

The Attitude of Adolescents Towards the Management of Food Wastes

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Abstract. Efficiency in managing different types of waste is more important than ever. High urbanization and industrialization alter food production and consumption. Resources taken from nature are used in the production of goods that are consumed or disposed of and treated as waste. Consumers can be considered as the most important group in total waste production, resource consumption and the creation of different environmental impacts. One of the means to achieving sustainable environmental development is to choose the right and appropriate mechanisms of school and family education, intertwined with effective technologies in the different spheres of life. Through proper education, you can create a base for the construction of a new life-style, value orientations, and readiness for the conservation of natural resources. Conducting adequate studies can present problems for environmental treatment of adolescents with food and to propose specific recommendations for enhancing the training in different aspects, with the aim of forming a proper environmental culture and consciousness. The material aims to trace the environmental attitude towards food and nutritional resources in adolescents of different age groups and social strata, and to find solutions to reduce food waste through responsible environmental considerations. It monitors trends in family-friendly, school-friendly and circular behavioural. Good intentions are not always reflected in everyday practices. Among the main factors are food perception and consumer efficiency knowledge, level of education, as well as general beliefs and concerns about the environment. For the purposes of this study, questionnaires have been developed and applied for selected groups of participants. 224 adolescents aged 12 to 18 were interviewed. With the help of 19 questions we were looking for in-depth analysis, flowing through the specific views of adolescents on educating them on the issue and events in their day-to-day life. The results obtained are processed using quantitative methods for analyzing the respondents' answers to the given environmental problem.

Key words: ecology, food, waste, education, attitudes, sociology.

Introduction

Multiple factors influence the processes of managing and establishing an attitude towards food. They are biological predispositions, sensory – affective, social, economic, cultural and educational (CONTENTO, 2010). Of particular importance

is the problem with the loss of food resources (FAO (2002, 2011, 2014) edible or waste, despite a number of acting technological, legislative, economic and social measures (PARFITT *et al.*, 2010). An important indicator in the chain of

management and decision-making related to the considered issue is the culture, together with the assessment of individuals and/or society as a whole, the importance of input resources and products created by them. Important factors (VERMEIR & VERBEKE, 2008) of consequence are: personality, knowledge, level of education, common beliefs and environmental concerns (LAIDLEY, 2011; MILFONT *et al.*, 2006; BRUNDLAND, 1989).

Children of school age are risk population group with regards to nutrition. In our preliminary study (TODOROVA *et al.*, 2018) conducted among students from 6-th to 12-th grade in several select Secondary Education School in the city of Plovdiv, we found deficiency in the level of knowledge related to the management of food and sustainable development of natural resources. When analyzing received data, a low level of attitude and proceeding of proecological everyday attitude is reported under the influence of the family and school environment. Promoting, evaluating and supporting activities, directed towards the protection of the environment, personal and public health are limited although the environment provides good examples.

Different groups of teenagers are able to analyze and forecast results of the impact of different human activities on the environment and its resources as well as to comment on the role of different factors of pollution and the responsibility for that. However, in the school curriculum, the topic of food is represented mainly as a source of good health and in a very small part is considered as a necessary resource for future generations (VERMEIR & VERBEKE, 2008). The United Nations Environment Program - UNEP (FAO, 2014) aims specifically to raise awareness of the value of food and the impact of its loss on the environment (Brynjarsdóttir *et al.*, 2012). It is necessary to establish constantly environmental competences among the students (VAKLEVA, 2008). Knowledge related to the management of food waste is an important

part of the competence and aims to form and support, contribute to the formation of the activities for the creation of (PANAYOTOVA & VAKLEVA, 2011) ecological culture, ecological consciousness and behavior with the main purpose of conservation the environment and natural resources. Nevertheless, there is a discrepancy in concepts such as "environmental literacy", "environmental consciousness", "responsible attitude to nature", "ecological culture", "ecological ethics" (MANTAROVA, 2010). To achieve success through learning processes through the formation of a value system, the quality of the learning environment (SIMEONOVA & PARVANOVA, 2017) and its intertwining with the everyday activities of teenagers is important (GYUROVA, 2017).

The aim of the present study is to examine the behaviour and attitudes of adolescents to the management of waste food.

