must build permanent educational infrastructure such as laboratories, libraries, workshops, and storage space. The government must also sponsor a critical re-examination of the curriculum to focus on the requisite post-conflict competencies and skills for the children, youth and adults from Northern Uganda. This idea was also strongly supported by evidence from this study where the majority of the respondents indicated that there was need for curriculum reform to meet the unique challenge of post-conflict and trauma education.
The challenge, however, is to determine the structure of the education system, teaching methods and learning approaches that will deliver such outputs. This in turn, calls for the reform of teacher training programs. It will demand improvements in the structure and composition of teacher incentives, especially the need to link bonuses to actual workloads and work environment. This same view was expressed by the respondents in the field. They argued that there should be no "blanket incentive" for teachers due to fear of abuse.

It was evident from the research that there is need for reform in the examination and assessment of students, especially those affected by emergencies or conflict. Consequently, a continuous assessment or innovative methodologies of measuring student academic performance is needed. This conforms to the data of this study where 50% of the respondents suggested that children from conflict zone should be given special school based examinations. That being said, there were other respondents who felt that raising the standard of schools to a level that the students can compete fairly was a better solution to the poor academic performance than special examinations.

The Blue Print for Post-Conflict Education

*The Development of the Education Blueprint*

The blueprint for educational revitalization in the north and eastern region was developed through a consultative process that lasted for over two months of intensive work that was rooted in the ongoing REPLICA program in 13 of the PRDP districts (Mutto et al., 2008). It involved several formal and informal discussions with key
stakeholders including leaders, technocrats and the communities at district level, the Ministry of Education and Sports, Office of the Prime Minister (OPM), USAID, and Education Funding Agency Group (EFAG).

The preliminary meetings were followed by sub-regional consultative meetings at which the three Uganda Local Government Association (ULGA) conveners identified 20 champions, mainly Local Council Five (LCV) Chairmen and Resident District Commissioners (RDCs), to broaden the consensus building process. The champions were sensitized about the objectives of the leaders' summit, the roles and responsibilities of the different stakeholders, expected outputs and outcomes.

The summit took place from June 19th to 21st in Gulu town, in Northern Uganda. A total of 350 local government leaders from the 40 districts of north and eastern Uganda attended the education summit. The educational priorities identified by the participants during the leadership summit organized by the Pincer Group International were grouped under eight categories: (a) Learners/Students, (b) Service providers/teachers, (c) Leadership, (d) Legal/Policy, (e) Budgetary framework, (f) Standards, (g) Infrastructure, and (h) Curriculum.

The specific provisions under each of the broad category included issues of access, retention, transition and equity in the region. Others included teacher-pupil ratio, gender parity, welfare, training and Continuous Professional Development (CPD), and productivity. Others included motivation, vision, participation, ownership, and pride in education, innovation, pro-activity, governance, teacher housing and preparation rooms, class rooms, science and ICT infrastructure, guidance and counseling services, water and sanitation, libraries, transportation and access roads. The REPLICA program is proposed
as enhanced "software" to support the infrastructure and policy aspects of the recovery program (Mutto et al., 2008).

"Island of Peace and Hope" Model

The above model of education in conflict was conceived at the inception of this research study. Interestingly, the proposed new model of education for emergency and conflict proposed two years ago agrees with the government provision for post-conflict education and the educational blueprint for the PRDP region.

The five case scenarios and the assumptions under which the model would apply are outlined:

Assumptions:

1. Schools can exist as "island of peace and hope" even during emergencies and conflict situations.
2. An effective education policy produces good results regardless of emergency and conflict situations.
3. Science education can provide the needed knowledge and skills for survival and development during and after a conflict situation.

The five crises case scenarios that could be addressed by the above models would include:

1. Peace time
2. Temporary peace situation or during truce and cessation of hostility
3. Isolated peace and conflict situation
4. Conflict and emergency

5. Post-conflict situation

Proposed Conflict and Post-Conflict Education Model

Scenario 1: Peace Time

During peaceful times, all schools will have to follow the national curriculum. However, if a school is in a conflict prone area like most African countries presently are, then there should be inbuilt mechanisms for survival during the emergency and conflict situations. Such schools would need to have facilities that are self-contained and can be transformed anytime to boarding facilities for students.

Scenario 2: Education During Peace and Onset of Conflict Situation

As soon as emergency or insurgency situations arise, teachers need to be prepared to adjust their priorities to address issues related to the emergency situation. For example, lessons on personal security, peace, and conflict resolution need to be given priority during such situations. In addition, emphasis has to shift from basic science to providing technical and vocational skills in case the insurgency continues for a longer period. In this respect, the curriculum would need to emphasize the kinds of knowledge and skills that the students will need for survival after the conflict situation or if they drop-out of school due to the conflict.

Schools will need to pursue “parallel educational programs” whereby there is provision for “survival graduation” at each level of schooling and re-entry and “second-
chance education” is provided at every level. Schools must prepare students for secondary education and at every level; children should be able to acquire practical skills for survival in the community. Schools should have open doors for re-entry at any level for students seeking second chance education. This would require special assessment techniques so that those seeking re-entry can be placed in the correct grade based on their experience outside school. For example, a former “child soldier” may be mentally older than his non-combatant cohort because of the experience of war and could have learnt skills that may enable him perform better in a higher grade or “specialized class” where his experience can be tailored towards problem solving. Currently, in Northern Uganda, the former child soldiers are helping in de-mining the war fields.

