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Evaluation of Students' and Parents' Views and Attitudes towards Recycling

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Abstract

Talking to children about recycling, specifically about selective collection, is just a small step in the recycling journey—one that is accessible to schools thanks to the many resources at hand, which involve low costs and a lot of creativity. However, to give children a wider framework so that they understand their contribution and keep their motivation to participate actively, environmentally friendly actions and workshops are needed. They need deep exploration of the concept of protecting the environment through hands-on experiences, games, creative activities, and sensitive discussions, all accompanied by establishing routines that highlight their input. This article explores ways to approach the topic of recycling with children and involve the family in a positive way. The target group was children from Maramures County secondary school together with grandparents, parents, or siblings who take care of them. The study aims to evaluate the factors that influence the attitude of students in relation to recycling and how they are influenced by the good practices transmitted by the family.

Keywords: *recycling; education; primary education; attitude; behavior*

1. Introduction

Recycling isn't just for adults—kids can get involved in protecting the planet, too. Educating them from a young age is important so that good habits are reflected throughout their lives.

Ecological behavior is achieved first of all through the power of example and then through that of the word. Students are very receptive to what they are shown and told about the environment, wanting to get involved, as much as their powers allow, in protecting the environment. Ecological education starts from children's natural interest in plants and animals, for what, in general, nature represents for them. Through recycling actions, behaviors, and eco-civic norms regarding the protection of the environment are motivated.

Researchers pay attention to that problem, and Ardoin and Bowers [1] put in evidence the low levels of environmental awareness and eco-friendly practices among elementary school students. Piao and Managi [2] also observed that higher educational levels were associated with an increase in specific environmentally friendly behaviors and sustainable energy consumption.

Students' in the higher educational level group tended to consume recycled goods, purchase energy-saving household products, conserve electricity, and separate their waste. In conclusion, higher levels of education can be positively associated with equivalent household income, indicating better economic development. Results show the importance of improving education at the broad population level to promote economic development and establish cooperative human behaviors necessary to sustain the environment. Another opinion of Yıldız et al. [3] Sustain needs for future studies that use interventional, experimental, and action research methods, holistically addressing pillars of sustainability.

The family plays an important role in shaping students' attitudes. In Greece, students express interest in the environment and its problems; their environmental attitudes tend to diminish over time [4], [5] because other family members do not express pro-environmental attitudes daily. In Great Britain, students declared their interest in environmental protection, but they found it difficult to continue recycling because their parents were not always willing to recycle [6]. In the Netherlands, it was indicated that the messages received from students' school and family were often in conflict, as most students' families owned at least one car and students rarely walked [7]. In New Zealand, students used their bicycles to go to school, even if their houses were located less than four kilometers away from their school [8]. In Malaysia, primary and secondary students' parents use cars to get their children to school safely and do not let them walk or bike [5].

Parents performing the role of the family in the formation of environmentally conscious citizens [6] can give their children experiences to help them come into contact with the natural environment, because through this contact the children are expected to form positive environmental attitudes and

behaviors [9]. Parents' consumption behavior and parents' purchasing decisions serve as role models for children, so girls tend to imitate fathers' behavior, while boys tend to imitate their mothers [8]. also Parents' participation in recycling or packaging activities can lead children to engage in ecological activities [9]. In addition, Walker et al. [10] and Palmer [11] confirmed that the family's environmental behavior in terms of recycling is significant because children participate in recycling and saving water by imitating parents. The effect of the family's actions on the child was also confirmed by a study that showed that Greek students recycled packages and batteries because their parents also did so [12].
In Portugal, families with children participate in supermarket recycling programs [13]. In Denmark, another study showed that although parents and children have similar pro-environmental behaviors and seek to save energy [14].

2. Case Study

This study was carried out as a result of the collaboration between the school and the family in order to determine the influencing factors of students attitudes regarding the recycling process. For the evaluation of Romanian students' and parents' views and attitudes towards recycling, a survey created with Google Forms was applied online. The structure of the survey is presented in Table 1.

