

FOOD WASTE IN THE ENVIRONMENT: minimization and awareness proposal

DESPERDÍCIO DE ALIMENTOS NO AMBIENTE ESCOLAR: proposta de minimização e conscientização
DESPERDICIO ALIMENTARIO EN EL ENTORNO ESCOLAR: propuesta de minimización y concienciación


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Received: 04.16.2023.

Accepted: 06.19.2023.

Published: 08.02.2023.

ABSTRACT:

The amount of wasted food was 931 million tons in 2019, with 26% of this value being discarded by the service sector, where the school is located. Considering that food waste is a social, economic and environmental problem, it is essential to develop research that propose effective solutions for its resolution. Thus, the objective of this work is to verify the situation of waste in a school and propose actions to minimize and raise awareness of food waste. By weighing food, it was found that 165 kg of food was discarded in the week of June 6, 2022 to June 10, 2022, despite the fact that 81.5% of the survey respondents claimed not to waste food. In view of this scenario, it is proposed to develop projects that bring greater awareness of the value of food, such as the cultivation of a vegetable garden, until the inclusion of this subject in the classroom, encouraging student protagonism.

KEYWORDS: Disposal of food; School food; Food valuation.

1. Introduction

According to the Food Waste Index, in 2019, 931 million tons of food were wasted, which corresponds to 17% of the world's total food production (UNEP - United Nations Environment Programme, 2021). This statistic includes only wasted food, understood as the intentional disposal of food products suitable for human consumption and is, therefore, related to the behavior of individuals (Santos et al., 2020). Also according to UNEP - United Nations Environment Programme (2021) 61% of waste occurs in homes and the rest, 26%, occurs in the service sector (restaurants, hotels, schools, among others). In addition to waste, there is also the loss of food that occurs during production, post-harvest and processing, in situations where the food is not harvested or ends up being damaged, such as in storage and transport (Tambosi & Dias, 2020).

According to the FAO - Food and Agriculture Organization of the United Nations (2013) it is estimated that the total cost of food waste can reach US\$ 1 trillion, with US\$ 700 billion related to environmental impact and another US\$ 900 billion is related to social issues. Brazil is among the 10 countries that waste the most food in the world, according to FAO - Food and Agriculture Organization of the United Nations (2015) with 35% of its production as total waste.

An important part of this waste occurs in Brazilian schools, which had the implementation of the National School Feeding Program (PNAE) in 1974 with the aim of guaranteeing the Human Development of Adequate Food (DHAA) for all students in public education or philanthropic institutions. In Brazil, there are two types of food distribution, ready-to-eat meals (PP) and self-service (AS). The PP is an older program, which consists of a positioning carried out by the cooks, according to the portion and per capita parameters defined by the PNAE, guaranteeing the supply of food on the plate, but not its consumption, in which it generates more leftovers of food in the bins. In the AS system, the student assembles his own plate, in which he gives the autonomy to make his food choice and what is his need, reducing and avoiding food waste, but it does not guarantee the consumption of all the food available at the distribution counter due to individual selectivity (Maurelli & Ribeiro, 2023). The study developed by (Maurelli & Ribeiro, 2023) emphasize that the amount of food leftovers in school units must be monitored, regardless of the type of food distribution, as 26.3% of waste was observed in the AS system while the PP presented 17.55%.

Since food waste is a major social, economic and environmental problem, it is necessary to expand research on this topic, with the intention of finding practices for awareness and mitigation of waste, especially in schools, places of learning and awareness. Thus, the objective of this work is to verify the situation of waste in a school and propose actions to minimize and raise awareness of food waste.

2. Methodological Procedures

The present work is exploratory research with an explanatory character, since to describe and correlate the facts it was necessary to carry out a bibliographic survey that would provide greater familiarity with the theme for the construction of hypotheses (Gil, 2002). As for the procedures, in addition to the bibliographic survey, a field survey and weighing of food waste was carried out in a state technical school located at the geographic coordinates 21°93' South Latitude and 50°52' West Longitude.