Materials and Methods

For the purpose of this study a survey of teenagers was conducted as a specific group, which is particularly important in examining the value attitudes of food as a resource and waste. To achieve the assigned tasks we developed a survey which includes containing 19 questions, which 3 questions from open and 16 from closed type. We are looking for an opportunity to understand and analyze the attitudes and trends in the development of ecological culture among our respondents (OLOFSSON & OHMAN, 2006; MILFONT *et al.*, 2006; LAIDLEY, 2011) tested by BOUDON & LAZARSFELD (1965, 1966); BOURDIEU (1980); DOISE *et al.* (1993). The survey examines the specific opinions of different groups of teenagers on their education and knowledge about food as resource and waste and traces their daily behaviour in this regard. In this study, only the part of the questions related to the education received in school on the subject was used. There were 224 adolescents, who was interviewed, aged 12 to 18. Students from the city of Plovdiv, who study at

different types of schools, were interviewed in order to reach a wider range of respondents and to ensure greater representativeness of the collected data: schools with specialized classes in the field of food technology and technique, elite and high schools of humanities with affinity to social and human science, private and state secondary general education schools. We

used quantitative methods for analyzing the respondents' answers to the given environmental problem.

Results and Discussion

The survey card used in this study is presented in Table 1, which includes the questions of the questionnaire method, number and percentage of surveyed adolescents.

Table 1. A survey card developed for the purposes of the study.

Question	Answer	Number of answers	Percentage
Grade	6-th grade - 12 year olds	14	6.4%
	7-th grade - 13 year olds	14	6.4%
	8-th grade - 14 year olds	13	5.9%
	9-th grade - 15 year olds	54	24.5%
	10-th grade - 16 year olds	15	6.8%
	11-th grade - 17 year olds	52	23.6%
	12-th grade - 18 year olds	58	26.4%
	Total	220	100.0%
You are	Male	85	38.8%
	Female	134	61.2%
	Total	219	100.0%
Do you leave leftover food?	Yes	124	55.4%
	No	100	44.6%
	Total	224	100.0%
Where do you throw away the leftover food when you're at school?	I leave it in the classroom (on the floor, under my desk in the bin)	25	11.4%
	In the recycling bins in the school yard or outside the school	96	43.6%
	I give it to an animal	71	32.3%
	Other (designated waste sites)	7	3.2%
	I don't throw it away, everything is eaten	40	18.2%
	Total	220	100.0%
How often are you a witness to how your classmates leave uneaten food to become waste?	Every day	89	39.7%
	At least once a week	26	11.6%
	Sometimes	94	42.0%
	Never	15	6.7%
	Total	224	100.0%

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Where does your family throw away the leftover food?	In the bin at home/school	97	43.3%
	Gives it to somebody	6	2.7%
	Gives it to an animal	103	46.0%
	We don't throw food away	37	16.5%
	Other	4	1.8%
	Total	224	100.0%
Does your family talk about the way of eating and the food as a waste?	Yes	117	52.5%
	No	106	47.5%
	Total	223	100.0%
Is leftover food garbage according to you?	Yes	21	9.5%
	No	201	90.5%
	Total	222	100.0%
Is it necessary to spend time in school to learn about nutrition issues and food as a resource?	Yes	174	77.7%
	No	50	22.3%
	Total	224	100.0%
Do you get enough knowledge about the importance of food in school?	Yes	72	32.6%
	No	149	67.4%
	Total	221	100.0%
In what form would you like to receive information and knowledge about food as a resource and waste?	In biology class	67	31.0%
	Through information boards in school	42	19.4%
	Through specialized lectures by external lecturers	65	30.1%
	Through visits to specialized units, connected to nutrition	73	33.8%
	Total	216	100.0%
	Where do you want to learn more about how to get and use food?	Family	44
	School	8	22.2%
	Friends	5	2.3%
	Internet and the television	36	16.7%
	All of the above	100	46.3%
	Other (specialists on nutrition, books, outside of class activities)	13	6.0%

As a result of the conducted interview among the 224 adolescents from 6-th to 12-th grade from different Secondary Education Schools in Plovdiv City the following comments can be made about food as resource and waste.

With regard to the question „*What is the Food for you?*“, in 70% of cases the students

point out that it is vital to human survival, a source of energy and a way of life. In many of the answers they share, that food is mostly a delight.

For the question "*Do you think the level of culture and the financial situation effects on the quantity of leftover food*", the interviewed adolescents are united around the opinion

that people who do not have the financial opportunities value food more, unlike those with financial stability, who are not interested in this problem and often throw out huge amounts of edible food. Some say that if a child or teenager is taught to appreciate food early, this will have consequences in the future. The adolescent's assessments confirm that it is necessary to treat food as a valuable resource and to prevent it from becoming a waste (BENETT, 1941). This change requires active efforts and persistence on the part of the individual and the structures involved in governance (FUSIONS, 2015).

