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Mine Closure Impact on Mine Schools' Students Learning: The Case of Sutton Mine

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Abstract:

Although considerable work has been written on the economic, social, environmental and health effects of mine closure very little has been academically presented on mine closure effects on students learning. Post mine closure problems which affected Sutton Mine were investigated and their linkage to students learning established. Qualitative research methodology was used and random sampling techniques to establish representative samples of students and residents. Two sets of questionnaires were used, one for residents and the other for students. Interview and observation were used for gathering data. The researcher also used documents obtained from Sutton Mine Zim Alloys Pvt Limited offices, Sutton Mine Primary School, Sutton Mine Secondary School and Sutton Mine clinic to answer some of the research questions designed. The research established that the mine closure has negatively affected learning. Before mine closure Zim Alloys used to provide support services to Sutton Mine Primary School and Sutton Mine Secondary School. With Mine closure the support has since evaporated, undermining students learning at the schools. The economic and social status of residents at Sutton Mine was also found to have been changed for the worse. This has undermined performance in both the areas of sport and academics. After mine closure ZimAlloys did not put enough resources and effort to rehabilitate the local environment, which now pose a threat to students at two local schools. Overly the research established that Sutton Mine closure had a far-reaching negative bearing on local students learning. A number of recommendations were made by the research.

Keywords: Education, students learning, mine closure

1. Introduction

The sustainable exploitation of minerals and metals, according to Mutyanga (2004) has fostered social and economic development in many communities. However, as Strongman et al (2007) point out minerals are non-renewable resources which cannot be replaced. This status of minerals, together with recurrent slump in international prices of minerals, adverse legal framework in countries such as Zimbabwe, and macro-economic challenges has led to closure of many mines.

In Zimbabwe, as Mukanya (1995) notes, mining began with the onset of the Early Iron Age between the 9th and the 11th Century. The mining industry has since developed and is currently contributing significantly to the country's Gross Domestic Product (GDP). However, as in other countries, many mines in Zimbabwe have been facing operational challenges, leading to closure. This has undermined the sector's contribution towards the country's education system, compromising the quality of education offered in mine settings.

Considerable work has been written on environmental impacts of mining on local communities, effects on local economies and impacts on the livelihood of mine residents. However, the writer noted that barely any work has been written on the impacts of mine closure on students learning. In Zimbabwe, the decade from 1990 to 2000 witnessed the closure of many mines, including Vanard Mine, Gester, and Ceaser along the Great Dyke. Other mines that have closed include Mhangura, Sheckleton, Alaska, Mashava, Kamativi and Shabane.

Despite the glaring problems associated with mine closure, very little has been written on impacts of mine closure on mine school-students. It is against this background that the writer found it imperative to research on the impacts of mine closure on mine school-students' learning, taking Sutton Mine as a case study. The mine specialised in chrome mining and today everything is at a standstill, and the mine has been turned into a ghost settlement.

Mine closure has caused stressful experiences on a number of stakeholders involved, ranging from mine owners, local authorities, Environment Ministries, residents of mines and governments at large. At the centre of the ensuing

problems are mine residents, especially students who are most negatively affected by mine closure. Academic and sports facilities have deteriorated, student's sponsorship evaporated and the general academic and sporting environment undermined. Mine schools, during mine operations, are characterised by high achievement in sporting and academic spheres and have a history of producing sportspersons of national stature, for example Effert Lungu, the 1983 Zimbabwe soccer star came from Rio Tinto, a gold mine. However, with mine closure most mine schools find themselves at the lowest end of academic and sporting performance. Very little is done to identify problems encountered by mine school-students after mine closure, and no clear strategies are formulated and implemented to address impacts of mine closure on the learning environment of mine schools.

The research is a case study on Sutton Mine carried out by the main author of the paper and advised by, two lecturers at Bindura University of Science Education. The study covered the two schools at the mine: Sutton Mine Primary School and Sutton Mine Secondary School.

Theoretical Background to Learning

The understanding of the theoretical framework to learning forms the springboard in the discussion of the impact of mine closure on student learning. In this respect the writer found it imperative to give a brief of major theories of learning and discuss how each of them can relate to the learning environment. These are behaviourism, cognitivism, constructivism and the multiple intelligences learning theory.

The major proponents of behaviourism are B. F. Skinner (1904) and Squires and McDounald (1994). These propose that learning is a post-natal exercise, and that the new born were a tabular rasa. The arguments are that learning is through positive and negative reinforcement and is evidenced by change in action through an explorative process that exposes an individual to external stimuli until a desired response occurs. The required response is reinforced by way of rewards while un-required response is not rewarded. The theory does not give due consideration to learners cognitive and affective processes since they are not observable. They put the responsibility of knowledge transfer to the teacher with learners as passive participants. Behaviourists view knowledge as objective, factual and absolute.

The environmental responses that accompany behaviourism are the lecture-based method, teacher focused and structured. Use of a system of rewards and punishment dominate to promote learning. The physical learning environment or the schools created to support this learning theory were typically fenced in single buildings with several storeys or classroom wings. Classrooms were in rows and columns with minimum room for flexibility. The teacher's desk is the focal point. The other learning theory that has gained prominence is cognitivism. It focuses on the study of mental processes which it uses to explain learning. The mind is compared to the black box, one that needs to be opened and explored (Akinsanmi, 2013). The mind receives information, processes it and then produces an output that can be stored in the mind or exhibited in behaviour. According to cognitivism, knowledge can be viewed as mental constructions that are organised or processed in the mind. From this perspective, learning occurs when there is change in the learning schemata. The other tenet of cognitivism is that the learner is an active participant in the learning process, and that action is result thought.

The environmental response to this learning theory is characterised by conscious provision of inquiry-oriented projects and presentation of knowledge in scaffolding. Knowledge is also presented as absolute and objective. Schools built on the philosophy of cognitivism were typically laid out like campuses, and were not fenced (Akinsanmi, 2013). Single and storey buildings earmarked various settings which provided apartments for students to interact with outdoors. This supported the explorative approach of the learning theory. Students, in the theory's environmental response are housed according to grades, and the teacher's desk still formed the focal point.

Constructivism as a theory of learning takes into consideration the learners' social, cultural and contextual conditions. The main argument of this learning theory is that learners construct knowledge through experience and in accordance with levels of cognitive development. Akinsanmi (2013) notes that learners interpret new information through their contextual experiences and build on their existing knowledge from assertions arrived at during assimilation and reflection on new knowledge. These theorists view learning as an active process of making meaning from experiences and argue that learning is the responsibility of the learner.

Environmental response from this learning theory is that student centres should be collaborative, co-operative and experiential. The teacher is viewed as the facilitator. The Brain Based Theory, as Akinsanmi (2013) argues, has been derived from constructivism. The theory is based on current neurological research findings on the physiological functions of the brain and proposes that people learn better in a challenging, safe, comfortable, social and enriched environment.

Other scholars have written a lot on the influence of the environment on learning. La Rowe, (2013) notes that the environment serves as a foundation for early learning, with parents serving as the first teachers and the home as the first classroom. According to a study carried out by the University of Chicago in 1998, children whose parents create a structured environment that makes time for nutritious eating, adequate studying time and interaction between family members tend to be ready and able to learn.

The author goes on to argue that children are better able to pay attention, absorb information, and engage in learning if their brain is rested and their stomach full. Xaxx (2013) also notes that children take with them their home environment to school. A positive, supportive and predictable environment helps a child to cope with stress and uncertainties of the classroom. Children who go to school without proper breakfast, or while worrying about their parents or believing that they could be relating to a team that is unsafe will not be able to learn as well. No matter how good the school is, children will be less able to take advantage of it if their home environment is inadequate.

As O'Rourke (2013) points out, damaging environmental factors include poverty, substance abuse, dangerous neighbourhood, frequent moving and parents who are very young, single, uneducated or unemployed. On the other side

helping factors include, families that read, family discussions, access to play equipment, libraries, cultural events and families that take interest in music, art and literature.

Although there is convergence by the cited authors on the importance of the environment on learning, it is vital to note that these sources do not provide methodology used to reach their conclusion. It is not clear whether these conclusions were reached on account of secondary sources, primary research or personal opinion.

Biedinger (2011), through his structural equation model, confirm that the learning environment and the education of parents are fundamental for the action of children at the age of three to four, and both factors were found to affect the improvement of cognitive abilities. As the writer further notes, the cultural capital of parents influences the home environment and the activities between parents and their children. If parents are highly educated the probability rises that their children will also be highly educated (Biedinger, 2011). The method used by Biedinger (2011) to find environmental related cognitive outcome hinges on evaluation of factors affecting cognition such as social inequality, socialization processes, biological reasons and educational institutions. It was noted that gaps in cognitive skills arise before children go to school and that there exist developmental differences of children from different social classes. The writer measured different children cognition attributes in Germany and used scientific methods to draw conclusions. It can, therefore, be asserted that the results of this research are valid and can be relied upon.

It is this researcher's humble conviction that this review of literature on the theoretical foundation to learning lays the lynchpin for understanding how learning takes place within children, and therefore, the effects that environmental changes that mine closure bring to student learning.

One of the theories of learning that have gained prominence among academics in the field of education is Howard Gardner's Multiple Intelligences Learning Theory (MI). According to Wikipedia (2014) learning is differentiated into primary sensory modalities rather than noting intelligence as being dominated by a single general ability. Gardner (1983) articulated seven criteria for behaviour to be considered as intelligence, and according to him intelligence showed potential for brain isolation by brain damage and place in evolutionary history. Other tenets of intelligence identified by Gardner (1983) include presence of core operations, susceptibility to coding, a distinctive development progression, the existence of savant prodigies and other exceptional people and support from experimental psychology and psychometric findings. The abilities, as postulated by Gardner (1983) include musical or rhythmic, visual or spatial, verbal or linguistic and logical or mathematical abilities. Other abilities noted include bodily or kinaesthetic, interpersonal, intrapersonal, naturalistic, moral and existential intelligences.

Mahamba (2013) notes that the MI learning theory postulates that each individual at birth is endowed with at least nine intelligences developed to varying degrees. Some can be very highly developed while others can be developed to a lesser extent. Mahamba (2013) further notes that in the incidence of prodigies, a child can be given a guitar for the first time and after thirty minutes play it's like they have been doing so for the past ten years. Also argued by Mahamba (2013) is the fact that multiple intelligences encompass bodily kinaesthetic intelligence. This is the domain that caters for the mind and body co-ordination, responsible for the art of dancing, acrobatics, sports, hand knitting and many other psychomotor skills.

The other domain is the interpersonal intelligence. This is the ability to understand others, empathize with them and influence them. Intrapersonal intelligence involves the ability to understand one's self and use this to guide one's behaviour. Other domains are the musical and logical or mathematical intelligences.

