

Marine Environmental Education for a sustainable exploitation of marine resources. The case of Abalone poaching in the Hermanus area.

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A minithesis submitted in partial fulfilment of the requirements for the degree of Magister Public Administration in the Faculty of Economic and Management Science, University of the Western Cape.

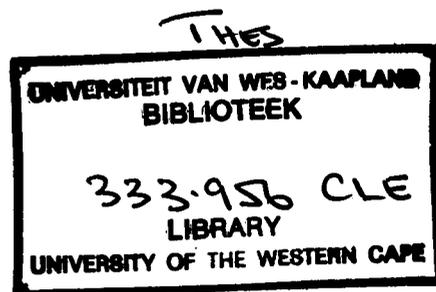


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KEYWORDS

Poaching

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National Qualifications Framework

Sustainable development

Human Development

Outcomes-based education

Community empowerment

Management transformation



Abstract

The coastal zone is a highly complex and highly productive environment in which components are intimately linked and interdependent on each other. Furthermore, human pressure and poaching remains an enormous problem within coastal zones and therefore necessitates an integrated and multi-disciplinary development and management effort.

Integrated coastal management requires balancing a wide variety of ecological, social, cultural governance and economic considerations. It is in this context that specialised educational programmes for schools in coastal areas should be established and pursued as a means of reducing poaching and thus creating an enabling environment for sustainable management and economic development in these areas. The views from school learners at Mount Pleasant Primary School in Hermanus reflect the view that unless young people are taught about marine resources, sustainable development will remain an unachievable goal in coastal communities. Clearly a link exists between education and community empowerment.

In addition, community empowerment is both desirable and critical to the success of the co-management of marine resources. Empowered communities

can help mitigate potential and existing conflicts by exploring management issues and initiating possible responses.

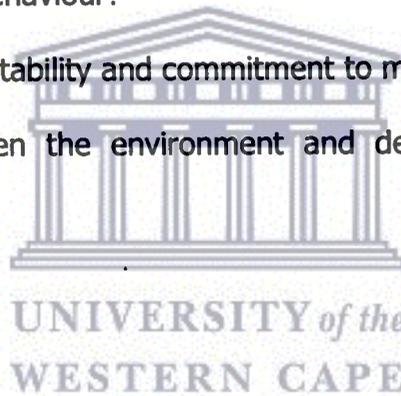
The mini-thesis concludes with various recommendations and possible education programmes that can raise the level of consciousness with regard to marine resources. Lastly, it attempts to answer a few pertinent questions.

Can marine education lead to a reduction of poaching?

Can it lead to changed behaviour?

Can it lead to increased stability and commitment to management?

Can the tension between the environment and development be adequately addressed?



Declaration

I declare that, *Marine Environmental Education for a sustainable exploitation of marine resources. The case of abalone in the Hermanus area* is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

NOEL CYRIL CLEOPHAS

15 OCTOBER 2002

SIGNED



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- From environmental awareness to informed action
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ACRONYMS



MCM	Marine and Coastal Management
MCS	Monitoring, Control and Surveillance
SIA	Social Impact Assessment
OBE	Outcomes Based Education
NQF	National Qualification Framework
WCED	Western Cape Education Department

CHAPTER 1

INTRODUCTION

The nature and scope of the study

Hermanus is a coastal community approximately 150 kilometres to the south-east of Cape Town. The fishing, holiday resort town is characterised by diverse social and economic factors. The town is characterised by a fairly affluent white community and a poor black and coloured community.

The Hermanus area is known for the occurrence of two marine animals, namely: whales and abalone. It is the indiscriminatory exploitation of the latter that is a concern to environmentalists. It is mainly the poor, in the black and coloured communities who are guilty of the illegal exploitation of abalone.

In the fight to curb runaway abalone poaching in the Hermanus area, the state is winning a few battles but is losing the war quite badly. It seems to be the most realistic assessment of progress of attempts made to end the poaching crisis, which has depleted abalone stocks.

In the article, (Yeld, 2002) "Cape losing war to save perlemoen", points out that, "the species faces commercial extinction unless effective action is taken

immediately”.

The crucial question that remains are what can be done to reverse this?

The answer is complex and requires innovative and sometimes brave decisions to adequately address this unfolding environmental catastrophe.

This study takes an introspective look at the attempts to reduce the poaching and the illegal exploitation of the abalone resource along the Hermanus coast.

The study aims to contextualise the exploitation of abalone resources and maintains that it should be understood first, before any meaningful intervention can take place to reverse the current state of affairs. It furthermore identifies environmental education for a variety of audiences in coastal areas as one of the main pillars to solve a complex problem.

It is within this scope that the study examines the following:

- (a) An overview of attempts to reduce the poaching of abalone.
- (b) An examination of attitudes within coastal communities with regards to abalone as a resource.
- (c) Whether an innovative education programme would have the desired

results in reversing attitudes towards conservation and sustainability.

A qualitative research methodology was utilised in order to gain the views of community members, primary school learners and teachers of the Mount Pleasant Primary School in Hermanus.

Statement of the problem

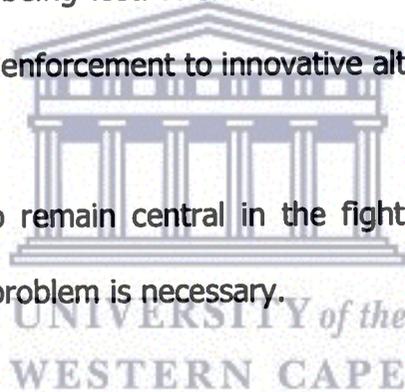
The high demand of abalone on international markets contributes to the unprecedented high levels of illegal exploitation and poaching. The situation in areas like Hermanus is exacerbated by the involvement of the Chinese triads¹ who mercilessly exploit the socio-economic disposition of the local population. Chinese triads have a considerable share in illicit abalone harvesting, and the nature of their culture and operations and the shortage of police resources make them hard to track down (Van der Merwe, 2002).

In the article "Triads have big share in illicit harvest", Peter Gastrow of the Institute of Security Studies concludes that, "a conservative estimate by police puts the illegal export of abalone, a market which is totally dominated by Chinese organised criminal groups, at about five hundred tons a year".

“At a retail price of about R780.00 a kilogram in Hong Kong, the gross income of illicit exported abalone is approximately R390 million” (Van der Merwe: 2002).

Traditionally there has been a heavy reliance on the police and marine law enforcement officers to force users to comply with the regulations as promulgated by government. Unfortunately, law enforcement officers are amongst those arrested for illegal harvesting of abalone. Although some successes have been registered in the war against abalone poachers, the overall picture is that of a war being lost. A shift needs to take place away from the historical reliance on law enforcement to innovative alternative approaches.

Although policing has to remain central in the fight against poaching a more holistic approach to the problem is necessary.



Objectives of the study

The study will examine the illegal exploitation and poaching of abalone resources and coastal communities' responses to this growing crisis. The research paper questions whether policing of the abalone resource is effective as the primary tool to address the illegal exploitation and poaching of the resource. Valuable insight is provided as to whether marine education can significantly shift

¹ Chinese triads refer to organised crime syndicates, which operate from Hong Kong.

attitudes of young people about the sustainable exploitation of abalone.

Research Methodology

Selection of an appropriate research design

The research context is one in which there is very limited literature and research done regarding the abalone industry in the Hermanus area. Furthermore, there is limited literature and research on educational interventions as a method to address the exploitation of marine resources.

The activities of Operation Neptune, a law enforcement operation to reduce poaching in the Hermanus area contribute to the community's suspicious attitudes towards researchers. Therefore limited research papers are available to draw upon for research purposes.

Given these contextual parameters, an open and flexible design strategy is appropriate and feasible. Mouton and Marias (1990:43) concur that such a research strategy is pursued in a relatively unknown research area.

Different methods of data collection may compensate for this limitation.

The data collection entailed:

- (a) A review of the limited related literature on abalone exploitation in the Hermanus area.
- (b) Semi-structured interviews with learners as the primary focus group about their perception about the problem of abalone poaching.
- (c) Semi-structured interviews with teachers, who formed the second focus group with regards to their views on the research problem.
- (d) Semi-structured interviews with marine law enforcement officers on the research subject.

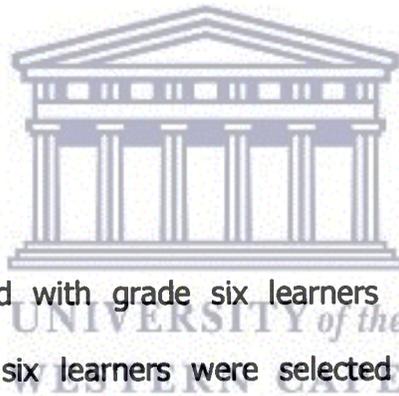
An interview schedule was used to guide semi-structured, in-depth interviews with which primary data was obtained. The interview schedule is attached as Appendix 1.

The field research study was undertaken to identify the perceptions of young people towards abalone as a resource and more importantly towards developing an awareness of the marine environment. The main objective of the study is to examine whether marine education can make a difference in reversing attitudes. The views of the two groups, namely, those of learners and teachers at the Mount Pleasant Primary school have immensely informed the study.

The views of young people in coastal zones will be the primary focus of the research study since they will be either the future stakeholders or they will be the future poachers in the abalone industry. Their experiences and opinions are important since environmental education is directed at them. The views of teachers with regard to environment education are equally important as the onus befall on teachers to become the implementers of this new awareness.

Finally, recommendations will be offered with regards to developing an education practice that is sensitive to marine conservation based on the field research and related literature.