Table 1. Survey structure

Question	Factor
Gender	Individual characterisitc
What age category do you belong to?	
You are a responsible person when it comes to the consumption of natural resources	Information
You have enough information to be responsible consumers of natural resources	
You think you live in a polluted city	
You are willing to volunteer to protect the environment	
Do you know the recycling points in the city?	Knowledges
Do you know companies that recycle	
Do you know what selective recycling means?	
Unplug electrical appliances when not in use	Behavior
What material do you recycle at home?	
Have you ever thrown trash on the floor?	
You are aware of the importance of the recycling phenomenon	
What measures should be taken to avoid pollution	Needs
What are the reasons why citizens do not pay due attention	

The survey parts were the following:
Part 1: Individual characteristics, age, and gender.
Part 2: Information about recycling importance, willing to become a volunteer,
Part 3: Knowledge about the recycling campaign, selective recycling,
Part 4: Behavior and involvement in the recycling process at home.
Part 5: Needs to improve the recycling phenomenon

The aim of the study was to identify information about recycling, to acquire knowledge about the human-environment relationship, and to educate students' behaviors towards the environment and recycling selective materials. Also to identify kids' skills and habits to protect the environment, if they have active vocabulary with words from the field of recycling and certain attitudes and active participation in recycling actions. Families influence kids behavior and knowledge in recycling of reusable materials, acquisition of some knowledge, and norms of behavior specific to ensuring the balance between the health of the individual. All these were priority objectives of the present study applied in the instructional-educational process in the school between the students from primary and general schools (140 participants) and between their family members. The survey was applied on winter holiday between 22 December 2024 and 8 January 2025. The analysis was made using SPSS

25.00, and a value of 0.865 was obtained for the Cronbach coefficient. To determine the correlation between variables, CHAID and cluster analysis were realized.

3. Results

In the first part, we determine the individual characteristics of respondents, and the results show that 67.4% are female and 32.6% are male. Of these, 62.5% are between 10 and 20 years old, our target group. Analyses show that 62.5% of respondents are students from primary and secondary school, and 37.5% of respondents belong to students' families. On the other hand, 90% of students are female, and they are deeply involved in the recycling process, maybe because they are helping their mothers in different home activities. So students copy their parents behavior as a model; 70% of adults are responsible for the garbage in family duties.

Another factor was to verify if respondents are very well informed about the recycling problem because the city was a polluted city because of the Golden Factory, which is now closed. As we can see from Table 2. The young generation, 47.14%, don't know about the dark story of the city, so families can give them necessary information about the importance of the environment and the necessity to
protect it.

Table 2. Respondents level of informations about their city pollution

What age category do you belong to		10-20	21-30	31-40	41-50	➢ 50	Total
You think you live in a polluted city	Yes	47	21	12	34	17	131
	No	66	0	0	0	0	66
	I don't know	27	0	0	0	0	27
	Total	140	21	12	34	17	224

Regarding the recycling information, 56.25% of students don't know yet where the recycling points are in the city, so for the future, families and schools must cooperate to learn and inform kids about that. Students are very responsible about the economy and reduce the consumption so 72.85% of students' unplug electrical machinery when they are not used anymore, but also from Table 3 we can see that adults are not so careful.

Table 3. Respondents behavior for reduce consume

What age category do you belong to		10-20	21-30	31-40	41-50	> 50	Total
Unplug electrical appliances when not in use	Yes	102	0	0	0	0	102
	No	38	20	0	0	0	58
	I don't know	0	1	12	34	17	64
	Total	140	21	12	34	17	224

Another factor taken into consideration was knowledge about the recycling process, and 70.54% of respondents had enough knowledge about the importance of the recycling process, from which 51.14% were students, but 41.42% of students' only heard about it and never participated in the recycling process. 55.36% consider that they also know it is necessary to be prudent and responsible for consuming natural resources because they are responsible for the future of their kids. 67.86% don't want to be involved in volunteer activities to protect the environment because they don't' have time. Regarding the type of measures that should be taken to avoid pollution, in students opinion, 40% of them believe that prevention can improve the students behavior, and 56.42% of them are following the slogan learning by doing and consider that families have the biggest influence in education and modeling the young generation.

4. Discussion

The results presented in Fig. 1 show that 42% of respondents have enough information about recycling; they are responsible about consuming natural resources in 55.4% of cases, from which

28.1% are male and 27.2% are female. 66.4% of respondents consider that they take action like a responsible person taking care of natural resources. 93.7% are male, maybe because they have skills and practical spirits compared with 57.4% who are female.
77.2% of students recycle because they have information about the benefits for the environment. 50.4% and 26.8% of students don't gain enough information.

