

Perception of Social and Environmental Problems by English and Mexican School Children

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Abstract

Identifying children's concerns about the world and the environmental situation can help orientate educational efforts in order to reinforce positive behaviours towards the environment. I describe Mexican and English school children's (aged 7 to 9) perceptions of the world and environmental problems. I explore the extent to which culture and school ethos with regards to the environment are influential factors in children's views of global and environmental problems. A close-ended questionnaire was given to children from eight schools with different ethos. Results reveal that, both English and Mexican children perceived war, pollution, and hunger as the three most important problems in the world. The school ethos was a determining factor that influenced children in their perception of social and environmental problems.

Résumé

La définition des préoccupations des enfants au sujet du monde et de la situation environnementale peut aider à orienter les efforts éducatifs axés sur le renforcement des comportements positifs à l'égard de l'environnement. Je décris la perception du monde et des problèmes environnementaux d'élèves anglais et mexicains âgés de 7 à 9 ans. J'examine la mesure dans laquelle le génie de la culture et de l'école eu égard à l'environnement influence les points de vue des enfants sur les problèmes planétaires et environnementaux. Un questionnaire orienté a été remis à des enfants de huit écoles de différents génies. Les résultats ont révélé que tant les enfants anglais que mexicains ont perçu la guerre, la pollution et la faim comme les trois plus importants problèmes dans le monde. Le génie de l'école a joué un rôle déterminant dans leur perception des problèmes sociaux et environnementaux.

There is a widespread concern about the current environmental crisis. This public concern about environmental matters is reflected virtually all over the world. Children express their concerns about the world. They do care for it and are worried about their future (Brown, 1984; Brown, Henderson, & Armstrong, 1987; Eiser, Spears, & Webley, 1988; Save the Children, 1992; Children of the World, 1994; Hicks, 1991, 1996, 1998; Hicks & Holden, 1995; King, 1995). Children's views reflect the social, cultural, and political concerns of the times (Brown, 1984). Young people now see their personal lives, their communities, and the wider world as equally problematic (Hutchinson, 1993). Currently cultural and commercial aspects of environmentalism dominate, and children are aggressively targeted as a consumer market for "green" products (King, 1995; Bloom, 1995). Children and teenagers of today have been raised with global environmental issues having a high profile in the popular media (Sachsman, 1995 cited in Stanisstree & Boyes, 1996).

Part of the current environmental crisis has its origins in human attitudes towards the environment. Unless something is done to change these attitudes and to establish a positive relationship between human communities and nature, environmental quality, and consequently, quality of life may deteriorate. The progress and welfare of present and future generations depends to a great extent on positive and timely solutions to socio-economic and ecological problems which arise from the relationships between humans and nature (Robottom, 1987). Unless we understand the future for which we are preparing, we may do tragic damage to those we teach (Toffler, 1974). One of the major goals in education is to prepare young children for the future. Education should be about creating possibilities, not about defining the future for our children (Wals & Jickling, 2001). To create possibilities, schools need to incorporate a future dimension into the curriculum in order to embrace exploration, evaluation, and critique of emerging ideas. Education for the future provides the opportunity for empowerment, so that children can work towards their chosen future. Therefore, images of the future play a crucial role in relation to human behaviour and actions in the present, at both personal and societal levels (Hicks & Holden, 1995). On a global scale, children most fear war in the future, followed by environmental damage, and issues related to poverty and starvation (Hicks, 1996).

Previous studies on children's views of the future reveal a deep concern for an end to social and environmental problems (Gillespie & Allport, 1955; Toffler, 1974; Brown, 1984; Hicks, 1991, 1996; Dodds & Lin-Chong, 1992; Wals, 1994; Hicks & Holden, 1995; King, 1995; Barraza, 1999). Children

seem to develop a high sense of awareness of the environment and world problems at a very early age (Children of the World, 1994; King 1995; Hicks & Holden, 1995; Palmer, 1995; Barraza, 1996). Children showed a considerable awareness of many of the world's current concerns which are likely to affect their lives either directly or indirectly in the future: war, famine, and poverty, green issues, crime and personal safety, violence and pornography (Market and Opinion Research International, MORI, 1986; 1993; Hicks, 1991, 1996; UNICEF, 1992; Hutchinson, 1993; Hicks & Holden, 1995; Stockdale, 1995). In another study, Barraza (1999) used a drawing technique to find out whether or not children were concerned about the environmental crisis. Results revealed that children showed deep environmental concern through their drawings. When asked to draw how they see things now, a high percentage (36.7%) pointed out problems related to the environment (pollution, nuclear waste, deforestation, loss of species, and global warming). Throwing away rubbish and polluted cities were dominant themes. Air polluters ranked as the most frequently represented environmental culprits, symbolised by factories, car exhaust, and radioactive emissions.

