

## **CHAPTER 1            ORIENTATION**

### **1.1    INTRODUCTION**

The processes of living, eating, working, playing and dying all utilise consumer products whose production and use generates waste (Tammemagi 1999:3).

The world generates a great deal of solid waste, which has become an area of concern for the world. Every man, woman and child in the United States of America, for example, produces an average of 1,6kg of solid waste per day. This results in a total of 160 million metric tons (176 million tons) per year in the USA (Raven, Berg & Johnson 1993:513). The problem worsens each year as the US population and per-capita consumption continue to increase.

The problem of solid waste has been highlighted by the media on a number of occasions. Garbage barges have wandered from port to port and from country to country in an attempt to find a country willing to accept their cargo (Raven et al 1993:513). In 1987, a garbage barge from Islip, New York, was towed to North California, but North California refused to accept the waste products. A total of six states and three countries finally rejected the waste and it was eventually returned to New York where it was incinerated (Raven et al 1993:513).

On the outskirts of Manila, the capital of the Philippines, one will find a large sprawling hill (Steffoff 1991:13). This hill is often referred to as the “smoky mountain”, because of the haze of smoke that constantly drifts skyward from its smouldering depths. But smoky mountain is not a volcano --- it is a trash dump the size of a town. It grows bigger every day! Twenty thousand people live on this dump. They live in shacks made of trash and pick through smoky mountain’s steaming mounds of garbage in search of something they can eat or sell for a few cents (Steffoff 1991:13).

African countries are no different from many other countries around the world when it comes to solid waste. Lusaka in Zambia, for example, has a huge problem with solid waste collection and disposal

(<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]). Lusaka is currently experiencing an unprecedented population growth, which is resulting in problems of overcrowding, congestion and poor environmental living conditions

(<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]). Illegal dumping is rampant in Lusaka, because the city lacks the equipment and resources needed to provide collection services in areas beyond the central markets (<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]).

The above example shows just how problematic the issue of solid waste is in Africa and around the world.

South Africa is no exception in this regard. In August 1994, the then National Deputy Minister of Environmental Affairs, Bantu Holomisa, said in a speech during the launch of the first Tidy Town Project in Johannesburg, South Africa, that littering remains one of the more pressing problems in less-privileged communities. While other less visible forms of pollution have a higher impact on the living environment, litter --- because it is so visible --- compounds various issues. Firstly, solid waste impacts directly on resources by polluting water and soil. Secondly, it creates serious health hazards (eg disease). Thirdly, it impacts directly on the tourism potential of surrounding areas, and lastly, but perhaps the more serious of all the effects, is the impact on the social fabric of people (<http://www.polity.org.za/html/govdocs/speeches/1994/sp0802.html> [accessed on 10 June 2003]).

Increasing population, urbanisation and the increasing availability of disposable items and products with built-in obsolescence are giving rise to increasingly large amounts of waste (Keep South Africa Beautiful Series 1992b).

Waste has to be disposed of. If it is not handled correctly, it becomes a source of litter, which, in turn, becomes a source of pollution (Keep South Africa Beautiful Series 1992b). This waste consists mainly of items made by man from natural resources, most of which are nonrenewable (ie once we use them up, they are finished). Not only are resources being used every day, but tonnes of these resources are literally being buried every day. It is thus not only the cost of the waste disposal that needs to be highlighted, but also the cost to the environment in terms of the depletion of natural resources and the damage caused to the environment by pollution. Any harm caused by waste products to the environment affects us as all living creatures depend on the environment for survival (Keep South Africa Beautiful Series 1992b).

Some South Africans live in poverty, whilst others live extravagant, wasteful lives that are not sustainable. An extravagant lifestyle often results in widespread pollution; resources are also wasted by what has become a consumer-oriented, throw-away society (Yeld 1997:17). Solid waste is, therefore, endemic even in South Africa.

Thohoyandou, the capital of the former Venda homeland in South Africa, also has a problem of solid waste. Population growth means a greater generation of waste. Solid waste has increased exponentially in Thohoyandou and has thus become a problem (personal observation).

This study explores the role of environmental education in dealing with solid waste in the Central Business District of Thohoyandou.

## **1.2 THE PROBLEM**

Thohoyandou has a problem with solid waste. This study looks at the role of environmental education in dealing with solid waste in the Central Business District of Thohoyandou

## **1.3 AIM AND OBJECTIVE OF THE STUDY**

The *aim* of this study is to explore the role of environmental education in dealing with solid waste in the Central Business District of Thohoyandou.

The *objective* of this study is to explore the role of environmental education in dealing with solid waste in the following ways:

- To find out to what extent environmental education plays a role in dealing with solid waste in the Central Business District of Thohoyandou.
- To find out how environmental education can be used to reduce solid waste in Thohoyandou.

## **1.4 RESEARCH METHOD**

Although the research method will be dealt with at length later in this study, it is important to briefly outline it in this section. Different authors define research differently (Bailey 1987:4; Mahlangu 1987:11; Struwig & Stead 2001:3). For the purpose of this study, research is defined as a systematic investigation into a problem (Bless & Higson-Smith 1995:3), that is, an investigation into the role of environmental education in dealing with solid waste. It is a structured enquiry that utilises acceptable scientific methodology to solve an identified problem and to create new knowledge that is acceptable (Grinell, Rothery & Thomlinson in De Vos 1998:19).

The qualitative methods of research will be applied in this study. Qualitative research is a genre which uses a special language which is similar to that used by natural scientists when they investigate natural order-variables (Bryman 1988:12).

The qualitative research style is more flexible and allows one to focus on a topic throughout a study. It is a more inductive process and much of the narrowing occurs after a researcher has begun to collect data (Neuman 2000:49). Qualitative researchers follow a nonlinear path and emphasise becoming intimate with the details of a natural setting or a particular cultural-historical context (Neuman 2000:154). In brief, the qualitative paradigm subscribes to a phenomenological, inductive, holistic, subjective, process-oriented methodology (Di Renzo 1990:686; Bless & Higson-Smith 1995:55; Neuman 1997:328-334; Babbie 1998:46).

This study is exploratory, because it aims to explore the role of environmental education in dealing with solid waste in the Central Business District of Thohoyandou.

The study is descriptive (Lebeloane 1998:21), because it draws on the theoretical perspectives of environmental education and solid waste. Lastly, qualitative research will be conducted in this study to explore the role of environmental education in dealing with solid waste in the Central Business District of Thohoyandou.

## **1.5 PROGRAMME OF THE STUDY**

Chapter 2 will focus on the theoretical perspectives on solid waste and environmental education. Chapter 3 will describe an empirical investigation, analysis and interpretation of the data. In chapter 4 , a summary of the findings and recommendations will be given.

## **CHAPTER 2            THE THEORETICAL PERSPECTIVES ON SOLID WASTE AND ENVIRONMENTAL EDUCATION**

### **2.1    INTRODUCTION**

This chapter will focus on the theoretical perspectives on solid waste and environmental education. The relevant terms will be defined and the impact of solid waste on the environment will be discussed. This will be followed by a discussion on the role of environmental education in dealing with solid waste. Contributions by the South African Government to curb solid waste will also be mentioned. Conclusions will be drawn from the discussion.

### **2.2    DEFINITION OF TERMS AND CONCEPTS**

Some of the terms and concepts relevant to this study will now be defined.

The word “explore” means to examine or investigate (Pollard & Liebeck 1994:280), that is, to examine something thoroughly in order to learn more about the state or nature of it (Hornby 1995:406).

The word “role” refers to the function fulfilled by a person or thing (ie environmental education) (Pollard & Liebeck 1994:694). For the purposes of this study, the word “role” refers to the particular function fulfilled by environmental education.

The expression “environmental education” refers to the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness of humans, their culture and their biophysical surroundings. Environmental education also entails practice in decision making and the self-formulation of a code of behaviour about issues concerning environmental quality (Neal & Palmer 1990:2). For the purposes of

this study, the term “environmental education” refers to education about, for, in and through the environment. It is a process that seeks to develop the necessary awareness, ethics, values, knowledge, skills and commitment to allow people to become environmentally literate in order to be proactive in securing a properly functioning and healthy environment that is sustainable. It must enable people to live in harmony with one another and the natural world, and should aim to show the relationship between people, their culture and their bio-physical environments (Allers 1997:4).

The term “general waste” refers to all unwanted and economically unusable by-products or residuals at any given time or place, and any other matter that may be discharged accidentally or otherwise in the environment (Gilpin 1996:228). For the purposes of this study, the term “general waste” refers to ordinary refuse, garbage, swill, rubbish, trash and ashes. As a substance it may not directly pose any threat to health (Thomas-Hope 1998:48).

Solid waste forms part of general waste. It is a material of a solid or semi-solid character that the possessor no longer considers of sufficient value to retain (Gilpin 1996:201). For the purposes of this study, the term “solid waste” refers to waste products that we dispose of in a careless way. This can include materials such as paper, glass bottles, aluminium cans and plastics, which are deposited by people in public places (Letsoalo 1991).

The word “litter” refers to any kind of rubbish, refuse or garbage, and any article or matter that is deposited, dropped or thrown in a public place, public reserve or on private land which leads to the defacement or defilement of that place or land (Gilpin 1996:136). For the purposes of this study, the word “litter” simply refers to any solid waste which is deposited by people in public places (Letsoalo 1991).

A landfill is a vast, bare area of land where trash and garbage is disposed of, usually a distance from where the population resides (Steffoff 1991:20).

Incineration takes place when garbage is burned. Incineration can reduce the volume of solid waste by as much as 90 percent. It can also produce energy in the form of steam or electricity that can be fed into the community's utility systems (Steffoff 1991:20).

