

Waste management integrated into the work of the primary school in Montenegro

Snezana Ljesnjak¹

¹Marko Miljanov Primary School, Podgorica, Montenegro



Abstract

Practice in Montenegro has shown that the problem with waste will not only be solved by collecting it and managing it better, but a new approach is needed that solves the core of the problem. In the first place, this refers to the environmental education and raising environmental awareness of students in primary school who will soon become the new generation that will run the country. Students will transfer the acquired knowledge to their parents and to the community in which they live. This is a pilot study concerning the city of Podgorica, later we would do a study at the state level. This survey will outline the detailed steps of the activities that will lead to the fulfillment of this goal. The results of the research will be useful for further integration of knowledge on waste selection, recycling and the importance of the individual for the community. Also, it will be important for the whole of Montenegro because we will be one step closer to joining the EU and closing Chapter 27.

Keywords: environmental education, awareness, waste selection, recycling, waste management.

1. Introduction

One of the greatest challenges facing developing countries is the unhealthy disposal of solid waste which resulted from human activities of development and survival (15). It is a problem recognized by all nations at the 2012 Conference on Environment and Development, and regarded as a major barrier in the path towards sustainability (UNCED, 2012). There is strong evidence which suggests that individual or group awareness and attitudes towards waste generation and management is critical in the effort to respond to the waste management challenge. Thus, it comes as no surprise, that there existed an abundant literature on waste management attitudes and behaviour and on the limited use of recycling (15).

In Montenegro, available literature on waste management are not only few but also concentrated on identifying the composition and quantifying waste generated in urban cities. The poor state of waste management in the country is caused by inadequate facilities, poor funding, and poor implementation of The concept of attitude and associated relationship with human behaviour has been a topic of interest among researchers for years. Attitude toward a concept can be defined as an individual or group of individuals, general feeling of favourableness or unfavourableness for that concept. Many studies of knowledge and attitudes have found a positive and often significant relationship between the two variables. In a study of the effectiveness of a visitor education strategy in raising levels of knowledge and attitudes toward nature conservation, Olson, Bowman and Roth (1984) found a positive relationship between scores on the knowledge test and scores on the attitude test for all concepts measured.policies as well as wrong lifestyle (consumption pattern).

Many studies in the last two decades on socio-demographic variables and environmental perception have helped in understanding people's views, and thinking about the environment. They have attempted to predict environmental awareness and attitudes of people based on their

socio-demographic characteristics. For instance, Raudsepp (2001) reported that age, education and gender have shown strong and consistent relations with environmentalism. Other researchers (Mensah & Whitney, 1991; Gigliotti, 1992; Sheppard, 1995; Eagle & Demare, 1999; Tikka, Kuitunen, & Tyns, 2000) have attempted to ascertain the correlates of environmental knowledge and environmental quality awareness and concern. Some others have also explored the influence of education, income, age, and gender on public awareness and attitude toward environmental quality issues. Chanda (1999) reported that environmental concerns among residents of Gaborone vary according to education and income levels, while age and gender do not seem to have any significant influence on variation in concern(17). There are studies that have examined public, households and students' knowledge and attitudes towards waste management (1,3,12).

Although Montenegro became the first country in Europe to declare itself an ecological state with its Constitution, 30 years ago, the overall ecological environment and nature conservation in the country have been steadily declining since that day and Montenegro now lags behind most EU countries. Also, numerous reports from international and domestic organizations and institutions have shown that this endeavor will be extremely difficult, due to numerous challenges in the country in this regard: inadequate legislation, lack of coordination and monitoring between various environmental institutions, lack of strategic planning and financing in this sector, lack of capacity at all levels, and most importantly for this survey - inadequate awareness of the importance of selective waste disposal, recycling and reduction of municipal waste. EU targets on the circular economy envisage that by 2025, at least 55% of municipal waste will be recycled and composted. However, in recent years, only 1,5% has been recycled, although the goal set for this year was to be 20 %. As work began in all fields on the most demanding chapter on this issue, so began greater engagement on the problem of waste management. Several actions have been implemented, including EU-supported projects, but no significant results have been reported. It is obvious that the approach of previous actions has not been good, and the low level of infrastructural conditions for the realization of such a demanding goal has a great contribution. In fact, the goal would not be demanding if such actions were implemented in all educational institutions in Montenegro at the same time. and this is possible only with the great engagement of all actors, and in the first place the support of the Government, which should best know the seriousness of the problem it must solve if it wants to be a member of the EU.