The spatial intelligence is the faculty that enables one to view the spatial world accurately and make transformations of this. As Mahamba (2013) further contends, some of Gardner's domains of the MI theory are the linguistic and naturalistic intelligences, and the existential intelligence, dealing with the spiritual.

Gardner (1983) criticizes traditionalist education which only measures linguistic and logical mathematical intelligence, ignoring other capacities in the individual. According to him the traditional type of education is characterised by a narrow curriculum which short changes many students whose stronger competencies lie outside the domain covered by the curriculum. Teaching and learning methodology also need to be compliant, going beyond verbalization, memorization and theorising to include those students whose dominant competencies are outside the domains

Mahamba (2013) contends that in Zimbabwe, and in the context of the application of the MI theory, it is not possible to find a Zimbabwe Foundation for Education with Production (ZIMFEP) student graduate standing at the corner of a street selling sweets because education with production graduates who are competent to serve the society, Highlighting one of the most fundamental achievements of Education with Production (EWP), Mahamba, (2013) underscores that ZIMFEP schools have the most balanced curriculum in the nation encompassing a wide of academic and practical subjects. Each child is bound to find an area in which they are strong and so are able to excel in it. Mahamba (2013) further disagrees with the traditionalist emphasis on five ordinary levels citing rampant unemployment it feeds every year. According to Mahamba (2013), "in traditional education we barely scratch the surface and we leave the seam of gold undetected." Education with production, through its wide range of poly-technical subjects searches competences in each child, ultimately serving the child and society better.

Discussions on Gardner's multiple intelligence theory form the bedrock in understanding how Sutton Mine closure has affected learning within the two schools at the mining site. This is possible through the analysis of the changes in curriculum during the pre-closure and post mine closure periods. Resource bases available for learning and the methods of teaching used as a result of environmental changes due to mine closure also warrant attention to determine whether these are compliant to Gardener's multiple intelligences theory.

2. Methodology

The regional approach, earmarked by the use of the qualitative research paradigm, was the basis of the study, where the area was viewed from an integrated approach, looking at the interrelationship between the social, environmental, psychological and economic impacts of Sutton Mine closure on the mine school-students' learning. The research paradigm has the theories of constructivism, post-positivism, critical theory, and participatory/co-operative paradigm as philosophical standpoints (Guba and Lincoln, 2005).

The qualitative research paradigm relies on the following methods of obtaining data: Participatory Observation, Non-participatory Observation, Field Notes, Reflexive Journals, Structured Interviews, Semi-structured Interviews, Unstructured Interviews and analysis of documents and materials. Other methods involved in qualitative research include the use of focus groups and key informant interviews (Fraenkel and Walter, 1996).

The researcher used quantitative methods for data collection and analysis. Triangulation methods were utilised to increase validity and authenticity research results.

The research is a qualitative case study design. Fraenkel and Walter (1996) describe a case study as an investigation of an individual group or institution to determine variables and relationship among variables influencing the current behaviour or status of the study. Since the final point of the study is on the impacts of Sutton Mine closure on students learning, its emphasis on in-depth analysis against generalisation was considered an advantage over other research designs. The case study was chosen as a design of the study after due consideration had been taken. The design concentrates on the specific case, impacts of mine closure at Sutton Mine on mine school-students' learning, and here the effects of mine closure are contextualised to Sutton Mine.

In this research, impacts of Sutton Mine closure on Sutton mine school-students' learning were investigated, and the population is made up of former ZimAlloys employees and their families, Sutton chrome mine co-operative members and their families and other residents who are renting houses at the mine. Sutton Primary and Secondary school-students and teachers are also part of the population targeted by the research for data collection. ZimAlloys records on housing and census population records for the mine from the 1960s to 2012 were used to determine the population changes in terms of general numbers, sex, education levels, economic status and social standing at the mine over the years.

Twenty percent of the various constituent groups, including former mine workers, mine houses tenants, spouses to former mine workers, mine workers, spouses to mine workers, students and teachers form the sample population.

There are two main villages at Sutton Mine. They are North and South villages. North village consists of four sections, which are: Low Density Section, Medium Density Section, J Section and K Section. All these sections were included in the survey sample. The resident's houses register provided by ZimAlloys was used for random sampling to determine households to be included in the study and the stratified random sampling technique was utilised to find representative samples for constituent groups, for example male and females. According to ZimAlloys records there are 100 occupied houses in North Village. In the Low-Density Section 6 houses were occupied and through the use of random numbers, 1 house was selected for the sample. There were 4 occupied houses in the Medium Density Section, and 1 household was included in the sample. For the J Section 1 household was also included out of 3 households. The largest part of the North Village is the K Section, with a total of 87 occupied houses. Of these, 18 were included in the sample. Therefore, for North Village, the sample is made up of 21 households.

The North Village of Sutton Mine consists of the following sections: A Section, B, C, D, E, F, H, O and Sisk Sections. All the sections were included in the sample survey. A Section has house number from 1-28, and 25 of these were occupied, with 5 households randomly selected for the sample. Section B houses are numbered from 1-54 and 48 houses were occupied. 10 houses were sampled for the research in this section. There were 12 households in Section E out a total of 15 houses numbered for 1-15. Of the 12 households, 2 were included in the sample. Section F has 69 houses numbered 1 to 69. Of this section 62 house were occupied, and 12 of the households were randomly selected for the survey. ZimAlloys records show that there are 40 houses in Section C, numbered from 1-40. However, there were 26 occupied houses in this section. After the sampling exercise 5 households were selected. Section D consists of 36 houses numbered 1-36. Only 18 houses were found to be occupied in this section, and 4 households were selected for the sample. In H Section or Primary School Teachers' Quarters, there are 9 houses and 5 were occupied. Of these, 1 household was sampled. The O Section has houses numbered 1 to 17. All the houses were occupied, and 4 of them were selected and included in the sample. Sisk Section is residence for secondary school teachers and other civil servants such as nurses and Agriculture, Education and Extension Officers. There were 19 occupied houses in this section and 4 households were selected, by house number.

The researcher included all the sections in the two villages as it was considered that Sutton Mine is a small settlement, to be covered in greater proportion, warranting a 20 percent sample size. In total there were 334 households in the two Sutton Mine Villages and they were selected randomly by house numbers. A questionnaire was administered to 67 households and 63 were returned, making a return rate of 94 percent.

For the students, the researcher used class registers with students' names in alphabetical order to select students by class. At primary level only the two Grade Seven Classes at Sutton Mine Primary School were considered for the questionnaire. These were viewed educated enough to comprehend the contents of the questionnaire. All the classes at Sutton Mine Secondary School, from forms 1 to 4 were used to select the sample for the students' questionnaire. After stratifying students into male and female constituents the writer used random numbers to get twenty percent of the student population. In total 55 questionnaires were distributed to students and all were returned, making a return rate of 100 percent.

Research instruments such as secondary and primary data sources, questionnaires, interview guides and observation sheets were used to extract information. On the effects of mine closure on the enrolment of students the

writer used school records to determine enrolment trends since mine closure in 2002. The data obtained was to be compared to enrolment figures at the two schools for a period of five years before mine closure. Here the ranking of the spheres of influence for the two schools was presented. Interview was used to obtain data concerning enrolment figures, sphere of influence, quality of students, economic and social status of the students and their parents. School heads and some of their teachers were interviewed in this respect.

To determine economic and social challenges at Sutton Mine which negatively affect student learning, the researcher targeted former mine employees and their families, mine workers and their spouses, tenants in mine houses, teachers, students and any other residents at Sutton Mine.

Questionnaire copies were collected and classified by gender. Responses to each item of the questionnaire were tallied. The Statistical Package for Social Sciences (SPSS) was used for data presentation and analysis. Data was transformed into numbers, frequency tables formulated and different types of graphs presented. Responses from interviews were classified according to objective areas. Observation were recorded, photographs presented and comments made on observation sheets. From the tables of data, graphs were made to enhance clarity. Data obtain from interview were compared to other sources of data such as primary documents and questionnaires. This helped to make reliable deductions. Observation was made to validate data obtained. Percentage of responses and correlation coefficient were calculated to give meaningful answers to research questions.

3. Data Presentation, Analysis, Interpretation and Discussion

Changes in the Schools Catchment Areas

As indicated by the Sutton Mine Primary School head, before mine closure over 90 percent of students enrolled at the two mine schools resided in the two Sutton Mine villages, North and South. Before closure about 10 percent of the students came from surrounding commercial farms such as Velbert, Templeton, Malembwe, Chikware, Mupondaminga, Rugare and Kildonian.

With ZimAlloys retrenchments of 2000 to 2005, most former mine workers took advantage of the land reform programme and were allocated A1 farms in the surrounding farms. They migrated with their families from Sutton Mine villages into the A1 communities. The surrounding farms, as a result of the 2000 land reform programme, also attracted farmers from many parts of Zvimba District, and even beyond. This changed the physical, economic, social, psychological and emotional landscapes of the two school's catchment areas.

Class admission documents for the two schools were analysed and it was discovered that currently most students come from the surrounding farming communities. The catchment area for Sutton Mine Secondary School now extends for thirteen kilometres and for the primary school six kilometres.

An aggregation of figures of the two classes shows that 58.3 of students at the primary school reside in Sutton and the remaining 41.7 percent come from outside the mine. Considering that before mine closure an average of only 10 percent of all students resided outside mine villages one can argue that there has been a change in Sutton Mine Primary School catchment area.

At secondary school level, through observation of admission registers, it was discovered that farming communities dominate enrolment at Sutton Mine Secondary School. From the table above, it can be noted that for form 1 class only 41.4 percent of students resided within Sutton Mine villages. The remainder of form 1 students came from the surrounding A1 farms. Of all the form 2 students 34.1 percent lived in Sutton. 83.3 percent of form 3 class lived outside Sutton Mine villages as they hailed from A1 farms. In form 4 class only 48.3 students were enrolled from the two Sutton Mine villages. The remainder came from outside Sutton Mine. In total only, 34.6 percent of all students at Sutton Mine Secondary School were enrolled from the mine villages.

The change in enrolment proportions, and as now being dominated by A1 farms, can be traced by back to Sutton Mine closure. This change was fundamental in eroding both academic and sports performance at the two schools. As indicated by the two schools' heads in the interviews held with them, the quality of students enrolled at the two schools has deteriorated over the years. The primary school head emphasised that most surrounding farming communities' students do not have high regard for education. At home most families in still and inculcate into their children the values of hard work in the fields for family survival.

Students from the farming areas, as pointed out in an interview, by the primary school head, are used to impunity. Some of them, especially those at secondary school level, do not respect the rule of law. The political environment in the farms, especially in 2000, 2005 and 2008, when they were recruited into political party bases, and could terrorise political opponents, and even their teachers, has affected their notion of discipline. Through interviews with the schools heads it was discovered that peaks in disciplinary cases at the schools coincided with political disturbances in the farms.