In this article I analyse how children, ages 7 to 9, from a variety of schools and from two countries, Mexico and England, perceive social and environmental problems. I consider the effect of culture and children's school ethos on their perceptions. In this study environmental issues are seen as a subset of world issues. Childhood is a crucial stage for the development and formation of habits. The middle years of schooling are considered crucial for the formation of positive attitudes. Children aged 7 to 12 have been found to be:

- intensely curious about the wider world in all its variety,
- particularly favourably disposed towards other cultures,
- open and flexible in their attitudes to social and political issues, and
- aware of and interested in, issues to do with human rights (Buergethal & Torney, 1976).

Grade 3 children (7 to 9 years old) were selected for this study because at this stage the child's mind undergoes intellectual and social developmental changes (Piaget, 1969; Vygotsky, 1978). I was interested in examining whether, within this developmental process, children developed an environmental concern. If so, I wanted to explore the extent to which culture and school ethos, with regards to the environment, are influential factors in this process. To assess this idea I needed to compare children from two very different countries. Because children's perceptions of environmental problems

may be influenced by their culture, I chose to gather comparable data in Mexico and England, two countries with significant cultural and structural differences in their educational system and industrial development. Mexico is a developing country with high biological diversity (McNeely, Miller, Reid, Mittermeier, & Werner, 1990; Ramamoorthy, Bye, Lot & Fa, 1993). England, on the contrary, is a developed country with low biodiversity.

Methods

Study sites

I sampled 5 schools in Mexico and 3 in England. The number of schools studied was determined basically by the acceptance of the specific schools to participate in this study. Criteria for choosing the schools included:

- primary schools,
- mixed schools,
- school ethos with regards to the environment (i.e., the emphasis in their orientation and interest on environmental issues), and
- type of school (boarding and day schools).

“Environmental schools” selected in this study have been actively involved in local, national and international environmental projects. Schools with “some interest in the environment” were those that manifested a concern for environmental issues, although they were not active in environmental projects, nor did they have specific policies on these issues. Boarding schools were included in this study to explore how, in the absence of the daily presence of parents, the school influences the formation of environmental perceptions in young children.

Schools were grouped according to their ethos with respect to environmental policies and whether they were day or boarding schools (see Table 1). School names were changed to keep their anonymity.

Socio-economic levels of children in this study varied, and are an important factor to consider, as they do strongly affect children’s development. Children growing up in different socio-economic levels acquire different cognitive abilities (Gray, 1991). Some of these socio-economic differences are considered in this study, although their evaluation is not the main purpose of the study.

Country		
School Ethos	England	Mexico
Day school - environmental policies. Strong orientation towards the environment	Walnut (32) The green award (1992, 1993) by City Council.	Hill (16) Involved in local, national, and international environmental projects. Pine (27) It owns 10,000 m ² of forest. It was recently involved in an international project supported by UNESCO and UNICEF: Rescue Mission, Agenda 21.
Day school - some interest in the environment, but no environmental policies	Tower (28) Do not have an environmental orientation scheme, but participated in environmental projects.	Orchard (34) Active learning system. Interest in the environment, although does not have an environmental program.
Day school - no environmental policies		Star (32) Traditional school with a strong moral orientation scheme.
Boarding school - no environmental policies	Castle (40) Founded to train young children as choristers. Well known because of its strong emphasis in music.	Cave (36) Learning system based on discipline and obedience. To provide not only education but home for poor and/or orphaned children.

Table 1. Characteristics of the schools taking part in this study. The number in parenthesis indicates the number of children participating in each school. Total number of children was 245.