Participants in the interview share their knowledge of the pressing problems about providing the food resources in the world and on their native territory. On question "How do you think this problem can be solved?" they are united around the view that it is necessary for the population to start value food more and to be interested in how it is produced, what is its destiny is after it is at the waste collectors. Opinions are shared about the reorganisation and revision of hitherto established habits as a nation, through universal efforts, rational and full use, accompanied by numerous actions and projects. The above statement confirms an assertion made by MANTAROVA (2014), that risk arises as a result of various processes occurring at the level of an individual or group of individuals that affect his development. The individual's attitudes and values, abilities and mental moods are personal factors, and they are usually those who influence us without realising it. They become noticeable in times of conflict with nature.

The results show that, in 55, 4% of the cases, students in the 6th - 12th grade in their everyday life, leave leftover food. In 60% of them they do not even think about it and do not consider the fact that throwing up some of their snacks or lunches has an adverse effect on the environment. This is confirmed by (GANGLBAUER *et al.*, 2013), which take

into account the influence of positive attitudes in a family environment on sustainable development and conservation of natural resources. Among the respondents, it remains unclear whether their action on one hand generates consumption of natural resources consumed in the production of the already prepared food and on the other, the processes involved in its degradation will affect the ecological situation. It is essential that the interviewed teenagers do not perceive (90, 5 %) unconsumed food as waste from the daily menu or that which is not used due to dislike or expiration term. This answer is somewhat contradictory to the action it takes to treat it at the time on the way to the bin. This is confirmed by the graphical representation of the results obtained from their answers to the question (Fig. 1). What to do with food is then apparent.

It is practice in the family and school environment for food waste to go into the bin. The elite high school students and those oriented to the food preparation and management process in 39.7% of the cases indicate that they observe this every day, another 42.0% sometimes, witnesses at least once a week are 11.6% and those who have never observed this were 6.7%. Respondents openly state (Fig. 2) that they lack information about the issue we are researching and would welcome the subject to be further commented in biology lessons at school related to environmental education and sustainable development (SIMEONOVA & PARVANOVA, 2017).

The students themselves are categorical (82%) that it is not only desirable, but also necessary to have training and education at school (Fig. 3) devoted to learning about nutrition and food as a resource and waste, preferably as visits to specialized nutrition centers in 33.8% of cases, through the Biology lessons at school 31.0%, through specialized lectures by external lecturers at 30.1% and 19.4% through specialized information boards in school.

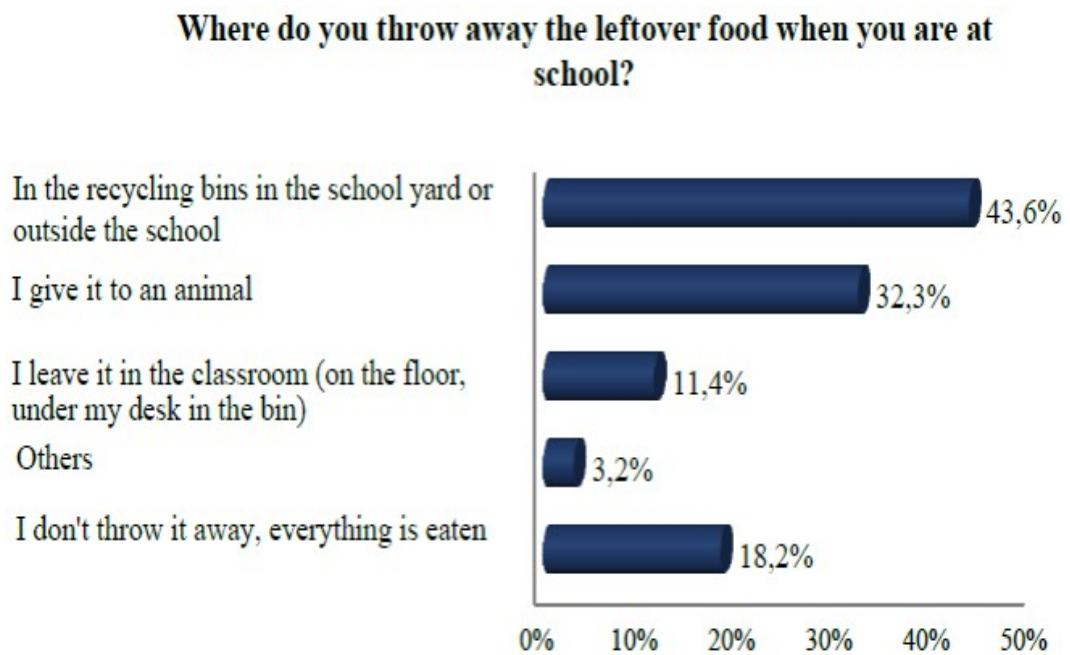


Fig. 1. Preferred places for pupils to throw away food waste in school.