Some students, even at primary level walk to school for more than 10 kilometres. Through observation, the researcher noted that most of these students, some as young as 6 years appeared tired, hungry and disoriented. At primary level the head noted that about 30 percent of the school students now lose their first two lessons every day because of late arrival. During rainy seasons absenteeism is high as students fail to cross flooded rivers to school. This together with other adverse weather conditions discourage students at both primary and secondary levels from going to school, so says the primary school head.

The economic environment of the post mine closure catchment areas of the two schools has also changed for the worse. As indicated by the two heads in the interviews, the two schools cannot escape the poverty that earmarks A1 farmers. The main catchment area, from which most of the two schools' students are enrolled float in poverty and struggle to sustain quality education at Sutton Mine Primary and Secondary Schools. There has been a shift in the physical,

economic, social, emotional and psychological environment of the two schools. This view is supported by Sander (2011) who argues that poverty puts children at risk of delay in language development, delay in reading development, aggression, violence, social withdrawal, depression, and irregular attendance. Other problems include failure to complete assignments, lack of study for tests and failure to come to school prepared for lessons because of poverty and related circumstances.

3.1. ZimAlloys Support to the Schools before Mine Closure

The researcher interviewed 3 key informants, mine maintenance manager and the two schools' heads to determine ways in which, before mine closure, ZimAlloys supported education at the mine.

It was indicated by all the 3 key informants that ZimAlloys provided buildings for classrooms, teachers' houses and toilets for the two schools. For the primary school there was a mine annual budget allocation for the maintenance of buildings, repair of broken windows, doors, locks and desks. New desks were also bought by the mine for students. As discovered through the interviews, the general learning environment was supportive for learning at primary level. However, for the secondary school although buildings were provided by the mine, no budget allocation was set aside for the secondary school infrastructure maintenance.

Sutton Mine Primary School received stationery, both for teachers and students from the mine. According to one of the key informants, orders were purchased for the primary school through account number 7939. There was no problem of non-payment of fees as students' parents, and even other workers, had part of their salaries deducted and channelled towards schools' expenses. As has been pointed out, because of mine support all students wrote given work, as all had exercise books, rulers, pens, pencils, covers and other required learning materials. This helped to improve the quality of education in Sutton Mine.

Mine authorities also gave performance-based incentives to teachers in the form of cash, sportswear and holiday trips. Stakeholder meetings were held between teachers and mine management to discuss issues of mutual concern and chart common ground in the education of mine students, so said the mine human resource officer. The schools received and mine households received free and continuous supply of free treated water and electricity. Sewer pipes were also repaired for the two schools at no cost. Mine dumps were fenced and shafts clearly demarcated, as was pointed out by one of the chief informants. As the primary school head pointed out in the interview, students had a ready supply of electricity for their night studies, and were free from any environmental threats, physical, psychological or emotional.

The mine welfare bus was available for educational trips such as public speaking, debate, quiz, geography excursions, historical trips and many others. ZimAlloys also provided, as gathered through interviews, uniforms for all primary school students, both summer and winter. The mine maintenance manager pointed out that spot uniforms, balls and other sports equipment required by the two schools were also provided by the mine. This created a fertile ground for both academic and sports high performance.

The mine provided sports facilities such as soccer stadium, netball, table tennis, lawn tennis, volleyball and basketball grounds. As indicated by one of the key informants, a variety of sports disciplines were offered by both schools, catering for student's multiple intelligences. The mine provided sports training services to the two schools through technical experts such as MrKondowe and MrMutepa. The mine welfare bus was also available for sporting excursions. The schools arranged friendly games with other elite schools in the province. They also attended all sporting events on the calendar as transport and food for the participants was never a problem for them. The school heads showed the researcher sports medals and awards they attained at different levels during the mine operations era.

With Sutton Mine stoppage of operations, and total closure in 2005, all the support that the mine used to provide to the two schools, Sutton Mine Primary and Sutton Mine Secondary Schools disappeared "like snow before the sun", so said one of the key informants interviewed.

3.2. Background of Respondents

Two groups of respondents were targeted by the research, and these are Sutton Mine residents in general, and Sutton Mine Primary School grade seven students and Sutton Mine Secondary School students in all levels of learning at the school. In total sixty-three residents were exposed to the questionnaire and distribution was by sex, years spent at the mine, type of residence and level of education. Fifty-five students were given the other set of questionnaires, and these were classified according to gender and level of study.

3.3. Gender of Respondents

For both residents and students there is equitable representation by gender. For all the 118 respondents combined there are 57 males and 61 females. However, for students it is important to note that there were marginally more males than females. This is a reflection of gender composition at the two schools. The equitable representation of gender is important in that the responses provided in the two sets of questionnaires become representative of the two groups, male and female. Some problems, economic, social, health and environmental, are gender specific, especially for female students. Therefore, with this consideration of gender the responses provided become valid and authentic in their relation to students learning.

3.4. Residents Number of Years at the Mine

The number of years spent at the mine is a very important factor in getting valid data about how Sutton Mine closure has affected students learning, since, it can be noted that 27 percent of the respondents have spent between 5 and 10 years at the mine, 30.2 percent above 10 years and 42.9 percent below 5 years. Therefore, it can be ascertained that

42.2 percent of the respondents have no experience of how learning at Sutton Mine was undertaken before the closure of the mine as they have spent less than 5 years at the mine. They started residing at the mine well after the mine had closed. This affects their view of the current quality of education at the two schools as they cannot give a comparative picture of the two eras.

However, it is important to note that 27.0 and 30.2 percent of the residents considered in the survey have between 5 years and 10 years, and above ten years respectively, of residence at the mine, making it a total of 57.2 percent. Most of respondents in this group had experienced the “good old days” of mine operation, and therefore their comparative view of students learning during pre-mine closure and post-mining eras could be relied upon.

It is clearly displayed by the graphs above that residents in the below 5 years category dominate the other two classes. However, it should be stressed that, combined, the 5-10 years class and the above 10 years group dominate. Therefore, valid information about students learning before mine closure and after mine closure was extracted.

3.5. Type of Residence of Respondents

Residents were classified according to their type of residence at the mine. The following categories were used and these are: former mine workers, mine workers, spouse to mine workers, civil servants, spouse to former mine workers and mine house tenant. Categorization of residents is important as it helps to determine their economic and social status.

Workers constitute a small fraction of the residents, with civil servants making up 6.3 percent of the sample and mine workers the remaining 4.8 percent. However, it should be noted that the questionnaire did not cater for those workers who reside in Sutton Mine and work somewhere else. Despite this, through observation and interviews held, the researcher discovered that a very small group of people work outside the settlement. It can be noted that more than 85 percent of the working age in Sutton Mine are unemployed. Therefore, in this respect one can argue that learning has been affected by mine closure as most families had no disposable incomes and struggled to meet their ends. Most families struggled to pay school fees, provide them learning resources and find adequate food for their children. This created physical, psychological and emotional stress for Sutton Mine students undermining their learning. This complies with the University of Chicago (1998) view that children whose parents create a structural environment that makes time for nutritious eating, adequate study time and interaction between family members tend to be ready and able to learn. This is supported by + ibssblog. wordpress (2014), which argues that the high the social class of parents the more likely the child is to attain high educational qualifications. According to the blog middle class mothers are able to influence their children’s primary schooling than the lower class.

It was discovered through interviews held and personal experience that during operation time the mine employed over 80 percent of male working group. Hence, it can be argued that before mine closure, family environment was conducive for learning.

The other categories of residents consist of former mine workers (19 percent), former mine workers’ spouses (9.5 percent), spouses to mine workers (1.6 percent) and mine houses tenants (57.1 percent). Of most interest is the category of tenants. All other groups do not regard themselves as tenants as they have a long attachment to the mine and are even owed retrenchment packages by ZimAlloys. They now defiantly claim to be owners of mine houses and even refuse to pay rents to mine authorities. The tenant category dominates the respondents, and therefore the residents’ population in Sutton Mine. These are mostly people who have migrated from towns such as Chinhoyi, Harare and Banket. Most of them failed to cope with high rents, electricity and water bills required in urban set up. They were attracted to Sutton Mine by low rates required and the opportunity to own pieces of land for agriculture in the adjacent farms, as found out from interviews. This is an economically desperate group that has found refuge in the less demanding mine set up.

Before mine closure the community was economically stable and most people were in the middle-class category, as shown by mine pay sheets records. Revealed through interview, the community in Sutton mine has been transformed into a poverty-stricken group through mine closure, undermining the economic and social status of residents. Therefore, it can be argued that learning at the mine, both at primary and secondary level has been negatively affected by this shift in the type of residents at the mine. The local environment is no longer economically and socially safe and comfortable, and as Akinsanmi (2013) proposes, people learn better in a challenging, safe, comfortable, social and enriched environment. As further argued by Kristin (2014) worries about financial hardships can affect low income children’s ability to learn.

3.6. Education Levels of Respondents

Respondents were also classified according to education levels, and the designed categories are primary, secondary and tertiary levels.

Most of the respondents do not have tertiary or professional qualification. Those with primary level education make up 23.8 percent of the respondents, secondary level 60.3 percent and tertiary level 14.3 percent. What can be deduced is that respondents were educated enough to comprehend the demands of the questionnaire. With 84.1 percent of residents in the sample lacking professional qualification and very few having passed attained Ordinary level, it can be argued that most residents in Sutton Mine have no high academic proficiency. Before mine closure the centre used to be a community of highly educated professionals such as administrators, miners, engineers, surveyors, procurement officers and many others. Most of these professionals had their children learning at the two schools. This change affected the quality of education that the community can offer as students now lack quality academic support at home. As Biedinger (2011) also confirms, learning environment and education of parents are fundamental for the action of children and important factors for the improvement of cognitive abilities. Kristin (2014) weighs in by arguing that educated parents also set expectations of academic performance that propel students forward on their performance levels.

Students were sampled by their level of study and the number of students in the respective classes. At secondary levels all the classes were considered for the questionnaire and at primary level, only grade seven students were considered educated enough to comprehend the contents of the questionnaire.

There is almost a balance in the number of students sampled per class. The slight differences are explained by differences in class enrolment. The fact that all classes at secondary level were included in the survey means that a wide spectrum of views was obtained through the questionnaire.

3.7. Sutton Mine Closure Related Economic Problems Which Affect Learning

The researcher used interviews, observations, institution records and two sets of questionnaires, one for residents and the other for students, to discover mine closure related economic problems which affect learning at Sutton Mine Primary and Secondary Schools.

3.8. Residents Disposable Incomes

The first item in the questionnaire set for residents, in the mine closure related economic problems section, sought to find residents views on the levels of disposable incomes in Sutton Mine.