Data Collection

A close-ended questionnaire was given to 245 children (100 English and 145 Mexican). The questionnaire included a list of social and environmental problems that was determined by reviewing the Grade 3 science curricula in both countries, as well as on social and environmental problems reported from previous studies (UNICEF, 1992; Market and Opinion Research International [MORI], 1993; Hicks, 1991; Hutchinson, 1993; Hicks & Holden, 1995; Stockdale, 1995). The questionnaire included two parts. In the first part, 10 world problems were listed: war, poor health, hunger, crime, population growth, unemployment, deforestation, homelessness, pollution, and lack of education. Pollution and deforestation were included to find out how children compared them in relation to other problems, and to see if environmental problems were at the top of the children's concerns. Pollution and deforestation were two major problems mentioned by children in previous research (MORI, 1993). The second part of the questionnaire consisted of listing 10 environmental problems: pollution (air, water, soil), deforestation, global warming, acid rain, illegal wildlife trade/poachers, species extinction, depletion of the ozone layer, quality of drinking water, nuclear waste/litter/rubbish, and noise levels. This list also included pollution and deforestation, mainly to see if there was consistency in the children's responses to the major world problems in relation to the environmental ones.

From the pre-determined lists, children were asked to select the three problems they considered most important in each case, and rank them. At the end of the questionnaire children were given some space to write their thoughts about social and environmental problems.

Data Analysis

Children's lists of world and environmental problems were analysed separately, as were their thoughts about the world and environmental crisis. Additional information at the schools was gathered considering four elements for the analysis:

1. the teacher's role,
2. the National Curriculum at school,
3. the school grounds, and
4. the school ethos.

The data collected on pedagogical approaches used by the teachers included interviews and systematic observations.

Statistical analyses followed Sokal and Rohlf (1981) and Zar (1984). Contingency tables, using the log likelihood ratio tests, or *G*-test, (Sokal & Rohlf 1981; Zar 1984) were employed to test for statistical differences in frequencies of categorical data. The *G*-test is equivalent to the more popular Chi-square test but is regarded as a preferable option as it is less sensitive to biases introduced by low frequencies (Sokal & Rohlf, 1981; Zar, 1984). Comparisons were made mainly between Mexico and England, between schools in each country and between schools with different ethos. A probability of 5% ($p=0.05$) was considered as the cutting point for statistical significance.

The author is aware that the research findings emerged from the analysis of 245 questionnaires, therefore in order to find general trends on children's perceptions towards the environmental crisis, and to design guidelines for environmental education programmes, more research is needed. However this study contributes to update our knowledge about perceptions in some Mexican and English children over environmental and social problems.

Results and Discussion

Main world problems

All children in this study, regardless of country, perceived war, pollution, and hunger as the three most important problems in the world (see Figure 1). For both English and Mexican children, deforestation and crime were perceived as important in each country. English children perceived homelessness as a greater problem compared to Mexican children. This perception might be because English children are not as used to seeing poverty in the streets as Mexican children are. English children might be experiencing a new social problem in their society. Poor health, population growth, and unemployment were problems to which Mexican children gave significantly greater importance than did English children ($G=27.75$, $df=9$, $p<0.001$). Lack of education and unemployment were conceived as the least problematic issues for both Mexican and English children.

When English schools were considered on their own, no overall differences were found amongst the children. Results from Mexican schools revealed significant differences between them ($G=117.8$, $df=36$, $p<0.001$; see Figure 2). Children from Cave School gave significantly greater importance



* $p < 0.05$; ** $p < 0.01$

Figure 1. Perception of world problems by Mexican and English children. Asterisks indicate statistical differences (G -tests) between both countries for that particular problem.

to hunger and poor health as major problems than children from other schools did ($G=10.44$, $df=4$, $p < 0.05$; $G=17.82$, $df=4$, $p < 0.005$, respectively). By contrast, they considered pollution, deforestation and population growth of little importance.

Results in this study support Hicks' (1998) findings on children's global concerns. He divided what children want for their future in three categories:

- in their personal lives,
- in their local communities, and
- globally.

He found that what children want in their personal lives in order of importance is:

- a good job,
- a good life,
- a good relationship, and
- to do well in school.



* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Figure 2. Perception of world problems by children from five Mexican schools. Asterisks indicate statistical differences (G-tests) between schools for that particular problem.