The field research was carried out online, through Google Forms®, containing four questions that sought to understand the number of people who eat at school and how

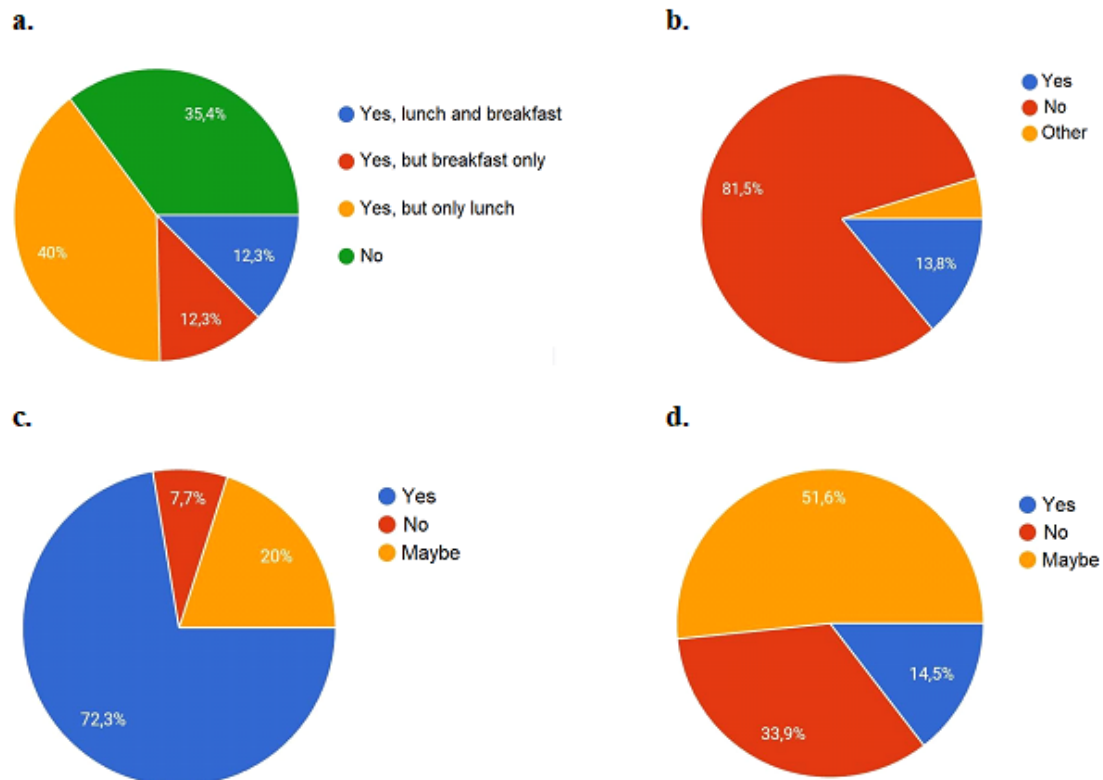
they perceive food waste. The questionnaire was sent to all students enrolled in high school and the completion (spontaneous) was 65 responses.

To weigh the wasted food, a G-TECH scale was used, where the bucket provided by the school itself for food disposal was placed.

3. Results and Discussions

Through the research carried out with students from the morning period of the technical school that hosted this study, it was seen (Figure 1) that 64.6% of students eat at school and that, within this data, 81.5% think they do not waste food, despite 72.3% claiming to witness other people wasting it. What contributes to the indifference towards this act is that 33.9% say they would not approach those who waste and 51.6% say they might.

Figure 1 a. "Do you eat at school?"; b. "Do you consider that you waste food?"; c. "Do you see waste in your school environment?"; d. "If so, do you have or would you have the courage to approach people who waste?"



Source: Prepared by the authors.

However, when performing a data collection at the school, where the amount of food that the students discarded was weighed, it was found that in the period of one

week, from June 6, 2022 to June 10, 2022, 165 kg of food were thrown away (Table 1). It can be seen that in the week in which the waste was weighed, the menu served was varied and, consequently, the volume wasted varied, indicating the selectivity of the students in relation to what was served.

Table 1 Menu and amount of wasted food in the period from 06/06/2022 to 06/10/2022

DATE		MENU	WASTE
06/06/2022	MONDAY	Rice, beans, scrambled egg, cabbage salad with onions	26 kg
07/06/2022	TUESDAY	Rice, beans, meat with carrots	44 kg
08/06/2022	WEDNESDAY	Rice, beans, meat with cassava, chard with tuna, papaya	31 kg
09/06/2022	THURSDAY	Pasta with ground beef in sauce, papaya	24 kg
10/06/2022	FRIDAY	Rice, beans, chicken with potatoes, sauteed cabbage	40 kg
TOTAL FOOD WASTED IN A WEEK			165 kg

Source: Prepared by the authors.