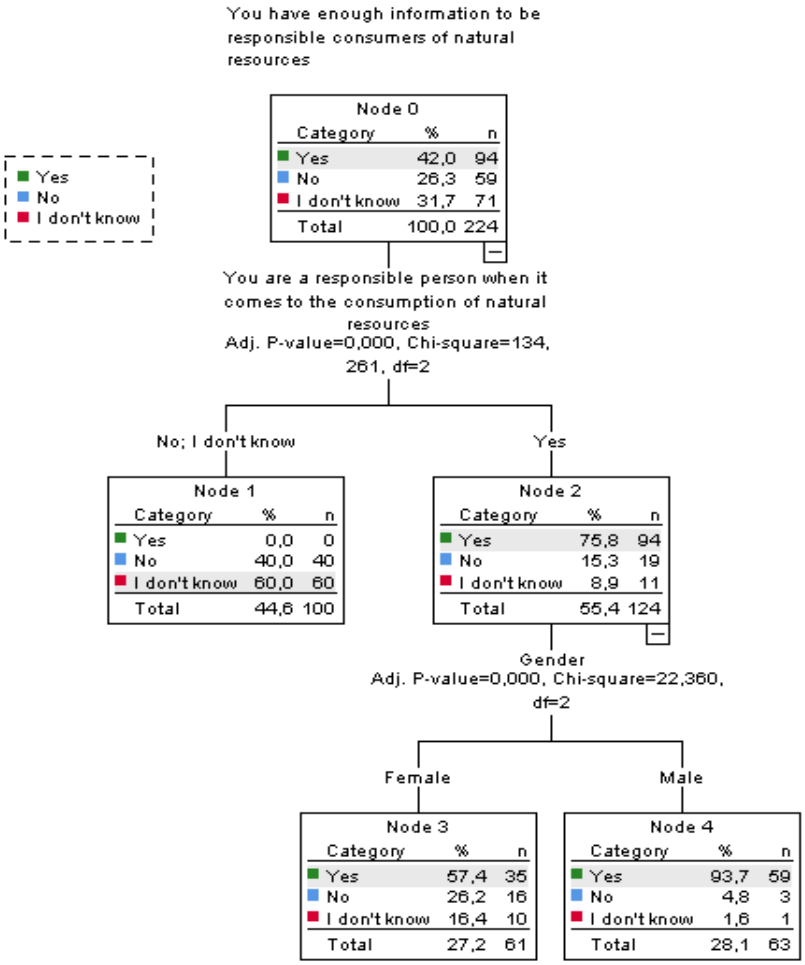

Fig. 1. Classification for student information regarding the natural resources

For alignment with European standards as a priority and a necessity and to encourage selective recycling, a new program was put into function. RGS—Return Guarantee System is a system through which Romanians will pay a guarantee of 0.50 RON when they buy a drink (water, soft drinks, beer, cider, wine, spirits) from a retailer. By returning the empty packaging to the collection points, the consumer will receive back, on the spot, the amount of the originally paid guarantee, without the need to present the tax receipt and even if the product in question was bought from another trader.
The legacy caused by an industrialization policy that aimed only at results, without taking into account the consequences, is very difficult. In a period of time, in short, they tried to repair and build a frame on the fly economically and socially according to EU norms.

From Fig. 2 we can see that 43.8% of respondents already know where the special point center for recycling is in the city, and 56.2% of respondents don't know because parents don't involve their kids in house activities of recycling. The parent exaggerated with kids protection and forgot that they are the future citizens. In conclusion, 29.5% of students have and know about selective recycling in comparison with 26.8% who only heard about that sensitive topic for our society. Parents must also

involve children in the selection activities and, through their example of good practices, influence and educate young people for a culture of recycling.
The students participate actively in 77.2% of the recycling process; they know the selection and sign standardization of each material: PET in 33.6%, glass in 17.3%, and paper in 9.2%.