In their local communities they wanted less pollution of the environment; better amenities and services for young people, no crime, and greater prosperity. Globally they wanted no more wars, no polluting, no poverty or starvation, and better relationships between countries. Children in this study reveal a concern for social and environmental problems at a global scale. One possible explanation for this concern is that the influence of the media is powerful, and it plays a vital role in the transmission of information about environmental and other issues to young children (Wober & Gunter, 1985). They are bombarded daily with images of, and information about, major global problems on television, on the radio, in newspapers, and other sources (Case, 1995). The whole industry of video games or electronic media plays a major role in sending aggressive messages about war to children. They are probably confused by the mixed messages they received. For example, in some of the video games, in order to win, children need to plan a strategy to destroy, or kill their opponent. This might affect children's values and perceptions as they learn that aggression can be acceptable. Toys, games, textbooks, comics, and T.V. often give a circumscribed view of the future (Hutchinson, 1994). Children hopes and fears are often mirror

images of each other (Hicks, 1998). Global issues have had an impact on local issues. Identifying local and global issues and knowing what children's preferences for the future are will help reinforce environmental education programmes.

For almost 10% of English and Mexican children, crime was a major world problem. Violence and aggressive behaviour is frequently observed. Crime is highly covered in the media and has an impact not only on adults but also on children. Children are concerned about the levels of crime and violence in their local area. Two-thirds think violence will get worse in the future (Hicks, 1996). They relate the presence of violence to unemployment, lack of police action, drunk driving, and a decreasing supply of resources (Hicks & Holden, 1995).

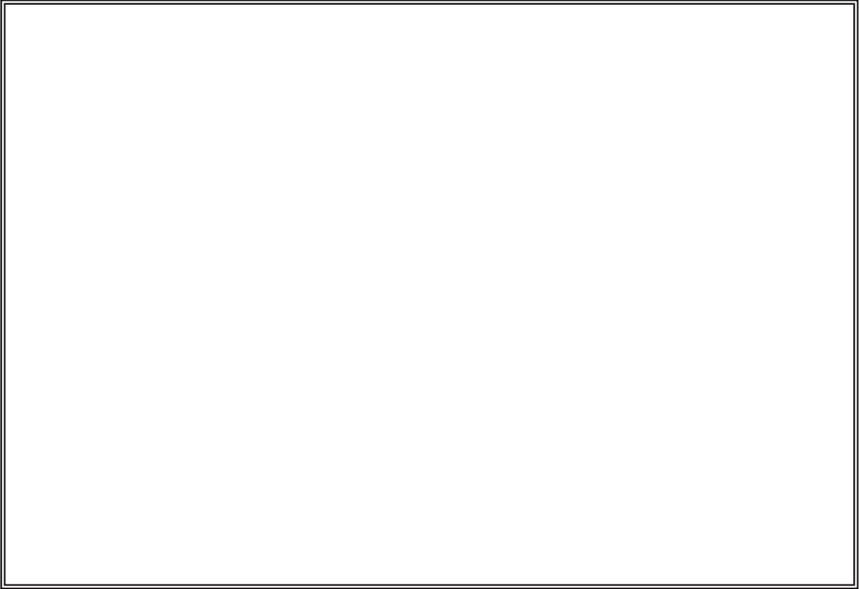
It is noticeable that Mexican children rated poor health and population growth much higher than English children did. This is an interesting aspect, if we consider that poor health care and population growth are more prevalent in developing countries. More than 95% of the world population increase is occurring in developing countries (Schell, 1993). Although, in the particular case of Mexico, the rate of population growth has declined.

Main environmental problems

Overall, the three top environmental problems considered by Mexican and English children were pollution (20%), acid rain (12%), and the depletion of the ozone layer (12%), but there were significant differences between the two countries ($G=43.92$, $df=9$, $p<0.001$). When considered separately, children from both countries regarded pollution as the most important environmental problem (see Figure 3).

For Mexican children, acid rain (14.1%) and global warming (13.8%) followed in importance. They gave significantly greater importance to these problems than English children did ($G=10.01$, $df=1$, $p<0.005$; $G=3.99$, $df=1$, $p<0.05$, respectively). For English children, the depletion of the ozone layer and nuclear waste were the second and third most important environmental problems. They regarded nuclear waste and the illegal wildlife trade of greater importance as compared to Mexican children ($G=12.32$, $df=1$, $p<0.001$; $G=6.57$, $df=1$, $p<0.025$, respectively). No overall significant differences were found between English schools. In the case of Mexican schools significant differences were found only in relation to one environmental problem: global warming ($G=15.35$, $df=4$, $p<0.005$; see Figure 4).