To reduce these numbers, the whole school community needs to work together, thus ensuring the full use of food and combating the waste of lunch. In the kitchen, fruit peels and vegetable stalks, which could be used, are thrown away, and in the cafeteria, the cooks end up putting more food than necessary for the students, who, when it is time to eat, get distracted in conversation with colleagues and end up not consuming everything. Often the menu does not please, but nothing is done to change it, and in the classroom, the subject of food appears occasionally. As a result, meals are poorly planned and wasteful.

To solve this consequence of the Brazilian scenario in the school environment, it is necessary that the management team is always present in relation to this theme. Therefore, it is necessary for the director to support and maintain constant communication with the kitchen team and always paying due attention to the needs of students (Santomauro, 2014).

In addition, the development of projects in the school environment tends to arouse greater awareness and appreciation of food, so it is suggested the development of awareness activities on healthy eating, which involve everything from attention in the preparation of dishes to the inclusion of this subject as content in the classroom; the cultivation of a vegetable garden by the students themselves, so that they understand the real value of food.

4. Final Considerations

In this way, the objective of this work is to propose actions to minimize and raise awareness of food waste, by verifying the situation of waste in a school.

At the end of this study, it is clear that there is a lot of food waste in the world and school units contribute significantly to the increase in these numbers. Thus, the process of food education on food waste has become of paramount importance, since the act of wasting occurs frequently and needs to be mitigated. For this and for change to really take place, individuals must change their habits and behaviors and become aware before throwing food away, whether inside homes, schools or anywhere else they go to eat.

The act of not wasting food demonstrates concern and empathy with people and the environment, as it reflects the search to guarantee a sustainable quality life for the next generations. Thus, the development of projects to raise awareness and value food in the school environment, becomes conducive to the full development of citizens, as they become replicators of actions in society.

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RESUMO:

A quantidade de alimentos desperdiçados foi de 931 milhões de toneladas em 2019, sendo que 26% desse valor é descartado pelo setor de serviços, onde a escola está inserida. Considerando que o desperdício de alimentos é um problema de ordem social, econômico e ambiental, é fundamental o desenvolvimento de pesquisas que proponham soluções efetivas para sua resolução. Assim, o objetivo deste trabalho é verificar a situação do desperdício em uma escola e propor ações de minimização e conscientização do desperdício de alimentos. Por meio da pesagem de alimentos, constatou o descarte de 165 kg de alimentos na semana de 06 de junho de 2022 a 10 de junho de 2022, apesar de 81,5% dos alunos respondentes da pesquisa alegarem não desperdiçar comida. Diante desse cenário, propõe-se o desenvolvimento de projetos que tragam maior consciência do valor do alimento, como o cultivo de uma horta, até a inclusão desse assunto em sala de aula, incentivando o protagonismo do aluno.

PALAVRAS-CHAVE: Descarte de alimentos; Alimentação escolar; Valoração do alimento.

RESUMEN:

La cantidad de alimentos desperdiciados fue de 931 millones de toneladas en 2019, y el 26% de esta cantidad es descartada por el sector servicios, donde se inserta la escuela. Teniendo en cuenta que el desperdicio de alimentos es un problema social, económico y ambiental, es esencial desarrollar investigaciones que propongan soluciones efectivas para su resolución. Así, el objetivo de este trabajo es comprobar la situación de los residuos en un centro escolar y proponer acciones para minimizar y concienciar sobre el desperdicio alimentario. A través del pesaje de alimentos, encontró la eliminación de 165 kg de alimentos en la semana del 6 de junio de 2022 al 10 de junio de 2022, a pesar de que el 81.5% de los estudiantes que respondieron a la encuesta afirmaron no desperdiciar alimentos. Ante este escenario, se propone el desarrollo de proyectos que aporten mayor conciencia del valor de los alimentos, como el cultivo de un huerto, hasta la inclusión de esta asignatura en el aula, fomentando el protagonismo del alumno.

PALABRAS CLAVE: Eliminación de alimentos; Alimentación escolar; Valoración de alimentos.