Fostering the stewardship of natural resources through EE: Assessing the strategies for minimizing beach pollution on the Durban beachfront

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Abstract

The Durban beachfront is a poplar tourism destination for travelers visiting KwaZulu Natal. In recent years, there has been a notable increase in the number of tourists vising the beachfront for several reasons - ranging from leisure, recreational (surfing and bathing), enjoying the sea breeze and sunshine and lately, the beachfront has become a popular landscape for fitness fanatics. The city has recently been promoted as a "sporting mecca", which has tremendously enhanced its economy and image. To be able to address severe unemployment levels, revive the depressed hospitality industry and boost the local economy, Durban has been endorsed as a world class convention destination "dubbed a melting pot of culture". The objective of this article is to examine the linkages between tourism and coastal management. The article discusses the Environmental Education (EE) strategies employed by the City in minimizing littering on the Durban beachfront. Furthermore, the article assesses the impact of Durban Solid Waste (DSW), waste minimization projects, special clean up events, education institutions program, and other initiatives on the management of waste, and the impact of recycling initiatives along KZN coastline. Focus group discussions, in-depth interviews and researcher administered questionnaires formed the core data collection approaches. The results demonstrate that littering can influence the quality of drinking water and leave harmful substances in seafood. The evidence shows that when buying houses, people gravitate towards well-kept neighborhoods, where there is open air dumping of litter, property prices will tend to fall, and ultimately the tourism industry will be depressed, resulting in a downward spiral of economic fortunes. The article highlights the potential risks of litter along the beachfront, identifies the sources of litter, where it goes and how to overcome the acts of littering in ecological sensitive areas which may have huge negative economic consequences. The article concludes that public and private entities should collaborate to strengthen the coastline and make it resilient to human, natural and climate-related risks. The authors recommend the adoption of positive cultural influences that will inhibit littering and promote preventive actions.

Keywords: pollution, tourism, environment, litter, environmental education

Introduction

A major challenge facing the tourism industry is to bridge the gap between profitability and ecologically sustainable industry, and on the other hand striving to satisfy visitor experience and improving standards of living in the host community where tourism is undertaken (Lim and McAleer, 2005). Over recent years the popularity of demand nature based tourism has rapidly increased and thus placing intense pressure on the natural environmental to satisfy the needs of tourism. Orams (2010) research identifies education and interpretation as sustainable methods to sustain ecological sound destination thus reducing tourists' impacts on the environment (Orams (2010). Hence, the destruction of the environment through human

activities such as loss of biodiversity, water scarcity, loss of ecosystems, land, air and water pollution; and loss of freshwater resources (Roberts, 2008) has resulted in the global community realising the need to forge awareness through education in order to effectuate responsible environmental behaviour and attitudinal change (Abbas, 2003). Parallel to and complementing the outlined above, Le Grange (2002) asserts that one of the most significant 'discoveries' of the twentieth century was the emerging awareness that we inhabit a sphere with limited resources (Le Grange, 2002). Nowadays, Environmental Education (EE) takes into consideration that the environment forms part of many interacting dimensions that is the bio-physical, social political and economic environments and further identified as a useful formative pedagogical processes to reverse the impact of anthropogenic activity and preserving our natural ecosystems through growing awareness of the effects of human impact on the environment (O`Donoghue, 2001).

EE is undoubtedly inseparable from the interacting dimensions listed above thus ensuring that sound ecological knowledge base understanding people and ecological relationships, understanding enforcing ethics, understanding politics, culture and ensuring active community participation in decisions making (Schudel, 2012). It is therefore the reason why EE has been promoted as an effective non-invasive tool to foster responsible stewardship reducing negative environmental impact (Abbas, 2003). Mensah (2012) and Irwin (1990) reflect upon the Tibisi Decelaration of 1977 which asserts that EE can be adopted in communities around the world with the aim of changing social behaviour towards the environment, values, and belief system with the aim of creating environmental protection and preservation of our natural resources (Mensah, 2012, Irwin,1990 and UNEP,1977).