Children's ideas about the environment are expressions of more general underlying conceptual frameworks (Stanisstreet & Boyes, 1996). Children's familiarity and understanding of environmental terms is in



* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Figure 3. Perception of environmental problems by Mexican and English children. Asterisks indicate statistical differences (G-tests) between both countries for that particular problem.

most cases related to their experience or exposure to such particular words. Children tend not only to remember but to understand and explain what a word means in relation to their direct experience of it (Barraza, 1996). Environmental problems can affect children’s perceptions, knowledge and understanding of the world (Sinclair, 1987; Zeidner & Schechter, 1988; Wals, 1994). For example, in another study Barraza (1996) found that in the case of Mexican children, ozone layer was a familiar term, 91% had heard it before, and it was understood by 83% of the children. Although a large proportion of Mexican children answered questions about the ozone layer correctly, it is possible that they associate the words “ozone layer” with the levels of ozone pollution in the (lower) atmosphere, which are frequently reported in Mexican television news broadcasts. Ozone layer was a term that Mexican children understood better than English children mainly because of its immediate relevance to them.

Differences between school ethos

For children from schools with an environmental policy, and those with an interest in the environment, war, pollution, and hunger were cited as the



** $p < 0.01$

Figure 4. Perception of environmental problems by children from five Mexican schools. Asterisks indicate statistical differences (G-tests) between schools for that particular problem.

three most important problems in the world (see Figure 5). Children from schools with no environmental policies listed pollution, war and population growth as the major problems in the world. Children from boarding schools with no environmental policies, perceived war and hunger as the most important problems. According to the school ethos, children's perceptions of world problems were statistically different ($G=84.62$, $df=27$, $p < 0.001$). Children from boarding schools with no environmental policies gave significantly less importance to pollution and deforestation, and greater importance to poor health than the other school ethos ($G=8.02$, $df=3$, $p < 0.05$; $G=9.46$, $df=3$, $p < 0.025$; $G=7.93$, $df=3$, $p < 0.05$, respectively). Children from day schools with no environmental policies, gave significantly greater importance to population growth and unemployment as compared to other school ethos ($G=23.21$, $df=3$, $p < 0.001$; $G=12.11$, $df=3$, $p < 0.01$, respectively).

Children from all types of schools perceived pollution as the most severe environmental problem (see Figure 6). Second in importance in all schools except boarding schools was acid rain. The latter perceived global warming as the second most important environmental problem. There



* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Figure 5. Perception of world problems by children from schools with different ethos. Asterisks indicate statistical differences (G -tests) between school ethos for that particular problem.

were no overall statistical differences between the school ethos with regards to children's perception of environmental problems. In the case of two particular problems, however, there were some differences when schools were considered by ethos. Children from day schools with some interest in the environment but with no environmental policies, gave less importance to global warming as compared to the other schools ($G=10.02$, $df=3$, $p < 0.025$). Children from boarding schools with no environmental policies gave significantly less relevance to acid rain than schools with other ethos ($G=9.63$, $df=3$, $p < 0.025$).

Are children from environmentally oriented schools more aware of the environmental crisis? In this study the school ethos was a determining factor that influenced children in their perception of social and environmental problems. There was a tendency to indicate that children from schools with environmental policies or those interested in the environment were more concerned about ranking environmental problems higher than children from other schools ethos. The pedagogical approach used by teachers is a determining factor in the development of positive perceptions towards the environment (Barraza, 1996, in press). It also seems to have an effect in



* $p < 0.05$

Figure 6. Perception of environmental problems by children from schools with different ethos. Asterisks indicate statistical differences (G-tests) between school ethos for that particular problem.