Sampling



Interviews were planned with grade six learners from the Mount Pleasant Primary School. Grade six learners were selected as they reflect from an educational point of view, the age group at which bad practices can be identified and reversed. Grade six learners are at an age (± 12 years) where they are susceptible to influences to participate in abalone poaching. As poaching of abalone is mainly a male activity, it was important to identify boys for the study, as they could possibly be the next generation of poachers. A fairly unsubstantiated assumption is that boy, rather than girls at this age would be more susceptible to involve themselves in poaching activities. Boys at the age of

12 years are thus a fairly reliable sample to test whether innovative education programmes can have the desired results of creating awareness about abalone poaching.

These learners were identified through the researcher's personal contact with the Deputy Principal, Mr A Neethling. Having been referred by Mr Neethling, it was easy to establish trust amongst the learners. The interviewing process took place in the form of learning activities. Again, Mr Neethling was instrumental in allowing the researcher to speak to some of his colleagues, the teachers.

One member of the community was also interviewed in an unstructured manner. In addition, a key informant, a marine law enforcement officer who has served in Operation Neptune along the Hermanus coastline was interviewed and has provided valuable insights in the fight against abalone poachers.

The interviews took place during January and March 2002. The interviews ranged in time:

- 15 minutes per learner (10 learners x 15 minutes = 2 hours 30 minutes)
- One hour with learner group as a whole
- 2 hours with law enforcement officer
- Approximately an hour with community member.

Limitations of research

The research study takes cognisance of the various social and economic problems that exist in coastal communities. Ignoring these variables would not only be naïve but irresponsible in drafting any management effort in order to reduce poaching.

Poverty, in many cases is a justification for involvement in poaching activities. However, factors such as greed, maintaining drug habits or alcoholism and very importantly, the coercion of organised crime cannot be ignored.

Despite this limitation the research focussed specifically on the views of young people with regard abalone poaching and their understanding of marine conservation. As grade six learners were the researcher's primary focus group, the group itself posed to be problematic as their knowledge was rather limited. Teachers, the second focus group, expressed very little enthusiasm and questioned the relevance of such a study as poaching is fairly entrenched in the community.

Since the sample was limited to the learners of Mount Pleasant Primary school it reflects the views of the sample area only. As young people are susceptible to innovative learning activities, it validates the research effort and creates

optimism that poaching can be reversed.

A further limitation to the study is that limited literature exists on marine education programmes in the Hermanus area.



Literature Survey

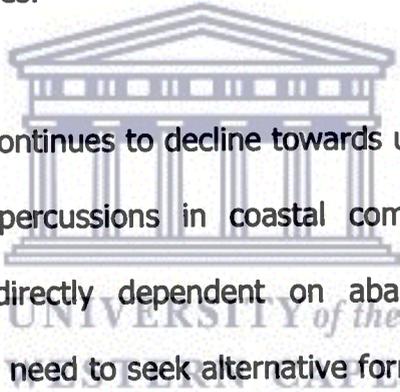
A limited number of research studies have been undertaken with regards to the illegal exploitation of abalone along the Hermanus coast. The most significant research study is a criminological study of abalone and crayfish poaching in the Hawston area approximately 10 kilometres from Hermanus by Hauck (1998) and the collaborative work of Hauck and Sweijd (1999) on abalone poaching in South Africa. These studies supply valuable insights into the difficulty of providing an analysis to the problem of abalone poaching.

The study by Hauck, **Abalone and crayfish poaching: An analysis of the problem and recommendations for action** (1998) provides a criminological explanation of the variables at play in abalone and crayfish poaching. In Hauck, M and Sweijd N, **A Case study of abalone poaching in South Africa** (1999) similar variables that are at play in the poaching of abalone are identified.

Hauck displays a very pragmatic approach towards marine resource management and acknowledges that the abalone industry is riddled with controversy. It is from this premise, Hauck believes, that one should start addressing the shortcomings within the industry.

Hauck, (1998) describes self-interest or opportunistic behaviour witnessed throughout resource exploitation as normal and believes it should be incorporated in any management strategy that attempts to address the problem of illegal exploitation.

The situation in areas like Hermanus is exacerbated by the increased involvement of youth in poaching activities, which enable them to have money for drugs and alcohol abuse. The quality of life is being undermined as local residents' fear for their lives.



If the abalone resource continues to decline towards ultimate collapse, there will be severe economic repercussions in coastal communities, like Hermanus. Whether directly or indirectly dependent on abalone harvesting for their livelihoods, people would need to seek alternative forms of income in an already bleak economy (Hauck and Sweijd, 1999).

When the present generation regards the poaching of abalone as acceptable, then one has to make serious attempts to change these negative perceptions towards the sustainable exploitation of resources.

Hauck and Swjied (ibid) correctly argue that illegal exploitation is intertwined with issues that make the traditional methods associated with resource management inadequate and consists of numerous complexities that make sustainable utilisation extremely difficult.

They acknowledge the involvement of a broad spectrum of role-players in the hierarchy of poaching activities. It is therefore difficult to define who a poacher is, as those involved represent a wide variety of socio-economic, racial and professional backgrounds (ibid).

The authors also highlight a second complexity, which they refer to, as need, greed and politics. Elements of greed creeps in as people with legitimate employment either quit their jobs or substitute their income through the lucrative poaching industry (Hauck, 1998).

Access and redistribution remains the greatest stumbling block for the sustainable utilisation of marine resources. Hauck and Sweijd (1999) argues that it is evident from the responses of people most affected by poaching, that the issue was not simple, but incorporate complex dynamics relating to poverty and the economy, greed and money, and politics and history.

What further enhances the complexity of the problem is organised crime. Syndicates, responsible for supplying the high demand for abalone products to the Far East, feed on the lucrative illegal market. The underlying complexities and intertwined dynamics involved, result in obstacles to the successful management of the resource, including threats to new initiatives that involve resource users in shared management arrangements (ibid).

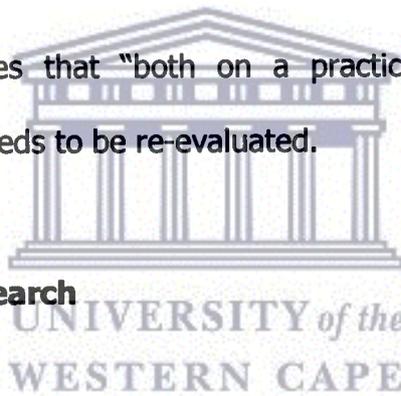
The lucrative nature of the abalone product encourages short-term gains over long-term interest. By diving an average of 40 kg in 2-3 hours and receiving an average of R45 per kg, the financial incentives become evident (Hauck: 1998). Organised Crime fuel illegal exploitation by providing lucrative incentives to poach and it provides the means to export the product overseas.

In addition, local residents live in a state of fear and intimidation if they pose a threat to the illegal operations. As a result many members of the community are afraid to oppose poachers and are reluctant to become involved in attempts to address it (ibid). Poaching activity has also impacted on fisheries management by being utilised as a political tool. Poachers have highlighted the inequities in resource allocation and use this argument to justify their activities (ibid).

Another obstacle to fisheries management, which is directly related to poaching, is corruption. It is recognised as a serious hindrance to the success of

diminishing poaching activities (ibid). Corruption generates a mistrust and scepticism, which in turn can lead to an unwillingness of local residents to cooperate and compromise with other stakeholders. It is against this contextual background that one has to adapt one's thinking with regard to managing the illegal exploitation of resources. There are major socio-economic and political factors that influence the process of resource exploitation and that these factors must be considered when developing potential strategies for management interventions.

Hauck (1998: 01) argues that "both on a practical and theoretical level", resource management needs to be re-evaluated.



Importance of the research

Research on the illegal exploitation and poaching of abalone in Hermanus is very limited and this research project therefore makes a contribution towards a neglected area of study. The study is one of a relatively small number of independent studies currently examining the process of finding alternative solutions to resource exploitation. The research results could be used to guide policy formulation that would facilitate the development of marine environment education programmes in schools.

Lastly, the study will contribute towards a relatively sparse literature and information base on abalone poaching.



Organisation of the study

This research report will be presented in the following manner:

Chapter 1: An introduction, including a review of related literature and outlines the research methodology.

Chapter 2: Managing Abalone
Crime syndicates within the Abalone industry

Chapter 3: Field Study, location of research, interviews and results.

Chapter 4: Developing a new environmentalism
Transforming Educational Practice
Curriculum Transformation

Chapter 5: Findings, recommendations and conclusions of the study

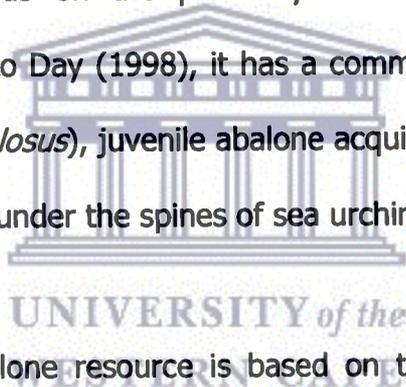
Appendix

Bibliography

CHAPTER 2

MANAGING ABALONE

The species, Abalone (*Haliotis midae*) is found in shallow water rarely deeper than ten metres. It is an important grazer in the near shore sub-tidal marine ecosystem, especially in the kelp beds of the southwestern Cape, where it occurs in the highest densities (Hauck and Sweijd, 1998). Being a broadcast spawner and dioecious, it depends on the proximity of con-specifics for successful reproduction. According to Day (1998), it has a communal relationship with sea urchins (*Parechinus angulosus*), juvenile abalone acquiring refuge from predation by fish and rock lobsters under the spines of sea urchins.