Then, it can be noted that 82.5 percent of the residents agreed that income levels at Sutton have been eroded by mine closure. Only 4.8 percent of the respondents disagreed and 12,7 percent of the 63 respondents were not sure of the effects of mine closure on disposable incomes.

The respondents who agreed that Sutton Mine closure eroded disposable incomes at the settlement dominated responses. Through interviews it was also discovered that there is poverty in Sutton as most people are unemployed and do not have any other sources of income. As pointed out by one of the key informants due to poverty in the settlement most families fail to pay school fees for their children. This undermines the quality of education offered by the two schools. This view is supported by Kristin (2014) who argues that a family's financial status influences a number of factors that can help or hinder a child in getting education. Wealth families have the financial resources to usher the children to high quality schools, hire tutors and obtain supplementary learning sources.

3.9. Business Viability in Sutton Mine

The researcher presented the notion that no any other type of business is viable in Sutton as the market has been destroyed by mine closure. Respondents were presented with 3 options, agree, disagree and not sure.

The majority of respondents agreed with the notion that no type of business is viable in Sutton because the market has been destroyed by mine closure. Therefore, it can be argued that after losing employment Sutton Mine residents find it difficult to eke out a living. With the difficult family economic environment, as pointed out by one of the heads in interview, students at both schools are least prepared emotionally and psychologically to learn. Xaxx (2013), notes that children take with them their home environment to school. A positive and predictable environment helps a child to cope with stress and uncertainties of the classroom. Chicago University (1998), weighs in by arguing that children are better able pay attention, absorb information, and engage in learning if their brains are rested and stomach full.

3.10. Fees Payment by Students

Two sets of questionnaires and secondary school fees registers were used to determine the level of fees payment at the two schools. One set of questionnaires was used for residents and the other for students. In the resident's questionnaire respondents were given a view that students are sent back home because of failure by parents to pay fees. Options for responses included agree, disagree and not sure. Students were asked to indicate by putting a tick whether their fees payment was up to date or not. Students were also to respond on whether they had been sent back home for non-payment of fees.

The majority of resident's respondents concurred that students were sent back home because of failure to pay school fees. A small group disagreed and others were not sure. The small group that disagreed was that section of the community that was able to pay school fees for the students. Some of the respondents interviewed did not have children learning at the two schools. Consequently, they indicated that they were not sure.

The majority of students asked on whether their fees payment was up to date indicated that it was not up to date. A total of 69.1 percent of the students indicated that it was not up to date, with only 29.1 percent saying that it was up to date. It is interesting that almost the same percentage, residents and students agreed that students' fees payment is not up to date.

The researcher also observed Sutton Mine Secondary School fees registers for the years 2011 to 2014. Outstanding fees records were classified by class and gender. For the years 2011 and 2013 the number of students, male and female, in fees arrears by year end, were considered, and for the year 2014 the observation was up to the second term.

For the year 2011 girls in fees arrears amounted to 73, with only 44 girls paid up. For the same year 64 boys were in fees debts and 59 had no arrears. By the end of 2012 44 girls were in arrears and 62 were paid up, and 61 boys had fees debts and 56 of them in debt. In 2013, 83 girls were in fees debt and only 26 were paid up. In the same year 58 boys were in fees arrears and 48 were in arrears. For the year 2014 fees payment registers were observed up to the end of the second term. The same trend was discovered, with 82 of the girls at Sutton Mine Secondary School in arrears and only 23 having paid up their fees. Out of a total of 124 boys, 94 were in arrears and only 30 were up to date in fees payment.

It can be noted that the majority of the girls in 2011 were not paid up. For the same year, boys in arrears are more than those who are paid up. In the same year there were more girls in arrears than boys in the same category.

Nevertheless, for 2012 there were more girls who were paid up than those in arrears, while on the other hand more boys were in arrears than those paid up. Girls in 2013 dominated the category of students in fees debt and a small number of both boys and girls were up to date in fee payment. In 2014 the same trend was discovered, with most of the students, both boys and girls in fees arrears. In total it was discovered that for the four years in total more girls were in arrears than boys. As was indicated in interviews, the girl child has been more negatively affected by mine closure as parents preferred the education of the boy child over that of the girl child. They preferred to pay fees of the boy child first, and if, later, resources came their way then paid fees for the girl child. In Zimbabwe economic downturn has caused numerous school children to drop out of school over the years. Low proportions of female students are in school and with limited resources parents often choose to send boys to school.

It should be noted that in the two sets of questionnaires both students and their parents agreed that students at Sutton Mine Primary and Secondary Schools are in fees arrears, as residents went on to indicate that students had been sent home from school for non-payment of school fees. From documentary research the writer also discovered that most of the students at Sutton Mine Secondary school are fees arrears. The head of Sutton Mine Primary school, in an interview, lamented non-payment of fees by students as one of the main challenges facing the institution in its delivery of education.

Non-payment of fees, as confirmed by the two schools' heads and key informants, has been a mine closure main factor undermining academic and sports performance. In the sporting arena, because of limited funds, the schools offer restricted sporting curriculum dominated by traditional games such as soccer, netball, volleyball, handball and athletics. The multiple intelligences of students are not totally cultivated as was the case during mine operation when the schools were aided by Zim Alloys. Muhamba (2013) notes that multiple intelligences encompass kinesthetic intelligences, the domain that caters for the mind and body co-ordination, responsible for the art of dancing, acrobatics, sports, hand knitting and many other psychomotor skills. With lack of funds the schools fail to offer students with a variety of psychomotor skills.

For the narrow sporting curriculum offered, very few resources are available for the purchase of balls, whistles for trainers, nets, uniforms and other necessities required for the games. It was observed that in soccer there was a single ball for five teams, one netball ball for three age groups, one for all handball teams and also a single ball for three volleyball teams. Soccer teams at both primary and secondary level neither have soccer boots nor uniforms. According to one of the trainers, moral was very low amongst both trainers and players but nothing could be done as the schools had no money due to non-fees payment. The schools cannot arrange enough friendly games before competitions because of limited resources.

According to school records no notable sporting awards have been obtained by the schools after mine closure. Noting that before mine closure the schools used to do well at sports, one can argue that mine closure economic problems facing Sutton Mine have eroded sporting performance at Sutton Mine Secondary and Primary schools. However, in 2009, as documents show, Sutton Mine Secondary produced an athlete of national stature who went on to win gold at national level. This was a case of individual talent which cannot be attributed to good training at the school, so said one of the athletics trainers at the school.

In the academic sphere, as discovered through interview and documentary research, the two schools have not been doing well after mine closure. The curriculum offered has become narrow due to lack of resources. There were only seven academic subjects on offer at Sutton Mine Secondary School. These were Mathematics, Geography, History, Integrated Science, Commerce, Shona and English Language. Only one practical subject was on offer, Agriculture. According to Ministry of Education Policy Circular 77 of 2002, as produced after the Nziramasanga Commission, schools should offer a variety of academic and practical subjects. Whilst other mine schools in the Mutorashanga cluster have increased the number of practical subjects they offer to include Computers, Building, Art and Design, Fashion and Fabrics and Metal Work, Sutton Mine Secondary School only offers Agriculture. As indicated by the school head, the school does not have resources to introduce more practical subjects and cater for the multiple intelligences of students. Other schools such as Muriel Mine High, Chrome Mine Secondary and Mutorashanga High School offer a variety of academic subjects to their students. This was not possible at Sutton Mine as the Centre is now a ghost town gored by poverty, so said one of the chief informants.

There was no viable practical project in Agriculture at Sutton Mine Primary and Secondary schools. An observation by the researcher showed that most of the work in agriculture was theorized. An observation of the agriculture department assets inventory at the two schools also indicated that there were few assets to support practical work in the departments. Generally, all departments, academic and practical, did not have a variety of textbooks to support learning. Only UNICEF basic learning textbooks books were found to be available in most departments.

Students were asked to respond whether they had been sent back home for non-payment of fees and the distribution of their responses is explained: Out of a total 69.1 percent of the students who indicated that they were in fees payment arrears 67.3 percent indicated that they had been sent home by school leadership for non-fees payment. A significant 30.9 percent of the students indicated that no students have been sent home because of failure by their parents to pay fees. This could be emanating from the fact that Ministry of Education directive through a policy circular on fees payment of 2014 forbids school authorities from sending students home because of failure by their parents to pay school fees. However, in practice, as the research got through interviews and observation, the schools disregarded the circular and continued to send students back for fees.

The category of students who agreed that they had been sent home for non-fees payment dominated the responses. So, it can be argued that most of the students at the two schools have lost part of their learning time due to failure by their parents to pay fees.

Residents also confirmed that some students have dropped out of school due to failure by their parents to pay fees. The researcher went on to observe registers of Sutton Mine Secondary School, checking for dropout figures for the two eras, pre-closure and post-closure.

Dropout figures for Sutton Mine Secondary School were obtained from attendance registers. The figures were divided into two periods, one starting from 1996 to 2004 when the mine was still operational and the other starting in 2005 to 2014 second term, when the mine had ceased operations. It can be noted that during mine operation few students were dropping out of school, with the highest figure of 27 attained in 2004 as the mine was in deep retrenchment by that year. In 2005 the mine had shut down and most of the families were now out of work. Many of them migrated to other areas and took with them their children. Therefore, the highest dropout figure during the mine closure era was in 2005 when 57 students moved out of Sutton Mine Secondary School. The smallest figure was in 2014, as this covered dropout up to the end of the second term only.

The lowest annual dropout figure was 7 and this was attained during the operation period. The highest dropout figure, of 57 was realized after mine closure. Both the dropout mean and standard deviation of Sutton Mine Secondary School after mine closure are higher than those during mine operation era. These dropout figures could have been caused by failure by parents to pay fees, and many other mine closure related factors.

Responses of residents were also sought in one of the questionnaires items to determine their views on fees related student dropout, that is, 76.2 percent of the respondents agreed that students have dropped out school due to failure by their parents to pay school fees. Only 6.3 percent disagreed, and these might be those parents who are always up to date in their fees payment, and have no enough experience of the dropout history of the school.

The remaining 17.5 percent of the residents is not sure on the effects of failure by parents to pay fees on dropout rates after mine closure.

There is convergence by schools' documents and residents' questionnaire data on the view that student's dropout rates at Sutton Mine Primary and Secondary Schools increased after mine closure, most notably as a result of failure by parents to pay school fees. This has affected learning through creating high student turnover. Class coherence that nurtured competition was disturbed as some of the best students dropped out of school, so said the primary school head in an interview.

3.11. Provision Of Learning Sources To Students

The researcher also sought to find out the effects of economic hardships on students learning at Sutton Mine Secondary and Primary Schools. Both groups, students and residents, were asked to air their views on how economic hardships affected provision of learning resources to students by their parents, proper uniforms provision and whether students got adequate food at home before they went to school.