Scenario 3: Education During Isolated Peace and Conflict Situations

During isolated peace and conflict situations, the curriculum has to emphasize both the basic and the technical subjects. In the events that some of these children get abducted or voluntarily join the fighting groups as was the case with the conflict in Northern Uganda, they would have basic skills and knowledge to endure the hardship. I hope that after the conflict or when they are rescued or surrender, they would still have some rudimentary skills they had learned from schools that they can put to immediate use and build on to start afresh and rebuild their lives.

Scenario 4: Conflict Situation (Conflict Prepared Schools)

Due to political instability in Africa over the past years, all schools are potentially “conflict prone”; hence, they must be “conflict prepared.” The overall assumption is that
a "conflict prepared school" is one where schooling is not directly affected by conflict situations because there are either physical barricades (strong perimeter walls) or maximum security such that the school is protected and shielded from the conflict. Schooling continues as if nothing is taking place outside the school walls. It presupposes that schools become self-contained and self-reliant communities, with all the social amenities provided within the school premises and children study in peace and live normal lives. Community members volunteer as home guards and provide protection for the children from attacks and abductions in the case of armed conflicts and civil wars. The government army provides the overall security and the police ensure law and order during such states of emergencies.

*Structural Adjustments and Infrastructure Improvement.* During conflict situation, there would be need for structural adjustment in terms of construction of perimeter walls for the schools and underground safety zones within the school premises perhaps similar to the “Tornado safety areas.” Experience has shown that physical barriers especially in boarding schools reduce incidence of invaders gaining entry into schools and also prevents children from leaving. Such walls are usually constructed using government funds. Therefore, if schools are planned such that walls are built around them to prevent students from leaving schools to go and do mischief outside school premises, this same wall would protect and prevent students being abducted during conflict and war situations.

In addition to the perimeter walls, provisions can be made for possible underground safety areas such that in each chosen location, maximum security is
provided by both the surrounding communities, home guards and the government security forces. Unlike in the model in Northern Uganda where government made an ultimatum for people to vacate the villages and congregate around the barracks and army bases, instead the communities could congregate around the schools since they are the parents of the children.

To reinforce security, "barricade houses" could be built by the communities around the schools. The barricade houses could be built using unburned bricks that do not require cement for construction and yet experience has shown that they are quite strong and durable. These barricade houses can be built around the schools with doors facing the schools while the backsides of the houses automatically form barriers, preventing entry of unwanted persons. This would form a "double-layer protection" for the children as well as the parents. This model referred to here as "Island of Peace and Hope" or "Oasis of Peace and Hope" would not cost any additional money than what is ordinarily budgeted by government because the perimeter walls would have been already included in the construction budget.

*Proposed Curriculum Reform for Conflict Situation.* During insurgencies and conflict situations it is important to establish a new science education policy that transcends emergencies and is conflict-prepared. The proposed curriculum would need to be tailor-made to address the needs of the different grade levels and should provide knowledge skills geared towards survival and reconstruction after the emergency or conflict situation is over.
Kindergarten/Pre-primary School. In this grade level the curriculum shall emphasize mainly play, drawing of pictures, storytelling, and singing. At this level, these children are aware that something has gone wrong because they no longer live in their homes in the villages and besides they would be hearing gunshots and bomb blasts. In order to provide them with “normal life,” they should be able to play freely as they used to do while in the villages without the fear of being abducted or killed. They should be able to express their fears, feelings and expectations through drawing of pictures so that the teachers can detect and identify traumatized children and give them the appropriate psychosocial support.

Primary Education (Elementary). In addition to the regular school subjects, the curriculum should include education for peace and conflict resolution. The teaching of practical skills that would be needed for survival, and reconstruction of the environment that would have been destroyed during the conflict needs to be emphasized.

Secondary Education/O’ Level (Middle and High School). The curriculum at this level would need to emphasize more science and technology subjects with acquisition of technical and vocational skills. There should also be emphasis on the acquisition of psychosocial and life skills. The science subjects that need to be taught include mathematics, biology, chemistry, physics, earth science, and technology because these form the basis for the training of the much needed future engineers and medical personnel and other human resource requirements that would be greatly needed during and after the conflict to reconstruct, rehabilitate and develop the infrastructure. They would need skills for construction of houses, roads, and bridges.
The psychosocial and life skills education would also need to be emphasized because some of these students may be trained as teachers; thus, they will need to provide psychosocial support to the students that have been traumatized by the war. Life skills are mental, social and emotional skills required by individuals to operate effectively in the community and the society. They include skills such as critical thinking, creativity, decision making, assertiveness, non-violent conflict resolution, empathy, negotiation, coping with stress and emotions, friendship formation, and interpersonal relationships.

Pre-College/University (A’ Level). At this level, the curriculum would need to emphasize vocational, technical and livelihood skills in addition to the academic subjects that are taught at this level such as economics, geography, history, and the basic science subjects. In addition, the students at this level are more mature and experienced enough to engage in education for “wholesomeness” that would involve skills and capital development through apprenticeship and entrepreneurship. These would give the students accelerated skills for economic empowerment after the conflict has subsided or ended.

Scenario 5: Proposed Post-conflict Educational Reform (Holistic Approach)

Considering that educational reform cannot happen in one day, the proposed science education policy could form part of bigger lifetime commitment to improve science education and bridge educational gaps created by historical imbalances and conflict situations.