Objectives of the study

Coastal and marine tourism spaces are determined by the level of access, usage and management. Usually users have open access to the site but they are often guided by the host regulation in terms of what, when and how to use the resources. Therefore, in order to maintain the site as attractive and satisfying to the users, a certain level of freedom is required. As a result of such freedom, the site's ability to maintain its attractiveness and sustainability is compromised. Hence limitless access to a particular resources can lead to its destruction. People who have access to the resources but don't consider the burden of their destruction tend to amplify the destruction. Despite the financial gains derived from the tourism sector, there is still a great need to pay due attention to governance and management mechanisms in order to maintain a healthy balance between people and the environment (Leijzer and Denman, 2013). EE can be used as a tool to promote responsible citizenship behaviour. EE can further be employed in this case to achieve a desirable environmental behaviour in the coastal tourism industry. It has the ability to arm people with critical skills and attitudes necessary to appreciate the interrelatedness among humankind, their culture and their biophysical surroundings (Skanavis and Sakellari, 2011).

Therefore this study intends to demonstrate the role and importance of EE in a bid for sustainable tourism and ultimately in bridging the gap between people and the environment, with special focus on coastal tourism. It is expected that the outcomes of the research will prompt appropriate methods to ensure a sense of care and responsibility for the environment while ensuring its survival for future generation and generating immediate economic gains (Padrao, 2014). The article seeks to discuss the Environmental Education (EE) strategies employed by the City in minimizing littering on the Durban beachfront. Furthermore, the study assesses the impact of Durban Solid Waste (DSW), waste minimization projects, special clean up events, education institutions program, and other initiatives on the management of waste, and the impact of recycling initiatives along KZN coastline.

Research problem

Over the past two decades, there has been an increasing concern documented about the extent of human activity on our natural ecosystems, which has resulted in a 30% decline of Biodiversity over the last 30 years (United Nations, 2014 and Clancy, 2008). The United Nations 2014 parliamentary report on Urbanization Challenges, Waste Management and Development, further describes that Sub- Saharan Africa is in a process of a rapid urban transition that will continue well into the 21st century (United Nations, 2014). The report further elaborates that between 2010 and 2035 urban population in Sub- Saharan Africa will more than likely double from 298 million to 697 million. The report indicates that by the mid-century urban population can likely rise to one billion people residing in urban areas in Sub- Saharan Africa (United Nations, 2014).

The dramatic increase of urbanization in Sub- Saharan Africa could be a catalyst for economic growth and development if correct urban planning is implemented. However Roberts (2008) asserts that rapid urbanization can also give rise to other ecological destructions such as loss of biodiversity, water scarcity, loss of ecosystems, land, air and water pollution; and loss of freshwater sources (Roberts, 2008 and Clancy, 2008). This is an engagement on sustainability and sustainable development which was guided shaped by a few events such as the report of the World commission on Environment and development (1987), the United Nations Conference on Environment and Development (United Nations Division for Sustainable Development, 2007) where 179 nations committed to carry out sustainable efforts in their countries. This global move further sparked educationists to develop aims and goals around "education for sustainability" (Huckle, 1999; Gough and Scott, 1999). Considering the linkages between rapid urbanisation and ecological destruction, there is a dearth of literature that demonstrates the role and importance of EE in sustainable tourism and how the gap between people and the environment can be bridged. Current studies focus mainly on generating immediate economic gains whilst down-playing the significance of employing EE strategies in minimizing littering and pollution and ensuring a sense of care and responsibility for the environment particularly in Durban.

Literature review

Since the dawn of the ''new South Africa" post 1994 South Africa's first democratic election shaped a new country for change. This however, rapidly identified the environmental and social well- being key elements for sustainability as the county witnessed new policies around environmental protection and education. The new South Africa (post 1994) further included in the Bill of Rights, that every citizen has a right to a clean and healthy environment (ANC, 1994 and RSA, 1998).