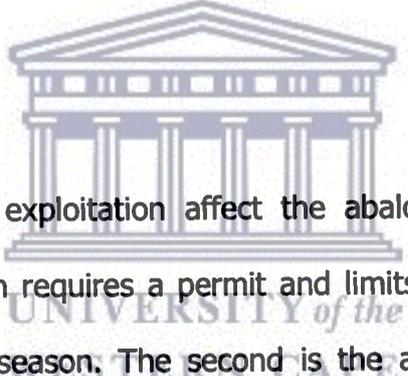


Management of the abalone resource is based on the effort-limitation with a minimum legal size (MLS) of 10.6 cm shell breadth, bag limits, Total Allowable Catches, closed season, and reserves (ibid).

The MLS, which is based on size at sexual maturity of the local population, allows 3-4 years of protected spawning before animals are recruited into harvesting (ibid). The rationale behind this limit is that, because of size of abalone generally increases with depth, sexually mature, but legally undersized, animals

tend to live in aggregations, which increases the likelihood of successful spawning (ibid).

Evidence from the size composition of confiscated abalone samples indicates that the majority of poached abalone is undersized. This, along with the fact that the aggregations are found in relatively shallow water, demonstrates the vulnerability of the abalone brood stock to poachers (ibid). It is therefore accessible and relatively easy to exploit. Abalone harvesting occurs mainly in the south west coast and south coast of the Western Cape with the Hermanus area as the focal point of illegal harvesting.



Three distinct forms of exploitation affect the abalone industry. The first is recreational diving, which requires a permit and limits exploitation to a specific catch per day within a season. The second is the abalone industry, which is governed by a formal set of regulations based on a Total Allowable Catch (TAC) established by scientists and Marine and Coastal Management. The TAC for abalone in 2001/2002 has been set at 431.5 tons (Gosling, 2001).

Thirdly, the informal sector consists of subsistence fisher communities and crime syndicates that supply the needs of a growing black market.

Poaching is loosely defined as harvesting activities that is recognised as contrary to the regulations as defined by the Sea Fisheries Act of 1988. This definition had been contentious, as it negates the traditional livelihoods of subsistence fisher communities. It views their actions as being illegal.

Illegal exploitation reopens the engendering debate that not only concerns the consequences of resource degradation but also the economic sustainability of the environment.

Historically, fisheries management has often been the responsibility of central government, which administered various regulations based on biological models in an attempt to achieve sustainable use (Hilbron, 1992). It has therefore been the role of the state to define the rules and regulations of fisheries exploitation, maintaining the right to enforce and control fisheries activities. However, government-centred approaches have generally failed in preserving a wide variety of fisheries and have contributed to increased conflict and antagonism amongst stakeholders.

In recent years, responsibility shifted away from the state to local communities most affected by resource utilisation (Hauck, 1998).

The philosophy has changed from excluding people from their local resources to promoting shared management responsibility, encouraging community participation in the ownership, management and enforcement of sustainable resource utilisation.

This theoretical shift in conservation and management strategies has been a response to the ongoing resource over-exploitation and failure of central government to adequately deal with this in their own (Hauck, 1998).

Crime Syndicates in the Abalone Industry

Poaching is mainly fuelled by the high demand for abalone, especially from countries like China. In China, abalone has the esoteric properties of delayed senility and increased fertility. It is also, considered an aphrodisiac. This demand for abalone products dictates the high price, with the Chinese black market paying an average of US\$700.00 per kilogram (Van der Merwe, 2002). This unsaturated demand for abalone and its lucrative nature has expanded the illegal activities in South Africa, resulting in unprecedented levels of over-exploitation. It has a direct impact on the resource and threatens the long-term sustainability of abalone.

Policing Abalone

In response to these threats, the state has developed various strategies, mainly based on law enforcement, to reduce and eradicate over-exploitation. This strategy largely centres on the apprehension and conviction of offenders. The South African Police Services (SAPS) is increasingly involved in monitoring and arresting offenders who are involved in illegally exploiting marine resources. The South African Police Service has not been historically involved in marine issues and therefore local policing efforts are often met with little success.

Hauck (1998:82) confirms that local police are often unsuccessful and argues that, "with their confrontational approach and reliance on reactive rather than proactive strategies, the problem has often been exacerbated by outbreaks of violence and mistrust between local residents and state structures".

The Monitoring, Control and Surveillance (MCS) of fisheries management is based on the need to monitor and to control fishing activities in order to ensure that practices and behaviour are consistent with the regulations established to implement the government's fishery policy objectives. Several organisations undertake MCS activities in collaboration with Marine and Coastal Management (e.g. the South African Navy, the South African Police Service and

the South African National Defence Force). Control of access to the exploitation of marine resources is vested in the MCM, a branch of the Department of Environmental Affairs and Tourism. This is done through setting of Total Allowable Catches (TAC), effort control, technical measures (e.g. closed seasons, minimum mesh size) and other appropriate mechanisms (White Paper, 1997).

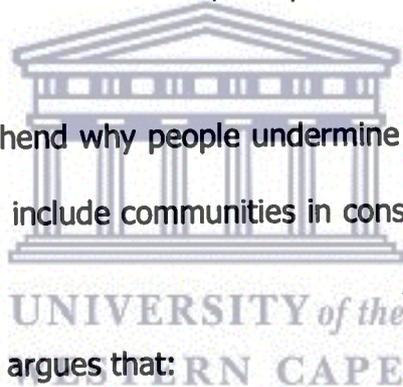
Regulatory measures have little effect unless they are implemented and effectively enforced. International experiences indicate that individual and industrial propensity for compliance to fisheries regulations may depend, apart from the calculation of potential private economic benefits from an infringement against risk of detection and punishment, on the degree to which the regulations are perceived as fair and just. If management directives are accepted as being legitimate, the cost and the over reliance on law enforcement would be within reasonable limits. The question of legitimacy is closely linked to industrial and community involvement in the deliberation processes leading to management decisions on regulations. Legitimacy is also closely linked to a general public awareness and the consciousness for the need of resource conservation, the basic principles of sustainable resource utilisation and the consequential requirements of responsible fishing practices (ibid: 33).

While it is indisputable that policies, regulations, monitoring and policing are

necessary components of resource management, one must question whether the exclusive reliance on these strategies can lead to the sustainable exploitation of abalone.

It is argued that the context in which illegal exploitation of abalone occurs should be noted and understood before any meaningful intervention can take place to reverse the current state of affairs. In addition, one cannot ignore the political, economic, social and historical dynamics surrounding the illegal exploitation of resources and whether access to abalone, is equitable.

It is necessary to comprehend why people undermine their resources, especially when efforts are made to include communities in conservation and management activities.



Stocking et al (1995:159) argues that:

"Conservation policies that tackle the proximate causes will not be effective unless the fundamental causes – distorting policies and incentives, inequitable distribution of land and other resources – are also addressed. It is easier to blame the local land user than to examine the underlying political and socio-economic reasons for their actions"

Hersoug and Holm (1998:237) concur with this view and argue that:

"Community models in management strategies emphasises equitable distribution and legitimacy in the eyes of the fishing communities. It fits in a situation in which lack of equitable and fair access to resources from users are located in traditional fishing communities are regarded to be the main problem"

In a newspaper article, "Quotas allocated unfairly – poacher" (Yeld, 2002:14) a 33-year anonymous poacher argued that government is still not allocating abalone quotas fairly. He continues to argue that:

"We do know about the resource (abalone) being depleted, and we want to see the resource being protected, but how can we? The government is still not giving the right people access"

Stocking et al (1995), Hersoug and Holm (1998) and Yeld (2002) all allude to an understanding of why people disregard conservation strategies. They argue that the root causes involved in resource over-exploitation and illegal activities need to be targeted, and incorporated, into a successful resource management strategy. Hauck (1998:05) in support emphasise the importance of social research in fisheries management.

It is argued that fisheries management should be most concerned with managing fishers and not fish.

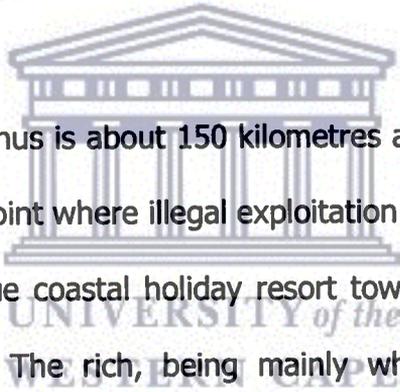


CHAPTER 3

FIELD STUDY

In this Chapter, the responses of the various focus groups in the study are documented. The responses follow the structure of the interview schedule in Appendix 1.

Description of focus area



The community of Hermanus is about 150 kilometres away from Cape Town and is regarded as the focal point where illegal exploitation of abalone takes place. Hermanus is a picturesque coastal holiday resort town with definitive contrasts between rich and poor. The rich, being mainly white people are either on retirement or holidaymakers while the poor are mainly black and coloured people who are mainly involved in the fishing industry.

The coloured community lives on the fringe of Hermanus. The area at best can be described as disadvantaged. Many inhabitants depend on fishing as a livelihood. As fishing is a seasonal activity, the income of many is seasonal as well. Consequently, the area has a high rate of unemployment amongst

coloured and black communities. It is in this poor, coloured community that Mount Pleasant Primary School is located.