Recycling entails gathering waste material after the end of its useful life and repossessing it for refuse in the same or different products (eg aluminium, glass, paper and plastics) (Frank & Brownstone 1992:259). Recycling is when a product can be reused, such as an aluminium can, which is then crushed and processed to make yet another product. To recycle, you need to separate your waste at home into organic waste, plastic, glass, tin cans and paper --- all of which can be recycled ([www.sntc.org.sz/eearticles/waste.html](http://www.sntc.org.sz/eearticles/waste.html) [accessed on 9 May 2003]). Recycling occurs when material from the waste stream is recovered, which is then used as "raw material" input for the manufacture of a new product. Hence, recycling is not merely the separation of materials from the solid waste stream; rather, it occurs when such materials are incorporated into products that enter the marketplace (Water Research Commission 1995:26).

Reuse is possible when a product is used several times; glass can be returned to shops for re-use. Milk bottles are re-used by distributors ([www.sntc.org.sz/eearticles/waste.html](http://www.sntc.org.sz/eearticles/waste.html) [accessed on 9 May 2003]).

The word "reduce" means to use less of something. Bulk products use less packaging than smaller products and thus reduce the amount of plastic solid waste ([www.sntc.org.sz/eearticles/waste.html](http://www.sntc.org.sz/eearticles/waste.html) [accessed on 9 May 2003]).

The word "biodegradable" means that something can be broken down by normal biological processes in the environment, especially by bacteria and microbes (Frank & Brownstone 1992:32). Many modern synthetic compounds are not biodegradable, but persist in the environment; these products often damage or

disrupt natural life processes (eg animals may eat nonbiodegradable plastics). Environmental action in recent years has focused on replacing nonbiodegradable materials with biodegradable materials where possible (Frank & Brownstone 1992:32).

The word “pollution” refers to changes in the physical, chemical or biological properties of air, waste or land that can adversely affect the health, survival or activities of human and other living organisms. Solid waste is a form of land pollution that affects the cleanliness of the environment and endangers all forms of life. Burning solid wastes contributes to air pollution and affects the land that it is burnt on (Arms 1994:544).

The term “sustainable development” refers to the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains two key concepts: the *concept of needs*, particularly the essential needs of the world’s poor, to which overriding priority should be given, and the *idea of limitations* imposed by the state of technology and social organisations on the environment’s ability to meet present and future needs. (This definition, known as the Brundtland definition of sustainable development, was taken from a report by the Prime Minister of Norway, Gro Harlem Brundtland, who chaired the United Nations World Environment and Development Conference in 1992) (Blackmore & Reddish 1996:248).

The word “community” refers to a group of people living together in some form of social organisation and cohesion. Its members share varying degrees of political, economic, social and cultural characteristics, as well as interests (Department of Environmental Affairs and Tourism 1996:98).

The word “participation” refers to any involvement by public and/or other interested and affected parties identifying needs, addressing concerns, choosing options, planning, implementing, monitoring and regulating. Effective participation

requires consultation, transparency, the openness to consider all options, access to processes including decision making, and the identification and involvement of all stakeholders. Participation requires support for capacity building and appropriate citizen education to increase knowledge, equity, justice and tolerance (Department of Environmental Affairs and Tourism 1996:98). People's participation is perceived today as an important dimension of an environmentally sustainable pattern of development. There are basically two reasons for this: organisations can encourage the direct management of local resources by the users, and responsibility can be exercised in the collective interest embodied in organisations (Ghai & Vivian 1995:304).

### **2.3 THE IMPACT OF SOLID WASTE ON THE ENVIRONMENT**

This study looks at the role of environmental education in dealing with solid waste. This section will look at the impact of solid waste on the environment, which can be both positive and negative. The focus will be on the positive and negative impacts of solid waste on the global environment and at the positive and negative impacts of solid waste on the South African environment.

The positive impacts of solid waste on the environment both locally and internationally, can be illustrated by the following examples.

The positive impact of solid waste on the environment in South Africa can be seen in the following illustration.

Community upliftment projects in Obanjeni in KwaZulu Natal (South Africa) were started because of the presence of solid waste. Jenny Kirkland established the Afr-Eco Community Upliftment Project of Obanjeni in an attempt to help the Obanjeni community to get rid of litter. The project team comprises 600 housewives who collect discarded packets and plastic bags, which are then stripped and used to make woven hats. The ladies sell these hats to foreign

countries, such as England, the USA, Poland, Sweden, Australia and Israel. With the income they generate, these ladies have raised funds which have enabled them to attend adult literary courses (Horner 2002). Solid waste in this community has created employment and education opportunities and a better standard of living for the women of Obanjeni.

In the United States, for example, recycled paper uses less energy than pulping virgin trees (an average of 2520kWh/ton compared to 6730kWh/ton for virgin paper). Less water is also required (Selke 1990:116).

A community environmental education programme was established in the Galena community in Alaska in 1999 as a result of solid waste. The solid waste included plastic shopping bags that were strewn over Alaska's rural landscape --- these bags became entangled in trees and bushes. As a result, the Galena community banned plastic shopping bags. After passing this ordinance, the Loudon Tribal Council initiated a community environmental education project, which taught school children how to reduce solid waste. The Galena high school also painted canvas bags as a substitute for the banned plastic bags

(<http://www.state.ak.us.dec/press/1999/rel0401.htm> [accessed on 9 May 2003]).

This should be seen as a positive impact: communities are brought together in order to solve a problem and this leads to a healthier environment and education about the environment.

The negative impact of solid waste on the environment cannot be ignored. Below are examples of how global solid waste has the capacity to destroy the environment.

According to Arms (1994:392), the municipal waste generated by towns and cities in the United States cause various forms of pollution. Most municipal waste is disposed of in landfill dumps or burned. Arms (1994:396-397) notes that nondegradable waste is waste that breaks down very slowly, such as aluminium

and plastic. Plastic accumulates in the environment faster than any other form of waste. Scientists estimate that modern polyethylene lasts for at least 200 years. As a result, surface water in every part of the world is polluted with plastic. The worst damage probably comes from plastic that floats in the water, such as lengths of fishing nets, six-pack holders, plastic cups and other similar objects.

Tin and cans contain residues of putrescible materials which cling to them when discarded (American Public Works Association 1975:16). In a warm, moist atmosphere, food remnants in noncombustible containers serve as breeding places for insects, such as mosquitoes (which cause malaria); it is, therefore, necessary to collect this solid waste frequently (American Public Works Association 1975:16).

Adams (1990:114-115) notes that the most serious and intractable pollution problems in Third World countries occur in urban areas, both from the disposal of waste products and the by-products of industrial processes (eg in China and Thailand). Problems of urban pollution (including solid waste) exist on a particularly grand scale and acute form in Third World countries which have most successfully industrialised, such as India, Malaysia and Brazil. Cities like Sao Paulo in Brazil are probably among the most heavily polluted environments in the world. Pollution seems to have been part of the price paid for “success” in development.

Potter and Lloyd-Evans (1998:193) argue that the existence of unsanitary conditions and environmental degradation in developing world cities is frequently attributed to a lack of resources, yet many of the cities with the worst environmental problems are located in the “miracle” economies of Pacific Asia. Hong Kong, for example, with its six million inhabitants, produces 23 000 tonnes of solid waste, 21 tonnes of floating refuse and two million tonnes of sewerage and industrial waste per day; it produces 100 000 tonnes of chemical waste per year.

Koren (1991) also analyses the impact of solid waste on humans. He asserts that solid waste can produce undesirable effects on humans biologically, chemically, physically, mechanically or psychologically. Pathogens found in human faeces, caused by chemical hazards, are a biological threat. Flammable materials are physically hazardous as they can lead to fires and explosions. Broken glass and sharp-edged bricks are mechanical hazards. Psychological problems caused by the destruction of property or the unsightliness of waste material can lead to depression. Biological vectors, such as insects and rodents, might directly or indirectly transmit disease agents from solid waste to humans. Flies, for example, transmit bacteria and viruses, while rats and mice transmit a variety of diseases to humans. Mosquitoes transmit dengue fever, encephalitis, filariasis, malaria and yellow fever (Koren 1991:140-141).

Plastic is part and parcel of solid waste and thus needs to be dealt with as an environmental problem. According to Steffo (1991), plastic has always been the biggest problem faced by the recycling movement. Although plastic makes up only seven percent of the solid waste stream by volume, it is highly visible in trash and garbage for several reasons. For one thing, plastic has replaced many other items, such as glass bottles and paper bags that can be more easily recycled. For another, plastic is often used in fast-food containers, disposable consumer and convenience goods; plastic is a symbol of the throwaway thinking that has contributed so greatly to the garbage crisis. Furthermore, plastic is very slow to break down, especially in landfills, and some types of plastic never degrade. Finally, most people are aware that paper, glass and metal can be recycled, even if they do not recycle these items themselves. But recycling plastic is technologically difficult and expensive, and, unlike glass and metal, can only be recycled once (Steffo 1991:69).

The negative impact of solid waste on the environment in South Africa is very significant as is shown below.

Yeld (1997:17) states that some South Africans live in poverty, whilst others follow extravagant, wasteful lifestyles that are not sustainable.

Waste produced by an urban community can be a problem both in terms of aesthetics and community health. It is possible for hazardous materials to exist in waste (South African Water Research Commission 1995:12).

The South African Water Research Commission Report of December 1995 clearly explains the various environmental implications that solid waste has for the environment --- local surface water, rivers and streams, ground water, pests, air pollution, landfills, and so on (South African Water Research Commission 1995:33).

Uncollected garbage on surface water is possibly the most serious health risk, because uncollected garbage impacts on the storm water system. Waste matter, together with loose soil, can lead to blockages in the storm water drainage system. This means that standing water cannot drain away; this stagnant water becomes contaminated with pathogens from decaying waste and human and animal excreta. Contaminated stagnant water elevates the risk of faecal-oral diseases, including intestinal parasites, diarrhoea, cholera and typhoid fever. Although intestinal parasites and diarrhoea are less severe than many of the other water-borne diseases, they may prove fatal among undernourished children and the elderly (South African Water Research Commission 1995:33).