Education for Sustainability in South Africa

In recent years, EE has been transformed through research and development. Practitioners, environmentalist and conservationists around the world have seen the need to ensure that a "sustainability" element should be included in all forms of EE. This forms a basis for the development of the paradigm of Education for Sustainability (ES). ES is also viewed as a form of practice to allow access to gain the necessary skills and knowledge that will contribute to a sustained future. The negative human impacts cause significant threats to both the human population and the natural ecosystems which are then placed under excessive pressure for sustenance and survival. Our response to curb this degradation of the environment is to provide EE and ES practices (Irwin, 1990; Le Grange, 2002).The value of sustainable education according to Wals and Jickling (2002) is to address the need to understand and interpret the significance of education for sustainability.

The subject matter of sustainable development and sustainability within higher education and societal context has been around since the previous decade and arose from different environmental debate and forums (Le Grange, 2002). The academics and professionals in the study of education share different viewpoints on growth and development in the interpretation of education for sustainability (Irwin, 1990; Le Grange, 2002). Some, however, fully embrace the way of thinking especially in the 21st century and others feel that there is too much focus on continued sustainability. The environmental thinking behind promoting education for sustainability is well drawn from the strength of integrating the use of sustainability in education. Sustainability simply refers to the sustenance in our context of environmental sustainability which is key to the preservation of ecological processes and loss of species (Wals and Jiicking, 2002).

The impact of Urbanization and Waste on African Cities

As African cities undergo the process drastic urbanization, the amount of waste generated in them subsequently grows. Clancy (2008) confirms this by stating that the rate of population growth and urbanization in Africa is the highest in the world. Furthermore, the change in economic patterns of society give rise to an increased consumption and purchasing behavioural pattern which escalates waste generation that must be managed and processed correctly. In the case of African cities with low incomes that are experiencing rapid urbanization, this places enormous pressure on the existing environment (UNEP International Environmental Technology Centre, 1996). This is due to the excess waste generated which now needs to be disposed and treated in a manner that is in line with the legal permitted requirements stipulated by the governing body of the particular city and national policy. In the case of South Africa, it is guided by the National Environmental Management act (NEMA-Waste Act).

Through the National Environmental Management Act (NEMA) (No. 107 of 1998), the South African Department of Environmental Affairs and Tourism (DEAT) evoked the theory of the Waste Hierarchy that is to Reduce, Reuse, Recover and Dispose) as an important step towards achieving sustainable development (Matete, 2010; UNEP International Environmental Technology Centre, 1996). Matete (2010), further notes that the Polokwane Declaration on Waste Management singles out "Zero Waste" as a significant benchmark towards creating sustainable waste management systems in South Africa.

African cities need to create an integral waste management strategy that incorporates all the stages of the waste cycle from generation to final disposal. When establishing a landfill site it is imperative that there is no ecological impact and hence authorities need to enforce the regulations and ensure that the design is in line with the specifications of the waste licence. Therefore, the landfill design process becomes a costly activity which requires the correct sets of skillset and personnel (United Nations, 2014; Oribe-Garcia et al, 2015). Most waste management service providers and municipalities have landfill disposal facilities available; however the key is to ensure that the correct waste is disposed of in the correct landfill space and in a correct manner (Beigl et al., 2003).

Effective waste management ensures that a basic level of waste management is available and accessible for all communities. Therefore understanding the waste cycle is an essential imperative. The waste cycle explains the cradle to cradle concept that simply implies that systems should be designed to ensure longevity of landfills and furthermore explains that disposal of waste should be considered before the actual material becomes regarded as waste material (CSIR, 2011; Oribe-Garcia, et al, 2015; Godfrey, 2008).

Methodology

The methodological approach that the study adopted comprised of the following:

Research Design
There are three broad types of methodologies namely, qualitative, quantitative and mixed methods (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014:148). The research was guided by a mixed method approach where both qualitative and quantitative research methods were used. Using a mixed method approach useful in extracting data that comprises on numbers and personal experience which can then be analyzed to form conclusive results (Creswell, 2009).

Population
According to Polit and Hungler (1999), population is the total number of all subjects that conform to a set of specifications defined by the study needs. It encompasses a group of people with similar characteristics that will more likely to add value to the research. The population of this study consisted of all beach goers (tourist, fishermen and fitness enthusiasts amongst others) and eThekwini municipality officials that form part the beach management and maintenance. Targeting this population assisted the researchers to gauge in-depth information around planning and maintenance matters from the city's perspective. The researchers identified Durban Central Beach (DCB) as a site to conduct the research. Based on the 2015 statistics, the DCB receives approximately 3620 visitors per day (KZN Stats, 2016) comprising of beach goers.