Responses from the interviews

Interviews with two groups at the Mount Pleasant Primary School were conducted, namely grade six learners and teachers. The following responses were received from each of the focused groups:

GRADE SIX LEARNERS

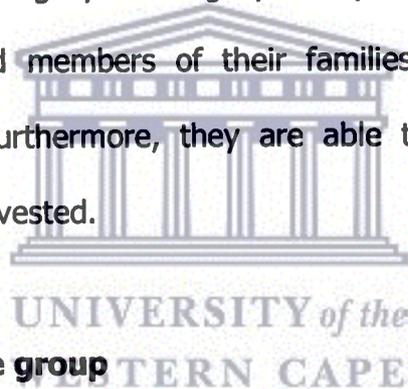
Ten grade six learners in Mr A Neethling's class were interviewed. They were all male learners who had some knowledge of abalone poaching. As males are the visible faces of poaching activities, the research effort was directed towards males. The study does not deny that females are involved or affected by these activities. However, for the purpose of this study male learners reflect the general views of young people in the coastal community with regards to poaching.

Details of focus group

The group of boys was all between the age of ten and twelve. At this age

boys become susceptible to join in these illegal activities. At 12 years, boys are vulnerable and can be easily lured into poaching activities. Furthermore, their economic circumstances do not provide them with many choices. The decision to choose boys, as the focus group is an important one, as the possibility exists that they would become the future poachers. It is therefore prudent that innovative programmes should be directed especially to the boy child.

The boys in the focus group had some knowledge about the harvesting of abalone whether it was legally or illegally. They had either known people poaching abalone or had members of their families involved in the fishing industry in Hermanus. Furthermore, they are able to identify popular areas where abalone can be harvested.



Social conditions of the group

The boys all came from low-income families, where either one or both of the parents were unemployed. Four of the learners' fathers' work within the fishing industry as fishermen, two boys fathers' worked at the municipality, three boys fathers were unemployed and one worked as a shop attendant. The work of their parents supplied a good description of their families' economic disposition. It strengthens the view that economic disposition can cause communities to be

vulnerable to the poaching of abalone.

Details with regard to abalone poaching

Although the boys were not very keen to respond to questions with regard to abalone poaching. They all acknowledged that they knew people who either poached abalone or who sold abalone. When asked whether they thought it was wrong to poach abalone, their responses varied from yes, to no and don't know.

They also indicated that they knew of people who illegally harvested abalone. They indicated that people dive for abalone for various reasons. While they admit that some people dive so that they can have food, others dive to sell their catches. Asked whether they knew whom the people are that the abalone is sold to, they appeared apprehensive and cautious. As young as the learners were they recognised the economic value of abalone harvesting and indicated that if it would benefit their families and they would certainly consider getting involved in the illegal harvesting of abalone.

Details with regard to the notion of marine education

The researcher asked the learners whether they thought learning about the environment was important. They agreed that it is necessary and beneficial to

know about the sea. They regard the sea as important to their lives as it provides food and employment to the community. They agreed that it was important to know the local environmental conditions, like wind and tides, as ignorance could lead to disaster. The learners whose fathers were fishermen acknowledged that the sea was their livelihood and therefore one must conserve it. The learners were asked whether they thought people should be allowed to remove abalone more than what they need. They all responded that if all abalone were removed then there would be no stocks left for future utilisation.

Asked, whether they thought more people should know about the significance of the sea and whether this would stop poaching. The learners responded affirmatively. From their responses the researcher could infer that the learners are susceptible to marine environmental education and if it was taught in a creative and innovative way it could lead towards changed attitudes.

Interview with teachers

The researcher interviewed Mr A. Neethling, Deputy Principal of Mount Pleasant Primary School and a grade six teacher.

The researcher asked the respondents whether they were aware of any learners at school who was either involved in poaching activities. The respondents

acknowledged that they were aware of learners who are involved in poaching activities. They concurred with the notion that the community's economic disposition fuelled the illegal exploitation of abalone and those young people were increasingly getting involved in this illicit activity. Young people are used as lookouts and some are used as divers. They explained that as teachers they become suspicious when they see learners in fancy expensive clothing and shoes or have luxury items such as cell phones and gold chains. It is unusual as most of the learners are from disadvantaged backgrounds.

The respondents were fairly apprehensive when asked whether education can make a difference in the way young people think about the environment. They contend that poaching is fairly entrenched within the community and that young people grow up seeing the material benefits that it can bring. The respondents explained that no space exist for marine education within the current curriculum. It is only in a subject like natural science where abalone and marine conservation can be taught. The education syllabus makes little provision for this. The respondents explained that the new revised curriculum is a system based on learning activities that are based on outcomes and not on the goals of learning. It allows for the introduction of activities, which would address marine conservation into the classroom.

The respondents explained that Outcomes Based Education is designed to

further the values of the new emerging South African society. A key value of society is the preservation of natural resources. Social Science and Life Orientation are two learning areas where marine environmental education can be successfully implemented.

The respondents acknowledged the need for the introduction of innovative marine educational programmes in schools in coastal areas. The respondent was however cautious to allude to its success as teachers' themselves needed to be conscious of the need to preserve marine resources. The problem they explained is that a variety of people poaches abalone that includes teachers. Teachers therefore need to internalise the need to conserve marine resources.

Another problem identified is that many teachers are hostile towards Outcomes Based Education and are resistant to its innovative teaching methods. The respondents also acknowledged that teachers' morale was at low ebb and that this would influence the success of the introduction marine educational programmes in schools.

The respondents pointed out that teacher-training programmes do not include conservation education and therefore it would be difficult to implement such programmes in schools. In addition, the lack of comprehensive training in outcomes-based education caused that teachers remain apathetic towards the

educational benefits of the system.

Interview with community member

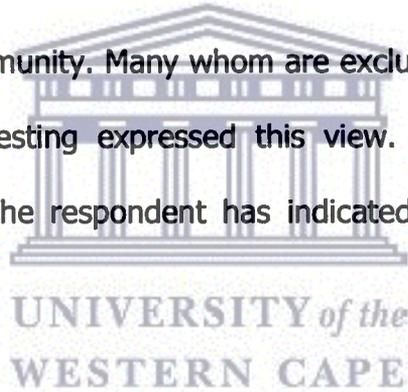
In order to understand the illegal exploitation of abalone, the community, which is directly involved in the industry, had to be approached for their views.

In an attempt to understand some of the prime causes for behaviour of non-compliance, the respondent has eluded to racism as it happens often that the coloured community is seen as the visible threat to the sustainable utilisation of abalone. Much attention is given to subsistence divers who often are guilty of poaching and who are mainly coloured. The media gives little attention to small boat recreational divers who are often guilty of illegally harvesting abalone and who happened to be predominantly white.

It is also evident from the respondent that access to resources, is at the heart of discontent. He identified legal access to resources as the most important reason for poaching and argued that Marine and Coastal Management maintains and perpetuates their historical exclusion from the resources. He maintained that quotas are acquired through seemingly devious means and are allocated to persons who are traditionally not involved in abalone harvesting.

Many subsistence fishers contend that because access is denied through legal means they need to poach in an attempt to feed their families. The respondent claimed that many members in the community did not belong to any gang and that their main motivation for illegal exploitation was merely to supplement the family income. Due to economic necessity abalone is poached and sold to any interested party willing to buy it.

What is clear from the fieldwork is that whatever strategy is used to make a meaningful intervention, it will have to realise the social, political and economic reality of the coastal community. Many whom are excluded from the formal legal process of abalone harvesting expressed this view. An important underlying reason for poaching as the respondent has indicated is because of economic necessity.



Social scientists acknowledge the adverse effect impoverishment has in the development and resource management (Thomas, 2000) and (Ngobese and Cock, 1995). The researcher's research concurs with the views of Hauck and Sweijd (1999) that poverty and underdeveloped living conditions in the area are important issues related to poaching.

CHAPTER 4

DEVELOPMENT AND THE ENVIRONMENT

Developing a new environmentalism

In this chapter, an attempt will be made to provide the analytical framework for the paradigm shift that is required to address the complex realities in abalone management. The research will attempt to inform the debate on a development of a new environmentalism as a strategy to address the problem of abalone poaching. It will be argued that a people centred approach is an essential prerequisite if one wish to make a significant impact in addressing the complexities within the abalone industry. At the level of public administration, it is argued for a developmental approach towards resource management. In other words resource management and development are inseparable.

Resource Management and Development

Resource degradation has risen from a false dichotomy, which flows from the myth of a separateness of man and nature, being placed on the relationship

between natural resources and development. Recent attempts at fostering an integration of environmental considerations into development planning, is an explicit recognition of the failure of development approaches that have not taken such considerations into account (Ngobese and Cock, 1999). The concept of 'sustainable development' itself is subject to various criticism. Amongst them, is the fact that the concept means different things to different people. Sustainable development is open to multiple interpretations resulting from the looseness of its operational definition, and as a result, the concept lacks sufficient theoretical grounding. It is furthermore, open to manipulation.

This is particularly true within the realms of marine resource management as the intrinsic relationship between resource conservation and development has been slow to identify. Thus, the challenges facing South Africa are complex and addressing these problems could help to inform management practices.

Environmental controls are extremely fragmented and under-resourced. The administrative system is caught up in a dualistic orientation, whereby government departments, for example, the Department of Environmental Affairs and Tourism is responsible for both resource exploitation and environmental protection, and the latter generally suffers at the expense of the former (ibid).

Thus there needs to be a clear separation between implementation and monitoring functions within government.

Another problem is that there is no mass-based environmental movement in South Africa. Internationally, mass-based environmental movements play an important role in lobbying governments, influencing policy formulation and educating the general public about the environment. Until very recently the dominant understanding of environmental issues in South Africa was an authoritarian conservation perspective (ibid). It focussed on the preservation of wilderness areas and particular species of plants and animals and asserted that it operated outside of politics. Within this perspective, if resource exploitation is identified as a main environmental problem then it was people who were perceived to be the core of the problem. Conservation was totally divorced from development. Conservation projects disregarded human needs, rights and dignity of communities who find themselves at the centre of these projects.