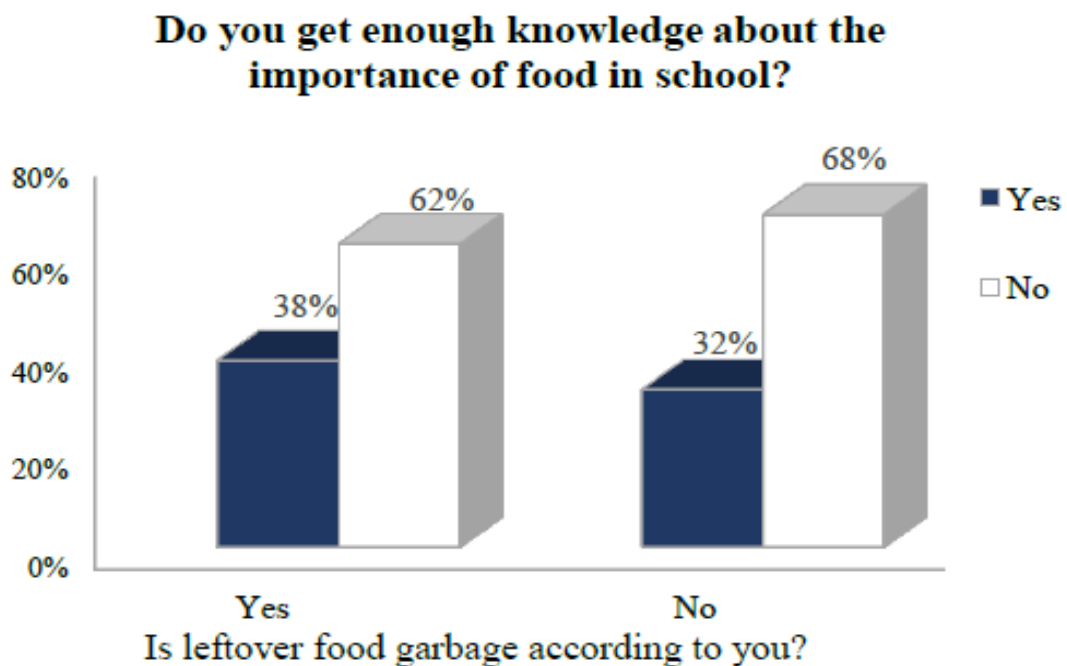


Fig. 2. Adoption of food-related topics as a resource and waste in the curriculum.

Is it necessary to spend time in school to learn about nutrition issues and food as a resource?

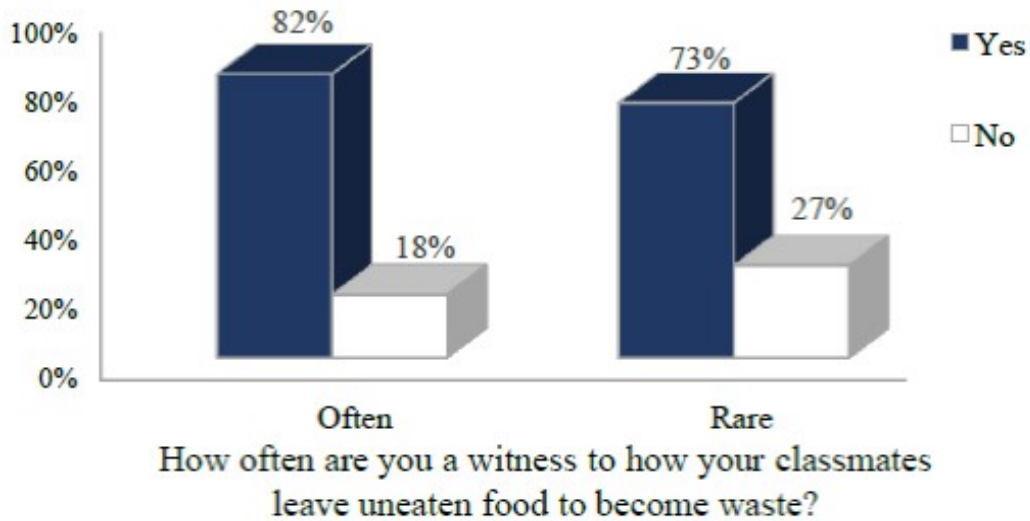


Fig. 3. Readiness of adolescents to receive additional information.

In what form would you like to receive information and knowledge about food as a resource and waste?

