SOCIAL BEHAVIOUR IN THE FRAMEWORK OF WASTE PREVENTION STRATEGY IN INSULAR COMMUNITIES

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ABSTRACT

The purpose of this study is to develop students' knowledge and behavioural changes in relation to the water plastic bottle of 500ml. Understanding waste prevention behaviour (WPB) could enable local governments and decision makers to design more-effective policies for reducing the amount of waste that is generated. Evaluation of waste prevention activities is critical, as is the main reason to enable policy makers, local authorities and experts to build their strategic plans, as they can measure and ensure that waste prevention initiatives are being effective and delivering behavior change. Students in a daily base bring their own water or buy water from the school as they don't fill safe to use other sources of water. Among the prevention activities was to measure the prevention of the refiling water containers in primary schools. The Municipality council were share 998 refiling Stainless Steel Water Refiling Bottles (SSWRB - of 600 ml) to the students in the 4 primary schools. For two weeks the teachers were measure the behaviour using a daily questioner. At the beginning 4 questions were asked: which children's were bring their own refiling plastic bottles (Q1), how many of them refill the same bottle (Q2), how many they used to buy water from the Scholl (Q3), how many they bring their own water bag (any container) (Q4). Then for a period of 2 weeks (and after a specific information that were given to the students) the teachers were asked the children's the same 4 questions as well as if they bring with them the specific refiling stainless steel bottles that were given to them (Q5). The results indicated that the students are presented with different behaviours from Class to Class for many reasons.

Keywords: social behaviour, monitoring and evaluation, prevention activities,

1. Introduction

In 1992, the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, drafted Agenda 21, which highlighted the potential role played by education in creating the awareness necessary to protect the environment and contribute to sustainable development [1,2,3,4]. Chapter 36 of the Agenda states that "education is critical for promoting sustainable development and achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decisionmaking" [5]. The World Summit on Sustainable Development (WSSD), held in Johannesburg in 2002, proposed to implement Resolution 57/254, which declared the 2005e2014 period to be the United Nations Decade of Education for Sustainable Development (UNDESD) [6]. The basic strategic vision of the UNDESD was to create a world where all human beings had the opportunity to benefit from education and to learn about the values inherent in environmental protection. The UNDESD expressed a commitment to integrate

Education for Sustainable Development (ESD) at all levels of education and training systems [7].

According to Waste Framework Directive [8], waste prevention are the measures taken before a substance, material or product has become waste, that reduce the quantity of waste, the adverse impacts of the generated waste on environmental and human health or the content of harmful substances. In the UK, the Government has funded a large research program in waste prevention. It includes a review of evidence analysing the behavioural opportunities and barriers in household waste prevention, associated with the effectiveness of various policy measures [9]. The impact of waste prevention campaigns, and methods to monitor and evaluate waste prevention through mass reduction and behavioural studies [10, 11] were also developed. Current decoupling indicators of waste prevention were reviewed [12]. It is, however, quite critical also to assess the environmental significance of waste prevention as this can reinforce evidence for policy development.

The purpose of this study (which was funded from EU, Project LIFE10 ENV/GR/000622), is to develop students' knowledge and behavioural changes in relation to the water plastic bottle of 500ml.

2. Materiasl and methods

2.1. Area Description

Municipality of Paralimni are based in the Eastern Region of Cyprus (Map 1) and according to the last inventory studied which carried out from the Cyprus Statistical Services on November 2011 the permanent population are 18601. However, as the Municipality consists of the main economical lung of the island due to the fact that in this area there are the largest hotels resorts the permanent population increases during the tourist period (April – October) to 50000/d [13, 14], producing approximately 15000 t/y of wastes. Municipality has Governmental and Private Schools. 4 primary schools, 1 Gymnasium, 1 Lyceum and 1 Technical School belong to the Government and 1 Private School. Also several kindergartens exist in the Municipality. Schools are working for 180 d/y approximately.

Table 1: Primary Schools in Paralimni Municipality

Primary School	No of Students
A' Primary School	250
B' Primary School	253
C' Primary School	222
D' Primary School	273
Each school has 6 classes: Class A (ages 6-7), Class B (ages 7-8), Class C (ages 8-9), Class D (ages 9-10), Class E (ages 10-11), Class F (ages 11-12)	

2.2. Measuring Waste Prevention

In this research a total of 998 students of the 4 primary schools were took place. The main problem was the plastic bottle of 500ml that is produced as a waste. Students ages 6-11 every day they have one plastic bottle with water. There 4 main categories of students (i) students that belongs on Class A and B (ages 6-8) and all of them have either a plastic bottle of water (500ml not refit able), either a plastic refiling bottle of water; (ii) students that belongs on Class C and D (8-10) which most of them have a plastic bottle of 500 ml (not refit able) but few of them have a refiling bottle (as they shy); (iii) students that belongs to Class E and F (ages 10-12) which most of them either the bring their plastic bottle of water (500 ml non refit able) or most of them the use to buy at least one bottle of water) and (iv) students from all ages that they always have their own refiling plastic bottle of water.