A study of the quality of the water flowing into the Juskei River from Alexandra, for example, revealed very high levels of pollution. The major source was identified as human and animal excreta, with uncollected waste a secondary source (South African Water Research Commission 1995). It was found during the case studies for this report that the dumping of uncollected garbage in storm water canals, rivers and streams is a common practice. This certainly adds to the

contamination problem in the areas concerned (South African Water Research Commission 1995:33).

Where household waste is not collected and is dumped on open ground, these informal dumping sites can lead to pollution of the ground water. This poses a threat to health if the water is accessed for domestic or agricultural use. It may also add to the contamination load of rivers and streams. Relatively little is known about the problem in South Africa and the issue is currently being investigated (South African Water Research Commission 1995:34).

Concentrations of organic waste attract pests such as flies, rats and cockroaches. These pests, apart from being a nuisance, can be carriers of diseases such as hepatitis A, trachoma and diarrhoea (South African Water Research Commission 1995).

Children playing in and around uncollected garbage are at a risk of injury from, for example, broken glass and rusty tins.

Uncollected waste is often burned and this can give rise to air pollution. Burning can cause both toxins (eg from certain plastics) and suspended particles (eg ash) to be released into the air. Those exposed to the smoke and fumes can certainly be affected. This method of waste disposal is fairly common in South Africa. In Alexandra and Soweto, for example, it was established that a large proportion of uncollected waste is burned (South African Water Research Commission 1995).

Collected household solid waste in South Africa is deposited in landfills and these too can cause environmental problems. The first problem with landfills is the space they occupy. This can be a problem particularly in expanding urban areas, where space for residential and commercial use is at a premium. Secondly, decay can give rise to heavy metals and poisonous chemical substances, which leach into the surrounding soil and contaminate ground water,

rivers and streams. Thirdly, the process of decay gives rise to gases which can be harmful or malodorous. The methane and carbon dioxide produced have been linked to the greenhouse effect and the depletion of the ozone layer, while methane has the additional problem of being explosive (South African Water Research Commission 1995). Fourthly, where landfills are close to residential areas flies, rats and other pests bring health hazards. Ash and noxious fumes can also be a problem. Residents of Belhar in Cape Town, for instance, complained of bad smells from a refuse dump sited only 100 metres away from some homes and flying ash from occasional burning (South African Water Research Commission 1995:34-37).

In conclusion, the advantages of solid waste are minimal when compared to the negative impact of solid waste on the environment. There is a need to bring awareness of the negative sides of solid waste to the masses. Solid waste accumulates wherever there is development and development goes hand-in-hand with an increase in the population around that area. There is a need for development to improve the quality of our lives, but development comes at a cost. It poses a threat to our environment by catalyzing the generation of waste. There is a need to protect our environment whilst it is developed.

## **2.4 THE ROLE OF ENVIRONMENTAL EDUCATION IN DEALING WITH SOLID WASTE**

This section deals with the role of environmental education in dealing with solid waste. The role could either be positive or negative.

Environmental education can facilitate the acquisition of knowledge and skills and enable people to change their attitude towards the environment.

Environmental education was boosted by Agenda 21. (The Earth Summit Conference took place in Rio de Janeiro in June 1992. It was attended by 120

heads of state and government, together with delegates from over 170 countries. Several important documents were signed at the summit, representing the beginning of a long process of interpreting, responding to and implementing recommendations and agreements designed to change the future of planet Earth. The centre-piece of the Rio agreement is known as Agenda 21, a major action programme which sets out what nations should do to achieve sustainable development in the 21st century. There are implications for environmental education throughout this document, but of particular significance is Section IV, chapter 4 on education, public awareness and training.) (Palmer & Neal 1994:5).

In terms of Agenda 21, “education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues ... behaviour consistent with sustainable development and for effective public participation in decision making” (Fien 1995). As a result, environmental education has been seen to have a positive impact on the environment.

The following are examples of how environmental education plays a positive role in dealing with solid waste in communities.

In the United States, newspaper campaigns (ie public education through the press) are valuable, especially at the start of a new system of solid waste collection or when changes are made to existing services (American Public Works Association 1975:424-427). Otherwise, periodic news releases to the local newspapers, prepared articles on various phases of the collection and disposal service, photographs of good and bad practices, human interest stories about personnel, and similar information prepared in an attractive way help to increase the public’s knowledge of what has to be done to provide good refuse collection service and arouse interest in maintaining a clean city (American Public Works Association 1975:424-427). This is a positive role played by environmental education in dealing with solid waste.

The Resource Cities Program: Urban Environmental Solutions (Lusaka-Dayton) is a programme run by the US Agency for International Development, which supports partnerships between the US and international cities to help them improve environmental management. Lusaka, the capital city of Zambia, was teamed up with Dayton, a city in Ohio (<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]).

Developing a better overall management strategy for waste collection is one of the key lessons Wilson Lungu (who participated in the Resources Cities Program) took back to Zambia after observing operations of his counterparts in Dayton. Dayton City Manager, Lemmie, saw Lusaka improve as a result of the Resource Cities Partnership. "The city became much more effective in developing a process under which they could routinely collect trash and dispose of it" (<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]).

Heightening citizen awareness about health and the environmental importance of proper waste disposal was another positive outcome. Lungu said: "People must be instructed on why they should handle garbage in a particular fashion, because if they are not aware, then its another problem. My department has now begun a public education campaign using brochures, radio announcements, and public meetings to help improved awareness. The response and results are very encouraging" (<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]).

The Resource Cities Program: Urban Environmental Solutions is a programme run by the US Agency for International Development, which supports partnerships between US and international cities to help improve environmental management. One such partnership was been Johannesburg (South Africa) and

Houston (Texas).

Waste management officials in Johannesburg and Houston first teamed up in 1997. For local governments, the end of apartheid created new imperative to provide services to all citizens --- regardless of race --- and to create greater equity and opportunity among city employees (<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]). The public awareness of environmental concerns at this time was low. “There is no awareness at all”, said Christa Venter, the Executive Officer for Waste Management in the Eastern Metropolitan Council of Johannesburg, one of four local councils in the city of 3,5 million people. “Basic issues of survival are more compelling than environmental concerns for the large population of urban poor.” (<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]).

Guided by the experiences of waste management officials in Houston, Venter and her associates developed a public awareness campaign to support a waste recycling programme in Johannesburg. “If you start trying to teach people about recycling, they are likely to start thinking about it at home,” Venter explained. Learning from the Houston experience, the Johannesburg Waste Management Officials engaged in a partnership with a private company to start a “buy-back” programme which has the dual benefit of recycling material and providing some income for the unemployed urban poor (<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]).

They collect paper for nothing, then they bring it to the centre where they will be paid approximately 20 cent a kilogram. All those involved in collecting are unemployed and they are making some money out of it. Venter said involvement in the Resources Cities Program helped her develop a “total strategy” for waste collection, which has led to an expansion of collections in previously unserved

areas, public environmental education campaigns and new recycling partnerships with the private sector

(<http://usinfo.state.gov/journals/itgic/0300/ijge/gj05.htm> [accessed on 10 June 2003]). This is a positive role played by environmental education in dealing with solid waste.

Keep South Africa Beautiful (KSAB), was a campaign headed by the Department of National Health and Population Development in the early 1990s. However, its effectiveness is still being felt to date. KSABs objective was to keep South Africa clean. In one of its Teacher Guides, it states that CSIR statistics indicate that the average South African living in urban areas generates between 0,576kg and 2kg of waste every day (Keep South Africa Beautiful Series 1992a). This means that South Africa has to get rid of about 65 000 tonnes of rubbish per day or about 24 million tonnes per year. The Keep South Africa Beautiful campaign had many avenues within which to reach the masses and these were divided into five categories:

- (1) *Community projects*: neighbourhood clean-up guides, removing all tyres, cleaning riverbanks, and so on.
- (2) *School/youth projects*: litter awareness as part of the curriculum, changing attitudes, environmental education centres, recycling litter, holding competitions and debates, and so on.
- (3) *Business projects*: donating litter bags, “clean up your shopping centre” awards programmes, and so on.
- (4) *General awareness*: distributing material, litter bags and bumper stickers, awareness activities, and so on.

(5) *Competitions*: radio jingles, litter art shows, litter through the lens (photography), and so on (Keep South Africa Beautiful Series 1992a)

According to Opie and Schuil (1993), litter clean-ups are much more fun if children can benefit directly from their work. Vast numbers of aluminium cans are produced daily and generally disposed of with little thought for recycling. The children can be taught to view many waste products (solid waste) as potentially valuable materials which should not be allowed to lie around. Such thrift can give rise to a concern for a cleaner, more economical use of our environment. Aluminium cans left lying around will survive for three human generations. The same cans will, therefore, litter the environment of these children's great-grand children (Opie & Schuil 1993:123). The role of environmental education in dealing with solid waste is very clear and positive.

The South African government has also played an important role in trying to reduce solid waste. The following websites give important information about the South African government's initiatives:

<http://www.polity.org.za/html/govdocs/speeches/1994/sp0802.html> (accessed on 10 June 2003)

<http://www.enn.com/extras/printer-friendly.asp?storyid=47184> (accessed on 9 May 2003)

[http://www.environment.gov.za/PolLeg/Agreements/2003Apr30/green\\_leaders\\_30042003.html](http://www.environment.gov.za/PolLeg/Agreements/2003Apr30/green_leaders_30042003.html) (accessed on 9 May 2003)

[http://www.environment.co.za/NewsMedia/MedStat/2003May5/plastic\\_bag\\_05052003.html](http://www.environment.co.za/NewsMedia/MedStat/2003May5/plastic_bag_05052003.html) (accessed on 9 May 2003)

<http://www.gpg.gov.za> (accessed on 29 October 2004)

The role that the South African government has played in trying to reduce solid waste is clear. The National Deputy Minister of Environmental Affairs, Mr Bantu Holomisa, and the Minister of Environmental Affairs, Mr Valli Moosa, were also involved in the fight against solid waste.