This proposed program could progress in the right direction because the journey of a thousand miles begins with the first step. Listed below are some of the components
of wholesomeness education code-named, "Progressive Education & Action for Community Empowerment" PEACE. This program is still in the conceptual form and I hope to develop it further.

Curriculum Reform (Tailor-made Curriculum for Different Age Groups).
Curriculum reform should be a continuous process. In this model, the process would involve research and training and working with teachers in the conflict area to design teaching programs that would meet the needs of war-traumatized children of different ages and especially girls who have been most affected by this conflict.

Life skills education would need to form a big part of the curriculum because the promotion of mental skills such as critical thinking, creativity and decision-making are basic skills for scientific inquiry and literacy.

Teacher Education Reform (New Trends in Teacher Preparation). There would be an urgent need to re-equip the teachers with skills and knowledge of handling traumatized children. This would involve a change in methods of teaching and adopting new trends in education that recognize the effects war experience has on students learning and how these negative experience can be used to promote positive attitudes and transformation of the minds. Teachers would be trained in the principles and practice of inquiry and the constructivist approach to teaching and learning because they draw on students' prior knowledge and experience. In addition, teachers would be trained on how to promote life skills in their day-to-day teaching. Most importantly, teachers would be trained how to overcome their own trauma before they can help the traumatized students.
Community Education (School/Community Out-Reach Programs). Community service education is gaining acceptance quickly among educators working with disadvantaged groups like refugees and children in the inner cities.

Therefore, during post-conflict education recovery, community education, and adult education would be emphasized because some of the former rebels may not feel comfortable in the normal school programs so they may benefit from adult education that is run by the local community. These community schools would interact with the normal schools such that students and adults as can switch back and forth from community schools to normal schools depending on their needs. The community education program would emphasize education for self-reliance by promoting vocational and technical skills development.

Second-Chance Education for Child-Mothers. Second chance education would enable especially girls who dropped-out of school due to childbearing to re-enter schools. These could be done at "child-mother" centers where the girls would be encouraged to come to the learning centers with their babies and nursery facilities would be provided for the few hours that they would be in class. It is hoped that by empowering these young mothers, we would be planting a seed for a better future generation because these mothers would gain knowledge and skills for parenting and bring up their children as responsible citizens.

It should be noted that the above program is already being implemented by the Northern Uganda Education Network (NUGEN) a community-based NGO founded by the researcher in 2006 where some students from the IDP camps are being sponsored to
study at a private high school called Nebbi Standard Academy which was established in 2002 by the researcher. The NUGEN program provides psychosocial support, counseling, mentoring, and scholarships for formerly abducted boys and girls.

*Peace Education and Conflict Resolution.* Peace education would form a major component of the curriculum at all levels. A multidimensional approach to peace education would be employed because the absence of war does not necessarily mean peace of mind and heart. Peace education shall address aspect of psychological, sociological, and emotional peace and conflict situation within an individual and how it translates into conflict within the community and society. Children of all levels would be taught the benefit of peace and the evil of war and conflict. In addition, they would be taught skills of non-violent conflict resolution.

Under the peace education, there shall be emphasis on psychosocial healing and mental health for war-traumatized children. Healing, rehabilitation, reconciliation, and restoration should form part of this curriculum.

NUGEN in partnership with University of Tennessee Knoxville Jazz for Justice is implementing the use of music for trauma healing. This is being done through music clinics, and school music and dance project called the “Rhythms of Reconciliation” where students compose music and poems, and a competition is organized where the winners get prizes.

*Ethno Science and Science Education as a Tool for Development.* Ethno-science shall form a major component of the science education curriculum because for some of the students, the only science they are familiar with is the cultural knowledge they
acquired in the bush. For example, the child-soldiers were told that applying "Shea butter" oil on their bodies would make them bullet proof. The fact that by chance a bullet could have slid off ones body does not make it bullet proof because they might have witnessed their colleagues dying of bullet wounds. Such belief, however, can only be dispelled if the children design some experiment to test their hypothesis.

*Assessment and Evaluation.* During conflict situations emphasis would be on continuous assessment of both academic and practical skills rather than administering a national examination because of the fear and stress factor associated with such crisis situations. Where possible the qualifying examinations should be decentralized to the districts depending on the varying security situations. The students in the conflict zones would need to be exempted from the National Examinations because it would be unfair to test them on the same examinations with other students who have studied under peaceful situations.

*Affirmative Action for Enrollment in Higher Education Institutions.* Due to the unique circumstances under which they have studied, there would be need for affirmative action to ensure that students from conflict regions get access to higher education not based on their performance. A quota system or extra points allowing the best students in the region to be identified and sent for further training in the most needed professions such as engineering and medicine, is necessary, when completing the course they would be compelled to come back and reconstruct the local areas that have been destroyed by the conflict and war situation.
Program Implementation. The implementation of the conflict and post-conflict education should be the responsibility of everybody. The central government would have to provide the funds and human resource to implement these programs in collaboration with the district officials, school management committee, parents, teachers, and the community at large.

Finance and Budget. The financing of this education reform programs would come from Peace, Recovery and Development Plan (PRDP) funding as provided for in the national budget. Other funding could come from international donor agencies directly to the affected districts and from NGOs and Community Based Organizations that support education in conflict zones. Local mobilizations of building materials for construction such as bricks and stones could be partly the responsibility of the local communities. This would cut costs for equipment that would be needed for the science subjects and for technical and vocational training. The targeted international donors shall include but shall not be limited to Save the Children, UNICEF, World Vision, USAID, World Bank, SIDA (Swedish Development Agencies) who are already providing financial supports to districts affect by the conflict.