This study is a concise overview of a set of activities that will lead to the achievement of the above mentioned goals, their main advantages and possibilities of implementation.

- **section 2** explains the existing problem and why its importance will fade over time
- **Section 3** explains:
 - what are the existing solutions in the available literature,
 - and what are the objections from the point of view of this survey,
 - what is the essence of our solution and why it is not expected to have the above objections,
 - what will be done to show that our solution is better, for how much and under what conditions.

2. Problem statement

EU targets on the circular economy envisage that by 2025, at least 55% of municipal waste will be recycled and composted. However, in recent years, only 1,5% has been recycled, although the goal set for this year was to be 20 %. Approximately 60 % of the total waste ends up in unregulated landfills. Of that, 37 percent was organic waste, 21 percent was plastic, 13 % was paper, 9 % was glass and 20 % was other waste. The biggest problem is Podgorica because almost a third of the population lives in it. There are 9 recycling yards and 2 sanitary landfills in Montenegro. The government has announced the construction of 4 Waste Management Centers and the existence of a waste treatment center. Despite all the infrastructural conditions, no progress can be seen in the selection and disposal of waste. Employees of the Public Utility Company and the Landfill believe that the main problem is that they do not have enough employees and that there is no public awareness of the importance of waste management. Several projects related to this topic have been implemented, but none have yielded any notable results. Recycling is mentioned in the subject Biology, but there are no containers for waste selection in schools so most of the acquired knowledge remains only on theory. This is very likely the core of the problem, because the most important thing for children is to complete the process before their eyes and with their participation. At several locations in Podgorica, there are containers for organic waste, and the recycling yard is located in front of the company Landfill, which is remote area for most residents and requires additional funds for transportation, so most give up this method of waste selection. Also, numerous reports from international and domestic organizations and institutions have shown that this endeavor will be extremely difficult, due to numerous challenges in the country in this regard: inadequate legislation, lack of coordination and monitoring between various environmental institutions, lack of strategic planning and financing in this sector, lack of capacity at all levels, and most importantly for this project - inadequate awareness of the importance of selective waste. Numerous studies related to the problem of waste management can be found in the literature.isposal, recycling and reduction of municipal waste.

Marko Miljanov Elementary School is a respectable Podgorica school with 60 students and 820 students. She has always been recognized for various extracurricular activities and actions for the benefit of students and the community in general. In state competitions, students have always taken leading positions, which is also an indicator of success. There is no doubt that the study will give results, as well as all the actions it has implemented so far. In addition to teachers and students, the collaborators in achieving the goal are the municipal company Landfill, the NGO Green Home and the private company Telecom.

3. Existing solutions in the available literature

Now environmental education is welcomed by all categories of people. It is an attempt to reorient education so that environmental competence is restored as one of its basic aims along with personal and social competence (3).

Hygiene starts from home. Our household waste accounts for major amount of solid rubbish. Some are reusable and others non-reusable. All these constitute megatons of municipal wastes. If it is not properly disposed off, the consequences are dangerous (Yadav & Mishra, 2004). So there