In August 1994, the then National Deputy Minister of Environmental Affairs, Bantu Holomisa, said in his speech as he launched the first Tidy Town Project in South Africa that it was an historic event --- Keep South Africa Beautiful and community leaders from Alexandra found common ground to improve living conditions in Alexandra and the business sector was praised for shouldering part of the responsibility for keeping the town free of litter (<http://www.polity.org.za/html/govdocs/speeches/1994/sp0802.html> [accessed on 10 June 2003]).

The Minister believed the main problems with waste management in many towns in South Africa were either a complete absence of such services or a lack of well-organised systems. The solutions are often not fully implemented. Litter remains one of the most pressing problems in less privileged communities. While other less visible forms of pollution probably have a higher impact on the living environment, litter --- because it is so visible --- compounds various issues. Firstly, it impacts directly on resources by polluting water and soil. Secondly, it creates serious health hazards. Thirdly, it impacts directly on the tourism potential of surrounding areas, and lastly, but perhaps most seriously of all, is the impact on the social fabric of the people. No one can fail to be touched by a community that lacks services (<http://www.polity.org.za/html/govdocs/speeches/1994/sp0802.html> [accessed on 10 June 2003]).

In May, 2002, the then Minister of Environment and Tourism, Mr Valli Moosa, told reporters in Cape Town that the plastics industry had been given 12 months to phase out the thin, plastic shopping bags handed out free of charge in stores and to replace them with thicker ones. Moosa complained that the bags were a blot on a country renowned for its scenic beauty and wilderness, adorning trees, bushes and fences across the nation. "Part of what we are trying to do is to change consumer behaviour and get people used to reusable packaging. The government wants to increase the thickness of the bags, to make it too

expensive for retailers to give them away. The government wants consumers to reuse the bags they buy, and in that way reduce the number of plastic bags that are strewn around the country” (<http://www.enn.com/extras/printer-friendly.asp?storyid=47184> [accessed on 9 May 2003]).

In April, 2003, the then Minister of Environmental Affairs and Tourism, Mr Valli Moosa, said that proper refuse collection is an essential service and a basic right. “At the moment, 40 percent of South Africa’s people do not have a proper domestic refuse collection system, which means that waste piles up around their homes, degrades their environment and affects their health. We have a national obligation to ensure that minimum standards for waste management are met. We have to act before it’s too late,” said Moosa ([http://www.environment.gov.za/PolLeg/Agreements/2003Apr30/green\\_leaders\\_30042003.html](http://www.environment.gov.za/PolLeg/Agreements/2003Apr30/green_leaders_30042003.html) [accessed on 9 May 2003]).

On 9 May 2003, the Plastic Bag Regulation took effect in South Africa. The then Acting Minister of Environmental Affairs and Tourism, Professor Kader Asmal, visited the Parow Pick ‘n Pay and the Khayelitsha Shoprite Checkers retail stores on 8 May 2003 in Cape Town to check their state of readiness to comply with the new regulations banning the use of thin plastic bags for thicker, recyclable plastic bags.

The plastic bag regulations prohibiting the manufacture, trade and commercial distribution of thin plastic bags in all retail stores in South Africa came into effect on 9 May 2003. The Minister met the store managers, staff and consumers in an attempt to get a first-hand account on how they were adjusting to the new law. The regulations will ensure that consumers have the option to re-use their thicker and more durable plastic bags or to use their own carrier bags ([http://www.environment.co.za/NewsMedia/MedStat/2003May5/plastic\\_bag\\_05052003.html](http://www.environment.co.za/NewsMedia/MedStat/2003May5/plastic_bag_05052003.html) [accessed on 9 May 2003]).

An ongoing campaign, the “Bontle ke Botho campaign: cleanest school/ward/municipality campaign” was established in 2003 and is being coordinated by the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (DACEL), in collaboration with the Gauteng Department of Education (GDE), the Gauteng Department of Development Planning and Local Government (DPLG) and the Gauteng Department of Health (DoH). It aims to promote participation in, and contribution towards, living and learning that enhances our human dignity (<http://www.gpg.gov.za> [accessed on 29 October 2004]).

“Bontle ke Botho” will serve as a vehicle over the coming years to implement the commitments contained in Agenda 21 and the Johannesburg Plan of Implementation (JPOI) emanating from the World Summit for Sustainable Development (WSSD). “Bontle ke Botho” means “being beautiful is being human” and the message of the competition is that a beautiful environment can be created for the people to live in and a better quality of life for all by the contribution of cleaning and greening of the Gauteng schools and communities. The campaign will encourage and reward the efforts of local authorities and schools in cleaning and greening their immediate surroundings. By linking the environment and greening interventions with social and economic wellbeing, the campaign will have a direct impact on sustainable development in action. (<http://www.gpg.gov.za> [accessed on 29 October 2004]). This campaign will be effective in reducing the solid waste in Gauteng.

This multi-year campaign has been divided into seven clusters of themes and each cluster will be dealt with over a period of about two years.

- (1) 2004/2005: water, sanitation and human settlements
- (2) 2006/2007: energy for sustainable development, industrial development, air pollution/atmosphere and climate change
- (3) 2008/2009: agriculture, rural development, land, drought, desertification and Africa

- (4) 2010/2011: transport, chemicals, waste management, mining and a ten-year framework of programmes on suitable consumption and production patterns
- (5) 2012/2013: forests, biodiversity, biotechnology, tourism and mountains
- (6) 2014/2015: oceans and seas, marine resources, small island developing states and disaster management and vulnerability
- (7) 2016/2017: overall appraisal of implementation of Agenda 21, the programme of Further Implementation of Agenda 21 and the Johannesburg Plan of Implementation (<http://www.gpg.gov.za> [accessed on 29 October 2004])

This campaign includes much more than dealing with solid waste in Gauteng, but it is worth noting the effort the Gauteng Provincial government is putting into establishing a sustainable South Africa.

The role of environmental education is vital to effectively reduce solid waste in a community. The integrated approach to solid waste management cites education as one of the factors needed to develop a sustainable programme of solid waste management.

In the Caribbean, for example, the sustainability of any solid waste management programme is highly dependent on the active participation of the public and the industrial-commercial-institutional (ICI) sectors. This is particularly true when the integrated approach includes components that require significant action on the part of these sectors, such as in waste reduction and source separation. The public generally reacts to changes with an emotional response. Public education assists in minimising emotions and allowing informed responses that are relevant to the needs of the community. Thus, public involvement in the master planning process and public education during the implementation of a programme must be undertaken to maximise the concept of good practice and public health. There

are many examples of environmental management education programmes that have focused on school children and women groups in the Caribbean, with excellent results (Thomas-Hope 1998:274).

The most probable negative role of environmental education in dealing with solid waste is when environmental education is not put into practice, that is, when environmental education is learned through skills, knowledge and values but is not put into action.

## **2.5 SUMMARY**

In this chapter, the terms and concepts relevant to this study were defined. The positive and negative impacts of solid waste on the local and global environment were discussed. The positive and negative role of environmental education in dealing with solid waste was also discussed. Contributions by the South African Government to curb the generation of solid waste were also mentioned.

The conclusion that can be drawn from this chapter is that solid waste has a positive and a negative impact on the environment, as seen in the discussion in section 2.3 of this chapter. The negative impact of solid waste on the environment is worth noting, however, because of what uncontrolled solid waste can do to the environment.

The role of environmental education in dealing with solid waste was also discussed in section 2.4 of this chapter. Development practitioners agree that education has an important role to play in the road to sustainable development. Education plays a positive role, as was evident by the examples provided. The negative role played by environmental education is minimal.

Chapter 3 gives a brief overview of qualitative research. The data is also analysed and interpreted.

## **CHAPTER 3            A QUALITATIVE ANALYSIS AND AN EMPIRICAL INVESTIGATION, ANALYSIS AND INTERPRETATION OF THE DATA**

### **3.1    INTRODUCTION**

In chapter 2, the theoretical perspectives on the positive and negative impacts of solid waste on the environment were discussed. The positive and negative roles of environmental education in dealing with solid waste were also discussed. In order to explore the role of environmental education in dealing with solid waste in the Central Business District of Thohoyandou, qualitative research will be conducted.

In this chapter, qualitative research is described in more depth. The purpose of this research is indicated. The procedures applied in conducting the research are then described. The criteria applied in selecting respondents and the research methods are described. The analysis and interpretation of data are then followed by the conclusion of this chapter.

### **3.2    QUALITATIVE RESEARCH: AN OVERVIEW**

Qualitative research is one of the research approaches employed in empirical research. It is defined differently by different researchers (De Beer & Dick 1994:91; Neuman 1997:330; Cook & Campbell 1979). In this study, as in Neuman (1997:335), qualitative research is at best an umbrella term covering an array of interpretive techniques which seek to describe, decode, translate and otherwise come to terms with the meaning, rather than the frequency, of certain more or less naturally occurring phenomena in the social world. This definition serves as a working definition from which qualitative research will be understood in the following sections.

### **3.2.1 The purpose of qualitative research**

The purpose of qualitative research is to emphasise the importance of the social context for understanding the social world (Neuman 1997:331). Qualitative research, unlike quantitative research, occurs where reality is accepted and not primarily as that which can be measured, seen and touched; it has reality rooted in the way in which respondents view it (McMillan 1992:9). For a qualitative researcher to understand reality, he or she must discover the meaning that people in particular situations attach to it (Lebeloane 1998:180).

Qualitative research in this study aims to explore, investigate and understand the role of environmental education in dealing with solid waste. The study wants to emphasise the views of the interviewees. The research method aims to explore the role of environmental education in dealing with solid waste. Qualitative research methods look for patterns in the lives, actions and words of people in the context of the study (Neuman 1997:329).

Qualitative research occurs in real-life situations and it is in real-life situations that respondents can provide in-depth information about phenomena (Krueger 1988:38).

In qualitative research, the researcher is in a position to communicate personally with the respondents and to discover how they see reality in real-life situations (Lebeloane 1998:180). Respondents, in turn, are free to express their views without being channelled as in quantitative research (Lebeloane 1998:180).