the way children perceive and learn about environmental issues. For example, many Mexican teachers provide the information in a one-way, top-downward approach, a teaching method still commonly used by Mexican teachers, where children do not have an active role in the learning process. For some teachers, the dialogue between the student and the curriculum is becoming more important as a teaching aid, but still not for the majority. In the case of the English educational system, more emphasis is given to environmental projects in the community. Children are often involved in different projects in which they need to find information using other sources. Teachers usually work together with children to find the information. They see education as a process of personal and social development. An emphasis is given to hands-on activities. The school ethos has a fundamental role in the acquisition of environmental information. Even though environmental education is a new area of development in most schools, results from this study suggest that schools with environmental policies can be more effective in the development of positive perceptions towards the environment in young children, than other schools. It is increasingly important that schools should focus on children's images of preferred

futures. This can provide the basis for creating a more just and sustainable future. Some major differences between the Mexican and the English educational systems allow us to have a better and clearer understanding of how children and teachers from different countries may respond to environmental issues. Many factors have to be considered such as: pedagogical approach, training, resources, methodological tools, but most important is the cultural context.

Role of Culture

Society consists of a plurality of communities of people who are linked together by the bonds of shared culture (Usher & Edwards, 1994). Knowing a culture allows us to understand it better.

Perceptions and attitudes do not exist in isolation within the individual. They generally have links with components of other attitudes and with deeper levels of value systems within the person (Barraza, 1996). Every cultural group has its own system of beliefs to appreciate. Culture itself plays a vital role in the way people feel, think, and act towards the environment. Therefore, culture can be reflected in the educational system of each country. In general there is a more homogenous pattern found in English schools. Unfortunately, Mexico has experienced centuries of unequal development. People in isolated rural communities or in urban marginal areas are still trying to obtain basic services such as safe drinking water and sanitation, electricity, health care, and education. The social, economical, and political context in Mexico makes it a country of striking contrasts where sophisticated cities and modern industries, advanced communications and transportation networks can be found together with great poverty and deprivation (Barraza, 1996).

Results showed that children's perception of the world and environmental problems are related to their direct experience of the problem itself (e.g., Mexico, air pollution; and England, nuclear waste); and reflects the cultural, social, and political situation of the society. The root causes of environmental problems are complex and closely tied to unequal distribution of wealth and resources, poverty and exploitation consumption patterns, and principles of economic growth, cultural, and individual outlook on life and other contributing factors (Wals, 1994).

Conclusions

Children's awareness of environmental and world problems seems to be as strong in Mexico as it is in England. This study showed that many young children have a concern for local and global environmental issues and a moderate to high level of understanding in such matters. Both Mexican and English children perceived that environmental quality has been damaged and is getting worse, and they expressed substantial concern about a range of specific environmental issues. Children were able to identify local and/or national problems that were affecting their community. They strongly associate these problems with their everyday life. They showed their concern for the world, are worried about their future and, in some of the schools where this study took place, teachers, parents, and children are playing their part in protecting the environment. Children start to form their perceptions of the world early, before their formal education begins. These initial perceptions will be based on their personal observations and experiences in their local environment and media coverage of more global issues (Cullingford, 1995).

Cultural differences among the children revealed to some extent the gap between an "industrial" and a "developing" country. For Mexican children poor health and population growth were highly ranked in comparison to the English children. As for English children concerns about nuclear waste and the illegal wildlife trade were comparatively high compared with those given by Mexican children. An important cultural difference is related to the socio-economic factor. Mexican children from the boarding school ranked poor health four times more than English children from the boarding school did.

In this study the school ethos was a determining factor that influenced children in their perception of social and environmental problems. It is possible to suggest, that children who are constantly involved in environmental projects at school have more information on environmental issues. Therefore their perception towards the world crisis may have a different angle and could be "environmentally biased." Children with interests in environmental issues, who often have access to environmental information, tend to develop a "green mind." The pedagogical approach that teachers used to teach environmental issues varies drastically in each country, and that does have an effect on the way children learn about the environment. Between the ages of 7 and 11 children's ideas about the environment and global issues develop a great deal, but this is not generally a result of the taught curriculum. Because environmental education

plays an important role in ensuring positive perceptions and attitudes towards the environment it should be part of every school ethos.

Children wish to be better informed about the world around them and better able to contribute to its future (Barraza, 1999). From this perspective schools should be more future-oriented, and teachers need to address children's hopes and fears for the future. Children's perceptions towards global problems is strongly influenced by media coverage.

Children in this study revealed a great sense of perception and concern towards environmental matters. Their values, attitudes, and knowledge are needed to develop a sense of responsibility and respect for the environment.

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