The evaluation procedure was mainly carry out by using hybrid methods approach as described by Zorpas and Lazardidi [11]. The Municipality were share 998 refiling Stainless Steel Water Refiling Bottles (SSWRB (of 600 ml – Table 2) to each student in primary schools. For two weeks every day the teachers were measure the behaviour using a daily questioner with 4

specific questions: (Q1) which children's were bring their own plastic bottles, (Q2) how many of them refill the same bottle, (Q3) how many they used to buy water from the Scholl, (Q4) how many they bring their own water bag (any container). Then for a period of 2 weeks every day (and after a specific information that were given to the students) the teachers were asked the children's the same 4 questions (Q1-Q4), as well as if they bring with them the specific refiling stainless steel bottle that were given to them (Q5).

3. Results and discussions

More than 40% of the kids from all ages they used to bring their own plastic bottles (Q1) which after they discharged as waste. Almost 10% of all ages they used to refill their water container from the School. Less than 2% of the students from Class A buy water from the School but on the other hand more than 20% of the Class F they use to buy every day at least one bottle of water from their Schools. As indicated from the evaluation period (Figure 1) the smaller kids (Class A and B are used to bring their own small plastic bottles or their own water plastic bags) while the biggest ages (especially Class E and F) they use to have their own plastic small bottles (of 500 ml) and do not bring their own water plastic bags, while at the same time they used to (if they need more water or if they forgot to bring their own water) to buy water from the School. This behaviour is happening for two main reasons: (i) the parents used to give money to the kids to have with them if they need to buy something and (ii) due to the fact that biggest ages are shame to bring their own water plastic bags and they preferred to buy, indicated to the others that "we are getting teenagers" and "we are controlling our self's". It is obvious that when the kids are grow up their behaviour is changed; from 42% of the participants in Class A, that they broth their own water bag (any container- Q4), only 13% of the kids from Class F they continue do that. If we look deeper why this is continue happens we will find out that: (a) economic crisis is one of the main reason, as to buy water (at least one bottle) cost 0.5€/day/bottle; (b) students are continue educated from their parents; (c) they start thing more "green". Through this research it was found out that a student will cost the each family at least €90±7.5 every School year if they used to buy at least one bottle of water and only the hours that the kid staying in the School. As the kids have usually outside activities like sports, dancing, foreign languages this amount is sometime triple.

The main reason that the smaller kids (Class A and B) used to bring their own plastic bottles or their own water plastic bags is due to the fact that parents wants to be sure that their kids, they will have during the day their own water as they fill more save. Actually the parents every morning prepare their kids school bags (including sandwich and water, juice or milk). They do not fill save to give them money to buy something from the school for many reasons (the most important are that usually they lost them or they afraid that someone may stole them)

Figure 2 presents the results from the second period and after the teachers and the kids were informed regarding the benefits of using the same water plastic bag (The same information's were given to all the Kids parents and more specific emphasis to them were given on how many euros they yearly spend to buy plastic bottles of water -500ml). It is obvious that after the specific information's that were given to the teachers, parents and students from all ages accept the Stainless Steel Water Refiling Bottles (SSWRB) but mostly the smaller kids (A Class 59% and then B Class 58%) as are more receptive and enthusiastic for something new. Impressing was that the biggest kids (E and F Class) they accept to use this new Stainless Steel Water Refiling Bottles (SSWRB) in more than 30% and they didn't buy water from the school (the percentage of buying water from the school from the first to second week were reduce from 13% to 8 % regarding Class E and from 21% to 2 % for Class F). However, as the biggest kids behave or want to presented as adolescents they chose to reuse their plastic bottle, or to bring their own water plastic bag or to have the new Stainless Steel Water Refiling Bottles (SSWRB) in more than 90 % for Class E and more than 87% of Class F.