Monitoring and Supervision. The monitoring and supervision of the education reform program would be the responsibility of the district officials, the school management committee, the representative of the funding agencies and officials from the Ministry of Education and Sports.
Conclusions

The Ugandan education policy was not designed specifically to address educational needs during emergencies or conflict situations. Therefore, it does not address the complex needs of children studying in conflict zones.

There are two approaches to policy formulation process, namely, CES and DES, which stands for Centralized Education System and Decentralized Education Systems, respectively. The study revealed that although Uganda pursues a decentralized system of governance, the policy-making process does not always follow the bottom-up approach, but instead the central government imposes its policy on the local government. Consequently, key policies are derived from political statements without the input of the local government who are expected to implement such policies. No wonder good intended policies end up not achieving the expected objectives.

This study revealed that science education is priority to the government of Uganda unfortunately there is no science policy to implement the science and technology programs. The assumed science policies have not been effective; first, because they were formulated as campaign tools during the election periods and, therefore, did not have the framework or the budget for implementation. Second, although government investment in education has tremendously increased over the past years, there has been little progress because of either the absence of or flawed policies.

It was observed that the non-governmental organization supported education in the conflict zones more than the central government because they were on the ground and worked with the local communities. However, there were challenges of competitions
among them and lack of transparency in their activities. Moreover, in some instances they were accused of using the insurgency for their personal financial gain at the expense of the population they claimed to be serving.

Unfortunately, in spite of all the efforts that were made by government and development partners to provide educational services in the conflict-affected region, academic performance remained poor and fewer students from the region gained access to higher education resulting into poverty and underdevelopment.

The impact of the armed conflict on the regions are evident in lack of or poor infrastructure, lack of social amenities, high illiteracy and morbidity rates, rampant diseases, and lack of human capital to spearhead economic development. All the above negative effects may lead to a feeling of despondency and anger that can spark more violent conflicts and wars especially among those who feel that they have been marginalized and educationally disadvantaged.

Recommendations

The challenges of the 21st century require highly educated, knowledgeable, and skilled work force. Higher education can provide the work force that is needed for economic transformation. As we moves up the educational ladder the cost of higher education becomes even greater to the extent it is only those who are financially able that can afford it. This leads to the phenomena where the elites reproduce themselves at the expense of the poor and the marginalized. Considering that education is the single most expensive life time investment, government needs to increase funding for the education sector and especially higher education. This should be made accessible to all particularly
to the educationally disadvantaged and the marginalized groups from conflict affected areas.

Vision 2035 advocates for a Knowledge-Based Economy and argues that human capital is the nucleus of knowledge-based economy. It is the knowledgeable humans that are involved in wealth creation by being innovative, applying technology and excising superior entrepreneurial skills. Therefore, education is vital for the post-conflict recovery of the shattered lives and economy of Northern Uganda.

Based on the findings of this study and the priority areas for policy interventions are affirmative action in education in the areas of admission, curriculum reform, professional development of teachers, infrastructure therapy, science and technology education and increased funding for education.

Considering that access to higher education in science and technology is a key component of the post-conflict educational recovery there is an urgent need to increase the number of students from the conflict regions accessing science courses at universities and higher institutions of learning.

In order for the marginalized and educationally disadvantaged to gain entry into universities and higher institutions of learning and get admission into science-based courses, the government needs to implement the following policy interventions.

1. The cut-off point for admission to universities should be lowered for educationally disadvantaged students and children from conflict-affected areas.

2. The 1.5 extra points should be given to all students studying in conflict-affected areas.
3. The number of students admitted under the quota system from conflict-affected areas should be increased.

4. The number of district bursaries/scholarship should be increased to enable more students from poor and conflict-affected families to access higher education.

5. Special allowance and incentives such as accommodation should be provided to teachers in "hard to reach" areas and conflict-affected areas.

6. Psychosocial and trauma training and skills development should be given to teachers working with war-traumatized students.

7. Provide modern educational technologies such as computer-based learning to bridge the gap between the rural and urban schools and empower the rural schools to become global competitor.

Policy Implications

The policy implication of this study is that it will open a new field of research in Science Education Policy for Conflict and Post-Conflict, including gender within conflict. This research will contribute towards policy reform for science education for conflict and post-conflict education, teacher training for crisis situations, policy for safer school environments and infrastructure and science curriculum reform for the educationally disadvantaged.
Future Studies

A comprehensive study on the levels of trauma among the different age groups needs to be carried out to guide educational interventions.

Implement “Science on a Wheel” program as an action-oriented study to evaluate the effectiveness of a mobile laboratory and internet services to bridge the urban-rural science education gap and improving performances in science subjects.

Way Forward

Advocate for a UN Declaration, “Schools as Islands of Peace.”

Quotes

“Knowledge is power that can transform an individual and the whole society!”

“Education is the Key that unlocks the doors to unlimited possibilities!” (Clark, 2003)

“Education is your first husband; he will never leave you nor forsake you. (Dad, Pers.coms)

“Invest in Education; Harvest opportunities.” (Udongo, 2008)

“If you think education is expensive, then try ignorance. . .”

“My people perish because of lack of knowledge.”
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Save the Children. (2002). *State of world’s mothers: Mothers and children in war and conflict*. Westport, CT.


UNESCO. (1999). Regional Program of Education for Emergencies, Communication and Culture of Peace. UNESCO PEER.