Sample and sampling technique
The sample was calculated based on the population. In this case, a Rao soft sample size calculator on google was used to determine the sample size. A margin of error of 5% was used with a confidence level of 95%. The sample size of 348 participants was likely to give correct answers than if we were to get responses from a large sample where only a small percentage of the sample responds to the survey. An accidental sampling technique was ideal for the research since the researchers could not be guaranteed that there will be people on the beach on a specific day. Accidental sampling entailed the researcher going to the research site and interviewing people on the ground who were participating on the beach tourism related activities (Coetzee, 2007).

Data Collection Instruments
The study used survey questionnaires as a primary source of data gathering. Measuring instruments are defined as assets used to gather information, for example, surveys, and tests are also viewed as being the most convenient, cheapest and fastest method of collecting data. The questionnaires were designed with the aim to collect the required data to address the research problem. The questionnaire was designed to ensure the ease of data capturing and data processing through Microsoft Excel/SPSS. The survey questionnaires largely consisted of closed-ended questions since participants in the tourism and leisure industry find it difficult to take time off their holiday to complete surveys.

Data Analysis
Quantitative analysis provides insight to numerical formats of data where summary findings are first presented in numerical terms (Denscombe, 2003; Coertze, 2007). Closed ended questions in the questionnaire were coded in order for the computer program Microsoft Excel/SPSS to process the raw data. Open ended questions were summarized and grouped into categories ranging from the most frequent open ended answer down to the less popular open ended answer. Summary of findings were presented using tables. Inferential statistics was used to test the relationships in the data using simple regression analysis.

Results

As can be seen below, most of the respondents were from South Africa (86%) and were within the age groups of 25 – 34 years (37%). The statistics underscore the fact that Duran is popular to Domestic tourists particularly the youth. In terms of race 55% were Africans followed by whites (19%) and coloureds (18%) respectively. About 36% of the respondents a grade 12 matriculation whilst 25% had degrees and 12 with post graduate degree/diploma.

Table 1: Sample characteristics

	N	%
Sex		
--Male	67	56.30%
--Female	52	43.70%
Origin		
--South African	102	85.71%
--Non-South African	17	14.29%
Age category		
--18-24 years	34	28.57%
--25-34 years	44	36.97%
--35-49 years	22	18.49%
--50-59 years	13	10.92%
--60+ years	5	4.20%
--Missing	1	0.84%
Race		
--African	66	55.46%
--Asian	4	3.36%
--Coloured	22	18.49%
--White	23	19.33%
--Other (specify)	4	3.36%
Highest education attained		
--Lower secondary	12	10.08%
--Grade 12 Matriculation	43	36.13%
--Post matriculation certificate	12	10.08%
--Diploma	8	6.72%
--Degree	30	25.21%
--Postgraduate degree or diploma	14	11.76%
Total	**119**	**100.00%**

Source: Own calculations from Waste Management Survey

The statistics show that most of the respondents visiting DCB have a fair level of education.

Table 2: Perceptions of tourists regarding the state and cleanliness of the Durban Beachfront

Statement	Poor	Fare	good	Excellent	Missing	Chi-square	p-value	Total
Impression of overall appearance of the Durban Central Beachfront (DCB)	9.4% (n=8)	36.6% (n=31)	62.5% (n=53)	8.3% (n=7)	1.2% (n=1)	0.12	0.998	100.0% (N=118)
Durban Solid Waste (DSW) service level along the DCB	12.6% (n=15)	49.6% (n=59)	30.1% (n=36)	6.7% (n=8)	0.8% (n=1)	0.04	0.997	100.0% (N=119)
State of waste management facilities along the DCB	12.6% (n=15)	47.1% (n=56)	30.3% (n=36)	10.1% (n=12)	0% (n=0)	0.03	0.999	100.0% (N=119)

Source: Own calculations from Waste Management Survey

Based on the table above 53% of the respondents had a good impression of the overall appearance of the beachfront with 50% acknowledging that that the DSW service level along the DCB was fair.