Qualitative research focuses on subjective meanings, definitions, metaphors, symbols and descriptions of specific cases. It attempts to capture aspects of the social world, for example, the environment for which it is difficult to develop precise measures expressed as numbers (Neuman 1997:329). Qualitative research focuses on subjectivity, in that the qualitative researcher is, amongst

others, expected to interact with the respondent, with the purpose of obtaining in-depth information and gaining an understanding of the meaning the respondents attach to everyday life (Lebeloane 1998:181).

With the purpose of qualitative research in mind, a researcher is capable of associating these purposes with the importance thereof.

### **3.2.2 The importance of qualitative research for this study**

Qualitative research has strengths (Weingand 1993:19; Neuman 1997:328-341), which make it important for this study. Qualitative research has, therefore, been considered because it enables the researcher to empirically explore the role of environmental education in dealing with solid waste. This it does in the following ways:

- It occurs in a real-life situation.
- It uses an emic perspective to enquire, that is, it wishes to understand reality by discovering the in-depth meaning that the people in a particular context attach to it.
- The researcher interacts with the respondents.
- Respondents express themselves as freely as they wish and are not restricted or guided in responding to questions (Lebeloane 1998:84).
- Openness can generate new theories and recognise phenomena ignored by most or previous researchers and literature.
- It helps respondents to generate a worldview, which simulates their experience of the world.
- It attempts to avoid prejudgement; the goal is to try to capture what is happening, present respondents on their own terms and to try to represent them from their perspectives so that the reader can see their views. This process is always imperfectly achieved – it is a quest (Cook & Campbell 1979:34).

- It allows the researcher to “get close to the data”, thereby developing the analytical, conceptual and categorical components of explanation from the data itself, rather than from the preconceived, rigidly structured and highly quantified techniques that confine the empirical social world to operational pre-definitions and structure. The empirical social world is thus examined by requiring the researcher to interpret that real world from the perspective of the respondents (Weingand 1993:19).

Having discussed the importance of qualitative research in this study, it is also important to discuss how data could be gathered in qualitative research.

### **3.2.3 Methods of gathering data in qualitative research**

There are no absolute methods of gathering data in qualitative research (Weingand 1993:19, De Vos 1998:241; Lebeloane1998:182). In other words, these methods are flexible and unique. They do not have fixed steps which need to be followed or replicated for gathering data (Lebeloane 1998:182).

Although qualitative research relies largely on the interpretive and critical approaches to social science (Neuman 1997:329), many researchers (Krueger 1988:38; Leedy 1989:141; De Vos 1998:242; Lebeloane 1998:182) agree that amongst a variety of data-gathering methods used in qualitative research, the following are used from time-to-time:

- An emic perspective of enquiry, that is, an enquiry in which a person is interviewed with the objective of deriving information and its meaning from that person’s perspective.
- Observing the person who is being interviewed. Observations are not undertaken systematically, but are determined by the richness of information and the situation. These can be modified to enrich the understanding of what the respondent says in the interview (Lebeloane1998:182).

The discussion on the method of gathering data in qualitative research is followed by a design of the research for this study.

### **3.3 RESEARCH DESIGN**

This section deals with the location of the study, the sample (target population) of respondents, sampling procedures, the limitations of the study and the data collection process.

#### **3.3.1 Location of the study**

The study was undertaken in the Limpopo Province of South Africa.

The Limpopo Province forms part of the border separating the Republic of South Africa from its neighbours, Zimbabwe and Mozambique. This province also has within its territory the former Venda and Gazankulu homelands. It consists of five local municipalities. The geographical area of the province is 122839, 36663 sq. km

[http://www.demarcation.co.za/info\\_1.aspx?frm=home&type=PROVINCE&Prov=Limpopo&code](http://www.demarcation.co.za/info_1.aspx?frm=home&type=PROVINCE&Prov=Limpopo&code) [accessed on 15 August 2004] (refer to appendix 2).

Thohoyandou is found in the Limpopo Province, within the Thulamela Local Municipality. The Thohoyandou Central Business District (CBD) is located within Ward 26. The geographical area of Ward 26 is 15 6667 square kilometres

[http://www.demarcation.co.za/info\\_1.aspx?type=WARD&code=93403026&Prov=Limpopo](http://www.demarcation.co.za/info_1.aspx?type=WARD&code=93403026&Prov=Limpopo) [accessed on 15 August 2004] (refer to appendix 3).

Thohoyandou is the capital of the former Venda homeland and the proud heart of the VhaVenda people. Its name means “head of the elephant” in tshiVenda.

The town is the commercial, administrative and legislative centre for the district. It is a business centre, well served with shopping complexes, an interesting

museum and an international hotel and casino

([http://www.webtouristinternational.com/thohoyandou\\_-south\\_africa-tourist-information.phtml](http://www.webtouristinternational.com/thohoyandou_-south_africa-tourist-information.phtml) [accessed on 15 August 2004]).

This study area was selected primarily because it was close to the researcher's home. In terms of environmental issues, Thohoyandou has a great problem with solid waste.

### **3.3.2 Sample of respondents/target population**

The target population comprises hawkers and vendors who were chosen because they spend most of their working days selling their merchandise in the Thohoyandou CBD. This is the area of Thohoyandou with the highest levels of solid waste and it is likely that these individuals contribute to the amount of solid waste found in the area.

### **3.3.3 Sampling procedures**

Sampling refers to the process by which a sample (subset of population elements) is drawn from the population (Stoker 1989:100). In this study, purposive sampling was used because it selects unique cases that are especially informative (Neuman 2000:198). To find out more about the environmental education that goes on in the CBD, it was necessary to select a target population that had been using the Thohoyandou CBD for a long period of time. This target population comprised 25 hawkers and vendors selling their goods on the streets, in shops, near the taxi ranks, and so on. Four areas where solid waste/litter was evident were identified.

### **3.3.4 Limitations of the study**

Since the researcher is not a native Venda, she was not able to communicate comfortably with the respondents in their home language, tshiVenda. She thus opted to use an interpreter and translator as the questionnaire was administered. The translator, a university student from the School of Environmental Science at the University of Venda was, however, very helpful.

### **3.3.5 Collection of data**

Data was collected in two ways: oral interviews and questionnaires.

#### *3.3.5.1 Interviews*

A research interview is a survey instrument, which involves a direct conversation between the interviewee and the interviewer with the purpose of obtaining useful information for the research (Cohen & Manion 1989). In terms of its design, it can either be formal, less formal, completely formal or nondirective, which makes it more flexible than other research methods (Aryl, Jacobs & Razavich 1972:24).

The main advantage of using interviews is that of direct interaction, which allows for a greater depth of information relevant to the topic concerned.

The researcher carried out four face-to-face oral interviews with those who were identified as possible key players in the struggle against solid waste in the Thohoyandou CBD. These interviewees belonged to the two environmental organisations in Thohoyandou that were active in reducing solid waste and using environmental education to reduce solid waste. These organisations are the Environmental Education Desk, under the Department of Finance and Economic Development in Limpopo, and the Environmental Health Services of the Thulamela Municipality.

### 3.3.5.2 Questionnaires

According to Wiersma (1986:179), questionnaires are a list of questions or statements to which the respondents are asked to respond in writing during an interview. The questionnaire, according to Cohen and Marion (1989), can either be administered under the supervision of a researcher or as a postal survey. In this study, the researcher personally delivered the questionnaire to the respondents.

The questionnaire included both open-ended and close-ended questions (see appendix 5). The open-ended questions were included to give the individual more freedom to respond, while the close-ended questions could easily be coded. The questionnaire contained 16 questions.

The questionnaires were written in English and translated verbally into tshiVenda for the respondents with the help of a translator. The responses were then interpreted from TshiVenda into English and recorded in English.

Four areas were identified where solid waste was most evident in the Thohoyandou CBD. The researcher randomly chose vendors (participants) to respond to the questionnaires. The settings of the areas are described below:

Area A is the area near the old taxi rank, behind the old Shoprite complex. A lot of business activities are conducted here and have been for a longer period of time than in the other areas. There are vendors who have, for example, been selling tomatoes here for the past twenty years. Some of the other activities include selling tomatoes, potatoes, fruit, vegetables and toys, as well as shoe peddlers and hair braiding. The drainage gutters nearby smell, because of poor drainage owing to litter (eg plastic, orange peels and apple cores). There is only one visible dustbin, which was provided by the municipality.

Area B is the area near the taxi rank, between the new plazas, namely,

Mvusuludzo and Capricorn plazas. This is a relatively new area of development, but because of the business activities in this area, there are a lot of people, the taxi rank and the plazas. The hawkers and vendors do not have established stalls, but are situated near the taxi rank so as to lure people easily. The vendors sell primarily oranges, sweet potatoes, cold drinks, ice-creams, Irish potatoes, bananas and apples. Orange peels, apple cores and plastic bags are scattered around the area. The municipality has provided dustbins, but they do not seem to be in use. The hawkers and vendors have been selling for different periods of time, for example, one vendor had been selling for just two weeks, while another had been selling for six years.

Area C is the area near the Jet Mart and the Superstore. This is the dirtiest area of the four. This area, shaped like a square, attracts a lot of activity and a lot of people. Business activities include cooking food, braiding hair, and kiosks selling a variety of merchandise, such as caps, scarves, handbags, bottles, shoes and airtime. Raw food is also being sold, like tomatoes, bananas and onions. Litter is very evident in this area. It was difficult to find any municipal dustbins and the researcher was only able to locate one. People braiding hair were situated close to people cooking food and the food was not properly covered. Lots of plastic bottles and other plastic is scattered around, and the blocked drains smell. The place is very dynamic --- one vendor had just started selling there the previous day.

Area D is the area near the Venda Plaza taxi rank. This is the cleanest and most recently established area. Activities include cooking food, selling vegetables, tomatoes, bananas, apples and onions. The difference here is the building structures provided in the form of kiosks where people can sell their goods. Where food is cooked, there are clean tables and chairs. There is some evidence of litter, but on a minor scale.