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Academic Registrar, Makerere University, Kampala

Educational Management Information Systems (EMIS), Ministry of Education and Sports, Kampala
Joint Admission Board, Ministry of Education and Sports

The National Curriculum Development Center, NCDC (2000)

The Prime Minister's Office and Ministry of Disaster Preparedness

Public University Joint Admissions Board (PUJAB), Kampala

Uganda National Examination Board, Kampala
Appendix A

Survey
SURVEY

Education Policy for Emergency, Conflict and Post-conflict Societies

Profession: ___________________________ Gender: Male ☐ Female ☐

Political Party Affiliation: ___________________________

District of Origin: ___________________________ Ethnicity________________________

1. Highest level of education attained

☐ Primary Education ☐ Bachelor's Degree

☐ O' level ☐ Master's Degree

☐ A' level ☐ Ph.D.

2. Marital Status:

☐ Single ☐ Married ☐ Widowed ☐ Divorced

3. Age

☐ Below 18 years ☐ 18 - 24 years

☐ 25 – 35 years ☐ 36 - 45 years

☐ 46 – 55 years ☐ 56 – 65 years

☐ Over 65 years

4. Are you a parent/guardian? Yes ☐ No ☐ If Yes;

5. No. of children currently in Primary School ___________________________

6. No. of children currently in Secondary School ___________________________

7. No. of children currently in Universities and higher institutions of learning———
Instruction: Choose the option that best expresses your view/opinion

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<tbody>
<tr>
<td>1. The Ugandan educational policy equally and adequately addresses the plight of children studying in conflict-affected areas.</td>
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<td>2. The policy of <em>Universal Primary Education</em> (UPE) equally benefits children from the conflict-affected regions.</td>
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<td>3. The policy of &quot;Day Secondary schools&quot; puts children in conflict region at a risk of loss of lives and abduction.</td>
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<td>4. The policy of <em>Universal Secondary Education</em> (USE) equally benefits children from the conflict-affected regions.</td>
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<td>5. The policy of <em>compulsory science subjects</em> is not fair to children studying in post-conflict and conflict situations.</td>
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<td>6. The policy of 75% sponsorship for <em>science-based</em> courses at tertiary level equally benefits children from regions affected by conflict.</td>
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<td>7. There is need for <em>affirmative action</em> in education for children studying in post-conflict and conflict-affected regions.</td>
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<td>8. There is need for <em>accelerated educational programs</em> for children studying in post-conflict and conflict situation in order to catch up with the rest of the country.</td>
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<td>9. Children studying during armed conflict situations should sit for <em>special examinations</em>.</td>
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<td>10. The current <em>curricula and textbooks</em> should be updated to make them more relevant for <em>post-conflict recovery, rehabilitation and reconstruction</em>.</td>
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<td>11. The &quot;cut off point&quot; for children studying in conflict situations should be lowered to enable them access higher education.</td>
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Teachers serving in post-conflict and conflict-affected regions should be retrained to serve the needs of conflict and post-conflict children.

Teachers serving in conflict-affected regions should be paid special allowance.

There is need for an "Emergency Education Policy" to address the educational needs of conflict and post-conflict societies.

There is need for "Emergency-preparedness Budget" in the field of education.

As a safety measure during emergencies and armed conflicts, government should relocate children to safer areas.

As a safety measure, all schools in Uganda should be fenced.

As a safety measure, during emergencies or armed conflict, schools should be transformed into boarding facilities.
Appendix B

Interview Guide
INTERVIEW GUIDE

1. Do you think that the Ugandan educational policy equally and adequately addresses the plight of children studying in conflict-affected areas?

2. Do you think the policy of Universal Primary Education (UPE) equally benefits children from the conflict-affected regions?

3. What are the advantages and disadvantages of Day Secondary schools especially in conflict region prone areas?

4. Do you think the policy of Universal Secondary Education (USE) equally benefits children from the conflict-affected regions?

5. Do you think the policy of compulsory science subjects is beneficial to children studying in post-conflict and conflict situations?

6. Do you think the policy of 75% sponsorship for science-based courses at tertiary level equally benefits children from regions affected by conflict?

7. Do you think there is need for affirmative action in education for children studying in post-conflict and conflict-affected regions? What kind of affirmative action do you propose?

8. Do you think there is need for accelerated educational programs for children studying in post-conflict and conflict situation in order to catch up with the rest of the country?

9. Do you think children studying during armed conflict situations should sit for special examinations?

10. Do you think the current curricula and textbooks should be updated to make them more relevant to the needs of post-conflict recovery, rehabilitation and reconstruction process?

11. Should the cut-off point for children studying in conflict situations be lowered to enable them access higher education?

12. What do you think about retraining teachers to serve the needs of conflict and post-conflict children?

13. Should the teachers serving in conflict-affected regions be paid special allowance?

14. Do you think there is need for an “Emergency Education Policy” and an “Emergency-preparedness Budget” in the field of education to address the educational needs of conflict and post-conflict societies?
15. During emergencies and armed conflicts, should government relocate children to safer areas?

16. Should all schools be fenced as a matter of government policy? Why and why not?

17. As a safety measure, during emergencies or armed conflict, should schools transformed into boarding facilities.
Appendix C

Samples of Research Questions
SAMPLES OF RESEARCH QUESTIONS

The Survey and Interview questions were guided by the UNESCO (2002) Guidelines for Education in Situations of Emergency and Crisis Edited by Kacem Bensalah

1. In what ways can the government contribute to education during emergency and conflict?

2. What steps are being taken to provide an educational supplies and materials to all IDP schools?

3. What are the longer term needs in respect of rehabilitation and renewal of the system in the affected localities? Does the curriculum need to be revised?