The Apartheid legacy has meant that today many South Africans are preoccupied with issues of physical survival. Rising levels of poverty and unemployment exacerbate this preoccupation. It creates a reality where environmental issues take a backseat in favour of economic survival.

In order for South Africa to move towards a better articulation of the environmental challenges facing the country, a new form of environmentalism must emerge. Nogobese and Cock (1999) argues that in this process the dominance of environmental issues by organisations that are white and middle class, in both their social composition and agenda, has to change. The focus should shift away from "conservation" in the narrow sense of preservation of threatened plants and animals to addressing the needs of local communities and should suggest ways in which they can participate in decision-making.

Transformation in Resource Management

The neglect of social factors and inadequate levels of public participation can be addressed through developing a specific focus on the investigation of social outcomes or effects, an approach that has come to be termed social impact assessment (SIA) (Craig, 1990).

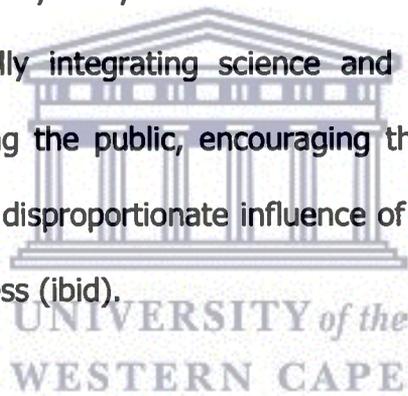
SIA can be used to investigate:

".... social and cultural impact of development plans, programmes and projects. It involves different research methods and techniques to investigate impacts such as demographic, socio-economic, cultural, etc."

(Bulmer, 1986:147)

It is a crucial means of ensuring that local communities are included in decisions about development that affect them. It is defined as an essential part of understanding the process of social change and giving it direction. It is also referred to as assessing a broad range of impacts that are likely to be experienced by an equally broad range of social groups as a result of some course of action (Ngobese and Cock, 1999).

SIA can provide better information for decision-making. It offers great potential for integrating scientific policy analysis into a democratic political process, and is a means of democratically integrating science and values (ibid). SIA is an effective tool for informing the public, encouraging their participation in policy debate, and reducing the disproportionate influence of special interest groups in the decision-making process (ibid).

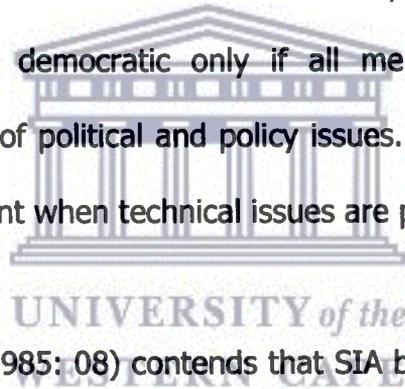


It can also provide a voice for indigenous communities who are most likely to be affected by planned development but lack power and resources. In this participatory approach, the emphasis is on community development and inclusive decision-making processes bringing about social change by creating an active, informed public through a structured process.

This is significant as it signals a shift away from planners who are the decision-

makers and whom assume the role of experts with unchallenged authority bestowed upon them by their exclusive technical knowledge and detached scientific stance. In practice, resource managers have adopted a positivist tradition and functionalist orientation in development practice as it emphasises objective data, ignore social tensions, socio-economic complexities, and have given a token nod to public involvement in processes.

In South Africa, public participation is especially important given the history of exclusion of blacks from resource utilisation. Participation is a prerequisite to democracy. A society is democratic only if all members can participate in unconstrained discussion of political and policy issues. Ngobese argues that it is difficult to reach agreement when technical issues are prioritised.



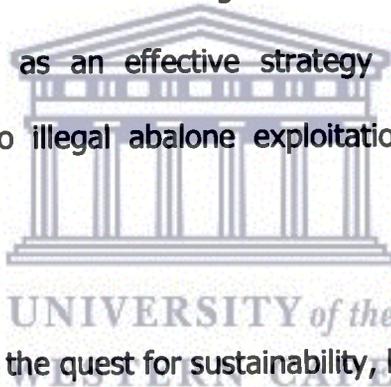
Derman and Whiteford (1985: 08) contends that SIA by its nature, is part of the planning process, a process that is embedded in the political system.

"Inevitably projects or programmes favour one sector of the society, often at the expense of others.... If the project threatens the powerless but benefits those in power, it is highly probable that it will be enacted despite dire predictions by social impact analysis".

Derman and Whiteford continue to argue that participation without power is an empty notion.

"... if a population has enough power, it can set the terms for its own participation, and it can influence the direction of or even stop a particular project that is generated from outside. To create participation in the absence of such power is a key dilemma for SIA and for development projects. Many development projects are, in fact, undertaken to enhance the circumstance of the powerful, with little concern for the consequences for the powerless" (ibid:08).

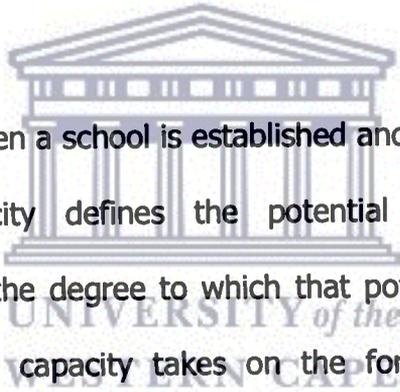
In the light of Derman and Whiteford's argument community based conservation is being widely adopted as an effective strategy to address the unfolding problems with regards to illegal abalone exploitation in the affected coastal communities.



People are at the heart in the quest for sustainability, both as a means by which development activities are carried out, and as the reason why development happens in the first place. It is not really possible to think about sustainable development without thinking about human experiences in order to achieve development. Building human capacity is one of the key outcomes of development activities.

Capacity and performance

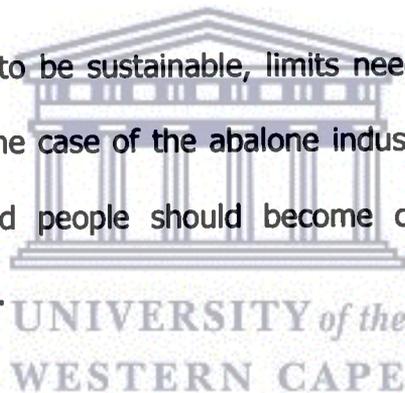
Implicit in the concept of sustainable development are the two concepts of capacity and performance (Cook, 1999). Cook argues that "capacity" (1999:276) could be regarded as the potential for something to happen, while performance is used to refer to something that is actually happening. There is the capacity for education to happen when there are educated and trained personnel in the community, money to pay them, and, perhaps a school building to accommodate them (ibid).



Performance happens when a school is established and learners begin to learn. In other words, capacity defines the potential for development, while performance represents the degree to which that potential is realised in actual achievement. In people, capacity takes on the form of education, training, experience, knowledge, networks values, and the like. It requires an interaction between conditions inside individuals and outside in the social environment. There is no limit in the extent to which capacity can be developed, but lack of capacity places a limit on performance. Cook argues that creating performance without building capacity is not sustainable, and to simply build capacity without performance is a waste of that capacity.

Environmental capacity is relatively fixed, begins at its maximum, and can only be sustained or degraded. The potential economic yield of the environment can be increased and optimised through wise management. Extracting performance out of the environment through activities such as fishing will lead to an inverse relationship between performance and capacity, until the reduction of environmental capacity begins to lower the ceiling on performance. In such a situation the only way to rebuild and sustain capacity is to reduce performance or find a less damaging way of utilisation (ibid).

For the fishing industry to be sustainable, limits need to be placed on current levels of harvesting. In the case of the abalone industry short-term profiteering needs to be limited and people should become central in the sustainable utilisation of the resource.



Munslow and Fitzgerald in Cook, (1999:277) argue that the central challenge to sustainable development is, "one of human resource capacity building and institutional strengthening for the management of sustainable development".

Harbison and Meyers' (1964) description of human resource development in Cook (1999:278) provides insight to the benefits that it has to society.

"Human resource development is the process of increasing the knowledge, the

skills, and the capacities of all the people in a society. In economic terms, it could be described as the accumulation of human capital and its effective investment in the development of the economy. In political terms, human resource development prepares people for adult participation in political processes, particularly as citizens in a democracy. From the social and cultural point of view, the development of human resources helps people to lead fuller and richer lives". (ibid)

Human resource development enforces the notion that development is not primarily about people but it is only about people. Clearly education is crucial and at the centre for capacity building, as is the other investment in social development which would increase the ability of people to act effectively to meet the challenges that they face.

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Developing Management

The sustainable exploitation of abalone requires an innovative effort and therefore developing management should clearly be a priority. It is therefore imperative that one should begin to develop and create innovative development models in academia where senior managers are taught and prepared how to guide development.

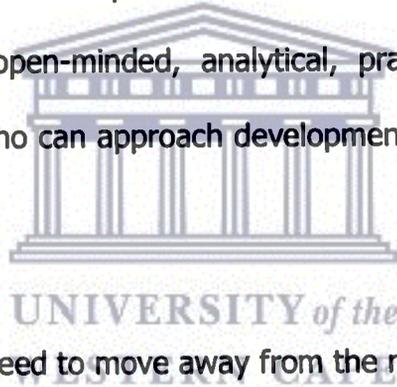
Development challenges facing South Africa require accountable and effective managers who are able to lead and redesign organisations for strategic development tasks. Perhaps the inability to affect transformation significantly can be attributed to the fact that no significant paradigm shift has taken place within public sectors such as marine management. In many ways public administration is design to train managers to fulfil their roles as instruments of state power and controllers of the public.