Distribution of residents' responses on the provision of learning resources to students is explained: only 1.6 percent of the respondents disagreed with the notion that parents failed to buy their children adequate learning materials due to harsh economic problems facing Sutton Mine residents. A total of 88.9 percent of the respondents agreed that parents failed to buy their children adequate learning materials because economic hardships. The remainder of the respondents indicated that they were not sure or did not respond to the question.

The majority of residents agreed with the notion that students were not provided with adequate learning resources by their parents. An insignificant group of students disagreed with the item.

Students were also given the opportunity to say 'yes' or 'no' to the question on whether students had adequate learning resources. The results of the responses were: Most of the students, 70.9 percent disagreed that they had adequate learning materials. Only 29.1 percent of the students, both primary and secondary agreed that they had adequate learning resources.

The category of students which disagreed that they had adequate learning resources dominated the responses. Only a small fraction of the students agreed that they had adequate learning resources.

The researcher also asked students to determine whether they had winter uniforms. Responses to this question are represented here. The majority of students, 67.3 percent of them indicated that they did not have winter uniforms. Only 21.8 of students at the two schools did have winter uniforms. Out of a total of 55 respondents, 10.9 percent did not respond to the question on whether they had winter uniforms. This could be due to the fact that the two schools not enforce students to adhere to the requirement of winter uniforms. Some students do not even know that they are required to wear winter uniforms during the winter period. Through observation it also noted that most of the students, both at primary and secondary level did not have winter wear. At primary level, as observed a significant number of students from the surrounding farms went to school barefooted, without jerseys. These findings converge with Strongman et al (2007) who examined impacts of mine closure in Kenya and concluded that mine closure harms the poor and that its impacts are age specific, and increase regional poverty. Denoit (2013) also notes that many parents in Kenya cannot afford to pay for their children's uniforms, textbooks, transport, meals and other supplies. As the writer further argues the fees are difficult for marginalized children such as females, orphans and the financially underprivileged.

This, together with the fact that most students did not have adequate learning materials such as exercise books, mathematical instruments, calculators and pens, undermines their learning, and according to informants, is one of the contributing factors to poor performance at the two schools. According to a study carried out by the University of Chicago in 1998, children whose parents create a structured environment that makes time for nutritious eating, adequate studying time and resources, and interaction between family members tend to be ready and able to learn.

4. Students Meals

Both students and residents were asked for their opinion on whether students received proper and adequate meals before they went to school.

The majority of students, 31 in total, responded “yes” to the suggestion that students had enough meals before they went to school. The other 23 students disagreed that meals were enough and 1 student did not respond to the suggestion. Although most students indicated that their meals were enough, a significant percentage of respondents noted that meals at home were not enough. Students’ differences in comprehension of what constituted ‘enough’ meals could have affected their responses. Some could have viewed this in terms of quantity while others looked at it in terms of the quality of the food offered.

Residents also responded to the notion that some parents failed to provide their children with proper meals before they went to school. The following pattern of responses was discovered as followed: The category of residents which agreed that parents failed to provide their children with proper meals before they went to school dominated the responses, amounting to 44 respondents. Only 12 respondents disagreed and the remainder of the respondents indicated either not sure or they did not respond to the item.

When students and residents’ responses are viewed in aggregation it can be noted that the majority of the respondents, 67, agreed that parents did not provide their children with enough meals before they went to school. The aggregated figure of 33 respondents noted that students had enough food before they went to school. Differences in response between residents and students could be accounted by differences in perception between the two groups in what constituted enough and proper meals.

Basing on the above information, one can argue that a significant number of students at Sutton Mine Primary and Secondary schools went to school on empty stomachs. This undermined their psychological and emotional preparedness to learn, and according to the two heads is one of the factors working against performance of students. This view is supported by Xaxx (2013), who notes that children who go to school without proper breakfast, or while worrying about their parents or believing that they could be relating to a team that is unsafe will not be able to learn as well. No matter how good the school is, children will be less able to take advantage of it if their home environment is inadequate.

4.1. Use of Students as Source of Labour

In both questionnaires sets, one for students and the other for residents, the researcher asked respondents about their views on the use students as sources of labour to supplement family earnings. The pattern of responses by students is presented here: A slight majority of the students in the survey, 47.3 percent agreed that students were used as a source of labour to supplement family earnings. The other 43.6 percent disagreed and said no to the suggestion that they were used as a source of labour to supplement family earnings. The remainder of the students did not respond to the view. The sphere of influence of the two schools is divided into two main areas, mine and farm areas. The majority of students from the A1 farming areas could have responded that students are used as a source of labour to supplement earnings because of their unique physical and economic environment. Those students in mine set up could have disagreed with the notion that students were used as a source labour to supplement family earnings because they live in a different economic environment from farm set up.

Residents responded on the suggestion that students were used as source of labour to supplement family earnings. The majority of residents, 54 percent, also agreed that students were used as a source of labour to supplement family earnings. A significant number, 22.2 percent disagreed. The remainder were either not sure (11 percent) or they did not respond (6.3).

So, for both students and residents, there is an agreement that some students at Sutton Mine Primary and Secondary schools were used as a source of labour to supplement family earnings. This was also confirmed by the school heads who pointed out that during the farming season cases of student absenteeism are high at the schools as students would be required to work in the fields to supplement earnings. As a result, students lose learning time, eroding academic and sporting performance.

4.2. Payment of Electricity Bills

The researcher presented residents with the suggestion that most families failed to pay their electricity bill, and went on to seek their views, whether they agreed, disagreed or they were not sure. Residents’ responses comprise the following results: The majority of respondents agreed that families in Sutton Mine failed to pay electricity bills. An insignificant figure disagreed, were not sure or they did not respond to the assertion.

An observation of ZimAlloys electricity payment documents showed that for the five electricity power points at the mine the company was in ZESA payment arrears of more than \$100 000.00. In 2011 the settlement was disconnected for five months, and so all the families at Sutton Mine did not have electricity. It was only after residents had taken over the power point and had to pay to ZESA \$12.00 per household that electricity was reconnected to the settlement. In interviews held it was also discovered that Sutton Mine families have been finding it difficult to contribute towards electricity payment. Electricity supplies intermittently over the years. In 2014 some parts of the South Village went for about a month without electricity as the borehole power point was disconnected because of failure by residents to pay for the electricity. Sander (2012) argue that poverty is associated with material hardships such as shortage of food, shortage of water, electricity, inadequate financial resources, insufficient incomes and lack of safe neighbourhood.

It is important to note that whenever there is no electricity in Sutton there would not be any water supplies to the settlement as its water system is powered by electricity. So, for all the months there was no electricity, there was also no water supplies to the settlement.

Students were asked whether lack of electricity at home undermined their studies and their responses followed the following pattern. The majority of students, 61.8 percent, agreed that lack of electricity at home undermined studies. The other group, 36.4 percent, disagreed that lack of electricity at home undermined students learning. One student did not respond to the assertion.

Because of recurrent disconnections of electricity at Sutton Mine due to failure by residents to pay electricity bills students have not been able to study or do their homework at night. There was also been non-availability of water for many months at the mine because the water system is electricity powered. As pointed out the school heads and realised through observation students lost much of their learning time as they were dismissed before time whenever there was no water at the schools. The only practical subject, Agriculture, offered at the schools proved not to be viable as most projects failed because of lack of water. Vegetables wilted due to water shortage and no animal husbandry, birds or mammals, was done because of the same problem. The agriculture teacher pointed out that that was one of the reasons why Agriculture at Sutton Secondary School was performed dismally at 'O' level and could not match other examination centres at cluster level.

The researcher sought to compare pass rates during the two periods. He also observed results analysis sheets for Sutton Mine Secondary for pre-closure and post-mine closure eras looking at the correlation between 'O' level pass rate and economic hardships induced dropout.

The analysis showed that from 1997 to 2004, before the mine totally closed, dropout figures were low. The economic environment was still viable and parents were able to keep their children at school. Families were stable and there was minimal migration of families to other places. During this period pass rate at Sutton Mine Secondary school was relatively high. Starting 2005, when the mine totally closed shop student dropout figures steeply rose, while on the other hand pass rate drastically fell.

The writer also sought to find out whether there was any correlation between student dropout, representing economic problems at Sutton Mine, and pass rates before and after mine closure.

With the Correlation Coefficient between dropout and pass rate of -0.553, one can argue that with more student's dropout pass rates fell. Since dropout figures are a mirror image of Sutton closure induced economic problems, it can be safely noted that pass rate at Sutton Mine Secondary School fell because of economic problems that gored the settlement after mine closure.

4.3. Mine Closure Related Social Problems Affecting Learning

The research sought to find out social problems that are related to mine closure and which could have had effects on students learning at Sutton Mine Primary and Secondary schools. Both residents and students were presented with questionnaires, a different set for each particular group. The researcher also conducted interviews to get different opinions on how mine closure related social problems affected learning at the two schools.

4.4. Effects of Mine Closure on Families Composition

The researcher included in both questionnaires, items designed to get information on the composition of families at Sutton Mine. The main thrust was to determine whether a significant number of families are single parent headed, child headed and weather cases of divorce have increased in Sutton Mine as a result of mine closure.

Residents were asked whether there has been an increase in divorce cases at the mine because of operations stoppage. A total of 49.2 percent of the respondents agreed that divorce case had increase in Sutton Mine as result of mine closure. Of the respondents, 19 percent disagreed and noted that cases of divorce had not increased at the centre after mine closure. Of interest is class of residents which is in the not sure category, 31.7 percent. This group is large enough to have significant influence on overall results of the responses. Yet, with a total of 49.2 percent of the respondents noting that divorce cases have increased at Sutton Mine as a result of mine closure, one is inclined to assert the same.

Students were also asked to indicate whether their parents were divorced. The majority of students, 56.4 percent agreed that they stayed with their parents. It should be noted that a sizeable number of students, 40 percent did not stay with their parents, and 3.6 percent of the students did not respond to the item. Students were further asked to indicate whether their parents were divorced. A total of 78.2 percent of the respondents indicated that their parents were not divorced, with only 16.4 percent of the student responding yes to the idea that their parents were divorced. An insignificant figure, 3.6 percent of the students did not respond to the question on divorces at Sutton Mine. It is important to note that although 40 percent of students indicated that they did not stay with both parents only 16.4 percent of the students had their parents divorced. As discovered in interviews with key informants, some students had their parents succumb to the HIV/AIDS scourge which ravaged Sutton Mine after mine closure. Other parents rented houses for their children in Sutton Mine because they could not manage to rent more rooms for families in urban areas where they worked. So, these two factors account for the number of students who stay alone in Sutton alone.

The researcher also included an item where students were asked to indicate who they stayed with. Although majority of students indicated that they stayed with their parents, 50.9 percent, a very significant number, 49.1 percent did not stay with parents. They stayed with aunts, grandparents, other relatives or alone. A few students stayed with either step mothers or step fathers.