Some, 47% thought that the state of waste management facilities was fair. Compared to a study by Brouwer et al (2017) the results show significant similarities. In their study on the social cost of marine litter along the European coast, Brouwer et al (2017) concluded that were

significant differences in perceptions existing between samples related to cleanliness if beaches. For instance, they found that 615 of the Greek sample found the beach where they visited was not clean at all, while 66% of the Bulgarian sample considered the beach somewhat clean.

Table 3: Awareness of environmentally friendly practices

Awareness of environmentally friendly practices	Yes	No	Uncertain	Missing	Chi-square	p-value	Total
Conserving water	86.5% (n=103)	8.4% (n=10)	5.1% (n=6)	0% (n=0)	0.03	0.986	100% (N=119)
Conserving electricity	86.6% (n=103)	6.7% (n=8)	6.7% (n=8)	0% (n=0)	0.03	0.985	100% (N=119)
Encouraging shower instead of bath	59.7% (n=71)	15.1% (n=18)	25.2% (n=30)	0% (n=0)	0.01	0.992	100% (N=119)
Use of local labour	1.1% (n=1)	58.3% (n=59)	27.4% (n=27)	32.2% (n=32)	0.04	0.998	100% (N=119)
Use LED (Energy saving) bulbs	79.8% (n=95)	10.1% (n=12)	7.6% (n=9)	2.5% (n=3)	0.15	0.986	100% (N=119)
Promoting green behaviour	91.6% (n=77)	15.5% (n=13)	9.5% (n=8)	2.4% (n=2)	0.10	0.992	100% (N=119)
Green building standards	55.4% (n=55)	35.7% (n=30)	15.5% (n=13)	1.2% (n=1)	0.06	0.997	100.0% (N=119)
Use of green products	69.8% (n=83)	16.8% (n=20)	12.6% (n=15)	0.8% (n=1)	0.07	0.995	100.0% (N=119)

Source: Own calculations from Waste Management Survey

Approximately 87% of the respondents were aware of conserving water as an environmental friendly practice and 87% conservation of electricity, 60% encouraging shower instead of bath. Approximately 80% were aware of the use of LED and 92% promotion of green behaviour while 55% were aware of green building standards and 70% use of green products respectively. The results are in line with Bob (2016) where she analysed responsible tourism behaviour amongst beach tourists in Durban. In her study Bob corroborated her findings with Lee and Mascardo (2005) who concluded that pro environmental behaviour intentions are more evident amongst tourist who are more aware. However awareness of environmental friendly practices will not lead to the choice of establishment based on environmental issues (Bob, 2016). A similar conclusion was made by Weeden (2015) who says being aware of best practice does necessarily not convert to actual behavioural change by tourist. The results show that there is need for public and private entities to collaborate in order to strengthen the coastline and make it more resilient to human, natural and climate-related risks. Hence the adoption of positive cultural influences that inhibit littering and promote preventive actions could assist in the fight against litter.

Table 4: By gender, tourist perceptions regarding litter on the DCB and mechanisms for public cooperation

	Male	Female	Total
Reasons for littering			
Lazy	29.9% (n=20)	23.1% (n=12)	26.9% (n=32)
No bins	8.9% (n=6)	5.8% (n=3)	7.6% (n=9)
Not aware of impact on the environment	23.9% (n=16)	28.9% (n=15)	26.1% (n=31)
Do not care attitude	23.9% (n=16)	30.8% (n=16)	26.9% (n=32)
Other (Specify)	13.4% (n=9)	11.54% (n=6)	12.6% (n=15)
Common type of litter			
Plastic (shopping packages, sweet wrappings etc.)	50.8% (n=34)	48.1% (n=25)	43.6% (n=59)