The analysis and interpretation of the data will follow in the next section of this chapter.

### **3.4 DATA ANALYSIS AND INTERPRETATION**

#### **3.4.1 Interview reports**

The interviews were conducted in English and have not been edited, so as to ensure that the respondents' true feelings and views are depicted.

A total of four interviews were conducted. The interviewer used different questions during each of the interviews, as each interviewee had a different job (job descriptions) and therefore information that was relevant and important to the study.

The interviews are reported below.

##### Interview 1

Respondent: Head of Environmental Education Desk  
in the Department of Environmental Affairs, under the Department of  
Financial and Economic Development, Limpopo Provincial Government.

Interviewer: When did the Department of Environmental Affairs establish the  
Environmental Education Desk in Thohoyandou?

Respondent: 1990

Interviewer: What were the Environmental Education Desk's main objectives?

Respondent: Its main objective was to create environmental awareness.

Interviewer: What activities does the Environmental Education Desk carry out to meet the above objective?

Respondent: We visit school clubs, who sometimes invite us to speak to them on specific environmental topics. We visit youth clubs of the various communities in Thohoyandou, and we speak on those topics in relation to the environmental problems they are facing in their community or environment. Topics can be proper waste management, soil erosion, environmental degradation, etcetera. We have radio talks, which are done weekly. Topics are selected depending on the weather season, since each season has its environmental impact, for example, just after winter in July and August, there are many instances of fire in the Limpopo Province. During that time, we concentrate on how to reduce fire occurrences. When it is a rainy season, we advise the communities more on water-related issues, collecting the water, reusing water, building trenches to trap water to the gardens, etcetera. In November and December, the town, Thohoyandou is usually crowded --- there is increased waste generation, during the festive seasons, and during Easter and school holidays, this is when we emphasise using dustbins, picking up litter, cleaning food, separating raw food from cooked food, etcetera. We organise clean-up campaigns with in the various communities, most especially when we are celebrating environmental days, where we have the communities clean-up their area, and have a guest speaker as well to promote more environmental awareness, and talk about things like waste management and littering. We also go out in the field and carry out information gathering. This is when we plan and visit specific areas in the province and observe the environment and the communities in that area. We can observe the area and see whether, they have dustbins, what kind of

community it is, how they perceive environmental issues. We also collect data, through questionnaires, and give them to a particular section of the population, for instance, traditional leaders, school students. After this information gathering exercise, we then sit down and plan, which areas we are going to visit again, and choose environmental awareness topics, which are relevant to the area. This is usually done in the beginning of the year and is included in our work plan.

Interviewer: In which particular areas do you work?

Respondent: We target both rural and urban communities of the northern part of Limpopo Province. We find that the populations in the Central Business Districts and schools are not as interested in our work as the rural areas.

Interviewer: In your view, what is environmental education?

Respondent: It is a combination of environmental issues in addition to creating awareness that leads to attitude change.

Interviewer: Environmental education is also known as the teaching and learning of knowledge, skills and values and attitudes of the environment. Do you think it can help to change people's attitudes towards solid waste or littering?

Respondent: In my view, change of attitude is very hard to attain, what we believe we are doing as the Environmental Education Desk is that we are influencing peoples' attitudes. For example, a child attends a clean-campaign in 2000, and is not actively involved and shows disinterest, but this same child three years later in 2003, is one of

the facilitators for the clean-up campaign, because of that activity three years back, influences the child.

Interviewer: Do you ever target vendors or hawkers in the Central Business District in relation to effective solid waste management in their working areas?

Respondent: Not as such, we can say we are able to reach them through our radio talks, but we do not go out to talk to them. It is the Thulamela Municipality which is doing that.

Interviewer: What is the relationship between you and the Thulamela Municipality, considering environmental issues and, in particular, solid waste management?

Respondent: We work closely indeed with the environmental health services in the Municipality, we actually help develop their environmental waste management programmes at the beginning, writing it out and explaining how it works, training them and influencing their thinking, then the Municipality completely takes over and implements the programmes.

Interviewer: Thank you very much for your cooperation.

## Interview 2

Respondent: Chief Nature Conservator, Environmental Education Desk in the Department of Environmental Affairs, under the Department of Financial and Economic Development, Limpopo Provincial Government.

Interviewer: What activities does the Environmental Education Desk do in Thohoyandou?

Respondent: Mainly capacity building and mass media, with the aim of making the masses aware of environmental issues, we do it through the following ways: radio programmes, usually on Radio Univen (University of Venda) on Thursdays. This is a one way programme, meaning no receiving calls from your listeners, which limits our feedback and measuring our effectiveness. We also use Radio Phalaphala, these give us a 45-minute slot, of which we can only speak for 15 minutes and 30 minutes for receiving callers, in this case we are limited on what we have to say. Communities invite us to speak to them on particular environmental issues. For example, last month, the community of Dzingahe invited us to speak to them about solid waste and pollution. We also go out information gathering, come back with data, digest it, and make a plan according to the needs and problems identified while information gathering. We also go out to school environmental clubs, whereby we involve the learners, and the schools in environmental competitions, like starting projects of collecting tins, papers. Then the best club is given chance to develop resource areas at schools, as well as get teaching aids. We celebrate environmental days, whereby we educate the masses by having clean-up campaigns, road signs that have environmental education messages, give away T-shirts, stickers, pamphlets, leaflets etcetera on those days there is usually a guest speaker, who speaks to the masses about environmental issue(s). We also had a waste management and pollution control forum, from 1998 to 2001. This forum included us, business men, University of Venda staff. This forum established recycling projects, it also reached out to hawkers and vendors, by educating them to clean their working areas, putting rubbish in the

dustbins provided. Unfortunately the forum ended.

Interviewer: Do you think you are changing the attitudes of the people you go out and visit?

Respondent: Attitude change is hard to measure or gauge, and we have poor observation methods, but I could say it is about 30 percent.

Interviewer: Thank you very much for your cooperation.

### Interview 3

Respondent: Head of Environmental Health Services,  
Thulamela Municipality, Local Government, Thohoyandou Head Office.

Interviewer: Of what population is Thulamela Municipality?

Respondent: Vhembe District comprises of Thulamela, Musina, Makhado and Mutale. Altogether these have a population of 1,191,884 of which 584,560 reside in Thulamela, therefore forming 54% population of the whole Vhembe district.

Interviewer: When did the Thulamela Municipality establish the Environmental Health Services?

Respondent: Originally Environmental Health Services were under the Department of Health, in the old government. Then in 1997, January, when the municipalities were formed, Thulamela Municipality inherited the Environmental Health Services with me as the head.

Interviewer: What was the main objective and responsibility of the

## Environmental Health Services?

Respondent: The main aim was to build our capacity in waste management and pollution control. However, the Department of Health was left with a few responsibilities like food poisoning, water sanitation. These are currently being considered to be moved to the Environmental Health Services of Thulamela Municipality, which is where Thohoyandou is situated.

Interviewer: When the Environmental Health Officers go out to the communities of Thohoyandou, what do they teach?

Respondent: Environmental education is taught both formally and informally. The formal environmental education is taught when the Environmental Health Officers are invited to schools, pension points, school sports days, shows etcetera. They are given a particular topic to educate about for example, general hygiene, waste management. Then with informal environmental education, the Environmental Health Officers target a population that contributes to the solid waste problem in the Central Business Districts, for example, hawkers and vendors. And collect them and educate them about hygiene, which includes washing hands after visiting the toilet, washing hands before eating food, cleaning food, not mixing raw and cooked food. Cleaning their working areas after each working day, collecting their rubbish and placing it into the dustbins provided by the Municipality. However, because of the new hawkers entering the Thohoyandou Central Business District, there is no long lasting impact of the environmental education carried out by the Environmental Health Officers, but with the formation of the Hawkers' Association, there will be more long lasting education effect. The Municipality also educates the

personnel or volunteers who collect the refuse from the communities. Such that as they collect the waste, they educate the members of the community they meet, about waste management and hygiene. This has proved to be very effective, since they go to all the communities in the Municipality.

Interviewer: Has there been a change as a result of the education?

Respondent: There has been an effective change, most especially when the Hawkers' Association was formed, and the leaders of the Hawkers' Association see to it that every hawker is educated and informed in these matters. However, the biggest problem in educating hawkers and vendors in Thohoyandou, is the fact that with in every week to two months, there are new incoming hawkers who are not educated and still lack waste management skills, and therefore need to educate more frequently than planned for.

Interviewer: Do you think environmental education should be promoted or integrated in your outreach programmes?

Respondent: Environmental education is already integrated within our programme, because we mainly deal in trying to change behaviour and attitudes towards the betterment of the environment.

Interviewer: And has environmental education been effective in reducing solid waste or made it possible for better waste management in Thohoyandou?

Respondent: People are now willing to change, they have learnt to accept that it is high time they changed their behaviour, and stop littering, have respect for others in their working areas, homes. However, this is a

slow process, the results are not immediately seen, but are seen over the years.

Interviewer: Do you have any projects that have dealt with solid waste?

Respondent: We have a number, namely, the Annual Clean City Competition , whereby municipalities compete for the cleanest municipality, then compete at a provincial level and finally at national level. The Thohoyandou Integrated Waste Management Campaign, this is a private project, initiated and funded by the government worth R500 000. They are involved in activities like recycling, have compressors, practice composting. And such projects help reduce the solid waste in Thohoyandou. There are also individual projects/ businesses, like collect-a-can, Sec 21 plastic recycling, these projects are very much encouraged by the municipalities. There was the Clean and Green Programme, that run for 36 months in Thulamela, from 1997 – 2000. This was a very fruitful programme, they were involved in collecting refuse, they carried out environmental education, they created community parks around street corners and residential areas.

Interviewer: Do you have any collection services and collection points?