The composition of a family is very important in the education of students. The fact that a significant number of students at Sutton Mine did not stay with their parents meant that they did not have enough parental guidance to foster learning. Residents were asked in the questionnaire to indicate their views of the performance of students under single parentage. Interestingly, 57.1 of the respondents agreed that students with single parents perform better at school. This category of respondents might have had the notion that because of poverty at home such students might be motivated to work hard and break the chains of family poverty. However, with 12.7 percent of the residents disagreeing and 28.6 percent not sure, it can be argued that a significant section of residents in Sutton Mine did not support the view that students with single parents perform better at school. Residents were further asked whether more students with single parents than those with both parents were out of school. A total of 60.3 percent of respondents agreed with this assertion, 15.9 percent disagreed, 20.6 percent were not sure and the remainder did not respond to the item. As indicated through interviews those single parents whose children were out of school were either divorced or their spouses were deceased.

Both parents are required for emotionally standing by children in times of storm and stress. It should also be noted that most of these students especially at secondary level are in their adolescent stage. This is the time when they require parental guidance most. So, with many of these students no staying with their parents, as indicated in interviews with school heads, a significant number of them lost focus and discarded their education. One of the key informants indicated that the fact that some of the students stayed with step mothers or fathers meant that some of them could be exposed to physical, emotional or psychological abuse. Mato (2005) argues that children growing up with two continuously married parents are less likely to experience a wide range of cognitive, emotional and social problems. This view is consolidated by [www.justaskscotland](http://www.justaskscotland.com) (2014) which notes that children's progress at school is affected by what is happening at home. If their home life is disrupted in any way this may affect their ability to benefit from school education. As the blog further notes, this may be the case of children who are affected by family breakdown, who are homeless or more often who are helping to take care of parents or siblings with health problems or who have become parents themselves.

4.5. Abuse of Students at Home

The researcher included items in the questionnaires to find out level of student abuse at Sutton Mine which are linked to mine closure social problems. Both residents and students were students were abused by step fathers, mothers or any other person they stayed with.

In response to the item on students' abuse, 69.8 percent of the residents agreed that students who did not stay with both parents were exposed to abuse in one form or the other. The other 22-2 percent were not sure while 6.3 percent disagreed. A single respondent, 1.6 percent of the sample population did not respond to the item. It can be noted that there was a general consensus by residents that students were abused by people they stayed with.

Students were also asked to indicate whether they were ill-treated by people they stayed with. Of the respondents, 21.8 percent agreed that they ill-treated by the by the person they stayed with, and 70.9 percent responded no. About 4 percent of the students did not respond to the item.

If 21.8 of the students who do not stay with both parent in Sutton Mine agreed that they were ill-treated by people they stayed with and 69.8 percent of the residents in the sample confirming that there were students abuse in the settlement, one is obliged to argue that abuse is problem that students face in Sutton Mine. At school such students are withdrawn. As pointed out by teachers in interviews, such students were not psychologically and emotionally prepared for learning. At primary level they tended to socially aloof or bully other students.

Students were also asked to indicate whether they were given enough time to study by people they stayed with. A total of 20 percent of the student sample noted that they were not given enough time to study by people they stayed with. Nevertheless, the majority 72.7 percent, of the respondents agreed that they were given enough time to study and 7.2 percent did not respond to the item. It can be noted that the majority of those students who agreed that they were given enough time to study are those students who stayed with both parents, in some cases one parent. So, a significant percentage of students at Sutton Mine did not have enough time to study because of the social composition of their families.

In the student questionnaire set there was an item which required them to indicate whether they had been sexually abused at home. They were further asked to indicate people who abused them. The majority of students at Sutton Mine schools, 87.3 percent, indicated that they were no sexually abused. As found in through interviews most of the students who were out of danger of sexual abuse stayed with both parents. So, most of the respondents staying with both parents noted that they were not sexually abused. Most of those students sexually abused did not stay with both parents or they stayed with a single parent. With 9.1 percent of the student sample indicating that they been sexually abused, one can note that students sexual abuse is a mine closure social problem affecting learning at Sutton Mine.

Students were also asked to indicate who abused them. The majority of students are not sexually abused (81.8 percent). However, it is interesting to note that the number of students sexually abused, seen through the abuser has increased to 17.5 percent against the original figure of 9.1 percent indicated in the item above. It can only be argued here that some of the students who concealed their abuse ended up revealing their abusers. Of the abusers, 3.6 percent were neighbours, 3.6 step fathers and the other 10.9 percent consisted of the types of abusers. No students indicated that they were sexually abused by step mothers. Therefore, one can note that the girl child is the main victim of sexual abuse in Sutton Mine. Residents were also presented with the assertion that girls were more sexually abused than boys. They were presented the option to agree, disagree or indicate that they were not sure. Of the respondents, 76.2 percent agreed that girls were more sexually abused than boys, 6.3 percent disagreed and 17 percent were not sure. This further cements the

view that in Sutton Mine the girl child is more vulnerable to sexual abuse than the boy child. If 17.5 percent of students, most notably the girl child, at the centre are sexually abused it would not be naïve to raise an alarm over the problem. As indicated in the interviews held some of the abused girls get pregnant and drop out of school. Others continue going to school but performance is severely undermined. It was also pointed out by the heads of the two schools that the problem sexual abuses in Sutton Mine could be traced back to mine closure

5. Students Drug Abuse

The researcher also sought to find out mine closure related economic and social problems had affected level drug abuse by students. Residents were asked to indicate whether cases of drug abuse increased after mine closure. A total of 46 percent of the respondents indicated that cases of drug abuse by students in Sutton Mine increased after mine closure. Only 4.8 residents did not respond to the item, 23.8 percent disagreed and 25.4 percent were not sure. Residents were further asked to indicate whether boys were more involved in drug abuse than girls. In total 61.9 percent of the respondents agreed that more that more boys were involved in drug abuse than girls, 14.3 percent disagreed and 23.8 percent were not sure. It can be noted here that there is a general view in Sutton Mine that cases of students' drug abuse increase after mine closure.

Students were asked to indicate whether they had ever taken mbanje or any other drugs. Students who agreed that they abused drugs amounted to 7.3 percent of the total in the sample. The majority of the students responded no to the notion that they were involved in drug abuse. The remaining 3 percent did not respond to the item. It can be noted that although 7.3 percent appears to be a small figure, it becomes important considering that to a greater extent it represents only boys. It was indicated in interviews that the problem of drug abuse only affects boys in Sutton Mine. Therefore, when one considers the fact that girls made up more than half of the total sample, one can argue that more than 16 percent of boys at Sutton Mine abuse drugs. As indicated by one of the chief informants, unemployed former students recruited and oriented students into drug abusing gangs.

There were cases of students who lost their minds because of drug abuse. Heads of the two schools pointed out that students who abused drugs lost their learning concentration easily and performed dismally in final examinations. Such students did not relate well with teachers and other students. The secondary school head indicated that disciplinary cases had increased at the school because of drug abuse by male students.

5.1. Unemployment and Poverty

The researcher included items in the questionnaire set given to residents to determine the level of unemployment and poverty in Sutton Mine. Information on these social aspects was also obtained through interviews held with key informants. Residents were presented with the view that unemployment was the source of all social ills in Sutton Mine. The majority of the respondents, 85.7 percent agreed that unemployment in Sutton Mine was the source of all social ills. Only a small fraction, 7.9 percent disagreed and the remaining 6.3 percent was not sure. The researcher also discovered, through interviews with key informants, that over 98 percent the working age in Sutton Mine was unemployed. Most of the school leavers were roaming the streets without viable income generating activities. Unemployment, as pointed out by one of the key informants, demeans and kills the self- concept of individuals. The unemployed develop a sense of loss of value as they spend much of their time in the streets.

It was also discovered through interview and observation that the unemployed youths in Sutton Mine were involved in drug and alcohol abuse, theft, violence and abuse of school girls. On the item in the resident's questionnaire set on how unemployment had affected cases of violence at the mine, 38.1 residents in the sample agreed that cases of violence had increased in Sutton Mine, 39.7 percent disagreed and the remaining 19 percent was not sure. It can, therefore, be noted here that a significant number, almost half of residents concurred that violence levels in the centre increased after mine closure.

Residents were further asked whether violence at home undermined student learning. Of those who responded to the item 44.4 percent agreed that violence at home undermine student learning, 24.4 disagreed, 25.4 were not sure and the remaining 4.8 percent did not respond to the item. It should be noted that the category of respondents who agreed that unemployment violence at home undermined learning dominated the responses. Students whose environment is not safe tend not to do well at school. This is confirmed by Maslow (1980), who notes that security is a basic need without which students cannot effectively learn. Unemployment at Sutton Mine also affected learning in that students were no longer motivated enough as they had no longer any success stories to emulate. They could not see the value of education as most of the former students were unemployed and roaming the streets. The unemployed, mostly youths, also recruited boy students into drug abuse, stealing and violence, so said the primary school in an interview. On the other hand, the same unemployed youths, as indicated by one of the key community informants, are notorious for sexually abusing students, especially at secondary level.

The researcher also included in item on the levels of poverty in the residents' questionnaire set. Residents were asked whether levels of poverty had increased at the centre because of mine closure. The category of respondents which agreed that poverty levels increased in Sutton Mine after mine closure dominated the responses, with 93.7 percentage points. Those who disagreed accounted for only 1.6 percent and the category of those who were not sure 4.8 percent.

It can be noted from the distribution of responses that there is a high degree of consensus that poverty levels have increased in Sutton Mine as a result of mine closure. Sander (2012), from the same corner, argues that poverty is associated with material hardships such as shortage of food, shortage of water, electricity, inadequate financial resources, insufficient incomes and lack of safe neighbourhood. Rodriguez (2011), through his complex statistical analysis of how

social problems affected learning, concurred that economic and social problems were inseparable. The writer went on to classify sign posts of poverty, which he viewed as homelessness, teenage parenting, child abuse, constant mobility, alcohol and drug abuse, suicide, violence and vandalism and school dropout.

Poverty levels at the Sutton Mine have severely undermined learning at the two schools, so said the heads of the two schools in interviews. As indicated by the heads, students' parents did not support school projects, in fact vehemently opposed any new projects at the schools because of their states of poverty. Students were not materially supported and as one of the key informants noted, this undermined learning at the mine schools. Students from poor families have low self-esteem. Akinsmnm (2013) notes that learners interpret new information through their contextual experiences and build on their existing knowledge from assertions arrived at during assimilation and reflection on new knowledge.