Shütte (1999) argues in *New training approaches: Exploring a paradigm shift*, that public administration provides students with a knowledge of public procedure rather than the ability to cope with a changing political reality left by an apartheid legacy (Shütte, 1999). Shütte contends that public administration in South Africa had been reduced to policy-making, organising, financing, personnel administration, work methods and procedures, control and rendering of accounts.

Ngobese, (1999); Cook, (1999) and Shütte all agree that this view of public administration is a fundamental stumbling block not only in the transformation of the public service but is also the reason why developmental issues such as the illegal exploitation of abalone is inadequately addressed.

It is argued by Ngobese, (1999); Cook, (1999) and Shütte that in order to adequately address development problems such as the illegal exploitation of abalone, a new approach is necessary how resources are managed. A new thinking and practice needs to develop which approaches environmental development alongside broader societal complexities.

Shütte (1999) speaks of a public administration, as a subsystem of society, which receives inputs from the environment, and then transforms these inputs into outputs, and receives renewed inputs and feedback from the environment. The idea is to develop an open-minded, analytical, practice- and development-orientated civil servant who can approach development issues in non-formal and inclusive way.



Shütte advocates, "the need to move away from the more formalistic rule-driven public administration towards a more developmental practice, capable of taking on board community needs, public concerns and a fuller participation within governance" (ibid: 297). Shütte continues to argue that a paradigm shift will have to be facilitated by process-driven change agents for some time to come because there is a tendency for bureaucratic cultures to continue long after their historical demise. These change agents should be encouraged to see the world as reality in process and transformation as a process itself. It requires a shift in

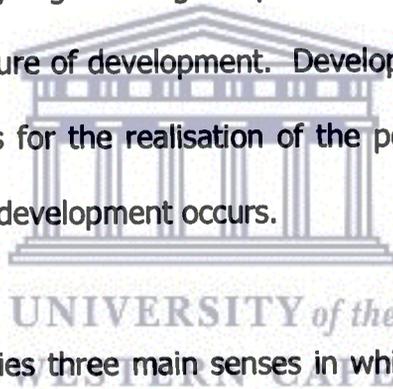
thinking as well as a shift in values.

As Ray and Rinzler (quoted in Shütte, 1999: 302) stipulate:

" As far as thinking is concern, we are talking about a shift from the rational to the intuitive, from analysis to synthesis, from reductionism to holism, from linear to non-linear thinking. As far as values are concerned, we are observing a corresponding shift from competition to co-operation, from expansion to conservation, from quantity to quality, from domination to partnership".

The development of human potential is equally important as a developmental orientated approach to public administration if one wishes to adequately address the complexities that surround the illegal exploitation of abalone and the vision of sustainable development. The simplest definition of development is given as meaning "good change" (Thomas, 2000: 23). In the context of the illegal exploitation of abalone it refers to the movement away from the structural inequality, which exists to the transformation of the industry so that all participants feel adequately satisfied with any transformation processes that are undertaken. Thomas argues that "good change" implies a vision of a desirable society, which over the long term implies improved living standards and the achievement whatever is good for society (ibid).

Views exist that development is not a once-off process of change but it is an all encompassing change which is not located in one aspect of society but it is a process which builds on itself by the material conditions which exist in society at a given time. Thomas (2000) in "*Poverty and Development in the 21st century*" endorses these views and argues that development is a matter of changes occurring at the level of social change and changes of the individual human being at the same time. The inference that can be made is that development is as much as about societal development as it is about self-development. This view is crucial when analysing the illegal exploitation of abalone as it reinforces the multi-dimensional nature of development. Development is based on the idea of creating the conditions for the realisation of the potential human personality with emphasis as to how development occurs.



Thomas (ibid: 25) identifies three main senses in which the term "development can be used:

- as a vision, description or measure of the state of being of a desirable society;
- as a historical process of social change in which societies are transformed over periods;
- as consisting of deliberate efforts aimed at improvement on the part of various agencies, including government, all kinds of organisations and social

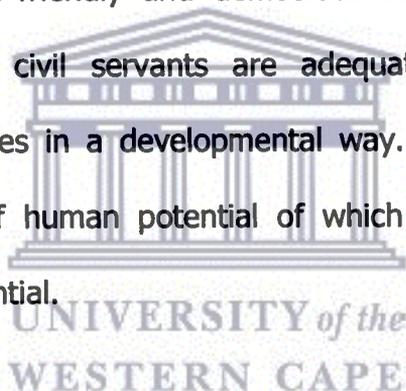
movements.

These three senses are interrelated. The state of being a desirable society is supposedly the result of the historical process of development; and the vision of a desirable society may form an aim towards which to direct efforts at improvements. Proponents of people centred development argues that development may not mean a state where everyone's needs are met but rather one where conditions for all to develop themselves to their full potential. The key argument here is that human survival depends on a commitment to alternative development practices guided by justice, sustainability and inclusiveness.

Dudley Seers (Thomas, 2000) is in agreement when he points out the importance of value judgements in deciding what is and what is not development. He further argues that the realisation of the potential of human of personality is a universally accepted aim and development must therefore entail ensuring the conditions for achieving this aim. He emphasises a shift from macro-economic development towards addressing the critical issues of poverty and other critical human needs. Coupled with human development is the critical issue of empowerment that is described as the process by which individuals are to take control over their lives. The implication of this is the redistribution of power and the transformation institutions.

Critical to people centred development is the development of groups, communities and social classes and not around the aspirations of individuals or nation states.

In summary, the illegal exploitation of abalone is clearly a development issue and to achieve sustained development within these communities, requires more than people participating in the development process. It is important to have a coherent and integrated state policy at national, provincial and local level. This requires not only a user-friendly and democratic strategy but also a public administration in which civil servants are adequately trained in order to implement these strategies in a developmental way. This should be balanced with the development of human potential of which participation in decision-making processes is essential.



As the illegal over-exploitation of abalone affects all that live in coastal communities, the active involvement of people in developmental processes are not only necessary but also essential.

Participation transforms the participating people's awareness of who they are, thereby raising their consciousness in order for them to identify what Paulo Friere describe as the contradictions in their lives.

CHAPTER 5

FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

In this Chapter the range of identified problems confronting abalone poaching are discussed and an argument is presented for the implementation of environmental programmes in schools in coastal areas in order to reduce the over-exploitation of abalone, so as to minimise this environmental disaster. Based on this discussion, the recommendations and conclusions of the study are also presented.

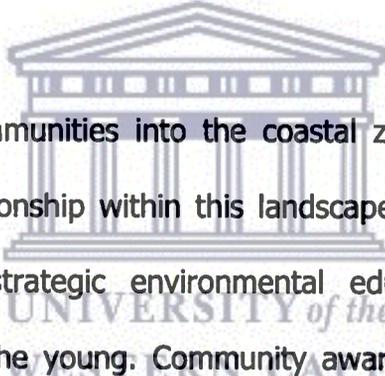
Shifting the focus to education



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It is absolutely essential to recognise that poaching and the illegal trade of marine products will not diminish through a single approach. Although there are problems and obstacles that need to be considered within state mechanisms and community structures, fisheries-management practices need to adapt to the threats of poaching in order to diminish it. This shift in management philosophy requires co-ordinated and shared decision-making to take place in order to achieve successful regulation of the abalone resource (Hauck, 1998).

It is with this assessment of Hauck that I wish to re-emphasise the multi-disciplinary nature of addressing marine problems such as poaching. As mentioned, at the level of law enforcement there is reasonable co-operation between government departments. So far, the Western Cape Education Department (WCED) has not played any significant part in any efforts to address the growing illegal exploitation of abalone. This is regrettable, as most people involved in this illegal activity are young people, either of school going age or school leaving age. This oversight is also an indictment on the education system as well as on the curriculum that is being taught.



Incorporating fishing communities into the coastal zone planning process and understanding their relationship within this landscape is critical. Central to this relationship would be strategic environmental education for a variety of audiences, in particular the young. Community awareness and participation in Coastal Zone Management can help mitigate potential and existing conflicts and empower the community to take a more active role in exploring management issues and initiating possible responses.

Education should be an integral part of this process and it would be best to start at the level of young people (www.susdev.org). If the community is meaningfully involved in decision-making in on-ground actions, a stewardship ethic for the

marine environment can develop, which would result in the community and private industry taking more responsibility for the care of the oceans and the coast, as it will change their behaviour accordingly. It is therefore imperative that various options to build community awareness through educational programmes should be actively pursued.

Programmes targeted at specific communities should be initiated where warranted. For example, if the need should exist in Hermanus to educate subsistence fishers with regards to quota application or to attend to the problem of illegal exploitation of abalone then the appropriate programmes should be put in motion. In addition, more general awareness raising should also be considered. For example, through radio or television programmes the general awareness of the South African public could be raised with regard to abalone poaching.

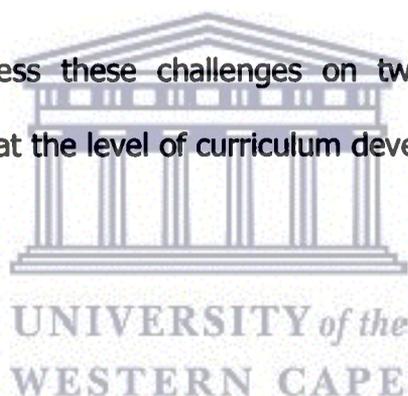
If genuine community participation in planning and management initiatives could be sought in partnership with non governmental organisations (NGO's) and government departments then the foundations for strong, effective partnerships will be laid down to conserve marine resources. Genuine community participation is facilitated by the community's access to information relevant to the marine environment and the ability of the public to enforce the duties of the relevant

government departments (www.erin.au.marinecoastcare).