Cupboard	10.5% (n=7)	5.8% (n=3)	8.4% (n=10)
Cans	14.9% (n=10)	15.4% (n=8)	15.1% (n=18)
Glass	4.5% (n=3)	3.9% (n=2)	4.2% (n=5)
Fishing gear	8.9% (n=6)	7.7% (n=4)	8.4% (n=10)
Cigarette buds	0.0% (n=0)	3.9% (n=2)	1.7% (n=2)
Other (Specify)	10.5% (n=7)	15.4% (n=8)	12.6% (n=15)
Efficacy of mechanisms for public cooperation on litter reduction			
Law enforcement (i.e. issuing fines)	20.9% (n=14)	26.9% (n=14)	23.5% (n=28)
Environmental education	61.2% (n=41)	51.9% (n=27)	57.1% (n=68)
Community service	16.4% (n=11)	11.5% (n=6)	14.3% (n=17)
User pay system	1.5% (n=1)	9.6% (n=5)	4.9% (n=6)
Total	100.0% (n=67)	100.0% (n=52)	100.0% (n=119)

Source: Own calculations from Waste Management Survey

The reasons for littering were divergent, and most of them were attributed to Laziness (27%) and I don't care attitude (27%). The most common litter were in the form of plastics (shopping packages, sweet wrappings etc.) (44%) and 15% cans. On the efficacy of mechanisms for public cooperation on litter reduction, 57% (Environmental Education) was viewed as one the most effective tools used to deal with littering followed by law enforcement (23%). Similarly, in their study Brouwer et al (2017) encountered cigarettes buds, followed by plastic bottles, bags, and cans as the main sources of litter between the samples. There are potential risks of litter along the beachfront, the above table identifies the sources of litter, where it goes and how to overcome the acts of littering in ecological sensitive areas which may have huge negative economic consequences. See some of the photographs that were taken on some of the sites on the coast.

Table 5: Wilcoxon rank sum test results

Association between poor visitor experience and poor waste management	N	Negative Responses	Positive Responses	z-score	Prob > |z|
Impression of Durban Central Beachfront (DCB) appearance = Durban Solid Waste (DSW) service level on DCB	116	73	43	-2.759	0.005**
Impression of Durban Central Beachfront (DCB) appearance = State of waste management facilities along the DCB	117	71	46	-0.312	0.002**
Impression of Durban Central Beachfront (DCB) appearance = Visibility of DSW at the DCB	117	89	28	-0.445	0.656

Source: Own calculations from Waste Management Survey

** Significant at p<0.05

The z-statistic is the p-value which validates our working hypothesis that there is a statistically significant relationship between poor waste management practices and an overall impression on the Durban Beachfront. Negative responses for the service level on the beach and the state of waste management facilities along the DCB were linked with poor to fair tourist rating of the DCB, with z-scores of -2.759 and –0.312 were statistically significant at p>0.05**.

Discussion of findings

The forms of 'green tourism' (ecotourism, agri-tourism, rural tourism) have all been founded on the rationale that they do not exert excess pressure on the environment by diverting resources such as water away from the local community, pollute the seas, destroy natural

vegetation and disrupt wildlife (Roberts and Tribe, 2008). Environmental Education (EE) and environmental awareness in the areas of waste and pollution management is fast becoming an essential concern to consider from a global perspective of natural resource management. Yüzbaşıoğlua, Topsakalb , and Çelikc, (2014) assert that tourists and tourism enterprises need to play an active role to overcome the environmental issues because global environmental issues (climate change, impurity, depletion of ozone layer, so on) and adverse effect of these issues on nature has been increased. In addition, tourists and tourism enterprises need to be informed about natural surroundings. There are different ways of looking at sustainability, especially in different fields of study and research.

The use of sustainability in this discussion, serves to add a value and knowledge base to environmental sustainability and its role in education, to preserve the natural and socio economic environments (Wals and Jiicking, 2002). The Durban Solid Waste (DSW) Education and Waste minimization uses the mobile training unit as an approach of education for sustainability in waste management education and waste minimization. For instance eThekwini Municipality developed a programme (clean and maintain my city and the beach programme) for residents and communities to have a sense of care and civil pride in caring and protecting the environment. The 'clean and maintain my city' programme was launched with residents, communities, schools, business, ward based structures and NGO's.