5.2. Cases of Students Love Affairs

The researcher also sought to determine cases of love affairs students are involved in, and who they went out with. Students, in the questionnaire were asked whether they were in love relationships. A total of 63.6 percent of the respondents indicated that they were not in love affairs. The other 34.6 percent of the students sampled agreed that they were in love relationships. Although the majority of respondents indicated that they were not in love relationships it is important to note a walloping figure of 34.6 percent, mostly girls at Sutton Mine Secondary School are involved in love affairs. Students were further asked to indicate who they were in love with.

It is interesting to note that when the researcher asked students to indicate classes of people, they were in love with the number of students in love rose to 40 percent from the original 34.6 students who had indicated that they were in love affairs. Students who were hesitant to admit that they were in love affairs ended up classifying people they were in love with. Accordingly, it can be finally argued that 60 percent of Sutton Mine students are not in love relationships, 1.8 percent with married man 3.6 percent are in love with school leavers. The remainder of the love affairs, 34.5 percent are among students. Then, it can be noted love affairs among students dominate student love cases at Sutton Mine schools, most notably the secondary school. However, all the respondents who indicated that they were in love with school leavers or married men were female. Thus, 5.4 percent of the girls at the mine were in love with grown up individuals and therefore were abused. Rodriguez (2011) points out that there is a close relationship between teen pregnancy and poverty, the pregnancy rate for children born to teenage mother who has never married and who did not graduate from high school was found to be 78% in the USA.

As noted by the school heads in interviews, students in love affairs perform badly at school. These students neglected school their work, lost concentration in class, lost respect for teachers and were involved in disciplinary problem cases. The researcher through observation discovered that as soon as students got in love their performance in class drastically fell.

6. Environmental and Health Problems which Affect Students

The researcher sought to find how mine closure environmental and health problems affected students learning. There were two questionnaire sets used, one for students and the other for residents. The investigator also interviewed mine management, key informants, school heads and the local clinic nurse in charge to determine the level of environmental and health safety at the mine. Mine environmental and clinic students' health records were also observed.

6.1. Students Injury

Residents were presented with an item, in the questionnaire, that cases of student injury increased in Sutton Mine due to mine closure related environmental hazards.

There is a near balance in the responses, with 34.9 percent of the respondents agreeing that students had been injured due to mine closure environmental hazards. Residents who disagreed amounted to 30.2 percent of the sample, 33.3 percent were not sure and only 1.6 percent did not respond to the item. However, the category of residents who noted that students' injury increased after mine closure constitute slight majority. As a significant figure of residents came to the mine years after it had ceased operations, it is possible that they had never experienced students' injury. It is not surprising therefore that many of the residents were either not sure or disagreed. It was discovered through interviews and company documents that a number of injuries had been recorded, and one of these was fatal. A primary school student lost his life when he drowned in an unsecured disused mine shaft. Such environmental hazards are also noted by Mukwada (2000) who argues that post mining shafts pose a threat to both animals and human beings.

Residents were presented with the notion that primary school students were always seen playing on unfenced Mine dumps. Of the sample, 57.1 percent agreed that primary school students were always seen playing on unfenced mine dumps, 28.6 percent were disagreed, 11.1 percent were not sure 3.2 of the residents did not respond to the item. The research also observed that at break time, lunch and even during lessons time some students would be playing on mine dumps. This exposed them to injury, dirtied their uniforms and stole part of their learning time. The dumps provide a hiding ground for both secondary and primary students. As indicated by the primary head truancy cases increase at the schools after mine closure as the dump sites provide hiding ground for the students.

There are some unfenced mine dumps at Sutton Mine where students, even those at primary level, play. This exposes them to danger of injury. Some of the dumps were also used as hiding ground by students in their truancy games.

Steward and Towse (1984) concur when they point out that mine dumps are insightful, dangerous and alter the landscape. They refer to the Aberfan disaster where 144 people perished when landslides took place after dumps succumbed to heavy rains.

6.2. Water Shortage and Contamination

Residents were also asked whether there were recurrent shortages of water at the settlement. Water is an environmental resource whose availability can be determined by the level of operation of the mine. It is a pre-requisite for the operation of any institution, schools included. The majority of residents included in the sample, 90.5 percent, agreed that there were recurrent water shortages at Sutton Mine. Only 4.8 percent disagreed and the remainder, 1.6 percent, did not respond to the item. Residents were further asked whether students fetched water from disused mine shafts. A total of 88.9 percent of the respondents agreed that students were fetching water from disused mine shafts, 7.9 percent disagreed, 1.6 percent of the residents were not sure and the other 1.6 percent did not respond to the item. It can therefore be argued that the majority of residents in Sutton Mine were of the consensus that there were recurrent water shortages at the mine and that students were fetching water from disused mine shafts.

There are open and unsecured mine shafts at Sutton Mine where students fetch water when it is in shortage at the settlement. As can be seen students are exposed to the danger of falling and drowning in the shaft.

Subsequently, one can argue that students were exposed to the health hazard of spending some time without water and also the risk of falling into disused mine shafts. As one of the key informants pointed out, the physical shortage of water affected learning in that water is a basic need without which one cannot concentrate in learning. Both students and residents were asked whether students spent much of their learning or study time fetching water. A total of 76.2 percent of the residents in the sample agreed that students spent much of their learning and study time fetching water, 14.3 percent disagreed, 3.2 percent were not sure and the remaining 6.3 percent did not respond to the item.

The category of students who responded no to the assertion that much of their learning and study time was spent fetching water dominated the responses, 52.7 percent. A total of 43.6 percent of the students agreed and the remaining 3.6 percent did not respond to the item. Whilst 76.2 percent of the residents agreed that much of the students' time was spent fetching water, only 43.6 percent of the students themselves agreed with the item. This disparity is explained by the fact that the most affected student is the girl child. Most boys at the schools did not indicate that much of their time was spent fetching water as fetching water is a girls' dominated activity. When residents responded to the item, they just assumed that it was in reference to the girl child. Through observation it was also noted that girls spent much of their time fetching water than boys. So, it can be argued that the girl child's learning is disrupted by recurrent water shortages that are associated with mine closure.

Residents were presented with an item which suggested that water at Sutton Mine was safe for domestic use and free from any form of contamination. Residents who responded that water at Sutton Mine was safe for domestic use and free from any form of contamination dominated with a percentage rate of 68.3. A total of 19 percent of the residents disagreed, 7.9 percent were not sure and 4.8 percent did not respond to the item.

It can be noted from the responses that the majority of the residents agreed that water at the mine was safe for use. The researcher interviewed mine management and went through mine water treatment chemicals procurement documents. It was discovered that there were incidents when the company failed to procure water treatment chemicals and therefore residents used untreated water. However, such information was not revealed to residents, hence the high response rate on the safety of water at the mine. The nurse in charge at the local clinic and the mine administration officer were asked about the safety of domestic water at the mine. Both concurred that no chemical tests had been held to prove the safety of water sources at Sutton Mine. As Hilton (2001) notes Acid Mine Drainage is one problem where waste tailings oxidise into sulphuric acid, which in turn contaminates water bodies and the soil. Heavy metal contamination can cause increase in heavy metal concentration in the soil and water in surrounding mining districts. As Hilton (2001) further argues, the problems have been reported at a number of mines in the Zambia Copper belt and in South Africa. So, with no chemical tests done on the safety of water at the mine, one cannot guarantee the safety of students and assert how their learning capacity is affected by water quality at the settlement.

As a follow-up to the safety of water at Sutton Mine the writer asked residents whether diseases such as diarrhoea and cholera affected students more after mine closure.

The majority of the respondents, 85.7 percent, agreed that students had been affected by diarrhoea and cholera after mine closure. Only 1.6 percent disagreed, 11.1 percent were not sure and the remaining 1.6 percent did not respond to the item. Most of the 11.1 percent who disagreed were recent occupants who did not have a long history of Sutton Mine. There was a general agreement that students had been affected by diarrheal diseases. Clinic records show that in 2012 297 cases of diarrhoea treated at the clinic, 249 in 2013 and 137 by the first quarter of 2014. The local nurse in charge also pointed out that common students' diseases included diarrhoea, headaches and coughs. As further pointed out in an interview with the nurse, diarrhoea and headaches were most common during water shortages times. Schools health masters also indicated that the rate of students visits to the clinic were high during times when there was no water at the schools. Records showed that in 2008 cholera cases were recorded in Sutton Mine. Although no students succumbed to the disease, some of them were affected. Deaths were recorded in the settlement as a result of that outbreak. Key informants pointed out that the cholera outbreak was caused by water shortages as the mine failed to pay electricity bills. It was also discovered through interviews and observation that although ZimAlloys collected service charges from residents the company did not collect refuse from households, never cleaned public toilets nor attended to burst sewer pipes. There was no operational mine environmental management plan and this undermined students' sanitary conditions.

As a result, because of poor health standards, water shortage and contamination, and related illnesses, students lost learning time. Through observation of school registers, cases of absenteeism were found to be high during times when there was no water at the mine. Students, in most cases girls, came to school late as they queued for water before coming

to school. The school heads pointed out in an interview that water shortage problems at the mine undermined learning, and therefore sports and academic performance at the schools.

6.3. Students' Nutrition Levels

The researcher also sought to find out nutritional levels of students at Sutton Mine. This was done through interviews with the local clinic nurse in charge, analysis of nutrition records at the clinic and observation. The nurse in charge indicated that although there was no child feeding schemes at the centre, cases of malnutrition among students were low. Clinic records showed that in 2013 there were 93 cases of underweight infants and by the first half of 2014 the figure had risen to 110. Some of the cases related to infants at primary level. Key informants also pointed out that the levels of nutrition deteriorated after mine closure. With lower levels of nutrition, the education of students was affected.

7. Cases of Students Sexually Transmitted Infections

The researcher interviewed local clinic nurse in charge on cases of students STIs. The nurse had spent 6 years at the clinic and she pointed out that for the years she had been at the clinic, no cases of students STIs had been recorded. However, the nurse in charge pointed that 31 children on anti-retroviral in Sutton Mine. Some of these children were at primary level while others were learning at the secondary school. The heads indicated that a sizeable number of such students lost learning time through illnesses. Some could not cope with the storms and stresses of discovering their HIV/AIDS status. They were, therefore, not psychologically and emotionally prepared to learn and this undermined the schools' academic and sporting performance.

Students were asked whether they had ever been treated of STIs. The majority of students, 92.7 percent responded no to the assertion that they had infected by STIs. Only 5.5 percent of the respondents responded yes, and the remainder, 1.8 percent did not respond to the item. These responses tally with what the nurse in charge alluded to when she noted that for the past 6 years no cases of students STIs had been treated at the clinic. So, the few cases of students STIs were not treated at the local clinic. From the data obtained one can note that cases of STIs are very minimal in Sutton Mine.