4. What infrastructure improvement is required to make schools safe places for children?

5. Should the current curricula and textbooks, be updated to make them relevant by the removal of inappropriate content and the inclusion of contents that promotes tolerance, conflict resolution, environmental conservation and health?

6. What should be done to make the national examination fair and just for candidates studying under difficult circumstances?

7. What plans does the Ministry of education have to strengthen the skills of teachers in conflict situations to meet the needs of traumatized children (in-service and full-time training, mobile trainers, in-school mentoring, school cluster arrangements, and teachers' center)?

Preparing/updating the register of certified teachers

1. What are the educational qualifications and teaching qualifications/experience of the teachers in the emergency-affected population?

2. What resources are being devoted to training of teachers, head teachers, program supervisors?

3. What are the possibilities for linkage with regular teacher training in other parts of the country?
Gender issues

There are numerous gender issues in emergency education. Key points to review include:

1. What are the gender ratios in different years of schooling, and what are the causes for the (often different) drop-out rates of girls and boys?

2. What are the gender ratios of teachers in different levels of schooling, and the causes for this?

3. What are the gender-related behaviors in the schools and classrooms (co-education)?

4. What are the gender biases and stereotypes in educational materials?

5. What measures can be taken to promote community and parental awareness of the importance of girls' education as a measure of gender equity and the need to provide equal opportunities to girls and boys?

6. What measures can be taken to decrease girls' home duties during school hours (e.g. pre-schools for younger siblings, food distribution outside school hours), improve security, meet cultural requirements and, in general, make it easier for girls (and boys) to attend school?

7. What measures can be taken to overcome the differential effects of poverty on girls?

8. What special education and training measures could raise the proportion of women teachers, head teachers and deputy head teachers?

International Organization and Non-Governmental Organizations

1. What organizations are involved in the emergency or post-crisis education?

2. What activities are these organizations undertaking?

3. What are the coordination mechanisms at local, district/regional and national level?

4. What role do these organizations expect to play in the future?

5. Are there arrangements for international agencies to progressively hand over their activities to local counterparts?
Emergency/War Budget

1. Is there a budget for emergency-affected populations?

2. Is there a budget for emergency-preparedness in the field of education, including training, educational materials, and the rehabilitation of schools?

3. What financing might be accessed from local and international donors?
Appendix D

Enrollment Flows for Primary Schools by Class (1997–2005)
## ENROLLMENT FLOWS FOR PRIMARY SCHOOLS BY CLASS (1997–2005)

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(Source: Education Management Information System data, M.O.E.S)
Appendix E

Map of Uganda Showing the Major Towns
MAP OF UGANDA SHOWING THE MAJOR TOWNS
Appendix F

Internally Displaced People’s Camps
in Northern Uganda
INTERNALLY DISPLACED PEOPLE'S CAMPS
IN NORTHERN UGANDA

Source: http://images.google.com
Appendix G

Child Taking Care of a Sibling in the IDP Camp
In 2004, more than 1000 children died every week in the camps due to diseases and malnutrition. The situation was described as the World's worst humanitarian crisis ever (Egland, 2003).

Appendix H

Child-Soldier in Rebel Army
CHILD-SOLDIER IN REBEL ARMY

Appendix I

Non-Governmental Organizations (NGOs) Supporting Education in Northern Uganda
NON-GOVERNMENTAL ORGANIZATIONS (NGOs) SUPPORTING EDUCATION IN NORTHERN UGANDA

The government of Uganda and a number of non-governmental organizations (NGOs) were involved in providing education in the northern region during the armed conflict. While a section of the population appreciated the efforts of government and the NGOs, other felt that the benefits were double aged. Some government officials took advantage of the situation to steal money, while some NGOs took advantage of the people they were supposed to help by pursuing self interest.

Although the findings of this research study clearly indicated that the Ugandan government did not achieve its goal of providing equitable access to quality education to all children especially those affected by conflicts, the ministry of education and sports believed that it made timely intervention which was crucial in averting total collapse of the education system of Northern Uganda.

The increase in primary school enrollments in the sub-region indicated that there were resources being channeled for education service delivery in northern region. It was reported that there was an increase in the number of girls that accessed school and the gender gap was narrowed particularly at the primary education level (Education Sector Annual Report, 2008). Government provided classroom and other educational infrastructure to some schools in the north that could be reached. Teachers were recruited and deploy teachers in some schools in the conflict-affected northern region. Government maintained a fairly adequate supply of the relevant teaching and learning materials and provide for the special learning needs of the war-affected vulnerable groups in the region. Government deliberately promoted partnership with international agencies and
educational provider non-governmental organizations to supplement its effort of educational delivery in the northern region.

The NGOs support to education in the northern region was an important aspect of this research study. The non-governmental organizations that played an important role in supporting education in the northern region during the period of the armed conflict are listed below. There were over 50 NGOs operating in the northern districts of Uganda during the insurgency with each organization engaged in various developmental programs ranging from health, water and sanitation, microfinance and education. In the next section, I shall describe briefly the contribution each of the NGOs that are listed below made toward educational delivery in the northern region.