Waste management education is thus fast becoming a critical environmental sustainability concern globally. Waste management education requires a systematic approach of integrating the active learning framework variables with the aim of achieving sustainable outcomes of environmental awareness programme development, execution and sustainability. Having an integrated waste management approach reduces the need for raw natural resources thus aiding in the protection and preservation of non-renewable natural resources (Irwin, 1990; Le Grange, 2002; O`Donoghue, 2001). Poor waste management practices as a result of human activity causes widespread damage to the physical and natural environment. Sometimes the damage caused is irreversible e.g. an increase in greenhouse gas emissions causes the ozone layer to deplete (Palmer Development Group, 1996 and Armitage et.al., 1998). EE in Waste management should therefore incorporate sound legislation, sustainable development of programme/projects and of personal initiatives and active social participation in achieving effective results in areas that have poor waste management practices. For instance the Durban Solid Waste (DSW) education and waste minimization department's primary focus is on the core principals of the active learning model. In this case, community driven projects are aligned to waste management practices by creating awareness around correct waste management techniques.

To achieve its goals, stakeholders such as the local community and other community structures are established around the waste management model that inculcates active community involvement (Oribe-Garcia, et al, 2015; Godfrey, 2008). Therefore, EE is significant in promoting pro-environmental behaviour and social change. For instance Bob (2016) argues that knowledge and awareness does not necessarily translate to changes and practices. Therefore there is a need to for more information dissemination and how to be more environmentally responsible as tourists.

The need for EE in waste management is critical in the 21st century due to population explosion, both in the Formal and informal housing structures of the eThekwini municipality to ensure that active social learning encounters take place at all levels of society addressing environmental risks and concern. A study by Brouwer et al (2017) concluded that litter plays a role in beach selection, and the presence of litter may be a reason to visit or not visit a beach. At the same time a strong correlation exists between beach visitor density and marine litter generation. Hence the Keep Durban Beautiful Association (KDBA) innovation was established in Durban in the 1980's by the Keep America Beautiful Association and this has played a significant role in formalizing education around waste management. Ospar (2009) discovered that beach recreation and tourism are found to be the main aspects responsible for litter.

Conclusion

Respondents highly rated their awareness of conserving water, conservation of electricity, encouraging shower instead of bath as environmental friendly practices. Other factors included the use of LED, promotion of green behaviour, green building standards and the use of green products respectively. Therefore, pro-environmental behaviour intentions were found to be more evident amongst tourist who were more aware but awareness of environmental friendly practices will not lead to the choice of establishment based on environmental issues. Similarly, being aware of best practices does not convert to actual behavioural change by tourists. The reasons for littering were found to be divergent, most of them were attributed to "laziness" and an "I don't care attitude". Hence the most common litter items were plastics (shopping packages, sweet wrappings etc.) and a range of cans. Even though there is a good perception of tourists regarding the state and cleanliness on the Durban Beachfront, the results show that there is a statistically significant relationship between poor waste management practices and the overall impression on the Durban Beachfront.

Negative responses for the service level on the beach and the state of waste management facilities along the DCB were linked with poor to fair tourist rating of the DCB (with z-scores of -2.759 and –0.312 were statistically significant at $p > 0$). The results show that littering can influence the quality of drinking water and leave harmful substances in seafood. The evidence shows that when buying houses, people gravitate towards well-kept neighbourhoods, where there is open air dumping of litter, property prices will tend fall rapidly, the tourism industry will be depressed, resulting in the undesirable downward spiral of economic fortunes. The article highlights the potential risks of litter along the beachfront, identifies the sources of litter, where it goes and how to overcome the acts of littering in ecological sensitive areas which may have huge negative economic consequences. The authors conclude that public and private entities should collaborate to strengthen the coastline and make it resilient to human, natural and climate-related risks.

Recommendations

The article recommends the adoption of positive cultural influences that will inhibit littering and promote preventive actions. Therefore, there is need to improve mechanisms that will enhance public cooperation on litter reduction, increase Environmental Education and law enforcement. People's perceptions vary from beach to beach, hence, even though they are aware of environmentally friendly practices, their knowledge will not influence their behaviour significantly in choosing the choice of accommodation.

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