8. Summary

The researcher investigated changes in the catchment areas of Sutton Mine Primary School and Sutton Mine Secondary School after mine closure and services which ZimAlloys used to provide to the two schools before closure. The thrust of the research was also to investigate how mine closure related economic problems, social ills, environmental and health challenges affected students learning at the two schools. A sample of 63 residents and 55 students were given two sets of questionnaires for residents and students respectively. The method used was a qualitative case study research and various other tools were used for collecting data. The researcher was catapulted by stories in the Sunday Mail about the dire situation Sutton Mine residents were in after mine closure. A number of problems were met during the research and these included time constraints and unwillingness by local clinic authorities to provide all the needed information because of ethical reasons. However, despite these hindrances, captivating findings and observations were made and the following conclusions were made.

9. Conclusion

The writer, after using various data collection tools managed to gather enough data related the designed research questions. The data was thereafter presented, interpreted, analysed and discussed, leading to the following conclusions.

Changes in Schools Catchment Areas

The research established after mine closure there was increased lateral mobility of families from Sutton Mine and into the surrounding farms. The period coincided with the land reform programme which attracted people from all over Zvimba into the schools' spheres of influence. This affected the catchment maps of Sutton Mine Primary school and Sutton Mine Secondary School. Most of the students for the two schools now come from the surrounding A1 farms. The social, political, environmental and economic turmoil that earmark these communities are negatively affecting learning at Sutton Mine schools.

As discovered, the ramifications of changes in catchment areas on learning are seen through low rates of school fees payment by students, late students' arrival at school, increased learners' disciplinary cases and more incidents of absenteeism.

ZimAlloys Services to Schools before Mine Closure

The study revealed that before mine closure Zimbabwe Alloys Private Limited was the responsible authority for Sutton Mine Primary School and Sutton Mine Secondary School. The company provided infrastructure in the form of classrooms, houses for teachers, toilets for both teachers and students and sports fields. Repair and maintenance of school's infrastructure was done by Zim Alloys. Water, water treatment chemicals and electricity were provided to the two schools free of charge. As a result, before mine closure, in terms of infrastructure, the two schools were some of the best on the district.

It was also discovered that the company provided learning resources and scholarships to students, and gave teachers performance incentives. In the area of sports, expert trainers, uniforms and other equipment, transportation of competitors and food for sporting errands were provided by the company.

Learning standards at the schools were found to have been high during the period when the mine was operational. The schools had a reputation in Zvimba District of high performance in the academic and sporting arenas.

Pass rates for grade seven, Zimbabwe Junior Certificate (ZJC) and Ordinary examinations were high during the time when the mine was operating

Socio-Economic Background of the Sutton Mine Community

The Sutton Mine community consists of former mine workers and their spouses, a few remaining mine maintenance staff and their spouses, civil servants and mine houses tenants. Most of the residents now residing at Sutton Mine sent houses from ZimAlloys. The tenants are mostly poor and cannot afford high rents in urban areas. These are people of a diverse social make up.

The research found out that in terms of education most of the residents in Sutton Mine have completed Ordinary level education. However, very few have five Ordinary level subjects. Few residents in Sutton Mine have any tertiary level qualification.

It was also established that because of their socio-economic status residents in Sutton Mine cannot adequately provide for the education on their children. Most of them are also not educated enough to help their children do school homework or provide any academic support needed by their children. So, it can be concluded that mine closure induced changes in the make or composition of Sutton Mine community has negatively affected learning at Sutton Mine Primary and Sutton Mine Secondary schools.

Mine Closure Related Economic Problems and their Effects on learning

The research came to the conclusion that disposable incomes of Sutton Mine residents were eroded by mine closure and no form of business is viable at the mine. The rate of unemployment was found to be unacceptably high in Sutton Mine.

It was established that because of economic problems facing residents, most families were failing to pay school fees for their children. This resulted in high rates of students' dropout at Sutton Mine Primary and Secondary schools. Many students have lost learning time as they had been sent back home by school authorities for fees. The curricula offered by the two schools were found to have been negatively affected by mine closure related economic problems, with the schools now offering few practical and academic subjects and sporting disciplines.

The research revealed that because of mine closure economic problems students did not have adequate learning materials. In winter a significant number of students went to school without winter uniforms and, therefore, were exposed to cold weather. Most parents failed to pay their electricity bills and had been disconnected. That affected students' studies as they could not read or do their homework at night. The research led to the conclusion that students at the schools did not have adequate meals before going to school. As was also discovered, lack of adequate meals undermined learning as it disturbed students' psychological and emotional preparedness to learn. To spike their families against economic quagmire, some families used their children as a source of labour. As discovered through the research, this worked against students' performance at school.

It was also concluded through the research that because of mine closure related economic problems facing Sutton Mine, the schools' pass rates deteriorated. It was further discovered that there was positive moderate correlation between residents' economic status and pass rate at Sutton Mine schools.

Mine Closure Related Social Problems

The investigation came to the conclusion that there were a number of mine closure related social problems which affected students' learning at Sutton Mine schools. The research established that family fabric had been weakened in Sutton Mine due to mine closure related economic problems. The manifestation of these problems was seen through changes in the composition of families at the mine. Most families were headed by single parents or were child headed. As also discovered through the research, a significant number of students at the mine stayed with other relatives, and not their parents. Such a scenario was caused by increased cases of divorce, the HIV/AIDS scourge and failure by parents to live with their families in urban areas because of high rents in these centres. This undermined students' learning through lack of parental guidance and enforcement of discipline. Some of the relatives staying with students did not give them enough time to study.

The research led to the conclusion that there were cases of students' sexual abuse at home. The girl child was found to be more vulnerable to sexual abuse than the boy child. Neighbours, step fathers and other relatives were responsible for cases of sexual abuse. These abuses disoriented students from school work and negatively affected their learning.

The research also established that unemployment and poverty were mine closure related social ills in Sutton Mine which affected students' learning activities. Most school leavers were found to be unemployed and roaming the streets. Poverty levels were discovered to have increased after mine closure. The unemployed school leavers sexually abused girl students and recruited boys into alcohol and drug abuse. Because of the environment of unemployment and poverty there was a general atmosphere of disillusionment and lack of motivation by students to work hard at school. As discovered through the research, this undermined academic and sporting achievement by the two schools at Sutton Mine.

Cases of students in love relationships were found to have increased in Sutton Mine. This was found to be the mirror image of the community, where commercial sex has increased for economic reasons. It was also discovered that love relationships among students were high. As noted through the research such relationships undermined learning through increased dropout rates and failure by involved students to work hard at school.

Environmental and Health Threats to Students

It was established through the research that cases of student's injury and even death had been recorded in Sutton due to lack of post mine closure environmental rehabilitation. However, such cases were very few. Mine dumps and mine shafts in Sutton Mine are not secured and students had free access to them. Therefore, it can be concluded that students at the mine schools are exposed to environmental danger. Because of recurrent water shortages, students, mostly girls, fetch

water from disused mine shafts. It was also discovered that because of the local environment characterised by recurrent shortages of water, valuable learning time was lost through water fetching.

Diarrheal and cholera cases in Sutton Mine increased after mine closure. Failure by mine authorities to repair sewer pipes and clean community toilets, and failure to provide an uninterrupted supply of water to the settlement are the main reasons for the rise in the diseases incidents. Students were found to be losing their learning time due to illnesses and regular visits to the local clinic. Headaches were discovered to be common during times of water shortage.

The research established that the safety of water at Sutton Mine is not guaranteed as treatment was not regular. No chemical tests of domestic water have been done to determine its chemical content and therefore safety.

Some students at the mine schools were found to be infected and affected by HIV/AIDS which increased at the mine after closure. This was found to be having a negative impact on learning through illness induced loss of learning time and accompanied emotional challenges.

It was established that very few cases of STIs have affected students after mine closure. So, it can be concluded in this respect that generally the schools did not face problems of high incidents of students STIs infections.

10. Recommendations

In light of the above conclusions, the writers, hereby, makes the following recommendations and suggestions. The suggested recommendations are stakeholder based and it is the writer's humble view that they will go a long way in solving some of the general post mine closure problems faced by Sutton Mine residents. It is also the writer's conviction that a solution to these problems will enhance learning at Sutton Mine primary and secondary schools.

Environmental Rehabilitation

In the short term, Zimbabwe Alloys Private limited should rehabilitate mine dumps, secure mine shafts and slime dams which pose a threat to students at Sutton Mine. Domestic water chemical tests should be held immediately to determine water quality at the mine. Tests should also be held to determine the effects of water quality on the general health and mental stamina of students. A mine Environmental Management Plan (EMP) should also be established help guide toilets cleaning times, grass cutting, refuse collection and other environmental responsibilities by mine authorities. The Department of Environmental health should constantly check and supervise the maintenance of sanitary conditions by the company as it still claims to be responsible for the settlement.

What Schools Can Do

Heads of the two schools at the settlement should mobilise stakeholders to create an awareness on problems, social, economic, health and environmental, which students face. It is the writer's conviction that the depth of students' problems can be reduced through collective effort. The schools should also be more initiative and use the few available resources to start sustainable income generating projects in crop and animal husbandry. Land is abundant around the school and therefore it can be taken advantage of. Profits realised can be utilised to purchase required sporting and academic resources. Teachers should be equipped with strategies to deal with economically and socially deprived students.

The Role of the Police

The Zimbabwe Republic Police (ZRP) Public Relations Department should increase public awareness programs on forms of abuses students, especially the girl child, can be subjected to. Students can be advised on what they can do to minimise cases of abuse and what action to take when abused. The ZRP can also educate the community on the consequences of students' abuse

Implementation of Ministry Policies

Zvimba District Education Officer should increase the supervisory role of the office. Although there is a policy which prohibits sending of students back home on account of failure by parents to pay fees, the writer discovered that students were sent back home. There were cases where students who were on Basic Education Assistance Module (BEAM) the previous year were sent back home for fees. So, authorities in the ministry of education are encouraged to capacitate themselves and enhance supervision of schools' implementation of policy.

The Role of Local Authority

Zvimba Rural District Council should take over the responsibility and administration of both Sutton Mine Primary School and Sutton Mine Secondary School and classify them as some of the poorest schools in the district. This might encourage the corporate world to come and donate to the schools and uplift the education of Sutton Mine students.

In the long term, Local government, through Zvimba Rural District Council, should encourage ZimAlloys to hand over the settlement to residents. Residents should be sold company houses at low prices and work with council to improve delivery of services. Sutton Mine should be turned into a viable diversified urban centre through provision of investment incentives. Local infrastructure which is idle should be leased to businesses involved in manufacturing. It is the writer's humble view that such a move can help solve the problem of unemployment and poverty in Sutton Mine.

Environmental Policy

Government, through the Ministries of Mines and Environment should align legislations on mining and environment. Before mining commences, a mine house should establish a government supervised fund to help rehabilitate the environment and help workers cope with unemployment shocks after mine closure. The environment and workers should be integral parts of mine life cycle, from planning, project inception, full throttle operation, closure to site rehabilitation.

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