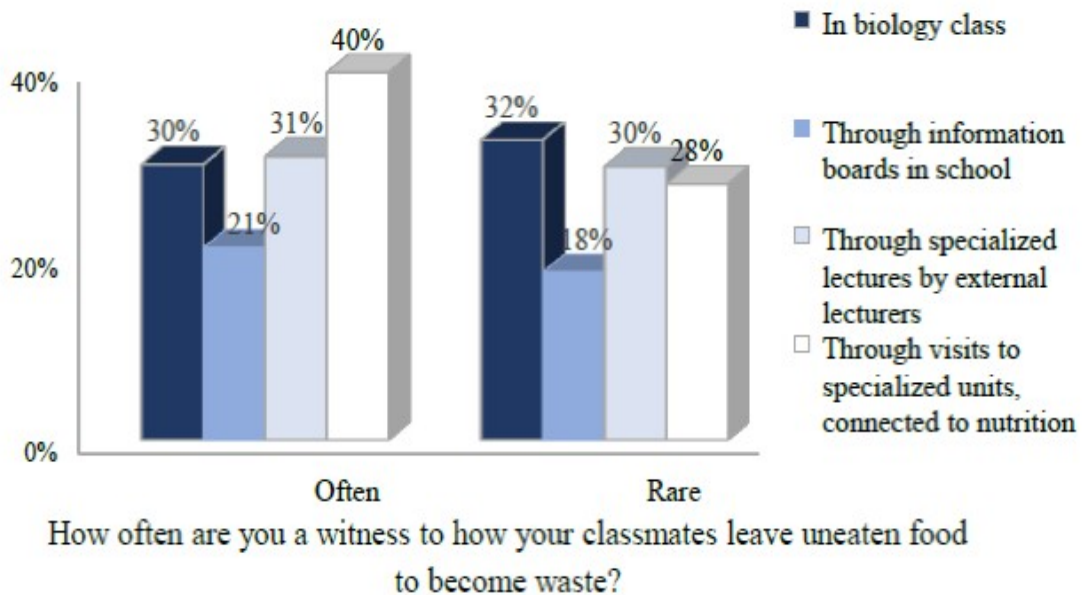


Fig. 4. Preferred forms of training.

Students in all classes, in 68% of cases, are on the opinion that in the school they do not get enough knowledge about food as a resource and waste. It is necessary to build environmental competences among students (VAKLEVA, 2008) by organizing an education focused on developing attitudes and values about the management of food wastes, for example composting or other technologies. (MANTAROVA, 2010; PANAYOTOVA & VAKLEVA, 2011). Teachers can help students to internalize those attitudes and values, so that it may affect their behaviour and decision-making in daily lives how to avoid unnecessary costs of food resources that have already been produced and were not consumed. Fig. 4 shows the shares of students' opinions about the best way they think they can get more knowledge on the issue. It is necessary to redirect patterns of consumption to food requiring fewer resources and hence to change the behaviour of their use (MOOMAW *et al.*, 2012), because good intentions are not always reflected in everyday practices (VERMEIR & VERBEKE, 2008). It is generally known that individual attitudes and behaviours are the most difficult to change. In order to achieve such a change, it is required to turn to such important factors as personality traits, eating habits, and the effectiveness of consumer practices, taking into account knowledge, education level as well as general beliefs and environmental concerns (OLOFSSON & ÖHMAN, 2006; MILFONT *et al.*, 2006; LAIDLEY, 2011).

Conclusions

As a result of the analysis we can summarise the following:

Teenagers understand that food must be approached in a responsible and committed manner, but at the same time, the sources of more information and good practice in everyday life are not enough. On the one hand, food is perceived as necessary and vital to our survival, a source of energy and a way of life. Leftover waste is not perceived as waste, which requires special processing, the possibility of re-incorporating it into

composting and reducing or avoiding negative environmental consequences. Throwing away leftover food is a daily routine in different spheres and different layers of public life and it is not perceived in most of cases like a serious problem. Respondents of different ages consider that social status largely determines the attitude towards food in all aspects of its consumption and attitude.

Adolescents point out that they do not have enough knowledge, skills and competences at school to guide them in decision-making how to prevent, reduce or avoid throwing away food. They consider it is necessary to devote time to the education and their learning about food as a resource and waste in a shape form that is preferred by them. The possibilities in this regard may be improved by different approaches identified by the respondents themselves. Preference is given to visits to specialized nutrition centers or external teachers, who are specialists in these areas. In this regard, we believe that a thorough analysis of the curriculum content in the Biology textbooks for Secondary Education Schools should be performed, identifying the approaches and appropriate practices in order to accumulate knowledge, attitudes and daily practices in the waste of food and nutritional resources.

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