Education would provide a powerful tool to make young people (future resource utilisers) aware of the contradictions that exist in society. These contradictions refer to the inequality that exists in the Hermanus area in terms of class, access to resources and crime involvement in abalone exploitation. Along with an awareness of these contradictions, it is equally important to instil conservation awareness amongst young people.

It is important to address these challenges on two levels, at the level of educational practice and at the level of curriculum development.

Education Practice



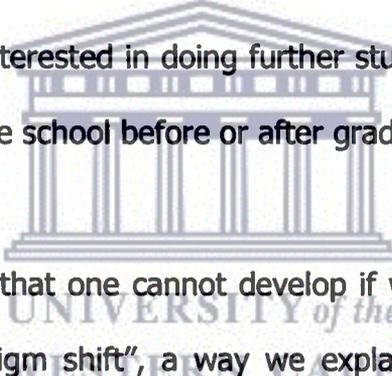
In South Africa, educational traditions have favoured a "teacher-tell" or "chalk and talk" mode of education, which is intrinsically undemocratic and paternalistic (Shütte, 1999: 302). The teacher is entirely in control of the class, confident that, as an expert in a topic, he/she will be able to deliver, in a highly structured manner, a considerable body of facts in which her/his learners will be able to demonstrate proficiency. In this type of classroom the teacher talk and the learners listen meekly. The teacher thinks and the learners are thought about.

The teacher knows everything and the learners know nothing. The teacher confuses the authority of knowledge with his/her own professional authority, which he/she sets in opposition to the learners; the teacher is the subject of learning, while the learners are mere objects (Freire, 1972).

This “banking” concept has led education suffering from what Freire calls “narration sickness” as teachers narrate their interpretations of reality to the learners in motionless, static, compartmentalised, and predictable fashion, encouraging mechanical memorisation and discouraging the development of critical problem-posing or problem-solving skills (ibid: 48).

Learners who have been through an education system in which the “banking concept” of knowledge is employed have little practice in bringing their own inner wisdom and subjective authority to bear in decision-making or trusting their own judgements, perceptions, and interpretations of reality. They have little ability to think intuitively, to synthesise information, or to make connections between different events. Learners, rather, wait patiently and trustingly for the “expert” to interpret reality and pass down proclamations to “bank” the expert knowledge in their heads (ibid: 49).

One can no longer rely on knowledge “banked” in one’s head and expect it to last a lifetime. Skills and knowledge need constant upgrading and young people need to develop learning skills, the ability to learn from their surroundings and experiences. Reflection and inquiry become more important than facts viewed as “building blocks” of knowledge (Shütte, 1999: 303). In other words, what schools were sharing with learners had no relation or value to what was expected from learners when they leave school. Learners are only prepared for what is happening during their schooling years and not for life after school. Furthermore, most of the activities which take place at school, only focused on those learners who are interested in doing further studies and not on those who have the intention to leave school before or after grade 12.



It is important to realise that one cannot develop if we do not change. What is thus needed is a “paradigm shift”, a way we explain and make sense of the world we are living in. The introduction of marine educational programmes in schools like Mount Pleasant Primary School requires of teachers to make this shift towards equipping learners with the skills to make sense of their environment.

According to the argument raised, teachers need to first change their way of thinking. If teachers change their mind-set, their attitude towards the process of

change will also change. When their attitudes change, their actions will change positively so that teachers can become the agents of the change process. This is particularly relevant within coastal communities where teachers are held in high regard and where they could make an impact on the way young people think about marine resources. Change cannot take place if individuals insist on the 'old' issues like the same responsibilities, relationships, opportunities, etc. Genuine change would result in changing the fundamental tenets of education and in the way it has so far been functioning.

Role of Education Department

The Department of Education is an important institution within human resource development in South Africa and should drive an education system that consists in acts of cognition rather than transferrals of information. Only within an interactive, dialogical, problem solving education system can people develop what Freire calls their 'power to perceive critically the way they exist in the world with in which they find themselves' (Freire, 1972: 49).

Only through this type of education system do people see the world as a reality in process and transformation, and as an integrated holistic system. This change in the thinking of educational practices is important, and teachers would be well

served by adopting this dialogical, interactive, transformation centred teaching styles so that their learners can emerge after completing school to play a meaningful role within their communities.

The responses of learners in the field study when questioned about marine educational programmes are an indication that they haven't been challenged to interrogate these issues. Environmental education requires a vibrant and innovative classroom. For any fundamental educational change to take place, a change in methodology – a shift to more discussion based, problem-solving and dialogical teaching and learning – is imperative.

Curriculum change



Since the establishment of the new democratic government in 1994, new policies were drafted and promulgated which attempt to streamline the curriculum so that it is consistent with the broader aims and vision of a democratic society. The curriculum is aimed at raising the awareness of learners to the unique problems that exist in South African society. In a learning area like social science it focuses on development problems such as poverty, HIV/Aids, urbanisation and environmental degradation. The social science curriculum is designed in such a way that these problems can be addressed through learning activities.

The problem however, is not the curriculum but the lack of training to implement it. Teachers at Mount Pleasant agreed that the curriculum allows for the introduction of marine educational programmes. It is the lack of training and learning support material that concerns them.

The National Qualification Framework

The historical evolution of the curriculum development can be traced back to the late 1980's when labour and business met to develop a 'futuristic model' in an attempt to heal the economic problems and to address the legacy of Apartheid and Apartheid education. An instrument, the National Qualification Framework (NQF) was developed as a result of this interaction. The NQF attempts to address the concerns of the people in developing an education system that will empower the previously disadvantaged people. The NQF took cognisance of the core values and principles of the new South African society, namely democracy, liberty, equality, justice and peace.

One of the most important principles of the NQF is the focus on an integrated approach to education and training. It moves away from the notion that general or academic education is the task for the formal education sector, whilst vocational and skills-orientated training is the task of industry.

It is within this space that has been created that meaningful intervention such as innovative marine education can contribute to the reduction of poaching activities and environmental awareness. If learners at Mount Pleasant or any other school in coastal areas were introduced to the theoretical and vocational aspects of the marine environment, it would contribute to the sustainable exploitation of resources. It is also within this space that learners can address environmental challenges, and to think broadly and understand systems, connections, patterns and causes.

The traditional Apartheid education only focused on the content of textbooks, the evaluation and examinations aimed to determine to what extent the learners have mastered the content by giving them score marks or percentages. The new instrument focuses on outcomes, which could be defined as culminating in demonstrations that are the results of meaningful learning in context.

It is argued throughout the chapter that education practice, curriculum and methodology shapes the awareness of learners about their reality. It is important to note that not all learners learn at the same time and in the same way. The NQF accommodates for these differences in learning.

Outcomes Based Education

The outcomes-based learning approach intends to equally focus on knowledge, skills, values and the process of learning and the final outcome. When learners achieve these, it proves that they did participate in their own development and had the benefit of mastering methods, techniques and procedures related to real-life situations. These critical outcomes are used as the basis for all learning activities that take place in the classroom. It is necessary to point out that when designing learning activities one starts with the intended outcomes. Thus, if the intended outcome is to teach learners about the biology of the abalone species then the learning programmes will be adapted to achieve this outcome. Schooling thus help to develop the talents and capacity of learners. When environmental education is taught in the outcomes based method, learners develop an understanding of, and concern for, stewardship for the natural environment, and the knowledge and skills to contribute to ecological sustainable development.

In Outcomes Based Education, the focus is not based on the intended results of teaching, but rather on the intended results of learning. In essence, OBE means defining, organising, focusing and directing all aspects of a teaching system in relation to what society wants learners to demonstrate once they leave school.

The prospects for young people once they leave school in the Hermanus area is very limited. The possibility exists that they will involve themselves in poaching activities. However, if schooling succeeded in raising their awareness through acquiring new perspectives, values, knowledge and skills which led to changed behaviour in support of the sustainable exploitation of abalone then the goals of OBE will have been achieved. The education system will literally give learners the power and determination to engage in society in a meaningful and positive way.

OBE is built on two aims, namely:

- to equip all learners with the knowledge, skills, attitudes and values needed for future success and not just an accumulation of facts which they can recall; and
- to implement programmes and conditions that maximise learning success for all learners and not just for those who are regarded as the 'clever ones'.

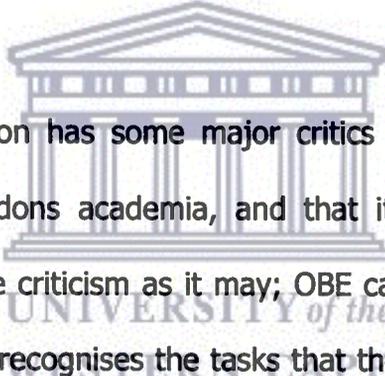
(Gallie, 2000: 02)

Goals of Outcomes Based Education

The curriculum must ensure that core values such as, self-respect, respecting other people, their property and views, being honest and fair, being trustworthy and reliable, endorsing the value of the natural environment, accepting

accountability for decisions and activities, are promoted.

Values are also about Ubuntu, which is an age-old African term that refers to 'humanness'. Maybe this would be one of the most important outcomes of OBE as Ubuntu promotes the opposite of being selfish and self-centred. It promotes co-operation between individuals, cultures and communities. It empowers learners to reach their full potential in accordance with those around them. Outcomes based education allows that these values be complied with, within the individual, community and environmental contexts (Starkey, 1991).