During the first period of the evaluation a total amount of 48% of the kids all ages were discharged their plastic bottles to waste bins. This amount was reducing to 18% of the kids all

ages. At the same time more than 60% of the kids all ages were accept to prevent using either their own water bags and either the SSWRB that were given to them

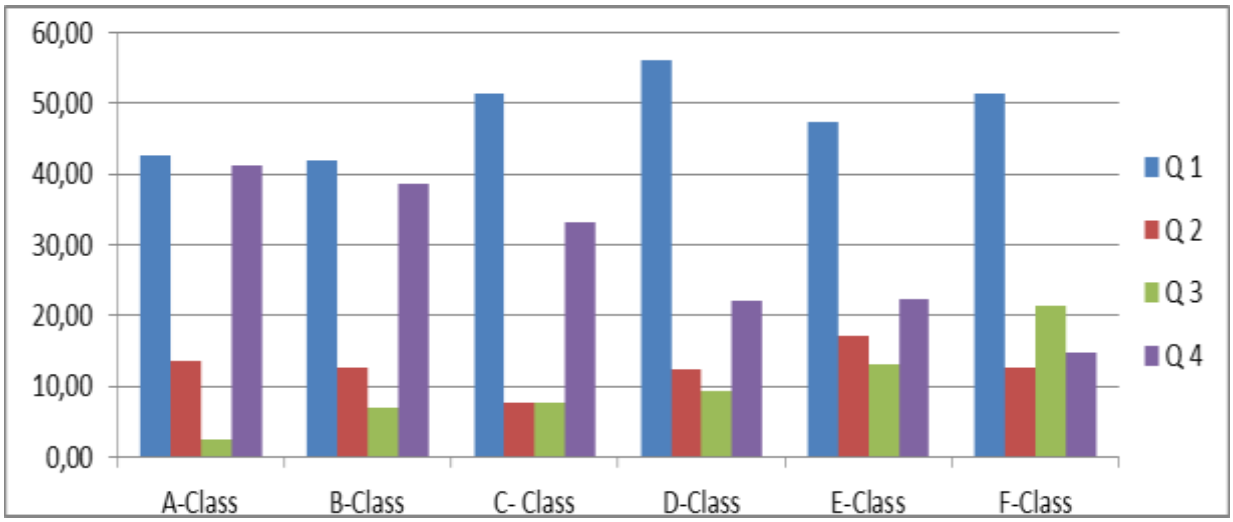

Figure 1: Evaluation of Students Behaviours per Class and for all the four primary schools and for the period of two week

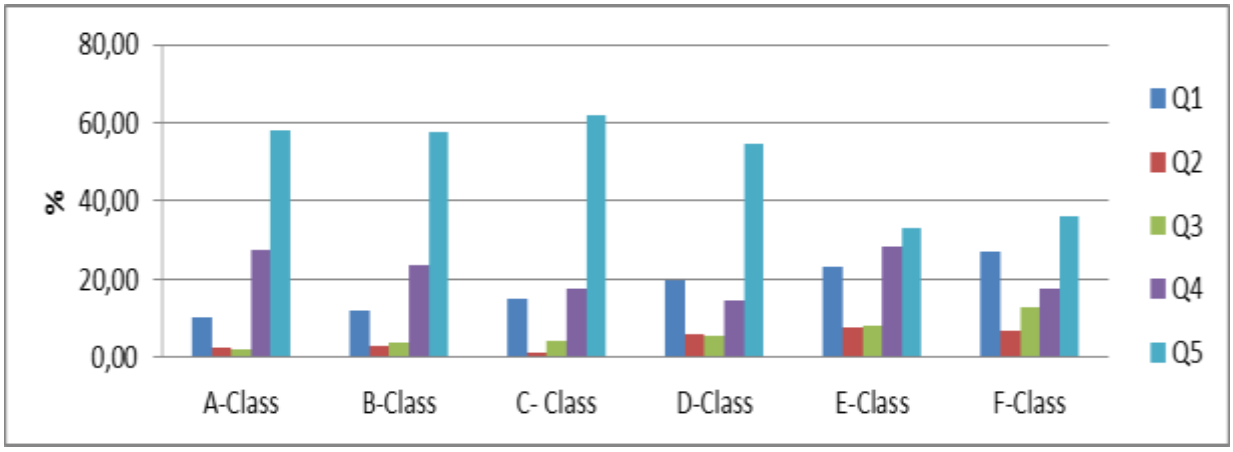

Figure 2: Evaluation of Students Behaviours per Class and for all the four primary schools and for the second period (with the SSWRB)

4. Conclusions

Waste prevention encompasses a range of policy options and has a broad range of benefits. Targeting at-source waste production, it reduces the amount and toxicity of waste before recycling, composting, energy recovery and landfilling become options. Waste prevention also includes measures to reduce the adverse impacts of the generated waste on the environment and human health. The waste minimization prevention campaign is in priority in order to achieve all the proposed activities. Public awareness event must be taken into account before the establishment of any prevention action. It is not easy to change people's behaviour without any specific awareness event.

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