is an urgent need to streamline and sensitize young minds to the environmental problems and concerns. It is the education which makes human beings knowledgeable to environment and problems related to it. Students must have awareness about environmental problems so that they can play their role very effectively in proper waste management (12). Students with better awareness towards social duty are more aware towards environmental awareness (Astalin, 2011). In conclusion giving social duty awareness along with waste management awareness may improve the practice of waste management. Awareness program of waste management is greatly needed for parents also. This can be given in the schools during parent teacher meetings or in community based programs. For this purpose, education departments of the states/ country can implement environmental education programs to the teachers at all levels of education.(4): Composition of waste generated in school foodservice operations in Andong Area. Korean J Comm Nutr 4(2): 130-135). The school and education policy makers can refer to the studies findings. Increased students interest or intention to implement sustainable waste management behavior can be improved by increasing students knowledge of sustainable waste management consisting of reduce, reuse, recycle, and waste to energy(21). In response to the challenge, San Juan (2019) revealed that participation of community members on solid waste management program depends on the action taken by their leaders or officials. More so, Al-Katib et al. (2010) emphasized that solid waste management requires technical, political, legal, socio-cultural, environmental, economic factors and available resources. The absence of any of the resources will make solid waste management program failure. Thus, the community members will be unsatisfied (11). Aside from these, mass cooperation and active participation is also necessary. Therefore, educating people through information dissemination on how to handle produced solid waste has become essential (9). Oliva as cited by Villanueva emphasized that education is one of the four key components to have a good solid waste management program. However, poor information dissemination strategy on solid waste management will make the public less aware and less participative on the program (14). For instance, Dela Cruz (2020) revealed that in a certain community, solid waste management program is moderately implemented. Results revealed that students have enough knowledge in terms on definition of solid waste, effect of improper solid waste disposal, solid waste prohibited activities, school initiatives towards solid waste, importance of solid waste management and students' responsibilities. However, students have low knowledge on the different laws relevant to solid waste management(9). Taiwan has implemented waste management and recycling education in schools since the 1980s and been recognized with her higher recycling rate than many developed nations worldwide.(20). The finding of this study indicated that participants' knowledge of MSW management is high, but the levels of attitude and practice are neutral and moderate, respectively. It showed positive correlation relationship between knowledge and practices. Furthermore, the result of this research was reasonably cleared that the most important issues must be focused on the group of young people (less than 20 years old).(7).

As for the studies conducted in Montenegro and the countries of the region, it is noticeable that they are scarce. Probably the reason is that the insufficient infrastructure does not allow the realization of such selective activities. Existing solutions are those concerning the existence of the above-mentioned infrastructure. All this is in vain when recycling yards are not available to the majority of the population, there is no organized transportation of selected waste, there are no containers for waste separation, and most of all there is no information on the importance of waste

management and benefits. Raising environmental awareness has recently become very attractive in Montenegro. It is contradictory if we know that more than 30 years have passed since the declaration of Montenegro as an ecological state. However, we have to deal with the problem, not whether it was just an expressed will without a willingness to implement the declaration. The solution we propose is to raise awareness of the importance of waste separation, recycling and waste management processes by educating primary school students. For the beginning of the study, it was done for the elementary school Marko Miljanov in Podgorica. Science and practice have long shown that it is best to act on the smallest possible age of the population if we want to instill a habit. The goal that has been achieved is to achieve the habit of selected waste at the place of origin, its proper disposal and knowledge of what happens later with it, through the active participation of students. In addition to raising the level of environmental awareness, this provides an independent fund for school funding related to the purchase of desired teaching aids. In addition, students will learn how to make money and contribute to society. Our solution has no shortcomings because it was made with the available infrastructure. It would be unfeasible to work at the state level because wider action would require infrastructure that is not currently available. Also, may be a good idea for solving the problems that the whole of Montenegro is dealing with, when it comes to the problem of waste management.