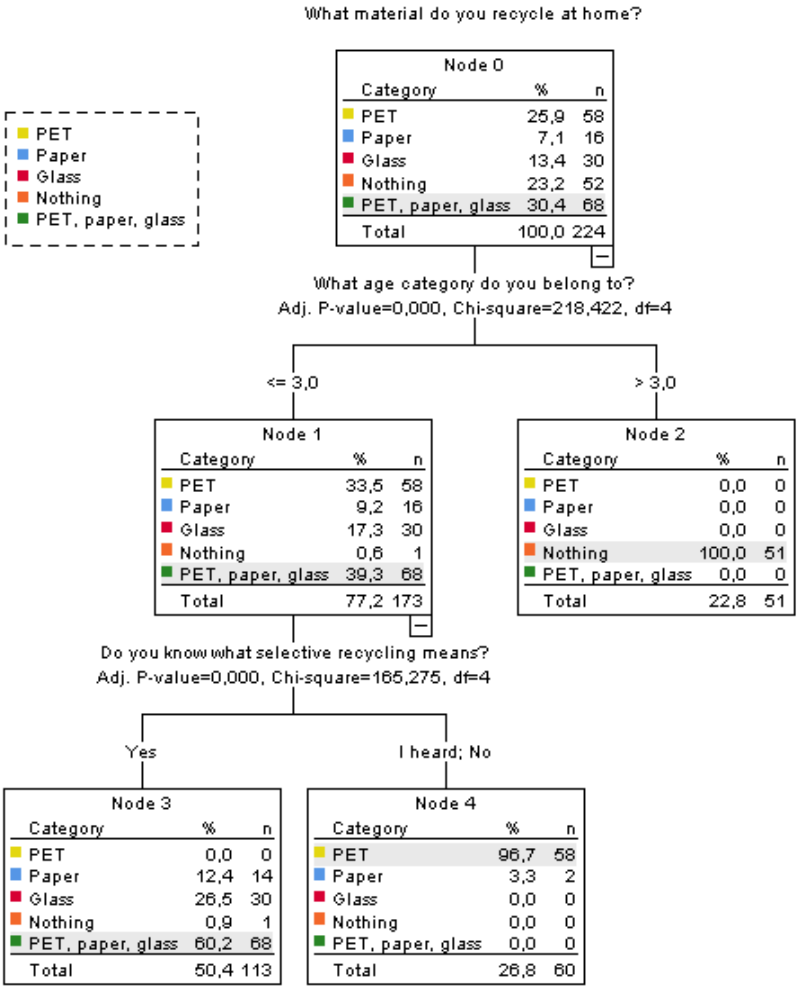

Fig. 2. Classification for student behavior regarding selective recycling

In the current context, educating children at school about selective collection should become a priority. By explaining to them why it is important to make a selection of the waste produced, involving them in various school projects that have as their main theme saving the environment, and showing them the consequences of their own actions, children will grow up with a healthy mentality vis-à-vis nature and natural resources. The impact these measures could have on children will also be considerable in nature.
By educating students about recycling, we inspire them to think more about how their actions make a difference to the environment, and as they grow up, they will see a normality in throwing trash in special bins for recycling.
Fig. 3 shows that the respondents are willing to be a part of volunteer activities in 57.8% of cases, and 42.2% are not interested in participating in protection of nature activities, considering that special people are responsible for that problem.
In schools, it is very easy for the little ones to learn to treat the environment with respect, but also the work of those who work in this field of recycling. A guide for the selective collection of garbage should be explained to them in their understanding but also put at hand to be consulted whenever needed.

The presence of bins for selective collection, by color, is essential and is a very safe way for the little ones to dispose of waste correctly.

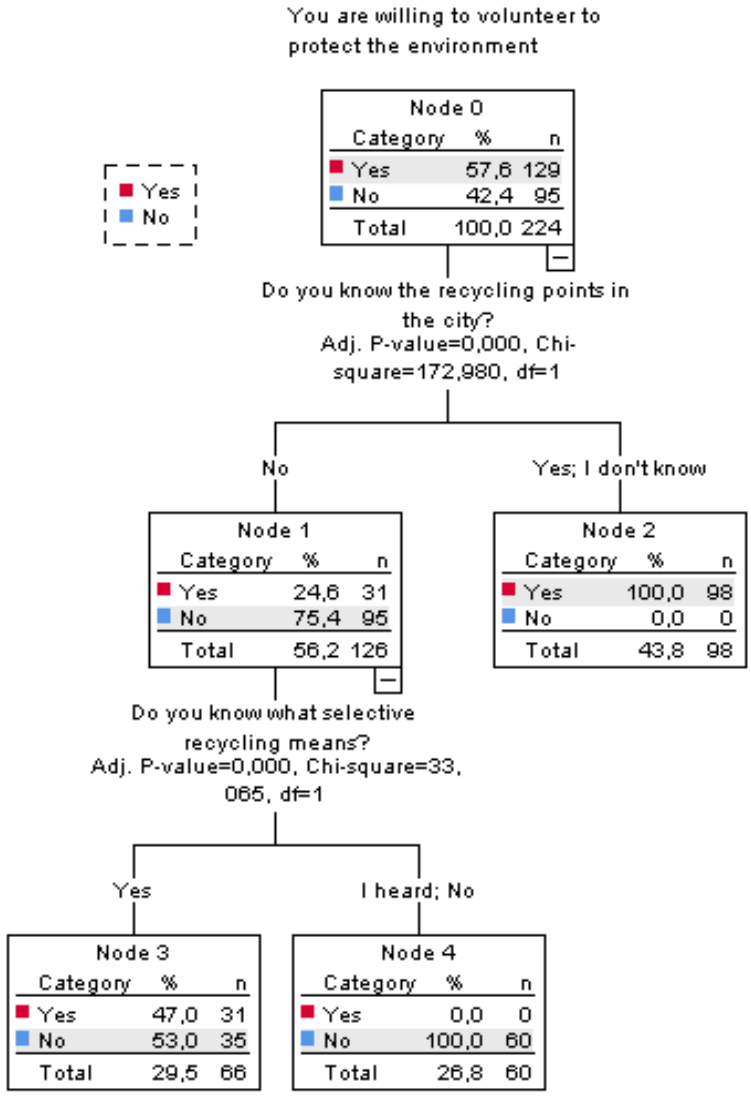

Fig. 3. Classification for student participation in activities to protect the environment