Outcomes based education has some major critics who believe that it is too humanistic, that it abandons academia, and that it embraces an egalitarian, socialistic philosophy. The criticism as it may; OBE can lead to the development of a new individual, who recognises the tasks that they need to perform outside schools. The task is to critically confront and actively participate in developmental issues that threaten to disrupt life in communities.

In summary, if one wishes to adjust behaviour with regards to abalone poaching, and to create an awareness of sustainable exploitation of abalone then it is imperative to target future poachers and future users of the resource.

Teachers are in the business of human resource development, and are ideally placed to play a meaningful role in creating an environmental awareness in coastal communities, like Hermanus. Outcomes-based education provides the conceptual framework for addressing the problem of abalone poaching through innovative educational programmes.

Role of Teachers

Teachers need to see themselves as agents of transformation who are necessary functionaries within the system of resource management. As teachers of Mount Pleasant Primary School indicated, the lack of training in environmental education is a stumbling block for the implementation of marine educational programmes in their classroom. Training programmes need to equip teachers with the necessary skills so that they can introduce marine education into their classrooms. The classroom can become indeed an area of activism, of struggle against the scourge of poaching. The classroom can become the arena where learners can develop the skills to critically identify their reality, and develop an awareness of how to confront this reality. Schools can become sites of development, the development of the human potential.

Development of learning materials

A major problem at schools especially disadvantaged schools like Mount Pleasant Primary is the shortage of adequate and new learning materials. The learning materials are outdated and some do not reflect issues concerning the marine environment. Teachers acknowledged that this was a constraint in implementing activities on sustainable exploitation of abalone.

Acknowledging this constraint, OBE allows for an array of methods such as the use of games, simulations, drama, and other activities to be used that encourage the active engagement in the content. Case studies, however, form an effective tool in discussion-based teaching. They are designed to approximate the way people make decisions in life, and learners can be encouraged to place themselves in the shoes of the main protagonist and to make decisions or to solve problems facing that person. In the classroom, learners bring a multitude of constructed realities, and in the absence of a dialogical tradition, cases can provide the common, understandable scenario needed to encourage dialogue (Shutte, 1999). Logical reasoning solves divergent problems. When they are solved the answers can be written down and passed on to others who can apply the solution to similar situations without any mental effort.

Politics, economics, education and environmental development are all areas that are characterised by divergent problems. Divergent problems demand of learners the employment of not just their reasoning power but of their whole being: their intuition, and their perceptions (Shütte, 1999). Case studies can be used to achieve a wide range of educational objectives, both cognitive and non-cognitive. Case studies are narratives, which appear, as entities on their own, unaccompanied by analysis at any level. Learners are forced to tap into their experiences; their own understandings in order to interpret the situation in the narrative and to determine appropriate action. This does not mean applying learnt formulas to situations but the ability to generate different options to the different problems posed in the case study. As case studies reflect real-life situations, it encourages learners to draw on concepts from many different areas as well as on their own knowledge and experiences when addressing the problem posed in the cases, in other words, to think divergently.

Games, simulations and art and drama can be used to develop learners' initiative, and powers of creative thought, particularly important in a world where the educational system continues to place progressively greater emphasis on divergent thought processes (Ellington, 1993).

How can dialogue occur in the classroom?

Outcomes based education provides the ideal framework for discussion based teaching and learning.

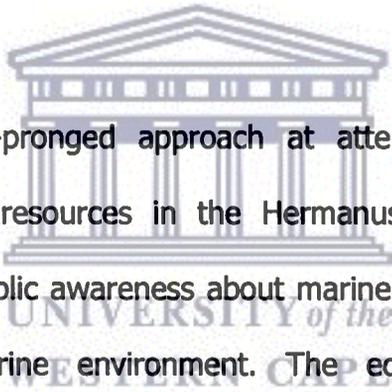
David Garvin in his essay 'Barriers and Gateway to Learning' (Christensen, 1991) provides three fundamental shifts for the successful practice of discussion teaching and other forms of active learning:

- The balance of power in the classroom away from where the teacher is all-powerful to a more democratic environment where learners feel comfortable sharing in the discussion and decision-making.
- Attention away from a singular concern for the material to an equal focus on content, classroom processes and the learning climate.
- Instructional skills away from declarative explanations to questioning, listening and responding.

Discussion-based education, within an outcomes-based education framework, can help creating an awareness of the over-exploitation of marine resources.

Non-Government Organisations

Non-governmental organisations are important development actors and can make a vital contribution to a new value construct that is necessary for long termed development in coastal communities. NGO's perceive their primary task as changing the conscientiousness and behaviour of local communities and of the state. A non-governmental organisation that is doing excellent work with regards to changing conscientiousness and behaviour of communities, is Seawatch.



Seawatch has a multi-pronged approach at attempting to diminish over-exploitation of marine resources in the Hermanus area. One of their key objectives is to raise public awareness about marine life and of the importance of protecting the marine environment. The educational aspect of the organisation is seen as vital to the success of sustainable development.

Seawatch have frequent articles in local newspapers and are represented on various local organisations. In addition, they have taken an active role in organising educational workshops in local schools and initiating walks and excursions during school holidays. They have emphasised the importance of increasing the interest of local communities in marine issues by organising general forums in the field of marine conservation.

The role of the church

The role of the church in coastal communities should not be underestimated in creating an awareness of the living environment and the sustainable use of resources. Churches are able to appeal to people across boundaries and cultures. Their ethical teaching would appeal to a civil society audience, which overlaps with their own constituency to a considerable extent. In this sphere they would experience an emerging awareness of the contribution of religion and value-centred teachings to development (Swart, 2001).



Conclusion

It is clear that the causes of the illegal exploitation of abalone are, as complex as is the solutions that should attempt to address it. It is absolutely essential to recognise that poaching activities will not be diminished through a single approach.

The very structure of poaching activities, which range from the water's edge to highly organised syndicates, emphasises the necessity for diverging methods of intervention. Hauck (1998) states that it would be ludicrous to assume that an isolated strategy would have a wide-ranging impact on the poaching. Not only new approaches need to be developed for various aspects of the problem, but also more efficient and co-ordinated strategies need to be developed for each component.

In this research paper, I have proposed that education, in particular education practice, curriculum development and learning programmes be identified as one of the major intervention strategies as these would focus on creating awareness of the marine environment.

It should be recognised that the long-term protection of natural resources does

not require increased law enforcement on the ground, but rather it requires more effective engagement within the communities involved. Though acknowledging the vital role that law enforcement has in the fight against poaching, other initiatives need to be considered which address this problem through a more holistic and long-term approach.

Addressing the illegal over-exploitation of abalone in coastal communities as pointed out in this research paper, is by no means an easy task. It requires first, a conceptual paradigm shift within our understanding of the problem, and secondly how government in the form of Marine and Coastal Management respond to the issues that emanate from these challenges. A multi-pronged approach and a commitment of various role-players are required in finding a mechanism to diminish the poaching and illegal trade of abalone. It is no longer acceptable to focus solely on law enforcement as a means of combating this problem.

APPENDIX 1

Interview Schedule

A list of questions guiding the semi-structured interviews with learners

Names of the respondents:

Age:

Area where you live:

Parents occupation:

What is abalone?

What is the economic value of abalone?

Have you dived for abalone?

Do you know somebody who dives for abalone?

Do you think it is correct to extract more abalone than what you need?

Why?

Do you know anybody who harvests abalone illegally from the sea?

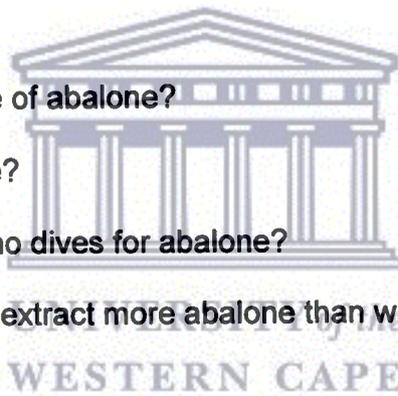
Why do you think people poach from the sea?

Would you consider diving for abalone illegally?

What do think of school?

Do think it is important to learn about marine conservation?

Do you think that if people were more aware of the benefits of the sea they would respect the sea more?



Questions that guided the interviews with teachers

Do you live close to the school?

What are your impressions of abalone poaching in the Hermanus area?

Are you aware of people involved in this activity?

Are learners involved in poaching?

What do you think is the root of the problem?

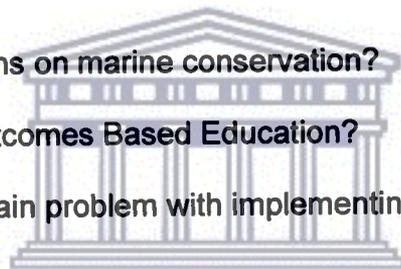
What is the community's attitude towards the poaching of abalone?

Do you think education programmes can lead to a reversal in people's attitude towards abalone?

Have you taught any lessons on marine conservation?

What is your opinion of Outcomes Based Education?

What do you think is the main problem with implementing OBE?



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Questions guiding interviews with community member

Why do you think people poach abalone?

What is the community's attitude towards abalone?

Does it worry you that abalone stocks can be depleted?

What is the primary cause of abalone poaching?

What can be done to reverse the situation in the abalone industry?

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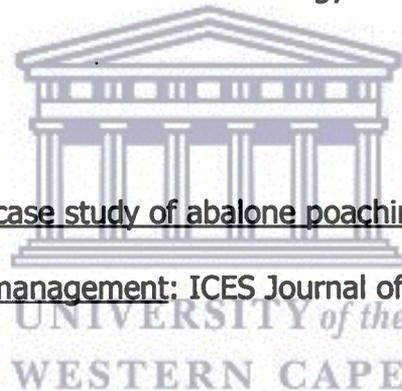
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