Respondent: Of course we do, in monthly work plan, we have included activities like house-to-house refuse collection, cleaning of taxi ranks, picking up of dead animals, cleaning of offices, collection of bulk containers and these activities are done daily or weekly. We collect our waste from households, businesses, CBDs and place them into trucks, which transport the waste to the dumping site or landfill site at Muledani, which is 20km from Thohoyandou.

Interviewer: Thank you very much for your cooperation.

#### Interview 4

Respondent: Chief Environmental Health Practitioner, Thulamela Municipality, Local Government, Thohoyandou Head Office.

Interviewer: What activities do the outreach team of the Environmental Health Office do?

Respondent: We have radio shows, visit schools, organise clean-up campaigns, give away T-shirts, etcetera. We have realised that waste management cannot be effective without outreach or educational programmes.

Interviewer: Which personnel in the municipality go out into the communities?

Respondent: My colleagues the Environmental Health Officials, who visit the schools, chief kraals, communities, in the CBD, they give health education to the hawkers selling food, clothes, toys. Also the volunteers who collect refuse daily in the CBD, also educate the community as they collect the refuse, and this has been very effective in delivering environmental education on solid waste.

Interviewer: How many times do the Environmental Health Officials go out into the Central Business District to talk to the hawkers or vendors?

Respondent: They fail to go out as regularly as they would like to, but at least they go out into the communities twice a year. However, with the formation of the Hawkers' Association, communication has increased, the representatives of the Hawkers' Association are invited to the Municipality Head Quarters, when we have an urgent

environment issue or particular season. Then we educate them according to the issue at hand, and they in turn go out to all the hawkers and educate them as well. Apart from that we also try to visit the hawkers door to door, educating them about health and environmental education.

Interviewer: What in particular do you teach the vendors and hawkers of Thohoyandou CBD?

Respondent: We speak to them mainly about waste management, because their work produces a lot of waste. This is because they are involved in selling food, braiding hair, selling clothes, toys , sweets, airtime, shoes, bags, which are usually wrapped, thus causing a lot of waste lying around the CBD. We educate them on collecting their refuse, placing it in a plastic bag, and then at the end of the day place them in the refuse bins provided by the municipalities.

Interviewer: Do you think attitude change can be effective in reducing solid waste generation in Thohoyandou?

Respondent: Yes, attitude is very important. For instance the attitude in Thohoyandou, among the population, is that solid waste is there for the municipality workers to collect, once they collect this solid waste, they would be depriving the municipality workers of their jobs! So, it is important to change the population's attitude, from this one, to the need to reduce solid waste because of the negative impact on their health as well as the environment.

Interviewer: What do you think is the solution to the solid waste generation (littering) in Thohoyandou CBD?

Respondent: I think the solution to this problem is to establish a by-law, which focuses on littering. That the municipality would be given powers to confiscate hawkers or vendors property, if she or he is littering his or her working area. Right now we are powerless in that if we confiscate property we could be taken to court. Another solution has been to educate the cleaners who go out to collect the refuse. While they pick and collect the refuse, they talk to the people about environmental awareness and health issues concerning the solid waste. These cleaners go out twice a day. The first group are regular workers, who work from 8hrs to 16hrs. The second group are volunteers who work from 16hrs to 20:30hrs, these too are educated so as to bring about environmental awareness. Part of the solution has been the establishment of the government's policy of paying for plastic bags, this has greatly reduced the amount of plastic bags lying around the Thohoyandou CBD. Recycling is another solution, there is a landfill site in Muledani, where most of the garbage is sorted, cardboard is on high demand, cans, paper. Bottles are destroyed and not yet recycled.

Interviewer: Thank you very much for your cooperation.

### **3.4.2 Analysis of the data collected from the questionnaires**

In this section, there are six tables which represent data from the 16 questions contained in the questionnaire.

Table 3.1 deals with the *selling time* each respondent spent in the particular area. The respondents were named after the area in which they were situated. Respondent A4, for example, was respondent number 4, found in area A. Respondent B6, was respondent number 6, found in area B (see section 3.3.4.2 for more detail).

<b>TABLE 3.1</b>		
<b>Selling time factor</b>	<b>Respondent</b>	<b>Years</b>
<b>Q 1 How long have you been selling?</b>	A1	15
	A2	14
	A3	3
	A4	2
	A5	7
	A6	20
	B1	1
	B2	6
	B3	3
	B4	2 weeks
	B5	4
	B6	5
	C1	5
	C2	1
	C3	9
	C4	2 weeks
	C5	3 days
	C6	4 months
	C7	12
	D1	3months
	D2	4
	D3	2
	D4	8
	D5	1
D6	2	

Table 3.1 shows the selling time of the respondents. Respondent A1 had sold for 15 years, respondent B1 for 1 year, respondent C1 for 5 years and respondent D1 for 3 months.

Table 3.2 deals with *municipality participation*, that is, to ascertain whether the municipality actually carries out its duties to reduce solid waste in the Thohoyandou CBD.

<b>TABLE 3.2</b>		
<b>Municipal participation</b>	<b>POSITIVE</b>	<b>NEGATIVE</b>
Do you have any waste collection bins?	(x 24)	( x 1)
Does the municipality provide for waste collection bins?	(x 24)	( x 1)
How many times does the municipality collect the solid waste (garbage)?	(x 24)	( x 1)
<b>Percentage for municipal participation</b>	<b>96%</b>	<b>4%</b>

Table 3.2 gauges the municipality participation in the Thohoyandou CBD. Twenty-five respondents were asked if they had any waste collection bins in their working (selling) areas: 24 (96%) answered “Yes, they did” which is POSITIVE, while 1 (4%) said “No, he or she did not” which is NEGATIVE. Respondents were asked if the municipality provided the waste collection bins and 24 (96%) said “Yes, they did” which is POSITIVE, and 1 (4%) said “No, they did not” which is NEGATIVE.

Table 3.3 deals with the *level of environmental awareness* of the respondents in the Thohoyandou CBD.

<b>TABLE 3.3</b>			
<b>Level of environmental awareness</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
Do you think solid waste can cause any dangers to your health? YES/NO?	(x10)	( x 6)	(x 9)
What dangers can solid waste cause to your health?	(x10)	( x 6)	(x 9)
Do you think solid waste can cause any dangers to the environment? YES/NO?	(x10)	( x 6)	(x 9)
What dangers can solid waste cause to the environment?	(x10)	( x 6)	(x 9)
<b>Percentage for level of environmental awareness</b>	<b>40%</b>	<b>24%</b>	<b>36%</b>

The level of environmental awareness was measured by asking the respondents the above questions. Twenty-five respondents were asked whether they thought solid waste could endanger their health. Ten (40%) respondents thought that solid waste did not endanger their health or the environment, which is classified as LOW. Six (24%) respondents thought that solid waste caused danger to the environment, but not to their health. This is classified as MEDIUM. Nine (36%) respondents thought that solid waste endangered both their health and the environment. This is classified as HIGH.

Table 3.4 deals with the *presence of environmental educators* in the Thohoyandou CBD.

<b>TABLE 3.4</b>				
<b>Presence of environmental educators</b>	<b>Very low</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
Have any people ever informed you of the need to put garbage away?	(x14)	(x2)	(x 3)	(x6)
How many times do the educators come in a year?	(x14)	(x2)	(x 3)	(x 6)
Do you think they make a difference to the way you treat your garbage/solid waste?	(x14)	(x2)	(x 3)	(x 6)
<b>Percentage of presence of environmental educators.</b>	<b>56%</b>	<b>8%</b>	<b>12%</b>	<b>24%</b>

Table 3.4 measures the presence of environmental educators in the Thohoyandou CBD. The questions above were asked. Fourteen (56%) respondents said no one had ever informed them of the need to put garbage away. This was categorised as VERY LOW. Two (8%) respondents said that educators came rarely, like twice a year. This was categorised as LOW. Three (12%) respondents said that they came regularly and this was categorised as MEDIUM. Six (24%) respondents said that the cleaners who collected the garbage educated them about the dangers of solid waste and the need to dispose of it. This was categorised as HIGH.

Table 3.5 deals with the *environmental action* of the respondents in the Thohoyandou CBD.

<b>TABLE 3.5</b>		
<b>Environmental action</b>	<b>Active</b>	<b>Not Active</b>
Do you collect garbage after selling?	25	
What have you done to make a difference in the way you treat garbage/solid waste?	25	
Percentage of environmental action	<b>100%</b>	

In table 3.5, the questions asked measured the respondents' environmental action (putting away their solid waste after work). All 25 (100%) of the respondents said they clean their places of work after work each day, and believe they make a difference in the way they treat their solid waste. The response was categorised as ACTIVE.

Table 3.6 deals with the *attitude of the respondents* of the Thohoyandou CBD towards environmental education

<b>TABLE 3.6</b>		
<b>Attitude towards environmental education</b>	<b>Positive</b>	<b>Negative</b>
What is your view towards the educators who tell you about the dangers of garbage/solid waste?	(x 24)	( x 1)
Do you think their education will help the Thohoyandou community to reduce garbage/solid waste in the CBD? YES/NO	(x 24)	( x 1)
If YES, state how educating you will help the Thohoyandou CBD in reducing the garbage/solid waste?	(x 24)	( x 1)
<b>Percentage of attitude towards environmental education</b>	<b>96%</b>	<b>4%</b>

Table 3.6 gauged the attitude towards environmental educators. Of all the questions asked, all the respondents 96% (24), except one (4%), had a positive attitude towards environmental educators and stressed that they needed them for the good of the Thohoyandou CBD as well as themselves.

### **3.5 SUMMARY**

In this chapter, an overview of qualitative research was discussed. The research design of the study was described. It included the location of the study, a sample of respondents, sampling procedures, the limitation of the study, data collection and the data analysis and interpretation. The findings indicate that environmental education plays a role in dealing with solid waste in the Central Business District of Thohoyandou.

A summary of the findings and recommendations regarding this chapter are presented in chapter 4.