UNICEF
Arbeiter-Samariter-Bund (ASB)
Christian Children’s Fund (CCF)
World Food Program (WFP)
Save the Children
Norwegian Refugee Council
UPHOLD
USAID
Action Aid
Association of Volunteers in International Service (AVSI)
Bringing Resources Across Communities (BRAC)
War Child Holland (WCH)
Echo Bravo
Windle Trust – Uganda/ABS
The Acholi Education Initiative (AEI), 2001
Irish Aid
UNICEF

The educational focus of United Nation International Children’s Education Fund (UNICEF) was on psychosocial and life-skills education in primary schools. They created more schools and developed a girls’ education movement (GEM) in schools and IDP camps. It was also interested in accelerated education programs and is trying to increase funding for vocational training in camps, including apprenticeship for working groups.

UNICEF also collaborated with other educational provides in the reason. For example, in conjunction with AVSI, UNICEF sponsored Peace Clubs in Kitgum because AVSI had other partners for the Peace Clubs in the region.

ARBEITER-SAMARITER-BUND (ASB)

ASB focused on pre-primary and the primary sub-sector, they built 3 school buildings in Oyam District for physical rehabilitation. In Lira districts they rehabilitated boreholes in one school. In the secondary school sub-sector they proved desks in 11 schools in Oyam and Lira Districts and constructed latrines in 6 schools.

Christian Children’s Fund (CCF)

Christian Children’s Fund has been operating in Uganda since 1980 and has assisted approximately 780,000 children and family members in the districts of Gulu, Kitgum, Pader, Lira, Soroti, Katakwi, Kaberamaido, Apac, and Adjumani in Northern Uganda. In the primary sub-sector, they assisted the communities to build and furnish classrooms and provided remedial teaching for enrolled students. They supported girl-child programs that focused on the rights of women and girls by promoting education for girls. They provided uniforms, scholastic materials and tuition assistance to students affected by the armed conflict. They trained psychosocial workers to offer counseling to
children affected by HIV/AIDS and other vulnerable children. In addition they trained
teachers in psychosocial support techniques and promoted peer education and counseling.

**World Food Program (WFP)**

World Food Program in partnership with the government of Uganda (GOU), and
other donor UN agencies, international and national NGOs and Community Based
Organizations, provided foods for the 1,619,807 Internally Displaced Persons, (IDPs),
including 178,741 school children and 19,900 people infected with or affected by
HIV/AIDS in Gulu and Kitgum districts. WFP also supported the government of
Uganda’s Education Strategic Investment Plan (ESIP 1998-2003) ensuring the
implementation of UPE and improving the quality of primary education by providing
feeding of 141,000 school children in 317 primary schools in Karamoja, Gulu, Kitgum,
and Bundibugyo districts.

**Save the Children**

Save the Children trained teachers in psychosocial support and trained school
pupils in peer to peer support. They provided trauma counseling for children who had
been abducted by the rebel and returned from the bush. They have also provided
vocational training to rebel returnees and provided logistical support for emergency and
reintegration programs delivery of the 2002 PLE examinations during the armed conflict.

**Norwegian Refugee Council**

The Norwegian Refugee Council trained 3,000 primary school teachers in Gulu in
psychosocial skills and they partnered with teachers’ colleges on curriculum development
with emphasis on participatory methodology. They developed the early childhood
education programs and extra-curricular activities like football for girls, music and drama, and agro-forestry. They also provided psycho-social support from a strengths perspective.

**UPHOLD**

UPHOLD was a six-year program (October 2002 to September 2008) funded by the USAID and supported by the government of Uganda. The program was aimed at strengthening the capacity of 34 districts in Uganda for the improved delivery, planning, management, monitoring and effective use of social services in three integrated social sectors of health, education and HIV/AIDS.

**Action Aid**

They drilled boreholes and provided crest tanks at or near primary schools/learning centers in Agago County, Pader district. They supported disadvantaged children such as the girl-child, disabled child, returnees, and orphans, working children, over-aged, child-mothers, and parents through advocacy for access to education services and supported the Northern Uganda Education Forum to build profile to inform policy formulation, review and implementation in favor of disadvantaged children. They also constructed temporary and semi-permanent classrooms in Pader and Kitgum and constructed permanent pit latrines and provided crest toilets to learning centers and camps in Pader and Kitgum. Action Aid also provided scholastic materials such as exercise books, pens, pencils, and math sets to children in the war ravaged north.

**Association of Volunteers in International Service (AVSI)**

AVSI began its education work in Northern Uganda in a three-way partnership with the local government of Kitgum district and UNICEF to implement the Kitgum Psycho-Social Support Program (PSSP). It extensively supported educational projects in
the north. In the pre-primary and primary sub-sector they provided a variety of simple and inexpensive instructional materials to 145 pre-service students in Kitgum PTC, and to 8 pre-primary centers and primary school through UNICEF support. A total of 471 children were supported with school fees and scholastic materials.

AVSI has also rehabilitated school facilities in primary, secondary and vocational schools in the sub-region. In addition they offered training courses for teachers, parents and community leaders to provide psychosocial support and help to build resilience in children and communities. They supported the Primary Teachers Colleges by providing Training of Trainers (ToTs) courses to Center Coordinating Tutors on psychosocial skills, classroom management, peace education and the rights of the children.

Furthermore AVSI provided remedial education courses and catch up classes in non-formal vocational training. They conducted psychosocial training for 384 Kitgum PTC Pre-service students as well as training for 40 nursery centers’ caregivers. Furthermore they also provided sponsorship to 48 repeating PTC pre-service students in Kitgum Core PTC. In addition, AVSI organized remedial education to help those students who intend to complete the primary level but were not able to regularly attend primary school classes. Furthermore AVSI facilitated training programs focusing on psychosocial issues for community volunteers, community health workers, social workers and teachers within the districts of northern Uganda.