4. Discussions

4.1. Conventional Consumer Cluster

In order to identify subgroups of respondents, a cluster analysis was performed, taking into account the order of behavior and participants information. A two-step group analysis (k-means and hierarchical clustering) of the factors allowed the identification of respondents groups with similar behavior and needs.

The sample of 224 targeted participants was divided into clusters; the variability of the preferences of the individuals belonging to the different clusters towards recycling sustainability was validated.

It was possible to analyze the sociodemographic components of the subjects within each subgroup in order to evaluate the effect of the individual characteristics (age, gender, level of study) on the formation of behavior and level of information about recycled materials.

Four clusters were identified and labeled as follows:

· “recycling needs” (characterized by specific measures and motivation to be involved in the recycling process)
· “recycling information” (characterized by the preferences to some material recycling),
· “Consumer knowledge” (characterized by high responsibility when we need to protect the environment).
· “recycling behavior”

Clusters were labeled according to major participants traits like in Table 4.

Table 4. Participants ‘ conventional cluster regarding recycling

Irems	Cluster		Number of participants
Do you know what selective recycling means?	4	Knowledges	30
You are a responsible person when it comes to the consumption of natural resources			
You have enough information to be responsible consumers of natural resources			
You think you live in a polluted city			
You are willing to volunteer to protect the environment			
Have you ever thrown trash on the floor?			
Do you know the recycling points in the city?			
Do you know companies that recycle			
You are aware of the importance of the recycling phenomenon			
Gender			
What age category do you belong to?	3	Behaviour	51
Unplug electrical appliances when not in use			
What material do you recycle at home?	2	Information	69
What measures should be taken to avoid pollution	1	Needs	74
What are the reasons why citizens do not pay due attention			

Cluster 1: Consumer needs obtained the highest value of 224 respondents, which shows, once again, that their behavior isn’t influenced by age and gender. Students with their families take care about pollution and identity reasons for a better campaign promotion of selective recycling. The biggest value was obtained by cluster 4 for motivation for 74 participants, which shows the interest of respondents regarding the possible measures to prevent pollution. but also to develop methods and tools to improve the recycling process.
Cluster 2: For 69 respondents, information is very valuable and presents the importance of lifestyle and orientation towards recycling at home, starting with one person as an example and following the family model, but because of their busy lifestyles, parents do not have enough time to attract them to different home activities. Families, together with schools, must identify new ways to send information on the benefits of kids and the environment. In second place is cluster 2, ‘recycling information’ participants, who consider that selective recycling is important and can influence in a positive way the kids perception and attitude following parents example.
Cluster 3: consumer behavior for 51 respondents Their behavior is influenced by age and their attitude towards the recycling process.
Cluster 4: For 30 respondents, recycling knowledge obtained low values, and they take into consideration the impact of volunteer activities and knowledge about city pollution and quality in their

preferences. The value indicates that knowledge does not represent an important characteristic in their decision, and the measures as external aspects are more important.

5. Conclusions

Based on the literature on students and families views and their attitudes towards the recycling process, the results were able to identify similarities between the Romanians' and people from different countries.

As a general conclusion, it can be seen that in Maramures County, students' are well oriented to be able to make seleective recycle, they are familiar with the concept of pollutionn and protection of environment.They are loyal to local special point for recycling in city and prioritize the relative importance of elements which can be recycle. and contributes to development and encourages the sustainable development of the area in the future.

Additionally, it is a normal way of living for both genders, with increasing attitudes for beneficial weekly consumption.

Additionally, individual characteristics, such as age segmentation, present a similar orientation for consumption for both food products (at least weekly).

The involvement of parents together with the school has an impact on children's education and behavior. The involvement of parents in schools was, as well as school life, less likely to engage in activities that would have children whose parents are active and interested in the educational process they go through register visible progress from the first years of school [4-8]. At the same time, children whose parents are involved in a partnership with the school tend to achieve the best learning outcomes and also have fewer behavioral problems [9]. Children whose parents are active and interested in the educational process they go through make visible progress from the first years of school.

Creative recycling, also known as upcycling or creative reuse, is a process by which waste, useless, or unwanted objects are transformed by creative methods into something new, interesting, and useful.

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