## **CHAPTER 4          SUMMARY OF FINDINGS AND RECOMMENDATIONS**

### **4.1    INTRODUCTION**

This chapter focuses on the findings of the literature review (theoretical perspectives on environmental education and solid waste) in chapter 2 and the qualitative analysis and data interpretation in chapter 3. Recommendations are based on the findings.

### **4.2    SUMMARY OF FINDINGS**

#### **4.2.1   From the literature review**

Chapter 2 looked at the theoretical perspectives on environmental education. This included the impact of solid waste on the environment and the role of environmental education in dealing with solid waste. It was concluded that solid waste can have both a positive and a negative impact on the environment, and local (South African) and global examples were cited. The negative impact of solid waste on the environment is worth noting, because of what uncontrolled solid waste can do to the environment.

As far as the role of environmental education in dealing with solid waste is concerned, it was found that development practitioners agree that education has an important role to play in sustainable development. The positive role environmental education has played in dealing with solid waste was clear to see through the illustrations provided. The negative role is minimal.

#### **4.2.2   From the qualitative analysis**

In chapter 3, a brief analysis was done on qualitative research, and it was found that qualitative research in this particular study aimed to explore, investigate and

understand the role of environmental education in dealing with solid waste. The study wanted to bring to the surface the views of the interviewees, as well as the respondents who answered the questionnaire. The research method, therefore, aimed at exploring the role of environmental education in dealing with solid waste.

Qualitative research methods look for patterns in the lives, actions and words of people in the context of the study (Neuman 1997:329).

### **4.2.3 From the data analysis**

#### *4.2.3.1 Interviews*

Four face-to-face oral interviews were carried out on influential members of the two organisations identified in Thohoyandou. It was found out that the Environmental Education Desk visits schools and youth clubs in Thohoyandou, and conduct weekly radio talks on topics that include solid waste. They also organise clean-up campaigns within the various communities, mostly when celebrating environmental days. However, it was found out that the Environmental Education Desk does not target the vendors or hawkers in Thohoyandou's Central Business District as such --- they only reach them through their radio talks.

The Environmental Health Services was found to be playing an active role in reducing solid waste in the CBD, as well as educating the vendors and hawkers about the dangers of solid waste. It was found that Environmental Health Officers go out to the communities in Thohoyandou, including the CBD. They educate the vendors and hawkers about hygiene, which includes washing hands after visiting the toilet, washing hands before eating food, not mixing raw and cooked food, cleaning their working areas after each working day, collecting their rubbish and placing it in the dustbins provided by the municipality. However, it was

discovered that, because new vendors and hawkers enter Thohoyandou every day, this environmental education does not have a lasting impact. A Hawkers' Association was recently formed, however, and the Environmental Health Service has invited them to obtain information from them and to share information in return. In this way, environmental education efforts have proved more effective. Another commendable thing the municipality has done is to educate the cleaners or collectors of the dustbins about environmental education, including solid waste. As the cleaners collect the waste, they now also talk to the people at the points where they collect the dustbins.

It was, however, also found out that the Environmental Health Officers seldom go out into the community for environmental education outreach programmes.

#### *4.2.3.2 Questionnaires*

Twenty five (25) respondents answered the questionnaire. The respondents were selected randomly from Areas A to D; these areas were described in section 3.3.5.2 of chapter 3. The results were compiled into six tables found in section 3.4.2 of chapter 3.

Below is a summary of the findings from the tables.

The answers relayed in table 3.1 contain the number of days, weeks, months or years the respondents have been selling merchandise in that area, that is, selling time. Respondent A1, for example, had been selling goods for 15 years, respondent B1 for one year, respondent C1 for five years and respondent D1 for three months (ie the relationship between those who were the most recent vendors in the areas and their correspondent level of environmental awareness). The recently established vendors have, on average, a LOW level of environmental awareness.

Table 3.2 gauged municipality participation in the Thohoyandou CBD. Twenty-five respondents were asked if they had any waste collection bins in their working (selling) areas and 24 (96%) said “Yes, they did”, which is POSITIVE, and one (4%) said “No, he or she did not”, which is NEGATIVE. Respondents were asked if the municipality provided the waste collection bins and 24 (96%) said “Yes, they did”, which is POSITIVE, and one (4%) said “No, they did not”, which is NEGATIVE. The Thulamela Municipality is playing the most active role in reducing the solid waste in Thohoyandou CBD. This is proved by nearly 100 percent of the respondents who said that the municipality actively collected garbage/rubbish/solid waste at least once daily.

In table 3.3, the level of environmental awareness was measured: twenty-five respondents were asked whether they thought solid waste endangered their health. Ten (40%) respondents thought that solid waste did not cause any danger to their health and to the environment. This was classified as LOW. Six (24%) respondents thought that solid waste caused danger to the environment, but not to their health. This was classified as MEDIUM. Nine (36%) respondents thought that solid waste endangered both their health and the environment. This was classified as HIGH.

Table 3.4 measured the presence of environmental educators in the Thohoyandou CBD. Fourteen (56%) respondents said no one had ever informed them of the need to put garbage away. This was categorised as VERY LOW. Two (8%) respondents said that educators came rarely, like twice a year. This was categorised as LOW. Three (12%) respondents said that they came regularly and this was categorised as MEDIUM. Six (24%) respondents said that the cleaners who collected the garbage educated them about the dangers of solid waste and the need of its disposal. This was categorised as HIGH. The presence of environmental educators was low; those times when respondents indicated that the educators had visited them regularly (HIGH) is where the cleaners were educated to talk to the public while collecting the solid waste.

In table 3.5, the questions measured the respondents' environmental action (putting away their solid waste after work). All 25 (100%) of the respondents said they clean their places of work at the end of each day and believe they make a difference in the way they treat their solid waste. The response was categorised as ACTIVE. The level of environmental action was definitely biased, because all the respondents claimed that they clean their places of work on a daily basis (POSITIVE). The evidence of litter lying around that may have been older than a day or two, was, however, still evident.

Table 3.6 gauged the respondents' attitude towards environmental educators. Of the questions asked, all the respondents 96 percent (24), except one (4%), had a positive attitude towards environmental educators and stressed their importance for the good of the Thohoyandou CBD and themselves.

### **4.3 RECOMMENDATIONS**

Firstly, it is recommended that a consistent training environmental education programme for both the Environmental Health Services of Thulamela Municipality and the Environmental Education Desk of the Department of Environmental Affairs be set up, and that a consistent environmental education programme be developed and offered to the vendors, hawkers and the greater Thohoyandou CBD community.

The environmental education programme could be facilitated by the formation of a partnership between the Department of Education and the Department of Environmental Affairs in Thohoyandou. Engage civic associations, khoro (meetings organised by the Venda Chief) and religious groups to assist in training and extension services. Hold workshops run by qualified environmental educators. These workshops could focus on farmers, forest workers, municipal

workers and recycling entrepreneurs in an attempt to help them adopt more efficient and sustainable practices.

Secondly, it is recommended that the Thohoyandou community be empowered to manage its local environment in a more sustainable way. This could be done by sending out a team from the municipality to visit other CBDs in South Africa and to learn from them and apply what they have learnt to Thohoyandou's situation.

Thirdly, it is recommended a by-law be established in the Thohoyandou CBD, whereby the municipality is given powers to confiscate hawkers' or vendors' property if caught littering his or her area of work. (This by-law is first referred to in Interview 4 in section 3.4.1.)

## **APPENDICES**

### **Appendix 1 Map of South Africa**

Source: (Earle, Proctor, Keats & Forsyth 1996:7)

## Appendix 2 Map of the Northern Province

Source: (Earle et al 1996:22)

### Appendix 3 Map of Thohoyandou – Thulamela Municipality (Ward 26)

Source:

(<http://www.demarcation.co.za/info1.aspx?type+WARD&code+93403026&Prov+Limpopo> [accessed on 15 August 2004])

**Appendix 4            Letter of permission to interview/question**

**4 May 2004**

Dear Sir/ Madam

**Re: Permission to interview or administer a questionnaire**

I am humbly asking for your permission to interview you or question you for the sole purpose of getting data for the research I am doing for my course.

I am a student at UNISA studying an MEd with specialization in Environmental Education, and this research is part of the course.

Your co-operation will be greatly appreciated.

Yours sincerely,

**Elizabeth Ddungu**

**Student No: 32800649 (UNISA)**

**072 110 1417**

**Appendix 5 Sample of questionnaire**

THE QUESTIONNAIRE FOR VENDORS/HAWKERS IN THOHOYANDOU  
(CENTRAL BUSINESS DISTRICT)

1. How long have you been selling here?  
.....  
.....
  
2. Do you have any waste collection bins here? (YES/NO)  
.....
  
3. Does the municipality provide for waste collection bins?  
.....  
.....
  
4. How many times does the municipality collect the solid waste  
(garbage/refuse)  
.....
  
5. Do you think solid waste can cause any dangers to your health?  
(YES / NO) .....
  
6. What dangers do you think solid waste can cause to your health?  
.....  
.....
  
7. Do you think solid waste (garbage) can cause any dangers to the  
environment? (YES / NO) .....

8. How do you think solid waste can cause danger to the environment?  
.....  
.....  
.....

9 Have any people ever informed you of the need to put the garbage away?  
.....  
.....

10 How many times do the educators come in a year?  
.....

11 Do you think they make a difference to the way you treat garbage (solid waste)?  
.....  
.....  
.....

12 Do you ever collect garbage after selling?  
.....  
.....  
.....

13. What have you done to make a difference in the way you treat garbage?  
.....  
.....  
.....

14. What is your view towards the educators who tell you about the dangers of garbage?

.....  
.....  
.....  
.....  
.....

15. Do you think their education will help your community in Thohoyandou to reduce the garbage in Thohoyandou? (YES / NO) .....

16. If so, please state how educating you will help you as a community member in Thohoyandou to reduce garbage (solid waste) in Thohoyandou Central Business District.

.....  
.....  
.....  
.....

THANK YOU VERY MUCH

## **Appendix 6 Sample of Thulamela Municipality monthly work plan**



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