**War Child Holland (WCH)**

War Child Holland is an International NGO which was founded in 1995 and has programs in 11 countries. The head office is in Amsterdam, the Netherlands. The Uganda
program started in September 2004. Since then offices were opened in Gulu, Kitgum, and Lira, each of them headed by a Field Location Manager. Their contributions toward education in the northern region included the introduction of the Creative Cycle groups to strengthen the constructive coping mechanisms of children and youth affected by war. They helped children to express themselves and provided them with skills to cope in a positive way with problems in their daily lives. The program is being implemented in 14 schools in the 3 districts of Kitgum, Gulu, and Lira. A total 3,302 children have gone through the program.

War Child Holland has trained 104 teachers from the 3 districts of Gulu, Kitgum and Lira on the use and importance of different recreational activities and sports. They are supporting the implementation of the Sara Communication Initiative (SCI) for empowering girls to fight HIV/AIDS in 5 schools in Lira district. A total of 1,827 children have so far benefited from the program. WCH also provided Catch up Education Programs (CEP) for youth who are not able to return to the formal education system, but still want to take the Primary Leaving Examination.

Echo Bravo

Echo Bravo is an educational agency, with a specialty in education in difficult circumstances. Since 2006, they have provided Alternative Education through a flexible Catch-Up Education Program (CEP). The learners in the CEP do the traditional seven years of primary school in three years using the 3-level syllabus. Specifically, the agency had supported over 360 out-of-school children and youth from Gulu, Amuru, and Kitgum districts by providing an opportunity to catch-up on their basic education and obtain life
and livelihood skills. The project has benefited out-of-school children especially child-mothers. Over 100 formerly abducted children and formerly abducted mothers have benefited from this program. Deliberate effort has been made to foster the enrollment and retention of girls in the program. All the requisite scholastic items are provided by the program. Furthermore, Echo Bravo renovated CEP Centers, recruited and inducted instructors for the CEP centers, introduced flexible study arrangements including day care component for child-mothers and night study programs.

**Windle Trust – Uganda/ABS**

The Acholi Bursary Scheme is supported by the Windle Trust for the Acholi sub-region. The Acholi Bursary Scheme is a full sponsorship initiative with up to 3551 beneficiaries. It provides guidance and counseling services and is involved in the construction of school infrastructure. It constructed a girls’ dormitory at Sacred Heart School and St. Monica Tailoring facility in Gulu. It constructed a five-classroom block at Kitgum High School and a fully equipped workshop at Kitgum Technical Institute.

**The Acholi Education Initiative (AEI), 2001**

The Acholi Education Initiative (AEI) is an indigenous NGO that was initiated in 2001 by a cross section of the Acholi society within the Acholi sub-region as well as those in the Diaspora (Kacoke Madit) under the auspices of the ACHOLI Religious Leaders Peace Initiative (ARLPI). It was a civil society response to the crisis in education sector among the war-affected adolescents (13-25 years) in the districts of Gulu, Kitgum, Pader, and Amuru, most especially former abductees, orphans children of IDPs and the poor who are incapable of meeting the costs of education and particularly the girl-child.
Irish Aid

Irish Aid is one of the principal contributors to the bursary scheme initiated by the AEI. The Irish envoy contributed $10,000 U.S. and the first batches of young Acholis to benefit from this initiative were sponsored by the Danish International Development Agency (DANIDA). By the end of 2002, DANIDA had, through AEI managed to recruit 200 students to attend secondary school education.

The Benefit and Challenges of NGOs Activities in Northern Uganda

The NGOs were considered better saviors than government because they had physical presence among the suffering communities. Moreover, they tended to run timely small-scale educational interventions. The personnel were more versatile responsible and expedited operations through minimization of bureaucratic procedures, thus the NGOs were more flexible and responsiveness than government.

Furthermore, they enjoy good rapport with the target populations and this enabled them to adapt to the local situations and build on the real needs and priorities expressed by the intended beneficiaries. They were able to introduce innovative educational methodologies and structures with great appeal among the target groups of learners such as music, popular theatre, role playing, puppetry, and peace clubs, remedial or catch-up education programs (CEPs), day care centers to assist child mothers without government interference. They often formed important links between the grassroots communities and the local political elite.

On the negative side, however, some NGOs tended to harbor paternalistic attitudes and top-down management styles which restricted the degree of client participation in project design, approval, implementation, monitoring, and evaluation.
Similarly, the “territorial possessiveness” of the projects impaired cooperation and partnership with the other providers of education whom they deemed to be competitors. The relatively small educational projects that they often undertook were less representative of the whole population and therefore less replicable. The dependence on outside financial assistance undermined the future and sustainability of the NGO projects. Most NGOs tended to pay greater allegiance to their external financiers than to the education authorities in the host country. Unfortunately, the majority appeared to have confined themselves to the pre-primary and primary sub-sector of education and was rarely visible in the secondary and tertiary sub-sectors were the need was even greater. While both the government and non-government interventions helped to avert a humanitarian crisis in the sub-region, there was the challenge of under-funding. In addition the emergency setting forced the employment of top-down management styles which undermined grassroots participation, sustainability and sense of ownership. The low absorptive capacities of the districts in northern region and poor the harmonization of the intervention programs led to wasteful and duplicity.