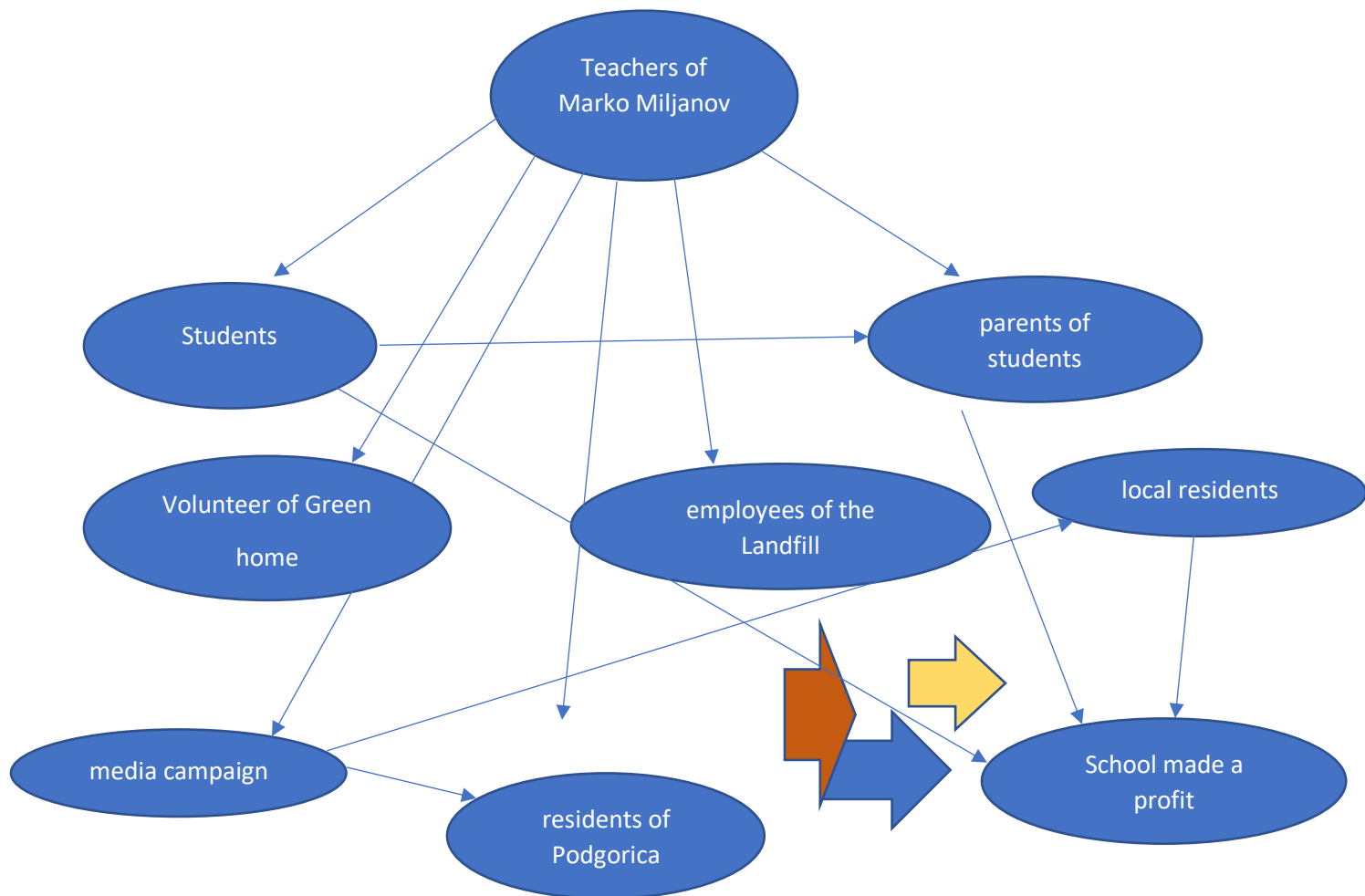
Realization by segments:

- Before the beginning of the school year, the teachers would organize an agreed meeting with the employees from the Landfill and NGO Green home,
- teachers of Marko Miljanov Primary School, would give an introductory lecture with all classes at the beginning of the school year,
- organize parent meetings to explain the importance of waste as a resource,
- bring containers of various colors in front of the school, which will clearly show which container is for plastic, paper, which for metal, which for glass,
- the Landfill company would have 2 trucks every day that would come in front of the school twice a day and collect the waste brought by the students,
- a press conference would be organized to present the project and its significance for the wider community,
- the Ministry of Education and its associates would create an educational brochure that would be distributed to other schools in Montenegro that are not covered by this study,
- involvement of volunteers who, upon invitation from households, would take the selected waste to the recycling yard,
- a private Telecom opens a telephone line to report collected waste,
- every month we would receive information on the amount of selected waste and how much money the Landfill paid into the school account,
- students would be regularly informed about their contribution to the community and the school,
- each class would decide itself what they would most like to buy from the earned money,
- based on the most votes, the school would decide which teaching aid the students most wanted to buy,

- organization of an eco-school for students from the Western Balkans,
- testing eco-school participants before and after attending,
- they would enter into an agreement with private companies engaged in the production of recycled products,
- we will promote the results of the project in the media of the Western Balkans, with their Ministry of Education, so that they and their schools can try to raise students' awareness of the importance of waste selection at the place of origin.

The greatest efforts will be made to keep the desire of students and parents to participate in the selection of waste at the place of origin for the first 15 days. This will be an additional job for teachers. The pandemic class lasts 30 minutes and it will not be easy to complete regular lessons and commitments in combination with project implementation. Parents will invest extra effort and time to pack recyclable waste that students will carry daily in containers in front of the school. DOO Landfill will employ 4 part-time workers who will be in charge exclusively for the implementation of this project. Volunteers will, in addition to obligations regarding other projects, have the obligation to take over waste from households by invitation.

The proposed study aims to impact different sectors of the society and in several aspects, most important being technical, economic, social and ecological. To that end, each target group and/or beneficiary of the project will be impacted in different ways and through different activities. The impact of the study on the technical aspect of representatives of public authorities (especially local environmental institutions) and CSOs will be made through trainings, conference, research and report, as well as introducing them with the new methods and EU practices when it comes to selection of the waste and recycle. These two groups will benefit in the long-run by working together in achieving the aims of the relevant national strategies, whereas their technical capacities may be strengthened in the near. Younger population, especially elementary school students will be impacted in several ways, primarily through new knowledge received through the new environmental program, but also by learning new skills waste management, means of protecting the environment and video production, which may affect their future plans and economic stability. Nature needs healing and sustainable management at all levels. In cooperation with the local print media, we promote our research. In cooperation with televisions with a national frequency, we will inform the public about our activities. We will get in touch with the regional media and in that way try to animate the countries of the region so that they also educate elementary school students in this way and in that way we get healthier environment and our neighboring countries. We will create eco-camps whose participants would be students from the Western Balkans who, after returning to their countries, transferred their experiences and knowledge to their peers. Our action will contribute and be a step closer to accession to the European Union. All activities proposed in the project are planned with minimum, or no risks involved: It may happen that students and parents, despite the efforts of teachers, will not want to participate in the project. They can have excuses that this is an additional effort, that this is not part of the basic role of the school, that parents do not have time to pack waste, that they find it difficult to carry a waste bag next to a school bag, that this is the responsibility of other Ministries and not school teachers. ..The pandemic covid 19 is still in full swing, the current omicron strain is in full swing so it could happen the Government introduces quarantine and then we can not achieve the proposed goals.



4. Conclusions

This survey provides an overview of activities aimed primarily at raising the level of environmental awareness of primary school students Marko Miljanov, primarily in terms of awareness of the importance of waste management and recycling. Also, profit is something that is a very important item for a state institution. In this way, waste management brings a special type of financing from which the school can buy funds that in a regular situation would not be possible. This provides an overview of activities that can be carried out at the state level, and opens new possibilities for further implementation of similar activities. Instead of expensive investments in various activities so far, it is better to dedicate ourselves to investing in education because it will return to us in the fastest way and be longer lasting. It also proves that cooperation between institutions is possible without anyone sponsoring anyone. Certainly, this study also supports research conducted by researchers from various countries mentioned above. It is necessary to conduct more studies of this type in Montenegro, because it is obvious that no results in this field have been recorded in the literature and that they have included an educational system.

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